8457761

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

February 09, 2024

THIS IS TO CERTIFY THAT ANNEXED IS A TRUE COPY FROM THE RECORDS OF THIS OFFICE OF THE FILE WRAPPER AND CONTENTS OF:

APPLICATION NUMBER: ***14/612,712***
FILING DATE: ***February 03, 2015***
PATENT NUMBER: ***9473602***
ISSUE DATE: ***October 18, 2016***

UNITED STATES PATENT AND TRADEMARK OFFICE · DEPARTMENT OF COMMERCE

Certified by

Performing the Functions and Duties of the
Under Secretary of Commerce
for Intellectual Property
and Director of the United States
Patent and Trademark Office

Attorney Docket No.: 891.0013.U5(US)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner For Patents
Mail Stop: NEW PATENT APPLICATION
P.O. Box 1450
Alexandria, VA 22313-1450

NEW APPLICATION TRANSMITTAL FORM

Sir:

Transmitted herewith for filing is the patent application of

Inventor(s): **Claus H. JORGENSEN**

For (title): **Portable Electronic Device**

Enclosed are the following:

- ☒ Application Cover Page
- ☒ **19** pages of Specification that consists of, **12** pages of Description, **6** pages of Claims and **1** page of Abstract;
- ☒ **6** sheet of drawings;
- ☒ Inventor(s) Declaration;
- ☒ Power of Attorney from Applicant;
- ☒ Preliminary Amendment;
- ☐ Certified Copy of priority document(s);
- ☐ English language translation of priority document;
- ☒ Application Data Sheet;
- ☒ Information Disclosure Statement and/or Form PTO 1449 and cited non-U.S. art (if applicable);
- ☐ Assignment,
  - ☐ Inventor Declaration is in Assignment document (Assignment contains the statements required by § 1.63 (35 U.S.C 115(e) and § 1.63(e)));
- ☐ Recordation Form Cover Sheet for Assignment;
- ☐ Return Receipt Postcard;
- ☒ Other: **Formal Drawings (6 Replacement Sheets)**

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000002

Assignment Data

☒ An assignment of the invention to Nokia Technolgoies Oy
- ☐ is attached.
- ☐ will follow.
- ☒ has been previously filed.

Small Entity Status

☐ Applicant claims small entity status.

Fees

☒ Utility ☐ Reissue

☐ Design

Basic Filing Fee					$ 280.00
Excess Claim Fee					
	Number Filed	Number Extra		Rate	
Total Claims	**18** -20 =	**0**	x	$ 80.00	$
Independent Claims	**2** - 3 =	**0**	x	$ 420.00	$
☐ Multiple Dependent Claim Fee ($780.00)					$
Examination Fee					$ 720.00
Patent Search Fee					$ 600.00
Exceeding of 100 sheets of paper fee ($400.00 per each 50 sheets)					$
Assignment Recordal		**0**	x	$ 40.00	$
TOTAL FEES					**$ 1600.00**

☐ A check in the amount of $_____ in payment of the filing fee is enclosed.

☒ Charge $1600.00 to Deposit Account No. 50-1924

☒ The Commissioner is hereby authorized to charge any additional fees under 37 C.F.R. 1.16 and 1.17 which may be required for this communication or during the entire pendency of this patent application, or credit any overpayment, to Deposit Account No. 50-1924.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000003

Authorization To Permit Access To Application by Participating Offices

☒ The undersigned hereby grants the USPTO authority to provide the European Patent Office (EPO), the Japan Patent Office (JPO), the Korean Intellectual Property Office (KIPO), the World Intellectual Property Office (WIPO), and any other intellectual property offices in which a foreign application claiming priority to the above-identified patent application is filed access to the above-identified patent application. See 37 CFR 1.14(c) and (h). This box should not be checked if the applicant does not wish the EPO, JPO, KIPO, WIPO, or other intellectual property office in which a foreign application claiming priority to the above-identified patent application is filed to have access to the above-identified patent application. In accordance with 37 CFR 1.14(h)(3), access will be provided to a copy of the above-identified patent application with respect to: 1) the above-identified patent application-as-filed; 2) any foreign application to which the above-identified patent application claims priority under 35 U.S.C. 119(a)-(d) if a copy of the foreign application that satisfies the certified copy requirement of 37 CFR 1.55 has been filed in the above-identified patent application; and 3) any U.S. application-as-filed from which benefit is sought in the above-identified patent application. In accordance with 37 CFR 1.14(c), access may be provided to information concerning the date of filing the Authorization to Permit Access to Application by Participating Offices.

Certification And Authorization To Permit Access To Search Results By The European Patent Office (EPO)

☒ The Undersigned Hereby Certifies And Authorizes The Following For The Above-Identified Application:

1. The undersigned hereby certifies that I am:
   a. an Attorney or agent of record; and/or
   b. a registered attorney or agent named in the application papers filed under 37 CFR 1.53 or 1.495 (37 CFR 1.63 or 1.497 oath or declaration was not filed.); and
2. The undersigned hereby authorizes the USPTO to provide the European Patent Office (EPO) access to the bibliographic data and search results for the above-identified U.S. patent application.

Correspondence

Address all future communications to: **Customer No.: 10948**
Direct telephone calls to Juan Juan at (203) 925-9400
Direct facsimiles to (203) 944-0245

2/3/2015
Date

Juan Juan (Reg. No.: 60,564)

Customer No.: 10948

Harrington & Smith,
Attorneys At Law, LLC
4 Research Drive
Shelton, CT 06484-6212
(203) 925-9400

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000004

Doc Code: PA..

Document Description: Power of Attorney

PTO/AIA/82A (07-12)
Approved for use through 11/30/2014. OMB 0651-0035
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

TRANSMITTAL FOR POWER OF ATTORNEY TO ONE OR MORE REGISTERED PRACTITIONERS

NOTE: This form is to be submitted with the Power of Attorney by Applicant form (PTO/AIA/82B or equivalent) to identify the application to which the Power of Attorney is directed, in accordance with 37 CFR 1.5. If the Power of Attorney by Applicant form is not accompanied by this transmittal form or an equivalent, the Power of Attorney will not be recognized in the application.

Application Number	
Filing Date	herewith
First Named Inventor	Claus H. JORGENSEN
Title	Portable Electronic Device
Art Unit	
Examiner Name	
Attorney Docket Number	891.0013.U5(US)

SIGNATURE of Applicant or Patent Practitioner

Signature		Date	2/3/2015
Name	Juan Juan	Telephone	203 925-9400
Registration Number	60,564		

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4(d) for signature requirements and certifications.

☐ *Total of _____ forms are submitted.

This collection of information is required by 37 CFR 1.31, 1.32 and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

GENERAL POWER OF ATTORNEY

The undersigned:

Nokia Technologies Oy
Karaportti 3
02610 Espoo
Finland

hereby appoints all practitioners associated with:

Customer Number: **10,948**

to represent Nokia Corporation in the U.S. Patent and Trademark Office in connection with any and all patent applications and patents which the undersigned is the applicant, assignee or patent owner.

Nokia Technologies Oy

By: _____
Name: Harri Hu[illegible]lo
Title: Director, [illegible]
Date: 23 January 2015

Nokia Technologies Oy

By: _____
Name: Jukka Nihtilä
Title: Head, Business Development Legal & IP
Date: 23 January 2015

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000006

Doc Code: PA..
Document Description: Power of Attorney

PTO/AIA/82B (07-13)
Approved for use through 11/30/2014. OMB 0651-0051
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number

POWER OF ATTORNEY BY APPLICANT

I hereby revoke all previous powers of attorney given in the application identified in either the attached transmittal letter or the boxes below.

Application Number	Filing Date

(Note: The boxes above may be left blank if information is provided on form PTO/AIA/82A.)

☑ I hereby appoint the Patent Practitioner(s) associated with the following Customer Number as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the application referenced in the attached transmittal letter (form PTO/AIA/82A) or identified above: 10948

OR

☐ I hereby appoint Practitioner(s) named in the attached list (form PTO/AIA/82C) as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the patent application referenced in the attached transmittal letter (form PTO/AIA/82A) or identified above. (Note: Complete form PTO/AIA/82C.)

Please recognize or change the correspondence address for the application identified in the attached transmittal letter or the boxes above to:

☑ The address associated with the above-mentioned Customer Number

OR

☐ The address associated with Customer Number:

OR

Firm or Individual Name					
Address					
City		State		Zip	
Country					
Telephone		Email			

I am the Applicant (if the Applicant is a juristic entity, list the Applicant name in the box):

Nokia Technologies Oy

☐ Inventor or Joint Inventor (title not required below)

☐ Legal Representative of a Deceased or Legally Incapacitated Inventor (title not required below)

☑ Assignee or Person to Whom the Inventor is Under an Obligation to Assign (provide signer's title if applicant is a juristic entity)

☐ Person Who Otherwise Shows Sufficient Proprietary Interest (e.g., a petition under 37 CFR 1.46(b)(2) was granted in the application or is concurrently being filed with this document) (provide signer's title if applicant is a juristic entity)

SIGNATURE of Applicant for Patent

The undersigned (whose title is supplied below) is authorized to act on behalf of the applicant (e.g., where the applicant is a juristic entity).

Signature	[signature]	Date (Optional)	23 January 2015
Name	Harri Hursti [illegible]	Jukka Nihtilä	
Title	[illegible] Legal and [illegible] Property	Head, Business Development Legal & IP	

NOTE: Signature - This form must be signed by the applicant in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. If more than one applicant, use multiple forms.

☐ Total of forms are submitted.

This collection of information is required by 37 CFR 1.131, 1.32, and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.: Confirmation No.:
Applicant(s): Jorgensen, Claus H.
Filed: Herewith
Art Unit:
Examiner:
Title: Portable Electronic Device

Attorney Docket No.: 891.0013.U5(US)
Customer No.: 10,948

Commissioner For Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Information Disclosure Statement

(37 C.F.R. §1.97(b))

Sir:

The following information is being disclosed to the U.S. Patent and Trademark Office as information that may be material to the examination of the above-identified patent application.

A Form PTO-1449 is enclosed for the Examiner's use which lists art cited in the parent application (Application No.: 14/067,249 [which is a continuation patent application of Application No.: 13/741,781 [now US 8,615,077], which is a continuation patent application of Application No.: 12/860,234 [now US 8,363,824], which is a continuation patent application of 11/393,510 [now US 7,787,618]). In accordance with 37 C.F.R. §1.98(d) copies of the art are not included. These can

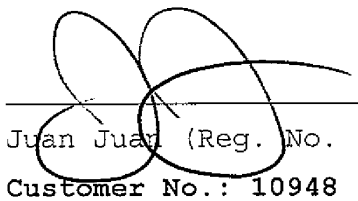
Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000008

be obtained by the Examiner from the file of the parent application.

The filing of this Statement is not to be construed as a representation that a search has been made regarding the claimed invention (37 C.F.R. §1.97(g)) or that no other possible material information exists. In addition, the filing of this Statement is not to be construed to be an admission that the information cited in the Statement is, or is considered to be, material to Patentability (37 C.F.R. §1.97(h)).

If there are any additional charges with respect to this Information Disclosure Statement or otherwise, please charge deposit account 50-1924 for any fee deficiency.

Respectfully submitted,



Juan Juan (Reg. No. 60,564)

1/29/2015
Date

Customer No.: 10948
Harrington & Smith,
Attorneys At Law, LLC
4 Research Drive
Shelton, CT 06484-6212
203-925-9400

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000009

INFORMATION DISCLOSURE CITATION FORM FOR PATENT APPLICATION (FORM PTO-1449) (Substitute)	Docket No.: 891.0013.U5(US) Serial No.:
	Applicant(s): Claus H. Jorgensen
	Filing Date: herewith Group:

U.S. PATENT DOCUMENTS

Examiner Initials	Document Number (Number-Kind Code)	Publication Date (MM-DD-YYYY)	Name of Patentee or Applicant	Class	Sub-class
	US-DES. 427,171	06-27-2000	Frye et al.	D14	138
	US-2005/0282593 A1	12-22-2005	Spence et al.	455	575.3
	US-2003/0199290 A1	10-23-2003	Viertola	455	575.1
	US-2001/0034242	10-2001	Takagi, Hisamitsu	455	550
	US-2004/0253508 A1	12-16-2004	Kohri et al.	429	100
	US-6,219,257 B1	04-17-2001	Arnold	361	814
	US-5,768,098	06-16-1998	Murayama	361	884
	US-6,128,184	10-03-2000	Ito et al.	361	681
	US-6,317,315 B1	11-13-2001	Lee et al.	361	681
	US-6,805,998 B2	10-19-2004	Jenson et al.	429	162
	US-6,920,344 B2	07-19-2005	Jang	455	575.5
	US-6,933,981	08-23-2005	Kishida et al.	348	375
	US-7,010,121	03-07-2006	Wennemer et al.	379	433.01
	US-7,336,228 B2	02-26-2008	Lu et al.	343	702
	US-7,515,431 B1	04-07-2009	Zadesky et al.	361	752
	US-7,522,889 B2	04-21-2009	Wulff et al.	455	90.3
	US-7,630,741 B2	12-08-2009	Siddiqui et al.	455	575.1
	US-2004/0204009 A1	10-14-2004	Cheng et al.	455	550.1
	US-2003/0100275 A1	05-29-2003	Hsu et al.	455	90
	US-2006/0233356 A1	10-19-2006	Lu et al.	379	433.01

FOREIGN PATENT DOCUMENTS

Examiner Initials	Document Number (Country Code-Number-Kind Code)	Publication Date (MM-DD-YYYY)	Name Of Patentee of Applicant	Translation? Yes/No/n/a
	GB 2 383 472 A	06/25/2003	Vertu Limited	n/a
	EP-1209880-A3	02-05-2003	Nokia Corporation	
	EP-1533983-A1	05-25-2005	LG Electronics Inc.	
	GB-2391740-A	02-11-2004	Matsushita Electrical Industrial Co. Ltd.	
	JP-2005-318064-A	11-10-2005	Toshiba Corp	Abstract
	EP-1496672-A1	01-12-2006	Matsushita Electric Industrial Co., Ltd.	
	EP-1 617 313-A2	01-18-2005	LG Electronics, Inc.	
	WO-95/31048-A1	11-16-1995	Daniels, John J.	

OTHER DOCUMENTS (Author (Capitalize), Title, Date, Pages, Etc., if known)

Examiner's Signature: Date Considered:

Initial if reference was considered, whether or not citation is in conformance with MPEP. Mark through citation if not considered. Include a copy of this citation form with your next correspondence to the Applicant(s).

INFORMATION DISCLOSURE CITATION FORM FOR PATENT APPLICATION (FORM PTO-1449) (Substitute)	Docket No. 891.0013.U5(US) Serial No.: Applicant(s): Claus H. Jorgensen Filing Date: herewith Group:

U.S. PATENT DOCUMENTS

Examiner Initials	Document Number (Number-Kind Code)	Publication Date (MM-DD-YYYY)	Name of Patentee or Applicant	Class	Sub-class
	US-7,499,040 B2	03-03-2009	Zadesky et al.	345	204
	US-7,627,343 B2	12-01-2009	Fadell et al.	455	557
	US-8,140,133 B2	03-20-2012	Jung et al.	455	575.3
	US-7,495,659 B2	02-24-2009	Marriott et al.	345	173
	US-7,099,709 B2	08-29-2006	Hsu et al.	455	575.8
	US-7,374,452 B2	05-20-2008	Kohri et al.	439	500
	US-7,046,230 B2	05-16-2006	Zadesky et al.	345	156
	US-6,785,395 B1	08-31-2004	Arneson et al.	381	334
	US-6,075,470	06-13-2000	Little et al.	341	107
	US-6,271,605 B1	08-07-2001	Carkner et al.	307	125
	US-6,278,442 B2	08-21-2001	Griffin et al.	345	169
	US-6,317,592 B1	11-13-2001	Campana, Jr. et al.	455	412
	US-6,754,507 B2	06-22-2004	Takagi	455	550.1
	US-D506,476 S	06-21-2005	Andre et al.	D14	496
	US-D416,256	11-09-1999	Griffin et al.	D14	191
	US-D433,460	11-07-2000	Griffin et al.	D21	329
	US-2003/0095656 A1	05-22-2003	Sommer	379	419

FOREIGN PATENT DOCUMENTS

Examiner Initials	Document Number (Country Code-Number-Kind Code)	Publication Date (MM-DD-YYYY)	Name Of Patentee of Applicant	Translation? Yes/No/n/a
	JP-2001308992-A	11-02-2001	Kyocera Corp.	
	CN-2750587(Y)	01-04-2006	Konka Group Co.	
	- -			
	- -			

OTHER DOCUMENTS (Author (Capitalize), Title, Date, Pages, Etc., if known)

	IPod Nano. (2013, October 28). In *Wikipedia, The Free Encyclopedia*. Retrieved 18:44, November 12, 2013, from http://en.wikipedia.org/w/index.php?title=IPod_Nano&oldid=579129002, 12 pages
	IPod Mini. (2013, October 28). In *Wikipedia, The Free Encyclopedia*. Retrieved 18:47, November 12, 2013, from http://en.wikipedia.org/w/index.php?title=IPod_Mini&oldid=579128730, 4 pages
	Nokia 9300 specifications, Nokia 9300 announcement: 2004, Nokia 9300 launched 2004-2005, retrieved 11/12/2013 from http://www.gsmarena.com/nokia_9300-881.php, 1 page
	Photographic image of Nokia 9300 with cover removed, Nokia 9300 announcement: 2004, Nokia 9300 launched 2004-2005, 1 page
	Wilson, Tracy V., "How a Blackberry Works", howstuffworks.com, 4 pages, January 2006, retrieved 8/26/2013, 4 pages
	Gabe, "Installing Palm Zire 31 Battery", www.iFixit.com, document generated 08/24/2013, Palm Zire 31 first released April 2004, 6 pages

Examiner's Signature:	Date Considered:

Initial if reference was considered, whether or not citation is in conformance with MPEP. Mark through citation if not considered. Include a copy of this citation form with your next correspondence to the Applicant(s).

INFORMATION DISCLOSURE CITATION FORM FOR PATENT APPLICATION (FORM PTO-1449) (Substitute)	Docket No. 891.0013.U5(US) Serial No.: Applicant(s): Claus H. Jorgensen Filing Date: herewith Group:

U.S. PATENT DOCUMENTS

Examiner Initials	Document Number (Number-Kind Code)	Publication Date (MM-DD-YYYY)	Name of Patentee or Applicant	Class	Sub-class
	US- US- US- US-				

FOREIGN PATENT DOCUMENTS

Examiner Initials	Document Number (Country Code-Number-Kind Code)	Publication Date (MM-DD-YYYY)	Name Of Patentee of Applicant	Translation? Yes/No/n/a
	- - - - - -			

OTHER DOCUMENTS (Author (Capitalize), Title, Date, Pages, Etc., if known)

	Fadell, Tony, "Apple seriously considered building an iPhone with hardware keyboard", MAC Daily News, April 30, 2012, 13 pgs.
	"Getting Started", Zire™ 31, Palm One, Inc., 2003, 104 pgs.
	"palmOne Zire 31 Review", Brighthand Smartphone News & Review, April 27, 2004, 4 pgs.
	"Repairing TomTom ONE Back Cover", Fixit, 2003, 4 pgs.
	"Sendo M550 Manual, CE0168" Sendo, 2003, 50 pgs.
	"User Guide for the Kyocera SoHo Phone", Kyocera 82K5867-1EN, Rev. 002, 2004, 59 pgs.
	"Sprint PCS Vision Phone VI-3155i by okia", Sprint PCS® Service, Sprint 2005, 208 pgs.
	"The Birth of the iPhone – Excerpt from Jony Ive: The Genius Behind Apple's Greatest Products", Kahney, Leander, Janury 7, 2014, 30 pgs.
	"Motomanual V176 GSM", Motorola, 2006, 77 pgs.
	"Operating Instructions X800 Symbian OS Smartphone, Panasonic, 2005, 194 pgs.
	"Meet the Nokia N72: the Multimedia Computer that Looks as Good as It Performs", Press Release, April 2006, 2 pgs.
	"Microsoft and Nokia Collaborate to Help Ensure Consumers Can Enjoy Digital Music Anywhere", Press Release, February 14, 2005, 2 pgs.
	"Multifuntional Mobiles Make the World Go Round", Press Release, June 6, 2006, 4 pgs.
	"Nokia 3250: A music phone with a twist", Press Release, September 27, 2005, 2 pgs.
	"Nokia Announces Convergence Devices for Mobile TV and the Digital Home at Nokia Mobility Conference 2005", PRNewswire, Barcelona, Spain, 2005, 3 pgs.
	"Nokia Launches Mobile Music Solution for Operators Worldwide", Nexus 5, February 14, 2005, 3 pgs.
	"Nokia N90 voted European Media Phone of the Year", Press Release, August 16, 2005, 2 pgs.
	"The world's first integrated DVB-H mobile device makes prime time any time", Press Release, November 2, 2005 , 3 pgs.
	"Two Nseries multimedia devices receive prestigious commendation from Popular Science magazine", Press Release, November 8, 2005, 3 pgs.
	"Part of the Nokia Nseries high performance multimedia range, the Nokia N90 brings Carl Zeiss optics into the mobile arena", Press Release, April 27, 2005, 4 pgs.

Examiner's Signature:	Date Considered:

Initial if reference was considered, whether or not citation is in conformance with MPEP. Mark through citation if not considered. Include a copy of this citation form with your next correspondence to the Applicant(s).

INFORMATION DISCLOSURE CITATION FORM FOR PATENT APPLICATION (FORM PTO-1449) (Substitute)	Docket No. 891.0013.U5(US) Serial No.: Applicant(s): Claus H. Jorgensen Filing Date: herewith Group:

U.S. PATENT DOCUMENTS

Examiner Initials	Document Number (Number-Kind Code)	Publication Date (MM-DD-YYYY)	Name of Patentee or Applicant	Class	Sub-class

FOREIGN PATENT DOCUMENTS

Examiner Initials	Document Number (Country Code-Number-Kind Code)	Publication Date (MM-DD-YYYY)	Name Of Patentee of Applicant	Translation? Yes/No/n/a
	- -			

OTHER DOCUMENTS (Author (Capitalize), Title, Date, Pages, Etc., if known)

	Blackberry 857 – Enterprise Edition – Blackberry Series Specifications, Blackberry 857 launched November 2000, document retrieved 5/30/2014 from http://www.cnet.com/products/blackberry-857-enterprise-edition-blackberry-series/, 3 pages
	Blackberry 957 – Enterprise Edition – Blackberry – 5MB Series Specifications, Blackberry 957 launched November 2000, document retrieved 5/30/2014 from http://www.cnet.com/products/blackberry-957-internet-edition-blackberry-series/, 2 pages
	Zire 31. (2013, December 20). In Wikipedia, The Free Encyclopedia. Retrieved 14:47, May 30, 2014, from http://en.wikipedia.org/w/index.php?title=Zire_31&oldid=586990828, 3 pages
	Zire 72. (2013, March 12). In Wikipedia, The Free Encyclopedia. Retrieved 14:49, May 30, 2014, from http://en.wikipedia.org/w/index.php?title=Zire_72&oldid=543613308, 3 pages
	Motorola Razr. (2014, May 29). In *Wikipedia, The Free Encyclopedia*. Retrieved 14:52, May 30, 2014, from http://en.wikipedia.org/w/index.php?title=Motorola_Razr&oldid=610567906, 12 pages
	Jony Ive : the genius behind Apple's greatest products [Summary], Book published November 2013, Summary retrieved May 30, 2014, from http://lccn.loc.gov/2013037927, 2 pages
	Photographic images of iPod Mini with cover removed, iPod Mini announcement: January 6, 2004, iPod Mini released on February 20, 2004, 1 page
	Photographic images of Palm One Zire 31 (front/back, and with cover removed), Palm One Zire 31 released: April 2004, 1 page
	Photographic images of iPod Nano (front/back, and with cover removed), iPod Nano released: September 2005, 1 page
	Photographic images of Nokia 9300 (front/back, and with cover removed), Nokia 9300 announcement: 2004, Nokia 9300 launched 2004-2005, 1 page

Examiner's Signature:	Date Considered:

Initial if reference was considered, whether or not citation is in conformance with MPEP. Mark through citation if not considered. Include a copy of this citation form with your next correspondence to the Applicant(s).

INFORMATION DISCLOSURE CITATION FORM FOR PATENT APPLICATION (FORM PTO-1449) (Substitute)	Docket No. 891.0013.U5(US) Serial No.: Applicant(s): Claus H. Jorgensen Filing Date: herewith Group:

U.S. PATENT DOCUMENTS

Examiner Initials	Document Number (Number-Kind Code)	Publication Date (MM-DD-YYYY)	Name of Patentee or Applicant	Class	Sub-class
	US-8,353,824 B2	01-15-2013	Shelton, IV et al.	600	208
	US-7,860,536 B2	12-28-2010	Jobs et al.	455	566
	US-7,574,672 B2	08-11-2009	Jobs et al.	715	830
	US-2005/0282593 A1	12-22-2005	Spence et al.	455	575.3
	US-5,537,294	07-16-1996	Siwinski	361	753
	US-5,541,448	07-30-1996	Carpenter	257	679
	US-D445,428 S	07-24-2001	Pattenden	D14	488
	US-2005/0282595 A1	12-22-2005	Spence et al.	455	575.3
	US-				
	US-				

FOREIGN PATENT DOCUMENTS

Examiner Initials	Document Number (Country Code-Number-Kind Code)	Publication Date (MM-DD-YYYY)	Name Of Patentee of Applicant	Translation? Yes/No/n/a
	JP-11-331333-	11-30-1999	NEC Saitama Ltd.	
	EP-1209880-A2	05-29-2002	Nokia Corp.	
	EP-1496672-A1	01-12-2005	Matushita Electric Ind. Co.	
	GB-2383472-A	06-25-2003	Nokia Mobile Developments et al.	
	GB-2391740-A	02-11-2004	Matushita Electric Ind. Co.	
	EP-2472833-A1	07-04-2012	Nokia Corporation	
	JP-2000133973	05-12-2000	NEC Corp.	
	JP2001007550-A	01-12-2001	NEC Corp.	
	WO-2007/110771-A2	10-04-2007	Nokia Corporation	

OTHER DOCUMENTS (Author (Capitalize), Title, Date, Pages, Etc., if known)

	"LG© LX-225 Phone Guide", LG Life's Good, 2004, 208 pgs.
	"i560 Phone User's Guide", Motorola iDEN Digital Multi-service Data-capable Phone, 2005, 155 pgs.
	"Motorola V3 GSM User Guide", 2005, 34 pgs.
	"Motorola V3-RAZR Repair Manual", April 2005, 33 pgs.
	"Nokia 3155 Use Guide", 2005, 95 pgs.
	"Nokia 3155, Nokia 3155i, and Nokia 3152 User Guide", 2005, 201 pgs.
	"Nokia 6101 and Nokia 6102 User Guide", 2005, 87 pgs.
	"Nokia USA Launches 3155 CDMA Folder", Oryl, Michael, March 15, 2005, 1 pgs.
	"O2X3™-How to use it", O2 (UK) Limited, August 2004, 125 pgs.
	"O2X4™-How to use it", O2 (UK) Limited, March 2005, 118 pgs.

Examiner's Signature:	Date Considered:

Initial if reference was considered, whether or not citation is in conformance with MPEP. Mark through citation if not considered. Include a copy of this citation form with your next correspondence to the Applicant(s).

INFORMATION DISCLOSURE CITATION FORM FOR PATENT APPLICATION (FORM PTO-1449) (Substitute)	Docket No. 891.0013.U5(US) Serial No.: Applicant(s): Claus H. Jorgensen Filing Date: herewith Group:

U.S. PATENT DOCUMENTS

Examiner Initials	Document Number (Number-Kind Code)	Publication Date (MM-DD-YYYY)	Name of Patentee or Applicant	Class	Sub-class
	US-				
	US-				
	US-				
	US-				
	US-				
	US-				
	US-				

FOREIGN PATENT DOCUMENTS

Examiner Initials	Document Number (Country Code-Number-Kind Code)	Publication Date (MM-DD-YYYY)	Name Of Patentee of Applicant	Translation? Yes/No/n/a
	- -			
	- -			
	- -			

OTHER DOCUMENTS (Author (Capitalize), Title, Date, Pages, Etc., if known)

	"Nokia 3155/3155i, 3152 (RM-61) Schematics – Main PWB, Version 1, Edit 247", Nokia Customer Care, 2005, 30 pgs.
	"And Then Steve Said, 'Let there Be an iPhone'", The New York Times, October 4, 2013, 12 pgs.
	"BT Zenith Flip-Issue 1-Edition 04, User Guide", 08/09/2005, 88 pgs.
	"User Guide for the Kyocera Candid KX16 Phone, 82-N8302-1EN, Rev.001", Kyocera Wireless Corp., 2005, 64 pgs.
	"Digital Wireless Telephone User's Guide", Motorola, 2002, 106 pgs.
	"Handbook for Palm™ Zire™ Handheld" , Palm Inc., 2002, 208 pgs.
	"Handsets look to eclipse cameras", BBC News, June 6, 2006, 2 pgs.
	"Hands-on with Motorola's RAZR V3 for Cingular", Nelson, Adam, Engadget, December 6, 2004, 10 pgs.
	"How a BlackBerry Works", Wilson, Tracy V., http://electronics .howstuffworks.com/blackberry.htm/printable, January 7, 2014, 4 pgs.
	"i930 Phone User's Guide", Nextel iDEN Digital Multi-serice Data-capable Phone, Microsoft, 2005, 194 pgs.
	"C3300 User Guide CE0168", LG Life's Good, February 20, 2005, 99 pgs.
	"User Guide for the Kyocera Milan KX9B/KX9C Phones 82-N8274-1EN, Rev. 002", Kyocera, 2005, 63 pgs.
	Google Inc.'s Notice of Prior Art (Shamita D. Etienne-Cummings et al.) [including Certificate of Service], Investigation No. 337-TA-885, December 24, 2013 (38 pgs.)
	Complainants Nokia Corporation and Nokia Inc.'s Responsive Claim Construction Brief (M. Scott Stevens et al.) [including Exhibits 1-36 and Certificate of Service], Investigation No. 337-TA-885, September 23, 2013 (983 pgs.)
	Complainants' Nokia Corporation, Nokia Inc.'s Opening Claim Construction Brief (Jonas R. McDavit et al.) [including Exhibits 1-29 and Certificate of Service], Investigation No. 337-TA-885, September 16, 2013 (787 pgs.)
	Respondents HTC Corp. and HTC America, Inc.'s Responsive Claim Construction Brief, Investigation No. 337-TA-847, executed Jan. 8, 2013 (17793 pgs.)
	Redacted copy of Respondents HTC Corporation's and HTC America, Inc.'s (1) Initial Supplemental Responses To Complainants' Contention Interrogatories To HTC (Nos. 9, 11, 12, 14, 52, and 53) and (2) Initial Objections and Responses To Complainants' Contention Interrogatories to HTC (Nos. 54-56) (Paul C. Goulet et al.) [including Certificate of Service], Investigation No. 337-TA-885, October 11, 2013 (11 pgs.)

Examiner's Signature:	Date Considered:

Initial if reference was considered, whether or not citation is in conformance with MPEP. Mark through citation if not considered. Include a copy of this citation form with your next correspondence to the Applicant(s).

INFORMATION DISCLOSURE CITATION FORM FOR PATENT APPLICATION (FORM PTO-1449) (Substitute)	Docket No. 891.0013.U5(US) Serial No.: Applicant(s): Claus H. Jorgensen Filing Date: herewith Group:

U.S. PATENT DOCUMENTS

Examiner Initials	Document Number (Number-Kind Code)	Publication Date (MM-DD-YYYY)	Name of Patentee or Applicant	Class	Sub-class
	US-				
	US-				
	US-				
	US-				
	US-				
	US-				
	US-				

FOREIGN PATENT DOCUMENTS

Examiner Initials	Document Number (Country Code-Number-Kind Code)	Publication Date (MM-DD-YYYY)	Name Of Patentee of Applicant	Translation? Yes/No/n/a
	- -			
	- -			
	- -			
	- -			

OTHER DOCUMENTS (Author (Capitalize), Title, Date, Pages, Etc., if known)

	Proposed Constructions for Claim Terms of U.S. Patent No. 6,035,189, U.S. Patent No. 6,373,345, U.S. Patent No. 6,711,211, U.S. Patent No. 7,187,945, U.S. Patent No. 8,140,650, U.S. Patent No. 8,363,824, and U.S. Patent No. 7,366,529[1] (Paul C. Goulet et al.) [including Declaration of Iain Richardson (with Exhibits A, B) and Certificate of Service], Investigation No. 337-TA-885, September 9, 2013 (35 pages)
	Complainants Nokia Corporation And Nokia Inc.'s Proposed Claim Constructions and Identification of Extrinsic Evidence (Jonas R. McDavit et al.) [including Proposed Claim Constructions and Identification of Extrinsic Evidence and Certificate of Service], Investigation No. 337-TA-885, September 9, 2013 (12 pages)
	Joint Claim Construction Chart (Jonas R. McDavit et al.) [including Joint Claim Construction Chart and Certificate of Service], Investigation No. 337-TA-885, September 13, 2013 (15 pages)
	HTC Corporation, HTC America, Inc., and Google Inc.'s Initial Claim Construction Brief for U.S. Patent No. 6,035,189; U.S. Patent No. 6,711,211; and U.S. Patent No. 8,140,650 (Shamita D. Etienne-Cummings et al.) [including Exhibits 1-11 and Certificate of Service], Investigation No. 337-TA-885, January 8, 2013 (255 pages)
	Respondents' Initial Markman Brief Regarding Disputed Claim Terms In U.S. Patent Nos. 6,373,345, 7,187,945, 8,363,824, and 7,366,529 (Paul C. Goulet et al.) [including Exhibits 1-24 and Certificate of Service], Investigation No. 337-TA-885, September 16, 2013 (400 pages)
	Google Inc.'s Initial Claim Construction Brief (Shamita D. Etienne-Cummings et al.) [including Exhibits 1-32 and Certificate of Service], Investigation No. 337-TA-847, December 20, 2012 (690 pages)
	Respondents HTC Corp. and HTC America, Inc's, Opening Claim Construction Brief (Blair M. Jacobs et al.) [including Exhibits 1-19 and Certificate of Service], Investigation No. 337-TA-847, December 20, 2012 (371 pages)
	Complainants' Nokia Corporation, Nokia Inc., and Intellisync Corporation, Opening Claim Construction Brief (Jason Berrebi et al.) [including Exhibits A-D and Certificate of Service], Investigation No. 337-TA-847, December 20, 2012 (106 pages)
	Google Inc.'s Reply Brief on Construction of Disputed Terms of U.S. Patent No. 6,141,664, U.S. Patent No. 7,209,911, U.S. Patent No. 5,884,190, and U.S. Patent No. 7,366,529 (Shamita D. Etienne-Cummings et al.) [including Exhibits 33-37 and Certificate of Service], Investigation No. 337-TA-847, January 8, 2013 (151 pages)
	Complainants' Nokia Corporation, Nokia Inc., and Intellisync Corporation Responsive Claim Construction Brief (Jason Berrebi et al.) [including Certificate of Service], Investigation No. 337-TA-847, January 8, 2013 (48 pages)

Examiner's Signature:	Date Considered:

Initial if reference was considered, whether or not citation is in conformance with MPEP. Mark through citation if not considered. Include a copy of this citation form with your next correspondence to the Applicant(s).

INFORMATION DISCLOSURE CITATION FORM FOR PATENT APPLICATION (FORM PTO-1449) (Substitute)	Docket No. 891.0013.U5(US) Serial No.: Applicant(s): Claus H. Jorgensen Filing Date: herewith Group:

U.S. PATENT DOCUMENTS

Examiner Initials	Document Number (Number-Kind Code)	Publication Date (MM-DD-YYYY)	Name of Patentee or Applicant	Class	Sub-class
	US- US- US- US- US- US- US-				

FOREIGN PATENT DOCUMENTS

Examiner Initials	Document Number (Country Code-Number-Kind Code)	Publication Date (MM-DD-YYYY)	Name Of Patentee of Applicant	Translation? Yes/No/n/a
	- - - -			

OTHER DOCUMENTS (Author (Capitalize), Title, Date, Pages, Etc., if known)

	Exhibit C-1: Invalidity of U.S. Patent No. 8,363,824 in light of United States Patent No. 7,515,431 to Stephen P. Zadesky, et al. ("Zadesky"), HTC Corp. and HTC America, Inc., October 11, 2013, 11 pages
	Exhibit C-2: Invalidity of U.S. Patent No. 8,363,824 in light of United States Patent No. 7,336,228 to Lin Lu, et al. ("Lu") , HTC Corp. and HTC America, Inc., October 11, 2013, 8 pages
	Exhibit C-3: Invalidity of U.S. Patent No. 8,363,824 in light of United States Patent Application Publication No. US 2005/0282593 to Michael F. Spence, et al. ("Spence"), HTC Corp. and HTC America, Inc., October 11, 2013, 8 pages
	Exhibit C-4: Invalidity of U.S. Patent No. 8,363,824 in light of PalmOne Zire 31 and U.S. Patent No. 7,366,228 to Lu, HTC Corp. and HTC America, Inc., October 11, 2013, 11 pages
	Exhibit C-5: Invalidity of U.S. Patent No. 8,363,824 in light of Apple iPod Nano (1st Generation), HTC Corp. and HTC America, Inc., October 11, 2013, 11 pages
	Exhibit C-6: Invalidity of U.S. Patent No. 8,363,824 in light of Apple iPod Mini (1st Generation), HTC Corp. and HTC America, Inc., October 11, 2013, 9 pages
	Exhibit C-7: Invalidity of U.S. Patent No. 8,363,824 in light of Nokia 9300, HTC Corp. and HTC America, Inc., October 11, 2013, 13 pages
	Exhibit C-8: Invalidity of U.S. Patent No. 8,363,824 in light of Blackberry 857, HTC Corp. and HTC America, Inc., October 11, 2013, 11 pages
	Respondents' Rebuttal Markman Brief Regarding Disputed Claim Terms in U.S. Patent Nos. 6,373,345; 7,187,945; 8,363,824; and 7,366,529 (Paul C. Goulet et al.) [including Exhibits 1-34 and Certificate of Service], Investigation No. 337-TA-885, September 23, 2013 (548 pages)
	HTC Corp., HTC America, Inc., and Google Inc.'s Rebuttal Claim Construction Brief for U.S. Patent No. 6,035,189, U.S. Patent No. 6,711,211, and U.S. Patent No. 8,140,650 529 (Shamita D. Etienne-Cummings et al.) [including Exhibits 1-11, 16-19 and Certificate of Service], Investigation No. 337-TA-885, September 23, 2013 (281 pages)
	Proposed Terms for Claim Construction of U.S. Patent No. 6,035,189, U.S. Patent No. 6,373,345, U.S. Patent No. 6,711,211, U.S. Patent No. 7,187,945, U.S. Patent No. 8,140,650, U.S. Patent No. 8,363,824 and U.S. Patent No. 7,366,529[1] (Paul C. Goulet et al.) [including Certificate of Service], Investigation No. 337-TA-885, September 23, 2013 (7 pages)

Examiner's Signature:	Date Considered:

Initial if reference was considered, whether or not citation is in conformance with MPEP. Mark through citation if not considered. Include a copy of this citation form with your next correspondence to the Applicant(s).

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.: Confirmation No.:
Applicant(s): Jorgensen, Claus H.
Filed: Herewith
Art Unit:
Examiner:
Title: Portable Electronic Device

Attorney Docket No.: 891.0013.U5(US)
Customer No.: 10,948

Commissioner For Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Preliminary Amendment

Sir:

Please amend the Application as indicated on the following pages.

Amendments to the Specification begin on page 2 of this paper.

Amendments to the Claims are reflected in the listing of claims which begin on page 3 of this paper.

Amendments to the Drawings begin on page 7 and include attached replacement sheets.

Remarks begin on page 8 of this paper.

An **Appendix** including amended drawing figures is attached following page 8 of this paper.

Amendments to the Specification:

Page 1, after the title, please add the following cross-reference section:

CROSS REFERENCE TO RELATED APPLICATION

This is a continuation patent application of U.S. Patent Application No. 14/067,249 filed October 30, 2013, which is a continuation patent application of U.S. Patent Application No. 13/741,781 filed January 15, 2013, which is a continuation patent application of U.S. Patent Application No. 12/860,234 filed August 20, 2010, now U.S. Patent No. 8,363,824, which is a continuation patent application of U.S. Patent Application No. 11/393,510 filed March 29, 2006, now U.S. Patent No. 7,787,618.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000019

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Please cancel claim(s) 1-24 without prejudice.

Listing of Claims:

1-24. (Canceled)

25. (New) An apparatus comprising:

a one piece housing forming enclosed exterior lateral sides and a rear side;

a cut out in the rear side of said housing;

a camera located in said housing and extending to said cut out at said rear side;

an engine section comprising a printed circuit board, a transceiver, a processor and a memory;

a user input section located above the engine section and a battery, wherein the user input section is located adjacent the battery and the engine section;

wherein the battery and engine section are housed in the housing and the user input is located in a hole through a front side of the housing.

26. (New) An apparatus according to claim 25 wherein said one piece housing has a front side extending from and between the lateral sides.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000020

27. (New) An apparatus according to claim 26 wherein the front side extends parallel to the lateral edges.

28. (New) An apparatus according to claim 27 wherein the front side forms at least a side of the hole through which the input device is located.

29. (New) An apparatus according to claim 25 wherein the user input and the front side of the housing lie in a side by side arrangement.

30. (New) An apparatus according to claim 29 wherein the front side of the housing and the user input form a continuous front surface of the portable electronic device.

31. (New) An apparatus to claim 25 wherein the battery is located adjacent the engine section in a side by side arrangement.

32. (New) An apparatus according to claim 25 further comprising a cut out portion comprising the cut out wherein the cut out portion projects from the rear side of the housing.

33. (New) An apparatus according to claim 32 where the camera is partially located in the cut out portion.

34. (New) An apparatus according to claim 25 further comprising a door configured to support an electronic module.

35. (New) An apparatus according to claim 34 wherein the electronic module is configured to interface to the engine section.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000021

36. (New) A housing for an apparatus comprising;

a one piece housing forming enclosed exterior lateral sides and a rear side;

a cut out in the rear side of said housing, said cut out configured to receive at least part of a camera;

wherein the housing is configured to receive a battery and an engine section, wherein the battery and engine section are housed in the housing, and wherein a user input is located in a hole through a front side of the housing.

37. (New) A housing for an apparatus according to claim 36 further comprising;

a front side extending between the lateral edges, said lateral sides and front side forming a aperture configured to receive the user input wherein the user input and the front side of the housing form a continuous front surface of the portable electronic device.

38. (New) A housing according to claim 36 wherein the one piece housing has been extruded.

39. (New) A housing according to claim 36 wherein the one piece housing comprises a metal.

40. (New) A housing according to claim 36 wherein the housing has substantially at least one of an open top or bottom aperture.

41. (New) A housing according to claim 40 wherein a antenna module is located at a aperture in the housing.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000022

42. (New) A housing according to claim 41 wherein the antenna module is enclosed by a antenna cover.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000023

Amendments to the Drawings:

The attached sheets of drawings include formal drawings for this application.

Attachment: Replacement Sheets

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000024

REMARKS

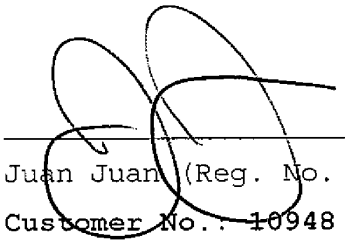
This is a continuation patent application. The parent patent application has been allowed and the issue fee has been paid.

The replacement sheets of drawings correspond to formal drawings filed during the prosecution (in response to a Notice to File Corrected Application Papers) of the parent patent application. The attached six sheets of formal drawings for Figs. 1-13 replace the original sheets of drawings.

The claims of the original parent patent application have been cancelled without prejudice above and new claims have been added to further claim the features of the invention.

Favorable consideration and allowance is respectfully requested. If there are any additional charges with respect to this Preliminary Amendment or otherwise, please charge deposit account 50-1924 for any fee deficiency. Should any unresolved issue remain, the examiner is invited to call applicant's attorney at the telephone number indicated below.

Respectfully submitted,



1/29/2015

Juan Juan (Reg. No. 60,564) Date

Customer No.: 10948
Harrington & Smith,
Attorneys At Law, LLC
4 Research Drive
Shelton, CT 06484-6212
203-925-9400

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000025

Approved for use through 01/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	891.0013.U5(US)
	Application Number	
Title of Invention	Portable Electronic Device	

The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76.
This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.

Secrecy Order 37 CFR 5.2

☐ Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)

Inventor Information:

Inventor 1 — Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Claus	H.	Jorgensen	

Residence Information (Select One) ○ US Residency ◉ Non US Residency ○ Active US Military Service

City	Bronshoj	Country of Residence i	DK

Mailing Address of Inventor:

Address 1	Tryggevaeldevej 84		
Address 2			
City	Bronshoj	**State/Province**	
Postal Code	2700	**Country** i	DK

All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the **Add** button. Add

Correspondence Information:

Enter either Customer Number or complete the Correspondence Information section below.
For further information see 37 CFR 1.33(a).

☐ **An Address is being provided for the correspondence Information of this application.**

Customer Number	10948		
Email Address	patent@hspatent.com	Add Email	Remove Email

Application Information:

Title of the Invention	Portable Electronic Device		
Attorney Docket Number	891.0013.U5(US)	**Small Entity Status Claimed**	☐
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	6	**Suggested Figure for Publication (if any)**	

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000026

Approved for use through 01/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	891.0013.U5(US)
	Application Number	
Title of Invention	Portable Electronic Device	

Filing By Reference :

Only complete this section when filing an application by reference under 35 U.S.C. 111(c) and 37 CFR 1.57(a). Do not complete this section if application papers including a specification and any drawings are being filed. Any domestic benefit or foreign priority information must be provided in the appropriate section(s) below (i.e., "Domestic Benefit/National Stage Information" and "Foreign Priority Information").

For the purposes of a filing date under 37 CFR 1.53(b), the description and any drawings of the present application are replaced by this reference to the previously filed application, subject to conditions and requirements of 37 CFR 1.57(a).

Application number of the previously filed application	Filing date (YYYY-MM-DD)	Intellectual Property Authority or Country

Publication Information:

☐ Request Early Publication (Fee required at time of Request 37 CFR 1.219)

☐ **Request Not to Publish.** I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application **has not and will not** be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

Representative Information:

Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32).
Either enter Customer Number or complete the Representative Name section below. If both sections are completed the customer Number will be used for the Representative Information during processing.

Please Select One:	◉ Customer Number	○ US Patent Practitioner	○ Limited Recognition (37 CFR 11.9)
Customer Number	10948		

Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, or 365(c) or indicate National Stage entry from a PCT application. Providing this information in the application data sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78.
When referring to the current application, please leave the application number blank.

Prior Application Status		Remove	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
	Continuation of	14/067249	2013-10-30
Prior Application Status		Remove	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
14/067249	Continuation of	13/741781	2013-01-15

Approved for use through 01/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	891.0013.U5(US)
	Application Number	
Title of Invention	Portable Electronic Device	

Prior Application Status			Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
13/741781	Continuation of	12/860234	2010-08-20
Prior Application Status			Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
12/860234	Continuation of	11/393510	2006-03-29

Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the **Add** button.

Foreign Priority Information:

This section allows for the applicant to claim priority to a foreign application. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55(d). When priority is claimed to a foreign application that is eligible for retrieval under the priority document exchange program (PDX)[i] the information will be used by the Office to automatically attempt retrieval pursuant to 37 CFR 1.55(h)(1) and (2). Under the PDX program, applicant bears the ultimate responsibility for ensuring that a copy of the foreign application is received by the Office from the participating foreign intellectual property office, or a certified copy of the foreign priority application is filed, within the time period specified in 37 CFR 1.55(g)(1).

Remove

Application Number	Country[i]	Filing Date (YYYY-MM-DD)	Access Code[i] (if applicable)

Additional Foreign Priority Data may be generated within this form by selecting the **Add** button.

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications

☐ This application (1) claims priority to or the benefit of an application filed before March 16, 2013 and (2) also contains, or contained at any time, a claim to a claimed invention that has an effective filing date on or after March 16, 2013.
NOTE: By providing this statement under 37 CFR 1.55 or 1.78, this application, with a filing date on or after March 16, 2013, will be examined under the first inventor to file provisions of the AIA.

Authorization to Permit Access:

☒ Authorization to Permit Access to the Instant Application by the Participating Offices

Approved for use through 01/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	891.0013.U5(US)
	Application Number	
Title of Invention	Portable Electronic Device	

If checked, the undersigned hereby grants the USPTO authority to provide the European Patent Office (EPO), the Japan Patent Office (JPO), the Korean Intellectual Property Office (KIPO), the World Intellectual Property Office (WIPO), and any other intellectual property offices in which a foreign application claiming priority to the instant patent application is filed access to the instant patent application. See 37 CFR 1.14(c) and (h). This box should not be checked if the applicant does not wish the EPO, JPO, KIPO, WIPO, or other intellectual property office in which a foreign application claiming priority to the instant patent application is filed to have access to the instant patent application.

In accordance with 37 CFR 1.14(h)(3), access will be provided to a copy of the instant patent application with respect to: 1) the instant patent application-as-filed; 2) any foreign application to which the instant patent application claims priority under 35 U.S.C. 119(a)-(d) if a copy of the foreign application that satisfies the certified copy requirement of 37 CFR 1.55 has been filed in the instant patent application; and 3) any U.S. application-as-filed from which benefit is sought in the instant patent application.

In accordance with 37 CFR 1.14(c), access may be provided to information concerning the date o f filing this Authorization.

Applicant Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

Applicant 1

If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section.

Clear

◉ Assignee	○ Legal Representative under 35 U.S.C. 117	○ Joint Inventor
○ Person to whom the inventor is obligated to assign.	○ Person who shows sufficient proprietary interest	

If applicant is the legal representative, indicate the authority to file the patent application, the inventor is:

Name of the Deceased or Legally Incapacitated Inventor :

If the Applicant is an Organization check here. ☒

Organization Name	Nokia Technologies Oy

Mailing Address Information For Applicant:

Address 1	Karaportti 3		
Address 2			
City	Espoo	**State/Province**	
Country	FI	Postal Code	02610
Phone Number		Fax Number	

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000029

Approved for use through 01/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	891.0013.U5(US)
	Application Number	
Title of Invention	Portable Electronic Device	

Email Address	

Additional Applicant Data may be generated within this form by selecting the Add button.

Assignee Information including Non-Applicant Assignee Information:

Providing assignment information in this section does not subsitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

Assignee 1

Complete this section if assignee information, including non-applicant assignee information, is desired to be included on the patent application publication . An assignee-applicant identified in the "Applicant Information" section will appear on the patent application publication as an applicant. For an assignee-applicant, complete this section only if identification as an assignee is also desired on the patent application publication.

If the Assignee or Non-Applicant Assignee is an Organization check here. ☐

Prefix	**Given Name**	Middle Name	**Family Name**	Suffix

Mailing Address Information For Assignee including Non-Applicant Assignee:

Address 1			
Address 2			
City		**State/Province**	
Country[i]		Postal Code	
Phone Number		Fax Number	
Email Address			

Additional Assignee or Non-Applicant Assignee Data may be generated within this form by selecting the Add button.

Signature:

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Signature				Date (YYYY-MM-DD)	2015-02-03
First Name	Juan	Last Name	Juan	Registration Number	60564

Additional Signature may be generated within this form by selecting the Add button.

Approved for use through 01/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	891.0013.U5(US)
		Application Number	
Title of Invention	Portable Electronic Device		

This collection of information is required by 37 CFR 1.76. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 23 minutes to complete, including gathering, preparing, and submitting the completed application data sheet form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000031

Docket No.: 891.0013.U3(US)

DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN APPLICATION DATA SHEET (37 CFR 1.76)

Title Of Invention: **Portable Electronic Device**

As a below named inventor, I hereby declare that:

This declaration is directed to the attached application, or (if the following box is checked):

☐ United States application or PCT international application number: _____ filed on _____

The above-identified application was made or authorized to be made by me.

I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

I have reviewed and understand the contents of the application, including the claims.

I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

FULL NAME OF INVENTOR :	LAST NAME	FIRST NAME	MIDDLE NAME
	JORGENSEN	Claus	H.

Signature _____ Date 6/12 2012

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000032

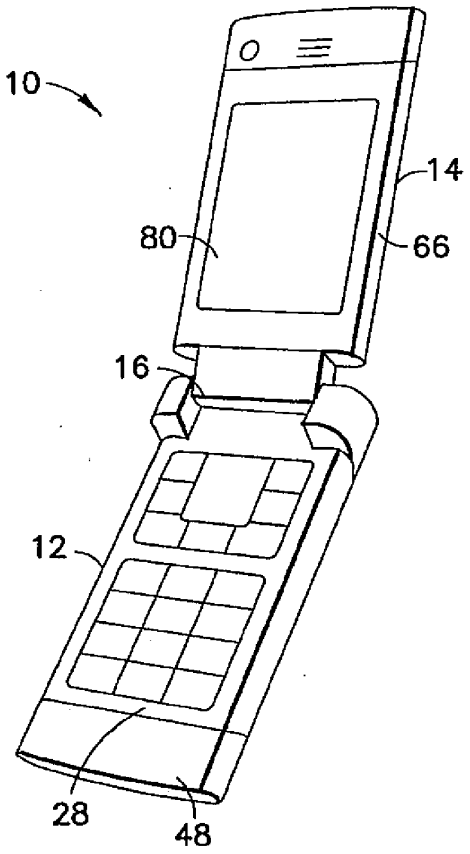


FIG.1

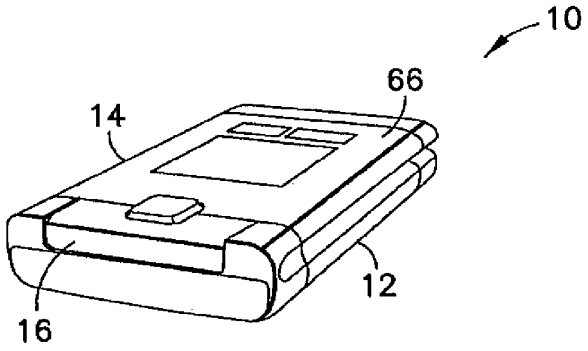


FIG.2

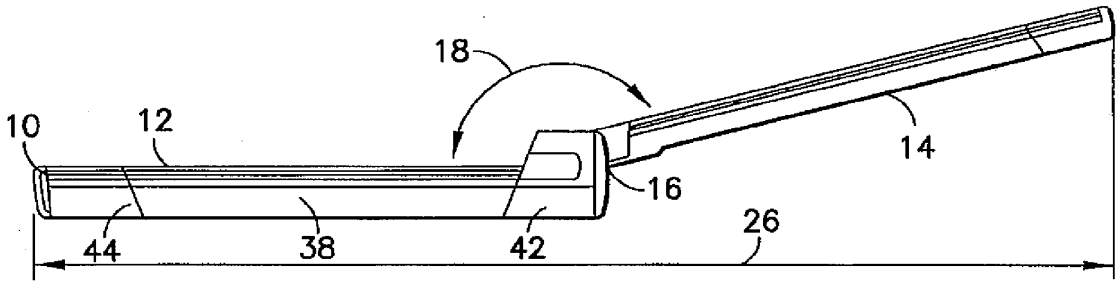


FIG.3

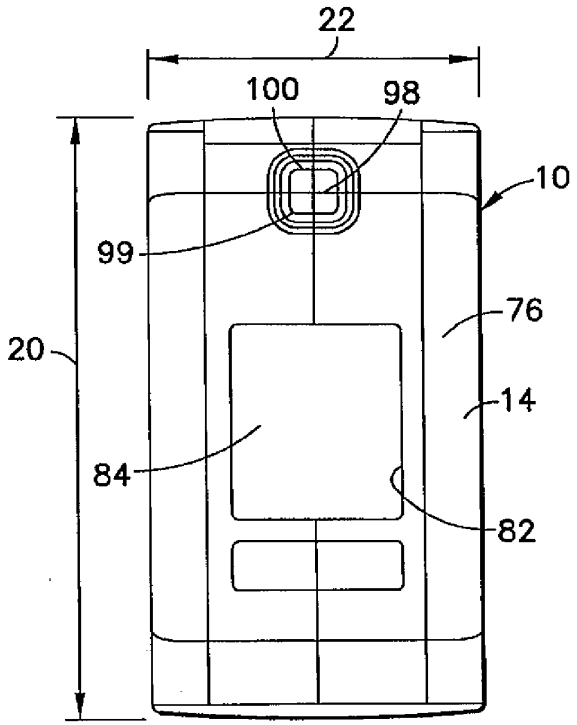


FIG.4

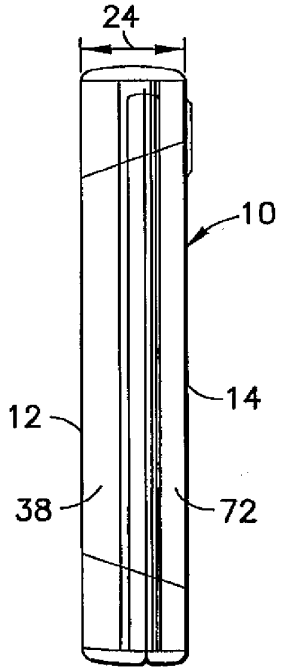


FIG.5

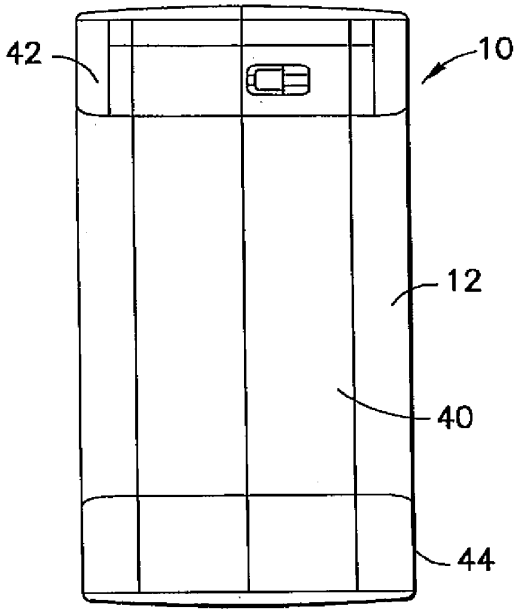


FIG.6

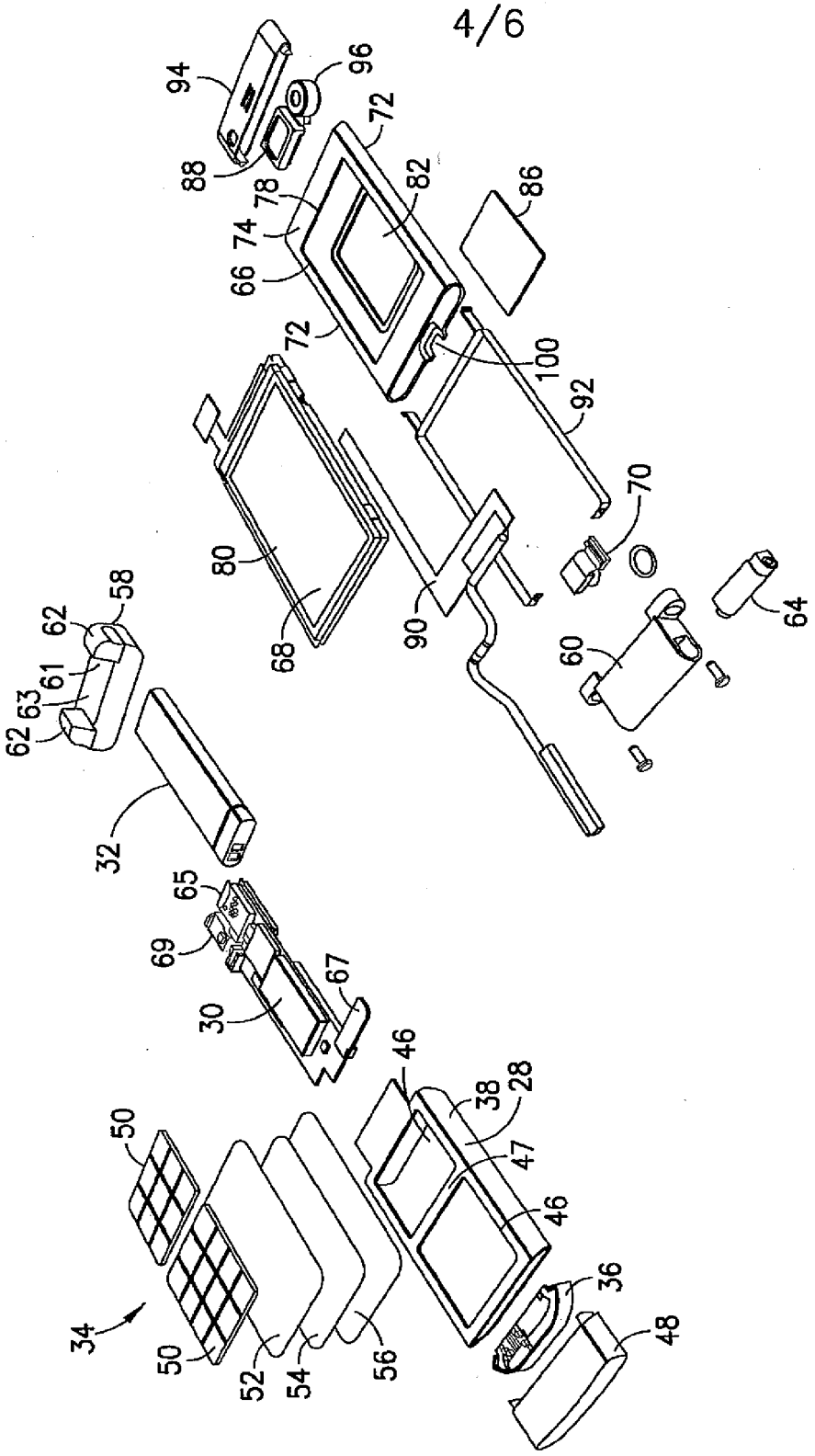

94
96
72
88
78
82
86
74
66
72
100
92
70
80
68
90
60
64
58
62
61
63
62
32
65
69
67
30
46
38
28
47
46
50
50
52
54
56
36
48
34

FIG.7

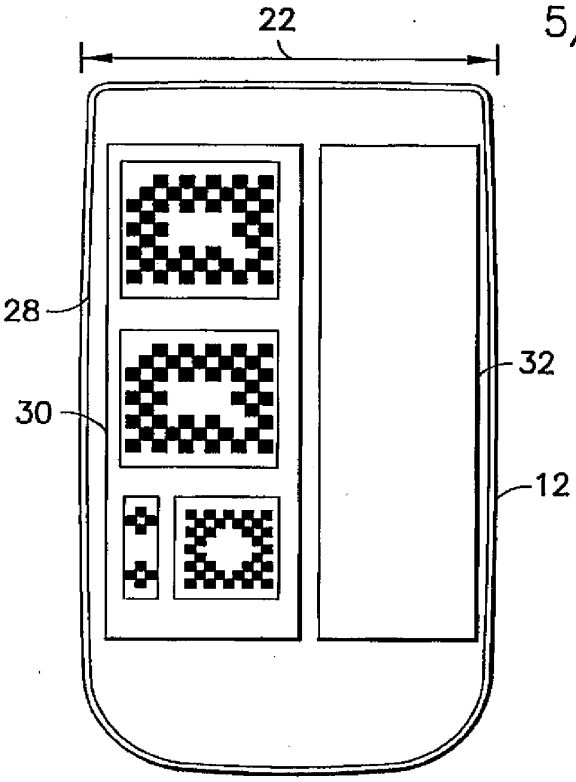


FIG.8

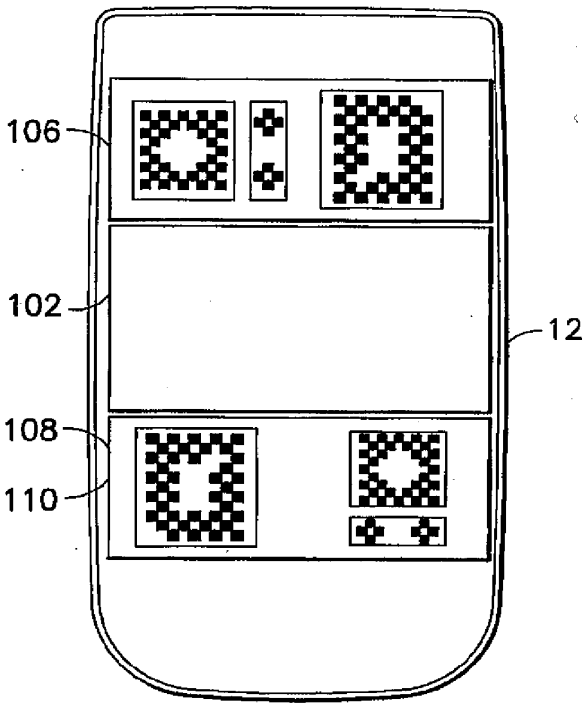


FIG.10

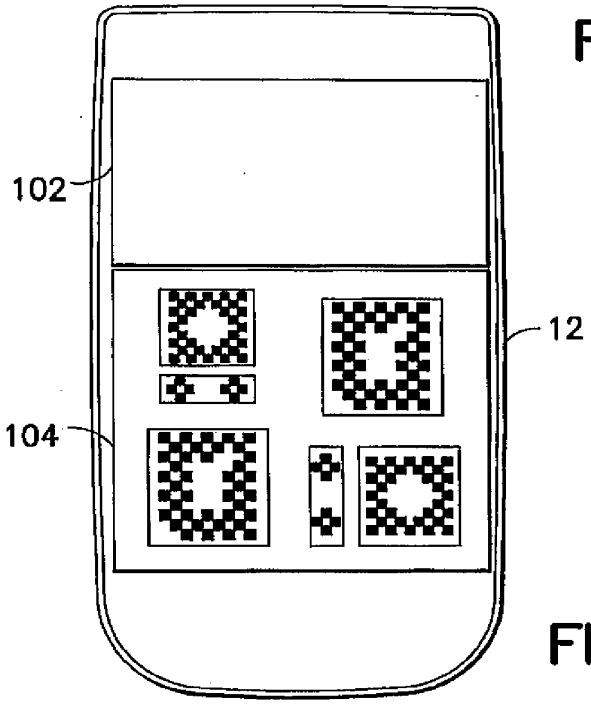


FIG.9

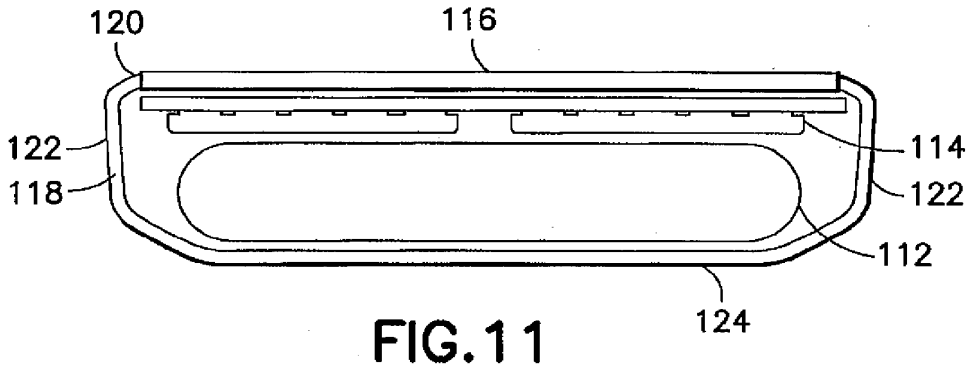


FIG.11

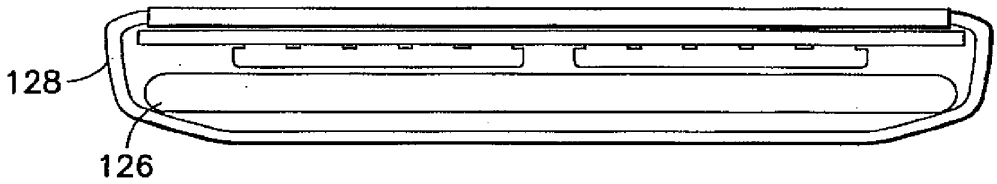


FIG.12

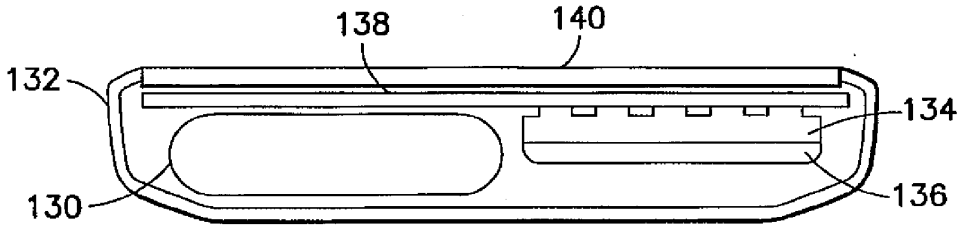


FIG.13

Attorney Docket No.: 891.0013.U1(US)

NC51996US

Patent Application Papers Of:

Claus H. Jorgensen

For: Portable Electronic Device

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000039

Portable Electronic Device

BACKGROUND OF THE INVENTION

Field of the Invention

[0001] The invention relates to a portable electronic device and, more particularly, to form factor configuration of a portable electronic device.

Brief Description of Prior Developments

[0002] Ultra thin telephone products have emerged in the market, pioneering a new approach in mechanical architecture for flip-phone designs (also known a clam-shell handset). Priority for these products is mechanical thinness, allowing the feature set and industrial design to be adjusted to suit this goal. New flip-phones include the Motorola RAZR, the Motorola V3, the Motorola V3x, the Samsung SCH-V740, the NEC L1. For example, the Motorola RAZR has a thickness of about 0.54 inch. Candy-bar shaped mobile phones can have smaller thicknesses, such as the Motorola SLIVR with a thickness of about 0.45 inch and the Motorola SCALPEL with a thickness of about 0.25 inch.

[0003] There is a desire for an architecture for an ultrathin fold product, such as a flip-phone style of mobile telephone, which can maintain aesthetic balance in proportions, and allow added thickness to avoid a "squeezed" appearance as seen with the RAZR™ mobile telephone.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000040

SUMMARY OF THE INVENTION

[0004] In accordance with one aspect of the invention, a portable electronic apparatus is provided comprising a first section comprising electronics; a second section movably connected to the first section by a hinge section, wherein the second section comprises a display; and an access entry provided in the hinge section adapted to allow insertion of an electrical device through the hinge section and into electrical connection with an electrical connector inside the first section.

[0005] In accordance with another aspect of the invention, a portable electronic device is provided including a first section, a second section and a connecting section. The first section has a user input section and a first tubular housing member. The first tubular housing member forms a majority of opposite exterior lateral sides of the first section. The second section has a display and a second tubular housing member. The second tubular housing member forms a majority of opposite exterior lateral sides of the second section. The connecting section movably connects the second section with the first section. The first tubular housing member at least partially houses the user input section. The second tubular housing member at least partially houses the display.

[0006] In accordance with another aspect of the invention, a mobile telephone is provided comprising an engine section comprising a printed circuit board, a transceiver, a processor and a memory; a battery located adjacent the engine section; and a user input section comprising a keypad located directly above the engine

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000041

section and the battery. The user input section is located directly opposite the battery without a portion of the engine section therebetween.

[0007] In accordance with another aspect of the invention, a portable electronic device is provided comprising a first section; a second section movably connected to the first section by a hinge; and a camera. The hinge comprises a first hinge member connected to the first section and a second hinge member connected to the second section. The camera is connected to the second section. The camera is housed at an exterior side of the portable electronic device by a junction of a portion of the second hinge member and a portion of an exterior housing of the second section.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] The foregoing aspects and other features of the invention are explained in the following description, taken in connection with the accompanying drawings, wherein:

[0009] Fig. 1 is a perspective view of a mobile telephone comprising features of the invention;

[0010] Fig. 2 is a perspective view of the telephone shown in Fig. 1 is a closed configuration;

[0011] Fig. 3 is a side view of the telephone shown in Fig. 1;

[0012] Fig. 4 is a front view of the telephone shown in Fig. 2;

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000042

[0013] Fig. 5 is a side view of the telephone shown in Fig. 2;

[0014] Fig. 6 is a rear view of the telephone shown in Fig. 2;

[0015] Fig. 7 is an exploded perspective view of the telephone shown in Figs. 1-6;

[0016] Fig. 8 is a schematic view showing the layout of the engine and the battery of the telephone shown in Figs. 1-7;

[0017] Fig. 9 is a schematic view similar to Fig. 8 showing an alternate embodiment of the layout of the engine and the battery;

[0018] Fig. 10 is a schematic view similar to Fig. 8 showing another alternate embodiment of the layout of the engine and the battery;

[0019] Fig. 11 is a schematic view showing an alternate embodiment of the layout of the engine and the battery;

[0020] Fig. 12 is a schematic view similar to Fig. 11 showing an alternate embodiment of the layout of the engine and the battery; and

[0021] Fig. 13 is a schematic view similar to Fig. 11 showing an alternate embodiment of the layout of the engine and the battery.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0022] Referring to Fig. 1, there is shown a perspective view of a portable electronic device 10

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000043

incorporating features of the invention. Although the invention will be described with reference to the exemplary embodiments shown in the drawings, it should be understood that the invention can be embodied in many alternate forms of embodiments. In addition, any suitable size, shape or type of elements or materials could be used.

[0023] In the embodiment shown, the device 10 comprises a hand-held mobile telephone. However, in alternate embodiments, features of the invention could be used in other types of portable electronic devices, such as a PDA or a hand-held gaming device for example. The telephone 10 is a flip-phone type of telephone comprising a first section 12 connected to a second section 14 by a movably connecting section 16. In this embodiment the connecting section 16 is a hinge. However, in alternate embodiments, any suitable type of movable connecting section could be provided. Fig. 1 shows the telephone 10 in an open configuration. Fig. 2 shows the telephone 10 in a closed configuration.

[0024] Referring also to Figs. 3-6, in the closed configuration, the second section 14 lies directly opposite the first section 12. The hinge 16 allows the second section 14 to pivot open to the open configuration at an angle 18 of about 165°. However, in alternate embodiments, the angle 18 could have any suitable angle. In the closed configuration, the telephone has a height 20 of about 88.7 mm, a width 22 of about 45 mm, and a thickness 24 of about 15 mm. In the open configuration, the telephone has a length 26 of about 166 mm. However, in alternate embodiments, any suitable dimensions could be provided. As seen with reference to Fig. 3, the

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000044

design shown has a substantially uniform thickness lower section 12 and a substantially uniform thickness upper section 14 along their entire lengths except for at the hinge 16. As seen best in Figs. 5 and 14, when the two sections 12, 14 are closed, the telephone 10 has a block shape with grooves along the joints at the lateral sides, but with the ends of the sections 12, 14 being at the same bottom end of the closed shape.

[0025] Referring also to Fig. 7, there is shown an exploded perspective view of the telephone 10 for details of how the small thickness 24 of about only 15 mm in a flip-phone design can be accomplished. The first section 12 generally comprises a first housing member 28, an engine 30, a battery 32, a user input section 34, and an antenna module 36. Additional components could be provided. The first housing member 28 generally comprises a one-piece tubular member. In a preferred embodiment, the tubular member is comprises of metal, such as aluminum for example. In one type of embodiment, the tubular metal member could be formed from an extruded member with holes punched into it after it is extruded. The first housing member 28 forms a majority of opposite exterior lateral sides 38 and a rear side 40 of the first section 12 (except at top and bottom ends 42, 44 of the first section). The front side of the first housing member 28 has holes 46 therethrough for portions of the user input section 34 to be located in the holes. Because of the tubular shape of the first housing member 28, the first housing member 28 has substantially open top and bottom apertures, which are slanted in the embodiment shown.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000045

[0026] The antenna module 36 is located at the bottom aperture into the first housing member 28 and enclosed by the antenna cover 48. The antenna cover 48, such as made of plastic, is attached to the first housing member 28 at the bottom aperture to keep the antenna module 36 attached to the rest of the telephone. In one type of embodiment, the antenna module could be a STINGRAY antenna from RaySat, Inc. However, any suitable antenna module could be provided.

[0027] The user input section generally comprises keymats 50, an EL backlight foil 52, a keymat dome sheet 54 and a keymat stiffener 56. However, in alternate embodiments, any suitable user input section could be provided. The keymats 50 are located in the holes 46 of the first housing member 28. The other components of the user input section are located inside the first housing member 28. A cross bar portion 47 of the first housing member 28 is located between the two keymats 50.

[0028] The engine 30 generally comprises a printed circuit board, a transceiver, a processor, and a memory, among other components. Referring also to Fig. 8, the width of the engine 30 is only about less than half the width 22 of the telephone. The battery 32 is located adjacent the lateral side of the engine 30 and is also about less than half the width 22 of the telephone. Unlike conventional telephones which have the engine located above the battery, the configuration of the side-by-side engine/battery allows the battery and the engine to have a practical design thickness and still provide a reduced thickness 24 as compared to conventional flip-phones. The keypads are located above the engine section 30 and the battery 32, wherein the user input section 34

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000046

is located directly opposite the battery 32 without a significant portion of the engine section 30 therebetween.

[0029] The connecting section 16 has a first hinge member 58 and a second hinge member 60. The first hinge member 58 is connected to the top end of the first frame member 28 to substantially close the open top end of the first frame member 28. The first hinge member 58 also comprises a door 61 for access to the battery 32 such that the battery can be removed, and a door 63 for access to the engine 30 for inserting and removing an electronic module 65, such as a SIM card or flash memory or other memory card. The doors 61, 63 are located below the shoulders 62 such that there is a path at the connecting section 16 past the second hinge member 60. In an alternate embodiment, the connecting section 16 could have only one door; for the battery or for the electronic module or both. The door(s) is preferably connected to the rest of the first hinge member 58 by a living hinge. However, in alternate embodiments any suitable type of doorway system could be provided. In other alternate embodiments any suitable access entry could be provided. In a preferred embodiment the door(s) support the electronic device (such as the battery 32 and/or electronic module 65). The engine 30 comprises electrical connectors 67 and 69 for the electronic devices 32 and 65 to connect to inside the first section 12.

[0030] The first hinge member 58 has shoulders 62 with interior facing apertures to receive ends of the hinge module 64. The hinge module 64 is mounted in the second hinge member 60. The second hinge member 60 is sized and

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000047

shaped to pivotably fit between the shoulders 62. In an alternate embodiment any suitable type of hinge assembly could be provided, such as disclosed in U.S. Patent No. 6,900,981, and U.S. Patent Application Nos. 10/610,978, 11/055,914, 11/077,674, and 11/253,017, for example, which are hereby incorporated by reference in their entireties. In an alternate embodiment, the electronic device insertion and removal feature through a movable connection section of the invention could be used in other types of telephones having movable sections including, for example, a slide phone such as shown in U.S. Patent No. Des. 427,171 which is hereby incorporated by reference in its entirety, or could be used in other apparatus, such as a gaming device or PDA having two movable sections connected by a hinge or connecting section.

[0031] The second section 14 generally comprises a second housing member 66, a display module 68 and a camera 70. The second housing member 66 preferably comprises a one-piece member having a general tubular shape. In a preferred embodiment, the tubular member is comprises of metal, such as aluminum for example. In one type of embodiment, the tubular metal member could be formed from an extruded member with holes punched into it after extrusion. The second housing member 66 forms portions of opposite exterior lateral sides 72, a front side 74 and a rear side 76 of the second section 14. The front side of the second housing member 66 has a hole 78. A front portion 80 of the display module 68 can be located for viewing through the hole 78. The rear side of the second housing member 66 has a hole 82 therethrough. A rear portion 84 (see Fig. 4) of the

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000048

display module 68 is located for viewing through the hole 82. Front portion 80 forms a main display, and rear portion 84 forms a sub-display. A window 86 can be glued onto the sub-display 84. Because of the tubular shape of the second housing member 66, the second housing member 66 has substantially open top and bottom apertures, which are slanted in the embodiment shown.

[0032] The display module 68, camera 70 and a speaker or sound transducer 88 are coupled to the engine 30 by a flex cable assembly 90 which extends through the hinge 16. A mounting bracket 92 is provided for mounting the display module 68 inside the second housing member 66 between the second hinge member 60 and a speaker cover 94 at opposite ends of the second housing member 66. An optional second camera 96 could also be provided.

[0033] The camera 70 extends to the rear side 76 of the second section 14. The camera 70 is housed at an exterior side of the portable electronic device by a junction 98 of a cutout portion 99 of the second hinge member 60 and a cutout portion 100 of the second tubular housing member 66. The cutout portions 99, 100 project slightly from the rear side of the telephone to form a protrusion 142 (see Fig. 14). By providing a projecting portion of the housing for the camera, rather than making the housing flush with the camera, this allows the rest of the telephone to have the reduced thickness 24, but still use a standard size camera.

[0034] Referring also to Figs. 9-10, alternate embodiments of configuration of the battery relative to the engine of Fig. 8 is shown. Fig. 10 shows an embodiment where the battery 102 and engine 104 are

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000049

located in the first section 12 in a side-by-side configuration. This side-by-side configuration comprises the battery 102 being located at a top side of the engine 104 proximate the hinge end of the first section. Fig. 11 shows an embodiment where the battery 102 is located between two portions 106, 108 of the engine 110. Thus a split side-by-side configuration is provided. In both of these alternate embodiments the keypad is located above the engine section and the battery, wherein the user input section is located directly opposite the battery without a substantial portion of the engine section therebetween.

[0035] Figs. 11-13 show other alternate embodiments of positioning the battery relative to the engine. In Fig. 11 the battery 112 is located below the engine 114. The keypad 116 is located above the engine 114. The components 112, 114, 116 are housed in a one-piece metal tubular housing member 118. The keypad is located at a hole through the front side 120 of the housing member 118. Otherwise, the housing member 118 forms enclosed lateral exterior sides 122 and rear side 124.

[0036] Fig. 12 shows an embodiment similar to Fig. 11. However, in this embodiment the battery 126 is thinner and wider than the battery 112. The tubular housing member 128 is thinner and wider than the tubular housing member 118. Fig. 13 shows another alternate embodiment. In this embodiment the battery 130 is about half the width of the tubular housing member 132. The engine 134 comprises a portion 136 located at the lateral side of the battery 130 and another portion 138 located between the battery and the keypad 140. The configurations shown

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000050

in Figs. 11-13 could be used in candy-bar style telephone handsets as well as flip-phone style handsets.

[0037] One of the features of the invention is the use of tubular members to form the major housing components of the first and second sections of the flip-phones. The tubular housing members provide an increased strength than conventional housing designs. This allows the reduction in side of the housing components versus conventional housing components and, thus, a reduction in the thickness 24 of the telephone. In addition, the side-by-side positioning of the battery/engine can further allow a reduction in thickness of the handset versus conventional stacked battery/engine handsets.

[0038] With the present invention a user exchangeable battery and/or cards (SIM, flash and other memory cards) can be inserted and removed through the hinge end in a portable terminal. The housing of a fold phone can be extruded in one material. Extruding a housing in one material and having a user exchangeable battery (and cards) through a hinge end can be provided. With the invention a battery can be located next to the PWB on a lateral side of the phone.

[0039] It should be understood that the foregoing description is only illustrative of the invention. Various alternatives and modifications can be devised by those skilled in the art without departing from the invention. Accordingly, the invention is intended to embrace all such alternatives, modifications and variances which fall within the scope of the appended claims.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000051

CLAIMS

What is claimed is:

1. A portable electronic apparatus comprising:

a first section comprising electronics;

a second section movably connected to the first section by a hinge section, wherein the second section comprises a display; and

an access entry provided in the hinge section adapted to allow insertion of an electrical device through the hinge section and into electrical connection with an electrical connector inside the first section.

2. A portable electronic apparatus as in claim 1 wherein the access entry comprises a movable door on the hinge section.

3. A portable electronic apparatus as in claim 2 wherein the access entry comprises a living hinge connecting the door to the rest of the hinge section.

4. A portable electronic apparatus as in claim 1 wherein the access entry is sized and shaped to allow insertion of a battery through the access entry, and the electrical connector is adapted to electrically connect to the battery.

5. A portable electronic apparatus as in claim 1 wherein the access entry is sized and shaped to allow insertion of an electronic module through the access entry, and the electrical connector is adapted to electrically connect to the electronic module.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000052

6. A portable electronic apparatus as in claim 1 wherein the access entry is sized and shaped to at least partially support the electronic device when the electronic device is fully inserted into the portable electronic device.

7. A portable electronic device comprising:

a first section having a user input section and a first one-piece tubular housing member, wherein the first tubular housing member forms a majority of opposite exterior lateral sides of the first section;

a second section having a display and a second tubular housing member, wherein the second tubular housing member forms a majority of opposite exterior lateral sides of the second section; and

a connecting section movably connecting the second section with the first section,

wherein the first tubular housing member at least partially houses the user input section, and wherein the second tubular housing member at least partially houses the display.

8. A portable electronic device as in claim 7 wherein at least one of the first and second tubular housing members comprises a metal member.

9. A portable electronic device as in claim 8 wherein the first tubular housing members comprises an extruded member.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000053

10. A portable electronic device as in claim 7 wherein the connecting section comprises a hinge with a first hinge member forming a cap to an open end of the first tubular housing member and a second hinge member forming a cap to an open end of the second tubular housing member.

11. A portable electronic device as in claim 7 wherein the first section comprises:

an engine section comprising a printed circuit board, a transceiver, a processor and a memory;

a battery located adjacent the engine section; and

the user input section comprises a keypad located above the engine section and the battery, wherein the user input section is located directly opposite the battery without a portion of the engine section therebetween.

12. A portable electronic device as in claim 7 wherein the connecting section comprises a hinge, wherein the hinge comprises a first hinge member connected to the first section and a second hinge member connected to the second section; and the portable electronic device further comprises a camera connected to the second section, wherein the camera is housed at an exterior side of the portable electronic device by a junction of a portion of the second hinge member and a portion of the second tubular housing member.

13. A portable electronic device as in claim 7 wherein the portable electronic device comprises a mobile telephone having a transceiver.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000054

14. A portable electronic device as in claim 7 wherein the connecting section comprises an access entry provided in the connecting section adapted to allow insertion of an electrical device through the connecting section and into electrical connection with an electrical connector inside the first section.

15. A mobile telephone comprising:

an engine section comprising a printed circuit board, a transceiver, a processor and a memory;

a battery located adjacent the engine section; and

a user input section comprising a keypad located above the engine section and the battery, wherein the user input section is located directly opposite the battery without a portion of the engine section therebetween.

16. A mobile telephone as in claim 15 wherein the battery is located at a lateral side of the engine section.

17. A mobile telephone as in claim 15 wherein the engine section is located at opposite sides of the battery.

18. A mobile telephone as in claim 15 wherein the mobile telephone comprises a first section comprising a first one-piece housing member having a general tubular shape and forming opposite exterior lateral sides of the first section, wherein the engine section, battery and user input section are housed in the first section.

19. A mobile telephone as in claim 18 wherein the mobile telephone comprises a second section pivotably connected to the first section, wherein the second section

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000055

comprises a second one-piece housing member having a general tubular shape and forming opposite exterior lateral sides of the second section.

20. A mobile telephone as in claim 15 wherein the mobile telephone comprises a first section pivotably connected to a second section by a hinge, wherein the hinge comprises a first hinge member connected to the first section and a second hinge member connected to the second section; and the mobile telephone further comprises a camera connected to the second section, wherein the camera is housed at an exterior side of the portable electronic device by a junction of a portion of the second hinge member and a portion of a one-piece second tubular housing member of the second section, wherein the second tubular housing member forms opposite exterior lateral sides of the second section.

21. A portable electronic device comprising:

a first section;

a second section movably connected to the first section by a hinge, wherein the hinge comprises a first hinge member connected to the first section and a second hinge member connected to the second section; and

a camera connected to the second section, wherein the camera is housed at an exterior side of the portable electronic device by a junction of a portion of the second hinge member and a portion of an exterior housing of the second section.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000056

22. A portable electronic device as in claim 21 wherein the first section comprises:

a first tubular housing member, wherein the first tubular housing member forms a majority of opposite exterior lateral sides of the first section, and located at the first tubular section:

an engine section comprising a printed circuit board, a transceiver, a processor and a memory;

a battery located adjacent the engine section; and

a user input section comprising a keypad located directly above the engine section and the battery, wherein the user input section is located directly opposite the battery without a portion of the engine section therebetween.

23. A portable electronic device as in claim 21 wherein the first section comprises a tubular metal housing member forming a majority of opposite exterior lateral sides of the first section, and wherein the second section comprises a tubular metal housing member forming a majority of opposite exterior lateral sides of the second section.

24. A portable electronic device as in claim 21 wherein the first and second sections each comprises tubular metal exterior housing members comprising extruded metal members.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000057

ABSTRACT

A portable electronic device including a first section, a second section and a connecting section. The first section has a user input section and a first tubular housing member. The first tubular housing member forms a majority of opposite exterior lateral sides of the first section. The second section has a display and a second tubular housing member. The second tubular housing member forms a majority of opposite exterior lateral sides of the second section. The connecting section movably connects the second section with the first section. The first tubular housing member at least partially houses the user input section. The second tubular housing member at least partially houses the display.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000058

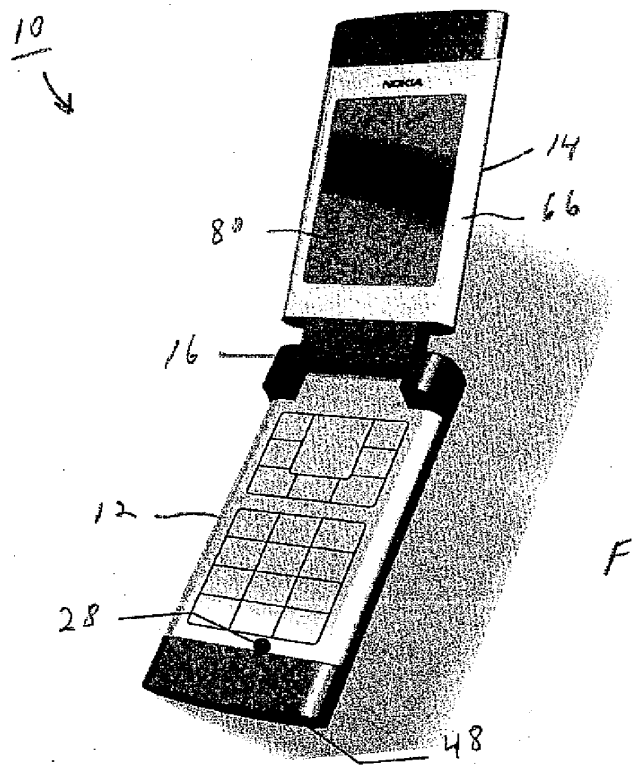


Fig. 1

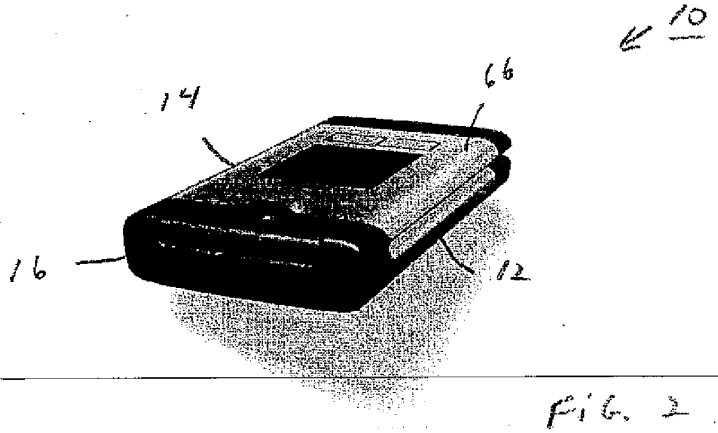


Fig. 2

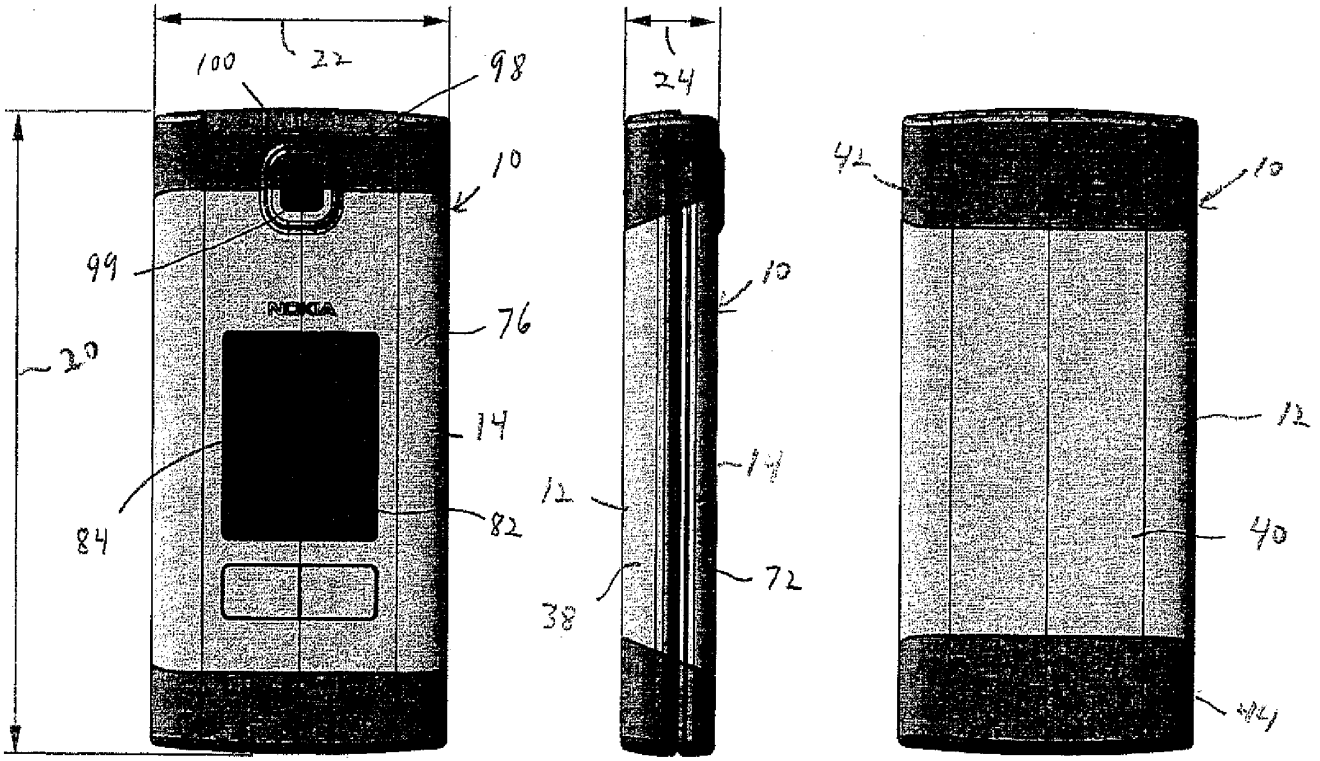


Fig. 4 Fig. 5 Fig. 6

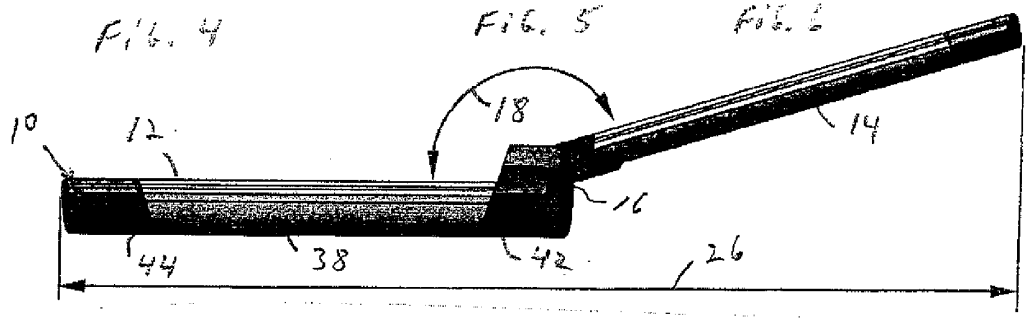


Fig. 3

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000060

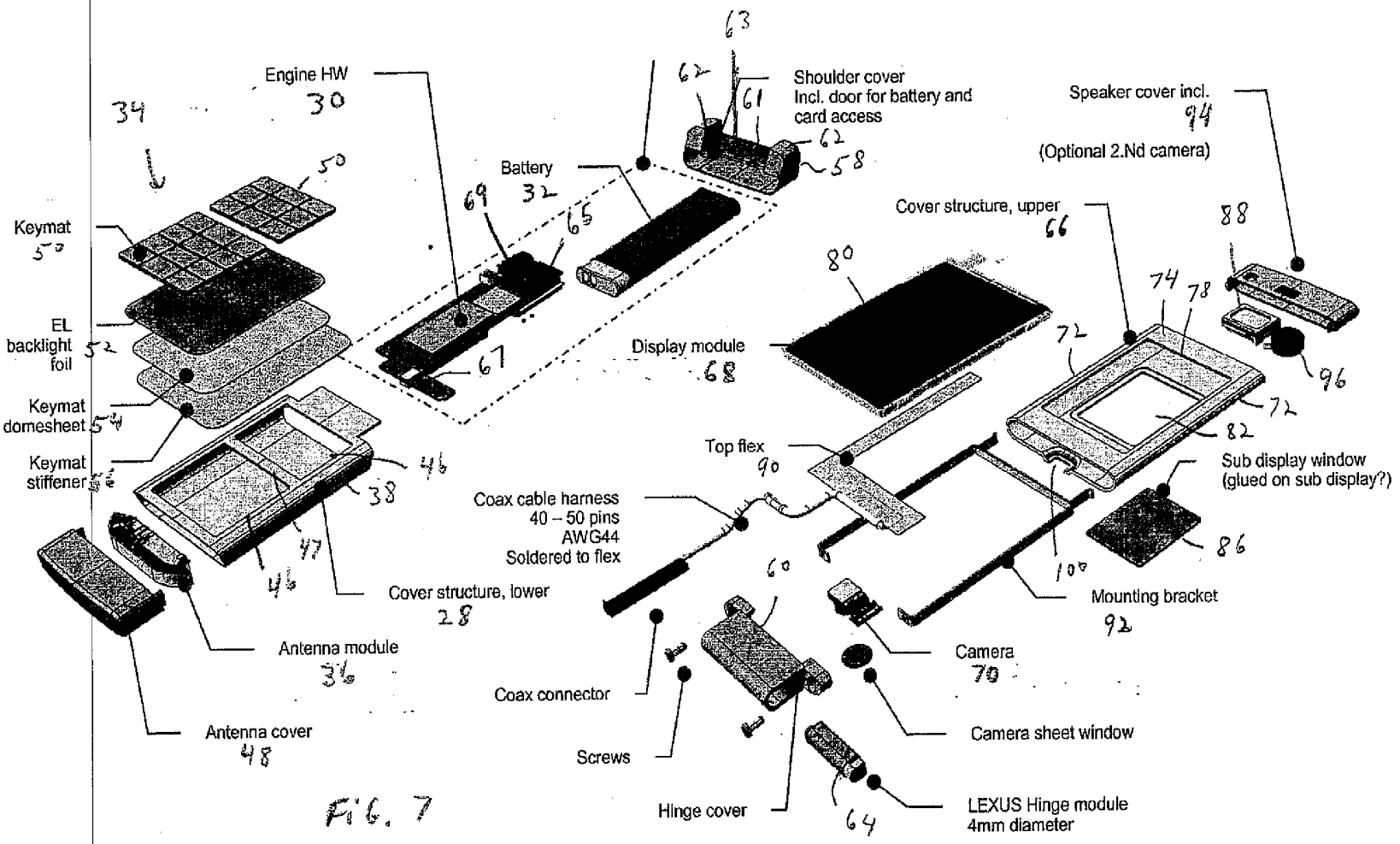


Fig. 7

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000061

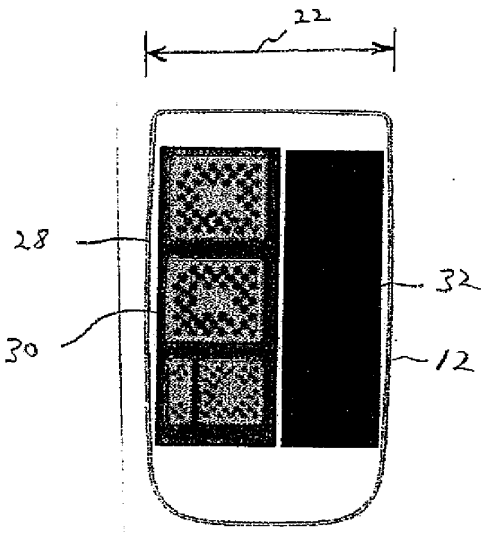


FIG. 8

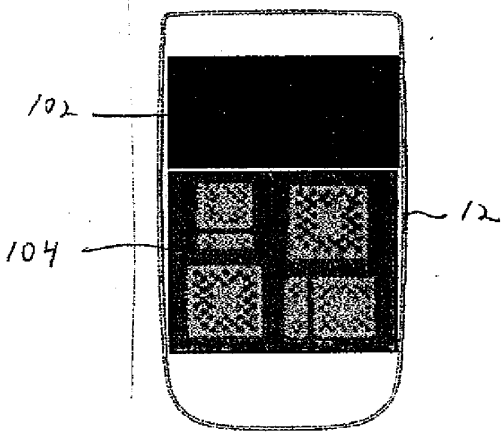


FIG. 9

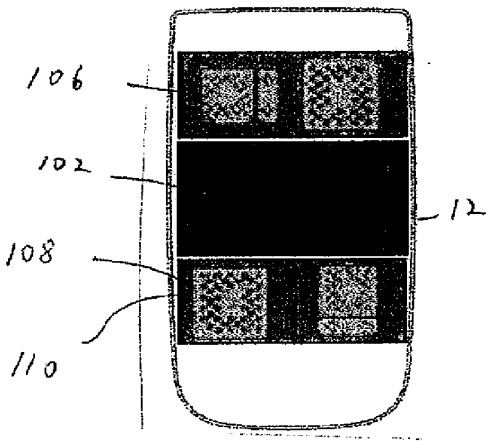


FIG. 10

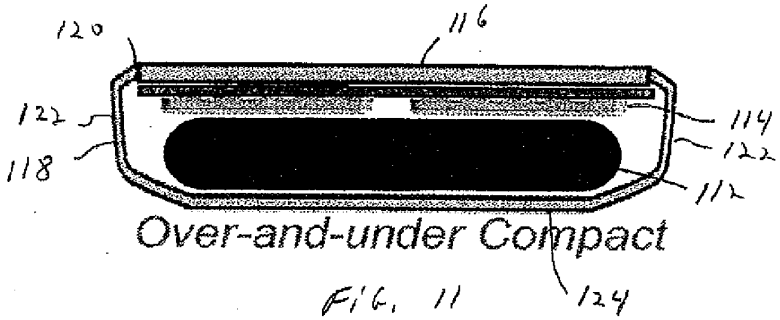


FIG. 11

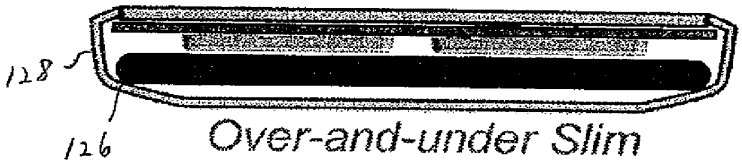


FIG. 12

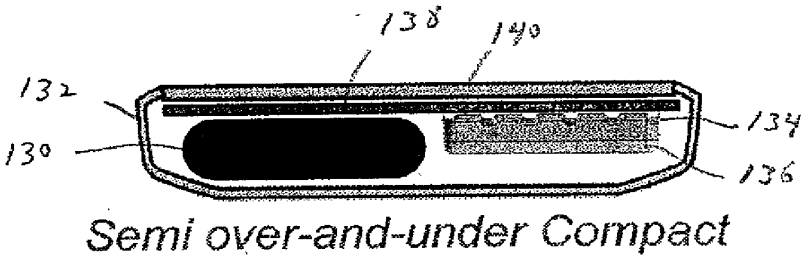


FIG. 13

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000064

Electronic Patent Application Fee Transmittal

Application Number:	
Filing Date:	
Title of Invention:	Portable Electronic Device
First Named Inventor/Applicant Name:	Claus H. Jorgensen
Filer:	Robert J. Mauri/Elaine Mian
Attorney Docket Number:	891.0013.U5(US)

Filed as Large Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Utility application filing	1011	1	280	280
Utility Search Fee	1111	1	600	600
Utility Examination Fee	1311	1	720	720
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
		Total in USD ($)		**1600**

Electronic Acknowledgement Receipt

EFS ID:	21385192
Application Number:	14612712
International Application Number:	
Confirmation Number:	4999
Title of Invention:	Portable Electronic Device
First Named Inventor/Applicant Name:	Claus H. Jorgensen
Customer Number:	10948
Filer:	Robert J. Mauri/Elaine Mian
Filer Authorized By:	Robert J. Mauri
Attorney Docket Number:	891.0013.U5(US)
Receipt Date:	03-FEB-2015
Filing Date:	
Time Stamp:	15:04:36
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	$1600
RAM confirmation Number	12226
Deposit Account	501924
Authorized User	
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal of New Application	Transmittal.pdf	76846 e283b7c29445f881308e7d65e621266794724e3c	no	3
Warnings:					
Information:					
2	Power of Attorney	PowerofAttorney.pdf	132936 a9d2e9229a9228213112647850 8ac7acfa293c8c	no	3
Warnings:					
Information:					
3	Information Disclosure Statement (IDS) Form (SB08)	IDS.pdf	384209 768eb6a3ee79313142b4ca00cafe2ac23e4e8656	no	10
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
4	Preliminary Amendment	PreliminaryAmendment.pdf	118029 075a27249e579eb0868e53220d642e41162c8f7b	no	8
Warnings:					
Information:					
5	Application Data Sheet	ADS.pdf	208723 8a968721b33059a557c9a746665f5c70f4494773	no	6
Warnings:					
Information:					
This is not an USPTO supplied ADS fillable form					
6	Oath or Declaration filed	Declaration.pdf	21003 9d0f2f949057850d7e11fc53cdcc7b141f74703a	no	1
Warnings:					
Information:					
7	Drawings-only black and white line drawings	ReplacementSheets.pdf	68602 32d0e14a8881ac6ccf43d5e3537d1be8b6c2186a	no	6
Warnings:					
Information:					

8	Specification	Specification.pdf	439164 c4915b35318fe662b17eb2f2bf1eeb416e5364cc	no	20
Warnings:					
Information:					
9	Drawings-only black and white line drawings	Drawings.pdf	245270 dd187ad77ddb932d0fd1cbfe6cd7549ab46e1fc7	no	6
Warnings:					
Information:					
10	Fee Worksheet (SB06)	fee-info.pdf	34971 dd5545f9b4d731b11d453628b13abb9ea698f64b	no	2
Warnings:					
Information:					
			Total Files Size (in bytes):	1729753	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

<u>New Applications Under 35 U.S.C. 111</u>
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

<u>National Stage of an International Application under 35 U.S.C. 371</u>
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

<u>New International Application Filed with the USPTO as a Receiving Office</u>
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
14/612,712	02/03/2015	2642	1600	891.0013.U5(US)	18	2

CONFIRMATION NO. 4999

10948
Harrington & Smith, Attorneys At Law, LLC
4 Research Drive, Suite 202
Shelton, CT 06484

FILING RECEIPT

OC000000073444356

Date Mailed: 02/19/2015

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Inventor(s)

Claus H. Jorgensen, Bronshoj, DENMARK;

Applicant(s)

Nokia Technologies Oy, Espoo, FINLAND

Assignment For Published Patent Application

Nokia Technologies Oy

Power of Attorney: The patent practitioners associated with Customer Number 10948

Domestic Priority data as claimed by applicant

This application is a CON of 14/067,249 10/30/2013 PAT 8953780
which is a CON of 13/741,781 01/15/2013 PAT 8615077
which is a CON of 12/860,234 08/20/2010 PAT 8363824
which is a CON of 11/393,510 03/29/2006 PAT 7787618

Foreign Applications for which priority is claimed (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see http://www.uspto.gov for more information.) - None.
Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.

Permission to Access - A proper **Authorization to Permit Access to Application by Participating Offices** (PTO/SB/39 or its equivalent) has been received by the USPTO.

If Required, Foreign Filing License Granted: 02/13/2015
The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 14/612,712**

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000070

Projected Publication Date: 05/28/2015

Non-Publication Request: No

Early Publication Request: No

Title

Portable Electronic Device

Preliminary Class

455

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at http://www.uspto.gov/web/offices/pac/doc/general/index.html.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, http://www.stopfakes.gov. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4258).

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000071

LICENSE FOR FOREIGN FILING UNDER

Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

GRANTED

The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where the conditions for issuance of a license have been met, regardless of whether or not a license may be required as set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign AssetsControl, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

SelectUSA

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The U.S. offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to promote and facilitate business investment. SelectUSA provides information assistance to the international investor community; serves as an ombudsman for existing and potential investors; advocates on behalf of U.S. cities, states, and regions competing for global investment; and counsels U.S. economic development organizations on investment attraction best practices. To learn more about why the United States is the best country in the world to develop technology, manufacture products, deliver services, and grow your business, visit http://www.SelectUSA.gov or call +1-202-482-6800.

PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number: 14/612,712

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY FEE($)
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	280
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A	600
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	720
TOTAL CLAIMS (37 CFR 1.16(i))	18 minus 20 =	*			OR	x 80 =	0.00
INDEPENDENT CLAIMS (37 CFR 1.16(h))	2 minus 3 =	*				x 420 =	0.00
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).						0.00
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))							0.00
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL			TOTAL	1600

APPLICATION AS AMENDED - PART II

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY ADDITIONAL FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE($)
AMENDMENT A	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE($)	ADDITIONAL FEE($)		RATE($)	ADDITIONAL FEE($)
AMENDMENT B	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.

To: USPTO@hspatent.com,Nokia.IPR@nokia.com,
From: PAIR_eOfficeAction@uspto.gov
Cc: PAIR_eOfficeAction@uspto.gov
Subject: Private PAIR Correspondence Notification for Customer Number 10948

Feb 19, 2015 05:32:29 AM

Dear PAIR Customer:

Harrington & Smith, Attorneys At Law, LLC
4 Research Drive, Suite 202
Shelton, CT 06484
UNITED STATES

The following USPTO patent application(s) associated with your Customer Number, 10948 , have new outgoing correspondence. This correspondence is now available for viewing in Private PAIR.

The official date of notification of the outgoing correspondence will be indicated on the form PTOL-90 accompanying the correspondence.

Disclaimer:
The list of documents shown below is provided as a courtesy and is not part of the official file wrapper. The content of the images shown in PAIR is the official record.

Application	Document	Mailroom Date	Attorney Docket No.
14612712	APP.FILE.REC	02/19/2015	891.0013.U5(US)

To view your correspondence online or update your email addresses, please visit us anytime at https://sportal.uspto.gov/secure/myportal/privatepair.

If you have any questions, please email the Electronic Business Center (EBC) at EBC@uspto.gov with 'e-Office Action' on the subject line or call 1-866-217-9197 during the following hours:

Monday - Friday 6:00 a.m. to 12:00 a.m.

Thank you for prompt attention to this notice,

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENT APPLICATION INFORMATION RETRIEVAL SYSTEM

PTO/SB/06 (09-11)
Approved for use through 1/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 14/612,712	Filing Date 02/03/2015	☐ To be Mailed

ENTITY: ☒ LARGE ☐ SMALL ☐ MICRO

APPLICATION AS FILED – PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	

APPLICATION AS AMENDED – PART II

AMENDMENT	02/03/2015	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 18	Minus	** 20	=	X $ =	
	Independent (37 CFR 1.16(h))	* 2	Minus	***3	=	X $ =	
	☐ Application Size Fee (37 CFR 1.16(s))						
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
						TOTAL ADD'L FEE	

AMENDMENT		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =	
	☐ Application Size Fee (37 CFR 1.16(s))						
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
						TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

LIE
/TERRANCE LAWRENCE/

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**
If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
14/612,712	02/03/2015	Claus H. Jorgensen	891.0013.U5(US)

CONFIRMATION NO. 4999

10948
Harrington & Smith, Attorneys At Law, LLC
4 Research Drive, Suite 202
Shelton, CT 06484

PUBLICATION NOTICE

OC000000075416110

Title: Portable Electronic Device

Publication No.US-2015-0148099-A1
Publication Date:05/28/2015

NOTICE OF PUBLICATION OF APPLICATION

The above-identified application will be electronically published as a patent application publication pursuant to 37 CFR 1.211, et seq. The patent application publication number and publication date are set forth above.

The publication may be accessed through the USPTO's publically available Searchable Databases via the Internet at www.uspto.gov. The direct link to access the publication is currently http://www.uspto.gov/patft/.

The publication process established by the Office does not provide for mailing a copy of the publication to applicant. A copy of the publication may be obtained from the Office upon payment of the appropriate fee set forth in 37 CFR 1.19(a)(1). Orders for copies of patent application publications are handled by the USPTO's Office of Public Records. The Office of Public Records can be reached by telephone at (703) 308-9726 or (800) 972-6382, by facsimile at (703) 305-8759, by mail addressed to the United States Patent and Trademark Office, Office of Public Records, Alexandria, VA 22313-1450 or via the Internet.

In addition, information on the status of the application, including the mailing date of Office actions and the dates of receipt of correspondence filed in the Office, may also be accessed via the Internet through the Patent Electronic Business Center at www.uspto.gov using the public side of the Patent Application Information and Retrieval (PAIR) system. The direct link to access this status information is currently http://pair.uspto.gov/. Prior to publication, such status information is confidential and may only be obtained by applicant using the private side of PAIR.

Further assistance in electronically accessing the publication, or about PAIR, is available by calling the Patent Electronic Business Center at 1-866-217-9197.

Office of Data Managment, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000076

To: USPTO@hspatent.com,Nokia.IPR@nokia.com,
From: PAIR_eOfficeAction@uspto.gov
Cc: PAIR_eOfficeAction@uspto.gov
Subject: Private PAIR Correspondence Notification for Customer Number 10948

May 29, 2015 05:24:22 AM

Dear PAIR Customer:

Harrington & Smith, Attorneys At Law, LLC
4 Research Drive, Suite 202
Shelton, CT 06484
UNITED STATES

The following USPTO patent application(s) associated with your Customer Number, 10948 , have new outgoing correspondence. This correspondence is now available for viewing in Private PAIR.

The official date of notification of the outgoing correspondence will be indicated on the form PTOL-90 accompanying the correspondence.

Disclaimer:
The list of documents shown below is provided as a courtesy and is not part of the official file wrapper. The content of the images shown in PAIR is the official record.

Application	Document	Mailroom Date	Attorney Docket No.
14612712	NTC.PUB	05/28/2015	891.0013.U5(US)

To view your correspondence online or update your email addresses, please visit us anytime at https://sportal.uspto.gov/secure/myportal/privatepair.

If you have any questions, please email the Electronic Business Center (EBC) at EBC@uspto.gov with 'e-Office Action' on the subject line or call 1-866-217-9197 during the following hours:

Monday - Friday 6:00 a.m. to 12:00 a.m.

Thank you for prompt attention to this notice,

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENT APPLICATION INFORMATION RETRIEVAL SYSTEM

PLUS Search Results for S/N 14612712, Searched Tue Aug 25 09:49:25 EDT 2015

The Patent Linguistics Utility System (PLUS) is a USPTO automated search system for U.S. Patents from 1971 to the present PLUS is a query-by-example search system which produces a list of patents that are most closely related linguistically to the application searched. This search was prepared by the staff of the Scientific and Technical Information Center, SIRA.

5969332 99
4967463 88
5022524 88
5215374 88
4353190 83
4429507 83
5304054 83
5421650 83
5937468 83
5957182 83
4471821 77
4480467 77
4549420 77
4754843 77
5509587 77
5511355 77
5516013 77
5826600 77
6116072 77
RE36873 77
6205834 77
4262733 72
4275625 72
4276763 72
4281859 72
4283278 72
4290471 72
4293273 72
4358125 72
4376541 72
4385846 72
4410865 72
4420037 72
4447854 72
4482305 72
4501973 72
4534532 72
4559141 72
4586697 72
4594734 72
4619131 72
4625531 72
4630855 72
4795347 72
4843858 72
4903823 72
4909011 72
4911627 72
4957372 72
4986367 72

PLUS Search Results for S/N 14612712, Searched Fri Sep 11 09:00:02 EDT 2015

The Patent Linguistics Utility System (PLUS) is a USPTO automated search system for U.S. Patents from 1971 to the present PLUS is a query-by-example search system which produces a list of patents that are most closely related linguistically to the application searched. This search was prepared by the staff of the Scientific and Technical Information Center, SIRA.

5969332 99
4967463 88
5022524 88
5215374 88
4353190 83
4429507 83
5304054 83
5421650 83
5937468 83
5957182 83
4471821 77
4480467 77
4549420 77
4754843 77
5509587 77
5511355 77
5516013 77
5826600 77
6116072 77
RE36873 77
6205834 77
4262733 72
4275625 72
4276763 72
4281859 72
4283278 72
4290471 72
4293273 72
4358125 72
4376541 72
4385846 72
4410865 72
4420037 72
4447854 72
4482305 72
4501973 72
4534532 72
4559141 72
4586697 72
4594734 72
4619131 72
4625531 72
4630855 72
4795347 72
4843858 72
4903823 72
4909011 72
4911627 72
4957372 72
4986367 72

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/612,712	02/03/2015	Claus H. Jorgensen	891.0013.U5(US)	4999

10948 7590 09/24/2015

Harrington & Smith, Attorneys At Law, LLC
4 Research Drive, Suite 202
Shelton, CT 06484

EXAMINER
NGUYEN, TUAN DUC

ART UNIT	PAPER NUMBER
2656	

NOTIFICATION DATE	DELIVERY MODE
09/24/2015	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

USPTO@hspatent.com
Nokia.IPR@nokia.com

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000080

Office Action Summary	Application No. 14/612,712	Applicant(s) JORGENSEN, CLAUS H.	
	Examiner TUAN D. NGUYEN	Art Unit 2656	AIA (First Inventor to File) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02/03/2015*.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5)☒ Claim(s) *25-42* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *25-42* is/are rejected.

8)☐ Claim(s) _____ is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a)☐ All b)☐ Some** c)☐ None of the:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☒ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date *02/03/2015*.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

4) ☐ Other: _____.

The present application is being examined under the pre-AIA first to invent provisions.

DETAILED ACTION

Double Patenting

1. A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C. 101 which states that "whoever invents or discovers any new and useful process... may obtain a patent therefor..." (Emphasis added). Thus, the term "same invention," in this context, means an invention drawn to identical subject matter. See *Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957).

   A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by canceling or amending the claims that are directed to the same invention so they are no longer coextensive in scope. The filing of a terminal disclaimer cannot overcome a double patenting rejection based upon 35 U.S.C. 101.

2. Claims 25-42 are rejected under 35 U.S.C. 101 as claiming the same invention as that of claims 1-18 of prior U.S. Patent No. 8,953,780. This is a statutory double patenting rejection.

Claim Rejections - 35 USC § 112

3. The following is a quotation of 35 U.S.C. 112(b):
(b) CONCLUSION.—The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the inventor or a joint inventor regards as the invention.

The following is a quotation of 35 U.S.C. 112 (pre-AIA), second paragraph:
The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 30 and 37 are rejected under 35 U.S.C. 112(b) or 35 U.S.C. 112 (pre-AIA), second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the inventor or a joint inventor, or for pre-AIA the applicant regards as the invention.

Claim 30 recites the limitation "the portable electronic device" in page 4 line 3. There is insufficient antecedent basis for this limitation in the claim.

Claim 37 recites the limitation "the portable electronic device" in page 5 lines 6-7. There is insufficient antecedent basis for this limitation in the claim.

Conclusion

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to TUAN D. NGUYEN whose telephone

number is (571)272-8163. The examiner can normally be reached on M-F 7:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Curt Kuntz can be reached on (571) 272-7499.

The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/TUAN D NGUYEN/
Primary Examiner, Art Unit 2656

Notice of References Cited	Application/Control No. 14/612,712	Applicant(s)/Patent Under Reexamination JORGENSEN, CLAUS H.	
	Examiner TUAN D. NGUYEN	Art Unit 2656	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-2006/0250762	11-2006	Yang et al.	361/681
*	B	US-2006/0250627	11-2006	Silverbrook et al.	358/001.12
*	C	US-2006/0250490	11-2006	Silverbrook et al.	347/109
*	D	US-2006/0055607	03-2006	Satoh et al.	343/702
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000085

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.: Confirmation No.:
Applicant(s): Jorgensen, Claus H.
Filed: Herewith
Art Unit:
Examiner:
Title: Portable Electronic Device

Attorney Docket No.: 891.0013.U5(US)
Customer No.: 10,948

Commissioner For Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Information Disclosure Statement

(37 C.F.R. §1.97(b))

Sir:

The following information is being disclosed to the U.S. Patent and Trademark Office as information that may be material to the examination of the above-identified patent application.

A Form PTO-1449 is enclosed for the Examiner's use which lists art cited in the parent application (Application No.: 14/067,249 [which is a continuation patent application of Application No.: 13/741,781 [now US 8,615,077], which is a continuation patent application of Application No.: 12/860,234 [now US 8,363,824], which is a continuation patent application of 11/393,510 [now US 7,787,618]). In accordance with 37 C.F.R. §1.98(d) copies of the art are not included. These can

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /T.N./

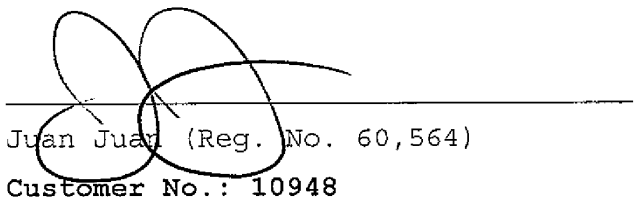
Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000086

be obtained by the Examiner from the file of the parent application.

The filing of this Statement is not to be construed as a representation that a search has been made regarding the claimed invention (37 C.F.R. §1.97(g)) or that no other possible material information exists. In addition, the filing of this Statement is not to be construed to be an admission that the information cited in the Statement is, or is considered to be, material to Patentability (37 C.F.R. §1.97(h)).

If there are any additional charges with respect to this Information Disclosure Statement or otherwise, please charge deposit account 50-1924 for any fee deficiency.

Respectfully submitted,



1/29/2015

Juan Juan (Reg. No. 60,564) Date

Customer No.: 10948
Harrington & Smith,
Attorneys At Law, LLC
4 Research Drive
Shelton, CT 06484-6212
203-925-9400

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /T.N./

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000087

INFORMATION DISCLOSURE CITATION FORM FOR PATENT APPLICATION (FORM PTO-1449) (Substitute)	Docket No.: 891.0013.U5(US) Serial No.: 14/612712 Applicant(s): Claus H. Jorgensen Filing Date: herewith Group: 2656

U.S. PATENT DOCUMENTS

Examiner Initials	Document Number (Number-Kind Code)	Publication Date (MM-DD-YYYY)	Name of Patentee or Applicant	Class	Sub-class
	US-DES. 427,171	06-27-2000	Frye et al.	D14	138
	US-2005/0282593 A1	12-22-2005	Spence et al.	455	575.3
	US-2003/0199290 A1	10-23-2003	Viertola	455	575.1
	US-2001/0034242	10-2001	Takagi, Hisamitsu	455	550
	US-2004/0253508 A1	12-16-2004	Kohri et al.	429	100
	US-6,219,257 B1	04-17-2001	Arnold	361	814
	US-5,768,098	06-16-1998	Murayama	361	884
	US-6,128,184	10-03-2000	Ito et al.	361	681
	US-6,317,315 B1	11-13-2001	Lee et al.	361	681
	US-6,805,998 B2	10-19-2004	Jenson et al.	429	162
	US-6,920,344 B2	07-19-2005	Jang	455	575.5
	US-6,933,981	08-23-2005	Kishida et al.	348	375
	US-7,010,121	03-07-2006	Wennemer et al.	379	433.01
	US-7,336,228 B2	02-26-2008	Lu et al.	343	702
	US-7,515,431 B1	04-07-2009	Zadesky et al.	361	752
	US-7,522,889 B2	04-21-2009	Wulff et al.	455	90.3
	US-7,630,741 B2	12-08-2009	Siddiqui et al.	455	575.1
	US-2004/0204009 A1	10-14-2004	Cheng et al.	455	550.1
	US-2003/0100275 A1	05-29-2003	Hsu et al.	455	90
	US-2006/0233356 A1	10-19-2006	Lu et al.	379	433.01

FOREIGN PATENT DOCUMENTS

Examiner Initials	Document Number (Country Code-Number-Kind Code)	Publication Date (MM-DD-YYYY)	Name Of Patentee of Applicant	Translation? Yes/No/n/a
	GB 2 383 472 A	06/25/2003	Vertu Limited	n/a
	EP-1209880-A3	02-05-2003	Nokia Corporation	
	EP-1533983-A1	05-25-2005	LG Electronics Inc.	
	GB-2391740-A	02-11-2004	Matsushita Electrical Industrial Co. Ltd.	
	JP-2005-318064-A	11-10-2005	Toshiba Corp	Abstract
	EP-1496672-A1	01-12-2006	Matsushita Electric Industrial Co., Ltd.	
	EP-1 617 313-A2	01-18-2005	LG Electronics, Inc.	
	WO-95/31048-A1	11-16-1995	Daniels, John J.	

OTHER DOCUMENTS (Author (Capitalize), Title, Date, Pages, Etc., if known)

Examiner's Signature: /Tuan Nguyen/ Date Considered: 09/18/2015

Initial if reference was considered, whether or not citation is in conformance with MPEP. Mark through citation if not considered. Include a copy of this citation form with your next correspondence to the Applicant(s).

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /T.N./

INFORMATION DISCLOSURE CITATION FORM FOR PATENT APPLICATION (FORM PTO-1449) (Substitute)	Docket No. 891.0013.U5(US) Serial No.: 14/612712 Applicant(s): Claus H. Jorgensen Filing Date: herewith Group: 2656

U.S. PATENT DOCUMENTS

Examiner Initials	Document Number (Number-Kind Code)	Publication Date (MM-DD-YYYY)	Name of Patentee or Applicant	Class	Sub-class
	US-7,499,040 B2	03-03-2009	Zadesky et al.	345	204
	US-7,627,343 B2	12-01-2009	Fadell et al.	455	557
	US-8,140,133 B2	03-20-2012	Jung et al.	455	575.3
	US-7,495,659 B2	02-24-2009	Marriott et al.	345	173
	US-7,099,709 B2	08-29-2006	Hsu et al.	455	575.8
	US-7,374,452 B2	05-20-2008	Kohri et al.	439	500
	US-7,046,230 B2	05-16-2006	Zadesky et al.	345	156
	US-6,785,395 B1	08-31-2004	Arneson et al.	381	334
	US-6,075,470	06-13-2000	Little et al.	341	107
	US-6,271,605 B1	08-07-2001	Carkner et al.	307	125
	US-6,278,442 B2	08-21-2001	Griffin et al.	345	169
	US-6,317,592 B1	11-13-2001	Campana, Jr. et al.	455	412
	US-6,754,507 B2	06-22-2004	Takagi	455	550.1
	US-D506,476 S	06-21-2005	Andre et al.	D14	496
	US-D416,256	11-09-1999	Griffin et al.	D14	191
	US-D433,460	11-07-2000	Griffin et al.	D21	329
	US-2003/0095656 A1	05-22-2003	Sommer	379	419

FOREIGN PATENT DOCUMENTS

Examiner Initials	Document Number (Country Code-Number-Kind Code)	Publication Date (MM-DD-YYYY)	Name Of Patentee of Applicant	Translation? Yes/No/n/a
	JP-2001308992-A	11-02-2001	Kyocera Corp.	
	CN-2750587(Y)	01-04-2006	Konka Group Co.	
	- -			
	- -			

OTHER DOCUMENTS (Author (Capitalize), Title, Date, Pages, Etc., if known)

	IPod Nano. (2013, October 28). In *Wikipedia, The Free Encyclopedia*. Retrieved 18:44, November 12, 2013, from http://en.wikipedia.org/w/index.php?title=IPod_Nano&oldid=579129002, 12 pages
	IPod Mini. (2013, October 28). In *Wikipedia, The Free Encyclopedia*. Retrieved 18:47, November 12, 2013, from http://en.wikipedia.org/w/index.php?title=IPod_Mini&oldid=579128730, 4 pages
	Nokia 9300 specifications, Nokia 9300 announcement: 2004, Nokia 9300 launched 2004-2005, retrieved 11/12/2013 from http://www.gsmarena.com/nokia_9300-881.php, 1 page
	Photographic image of Nokia 9300 with cover removed, Nokia 9300 announcement: 2004, Nokia 9300 launched 2004-2005, 1 page
	Wilson, Tracy V., "How a Blackberry Works", howstuffworks.com, 4 pages, January 2006, retrieved 8/26/2013, 4 pages
	Gabe, "Installing Palm Zire 31 Battery", www.iFixit.com, document generated 08/24/2013, Palm Zire 31 first released April 2004, 6 pages

Examiner's Signature: /Tuan Nguyen/	Date Considered: 09/18/2015

Initial if reference was considered, whether or not citation is in conformance with MPEP. Mark through citation if not considered. Include a copy of this citation form with your next correspondence to the Applicant(s).

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /T.N./

INFORMATION DISCLOSURE CITATION FORM FOR PATENT APPLICATION (FORM PTO-1449) (Substitute)	Docket No. 891.0013.U5(US)	Serial No.: 14/612712
	Applicant(s): Claus H. Jorgensen	
	Filing Date: herewith	Group: 2656

U.S. PATENT DOCUMENTS

Examiner Initials	Document Number (Number-Kind Code)	Publication Date (MM-DD-YYYY)	Name of Patentee or Applicant	Class	Sub-class
	US- US- US- US-				

FOREIGN PATENT DOCUMENTS

Examiner Initials	Document Number (Country Code-Number-Kind Code)	Publication Date (MM-DD-YYYY)	Name Of Patentee of Applicant	Translation? Yes/No/n/a
	- - - - - -			

OTHER DOCUMENTS (Author (Capitalize), Title, Date, Pages, Etc., if known)

	Fadell, Tony, "Apple seriously considered building an iPhone with hardware keyboard", MAC Daily News, April 30, 2012, 13 pgs.
	"Getting Started", Zire™ 31, Palm One, Inc., 2003, 104 pgs.
	"palmOne Zire 31 Review", Brighthand Smartphone News & Review, April 27, 2004, 4 pgs.
	"Repairing TomTom ONE Back Cover", Fixit, 2003, 4 pgs.
	"Sendo M550 Manual, CE0168" Sendo, 2003, 50 pgs.
	"User Guide for the Kyocera SoHo Phone", Kyocera 82K5867-1EN, Rev. 002, 2004, 59 pgs.
	"Sprint PCS Vision Phone VI-3155i by okia", Sprint PCS® Service, Sprint 2005, 208 pgs.
	"The Birth of the iPhone – Excerpt from Jony Ive: The Genius Behind Apple's Greatest Products", Kahney, Leander, Janury 7, 2014, 30 pgs.
	"Motomanual V176 GSM", Motorola, 2006, 77 pgs.
	"Operating Instructions X800 Symbian OS Smartphone, Panasonic, 2005, 194 pgs.
	"Meet the Nokia N72: the Multimedia Computer that Looks as Good as It Performs", Press Release, April 2006, 2 pgs.
	"Microsoft and Nokia Collaborate to Help Ensure Consumers Can Enjoy Digital Music Anywhere", Press Release, February 14, 2005, 2 pgs.
	"Multifuntional Mobiles Make the World Go Round", Press Release, June 6, 2006, 4 pgs.
	"Nokia 3250: A music phone with a twist", Press Release, September 27, 2005, 2 pgs.
	"Nokia Announces Convergence Devices for Mobile TV and the Digital Home at Nokia Mobility Conference 2005", PRNewswire, Barcelona, Spain, 2005, 3 pgs.
	"Nokia Launches Mobile Music Solution for Operators Worldwide", Nexus 5, February 14, 2005, 3 pgs.
	"Nokia N90 voted European Media Phone of the Year", Press Release, August 16, 2005, 2 pgs.
	"The world's first integrated DVB-H mobile device makes prime time any time", Press Release, November 2, 2005 , 3 pgs.
	"Two Nseries multimedia devices receive prestigious commendation from Popular Science magazine", Press Release, November 8, 2005, 3 pgs.
	"Part of the Nokia Nseries high performance multimedia range, the Nokia N90 brings Carl Zeiss optics into the mobile arena", Press Release, April 27, 2005, 4 pgs.

Examiner's Signature: /Tuan Nguyen/	Date Considered: 09/18/2015

Initial if reference was considered, whether or not citation is in conformance with MPEP. Mark through citation if not considered. Include a copy of this citation form with your next correspondence to the Applicant(s).

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /T.N./

INFORMATION DISCLOSURE CITATION FORM FOR PATENT APPLICATION (FORM PTO-1449) (Substitute)	Docket No. 891.0013.U5(US)	Serial No.: 14/612712
	Applicant(s): Claus H. Jorgensen	
	Filing Date: herewith	Group: 2656

U.S. PATENT DOCUMENTS

Examiner Initials	Document Number (Number-Kind Code)	Publication Date (MM-DD-YYYY)	Name of Patentee or Applicant	Class	Sub-class

FOREIGN PATENT DOCUMENTS

Examiner Initials	Document Number (Country Code-Number-Kind Code)	Publication Date (MM-DD-YYYY)	Name Of Patentee of Applicant	Translation? Yes/No/n/a
	- -			

OTHER DOCUMENTS (Author (Capitalize), Title, Date, Pages, Etc., if known)

	Blackberry 857 – Enterprise Edition – Blackberry Series Specifications, Blackberry 857 launched November 2000, document retrieved 5/30/2014 from http://www.cnet.com/products/blackberry-857-enterprise-edition-blackberry-series/, 3 pages
	Blackberry 957 – Enterprise Edition – Blackberry – 5MB Series Specifications, Blackberry 957 launched November 2000, document retrieved 5/30/2014 from http://www.cnet.com/products/blackberry-957-internet-edition-blackberry-series/, 2 pages
	Zire 31. (2013, December 20). In Wikipedia, The Free Encyclopedia. Retrieved 14:47, May 30, 2014, from http://en.wikipedia.org/w/index.php?title=Zire_31&oldid=586990828, 3 pages
	Zire 72. (2013, March 12). In Wikipedia, The Free Encyclopedia. Retrieved 14:49, May 30, 2014, from http://en.wikipedia.org/w/index.php?title=Zire_72&oldid=543613308, 3 pages
	Motorola Razr. (2014, May 29). In *Wikipedia, The Free Encyclopedia*. Retrieved 14:52, May 30, 2014, from http://en.wikipedia.org/w/index.php?title=Motorola_Razr&oldid=610567906, 12 pages
	Jony Ive : the genius behind Apple's greatest products [Summary], Book published November 2013, Summary retrieved May 30, 2014, from http://lccn.loc.gov/2013037927, 2 pages
	Photographic images of iPod Mini with cover removed, iPod Mini announcement: January 6, 2004, iPod Mini released on February 20, 2004, 1 page
	Photographic images of Palm One Zire 31 (front/back, and with cover removed), Palm One Zire 31 released: April 2004, 1 page
	Photographic images of iPod Nano (front/back, and with cover removed), iPod Nano released: September 2005, 1 page
	Photographic images of Nokia 9300 (front/back, and with cover removed), Nokia 9300 announcement: 2004, Nokia 9300 launched 2004-2005, 1 page

Examiner's Signature: /Tuan Nguyen/	Date Considered: 09/18/2015

Initial if reference was considered, whether or not citation is in conformance with MPEP. Mark through citation if not considered. Include a copy of this citation form with your next correspondence to the Applicant(s).

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /T.N./

INFORMATION DISCLOSURE CITATION FORM FOR PATENT APPLICATION (FORM PTO-1449) (Substitute)	Docket No. 891.0013.U5(US) Serial No.: 14/612712 Applicant(s): Claus H. Jorgensen Filing Date: herewith Group: 2656

U.S. PATENT DOCUMENTS

Examiner Initials	Document Number (Number-Kind Code)	Publication Date (MM-DD-YYYY)	Name of Patentee or Applicant	Class	Sub-class
	US-8,353,824 B2	01-15-2013	Shelton, IV et al.	600	208
	US-7,860,536 B2	12-28-2010	Jobs et al.	455	566
	US-7,574,672 B2	08-11-2009	Jobs et al.	715	830
	US-2005/0282593 A1	12-22-2005	Spence et al.	455	575.3
	US-5,537,294	07-16-1996	Siwinski	361	753
	US-5,541,448	07-30-1996	Carpenter	257	679
	US-D445,428 S	07-24-2001	Pattenden	D14	488
	US-2005/0282595 A1	12-22-2005	Spence et al.	455	575.3
	US-				
	US-				

FOREIGN PATENT DOCUMENTS

Examiner Initials	Document Number (Country Code-Number-Kind Code)	Publication Date (MM-DD-YYYY)	Name Of Patentee of Applicant	Translation? Yes/No/n/a
	JP-11-331333-	11-30-1999	NEC Saitama Ltd.	
	EP-1209880-A2	05-29-2002	Nokia Corp.	
	EP-1496672-A1	01-12-2005	Matushita Electric Ind. Co.	
	GB-2383472-A	06-25-2003	Nokia Mobile Developments et al.	
	GB-2391740-A	02-11-2004	Matushita Electric Ind. Co.	
	EP-2472833-A1	07-04-2012	Nokia Corporation	
	JP-2000133973	05-12-2000	NEC Corp.	
	JP2001007550-A	01-12-2001	NEC Corp.	
	WO-2007/110771-A2	10-04-2007	Nokia Corporation	

OTHER DOCUMENTS (Author (Capitalize), Title, Date, Pages, Etc., if known)

	"LG© LX-225 Phone Guide", LG Life's Good, 2004, 208 pgs.
	"i560 Phone User's Guide", Motorola iDEN Digital Multi-service Data-capable Phone, 2005, 155 pgs.
	"Motorola V3 GSM User Guide", 2005, 34 pgs.
	"Motorola V3-RAZR Repair Manual", April 2005, 33 pgs.
	"Nokia 3155 Use Guide", 2005, 95 pgs.
	"Nokia 3155, Nokia 3155i, and Nokia 3152 User Guide", 2005, 201 pgs.
	"Nokia 6101 and Nokia 6102 User Guide", 2005, 87 pgs.
	"Nokia USA Launches 3155 CDMA Folder", Oryl, Michael, March 15, 2005, 1 pgs.
	"O2X3™-How to use it", O2 (UK) Limited, August 2004, 125 pgs.
	"O2X4™-How to use it", O2 (UK) Limited, March 2005, 118 pgs.

Examiner's Signature: /Tuan Nguyen/ Date Considered: 09/18/2015

Initial if reference was considered, whether or not citation is in conformance with MPEP. Mark through citation if not considered. Include a copy of this citation form with your next correspondence to the Applicant(s).

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /T.N./

INFORMATION DISCLOSURE CITATION FORM FOR PATENT APPLICATION (FORM PTO-1449) (Substitute)	Docket No. 891.0013.U5(US)	Serial No.: 14/612712
	Applicant(s): Claus H. Jorgensen	
	Filing Date: herewith	Group: 2656

U.S. PATENT DOCUMENTS

Examiner Initials	Document Number (Number-Kind Code)	Publication Date (MM-DD-YYYY)	Name of Patentee or Applicant	Class	Sub-class
	US-				
	US-				
	US-				
	US-				
	US-				
	US-				
	US-				

FOREIGN PATENT DOCUMENTS

Examiner Initials	Document Number (Country Code-Number-Kind Code)	Publication Date (MM-DD-YYYY)	Name Of Patentee of Applicant	Translation? Yes/No/n/a
	- -			
	- -			
	- -			

OTHER DOCUMENTS (Author (Capitalize), Title, Date, Pages, Etc., if known)

	"Nokia 3155/3155i, 3152 (RM-61) Schematics – Main PWB, Version 1, Edit 247", Nokia Customer Care, 2005, 30 pgs.
	"And Then Steve Said, 'Let there Be an iPhone'", The New York Times, October 4, 2013, 12 pgs.
	"BT Zenith Flip-Issue 1-Edition 04, User Guide", 08/09/2005, 88 pgs.
	"User Guide for the Kyocera Candid KX16 Phone, 82-N8302-1EN, Rev.001", Kyocera Wireless Corp., 2005, 64 pgs.
	"Digital Wireless Telephone User's Guide", Motorola, 2002, 106 pgs.
	"Handbook for Palm™ Zire™ Handheld" , Palm Inc., 2002, 208 pgs.
	"Handsets look to eclipse cameras", BBC News, June 6, 2006, 2 pgs.
	"Hands-on with Motorola's RAZR V3 for Cingular", Nelson, Adam, Engadget, December 6, 2004, 10 pgs.
	"How a BlackBerry Works", Wilson, Tracy V., http://electronics .howstuffworks.com/blackberry.htm/printable, January 7, 2014, 4 pgs.
	"i930 Phone User's Guide", Nextel iDEN Digital Multi-serice Data-capable Phone, Microsoft, 2005, 194 pgs.
	"C3300 User Guide CE0168", LG Life's Good, February 20, 2005, 99 pgs.
	"User Guide for the Kyocera Milan KX9B/KX9C Phones 82-N8274-1EN, Rev. 002", Kyocera, 2005, 63 pgs.
	Google Inc.'s Notice of Prior Art (Shamita D. Etienne-Cummings et al.) [including Certificate of Service], Investigation No. 337-TA-885, December 24, 2013 (38 pgs.)
	Complainants Nokia Corporation and Nokia Inc.'s Responsive Claim Construction Brief (M. Scott Stevens et al.) [including Exhibits 1-36 and Certificate of Service], Investigation No. 337-TA-885, September 23, 2013 (983 pgs.)
	Complainants' Nokia Corporation, Nokia Inc.'s Opening Claim Construction Brief (Jonas R. McDavit et al.) [including Exhibits 1-29 and Certificate of Service], Investigation No. 337-TA-885, September 16, 2013 (787 pgs.)
	Respondents HTC Corp. and HTC America, Inc.'s Responsive Claim Construction Brief, Investigation No. 337-TA-847, executed Jan. 8, 2013 (17793 pgs.)
	Redacted copy of Respondents HTC Corporation's and HTC America, Inc.'s (1) Initial Supplemental Responses To Complainants' Contention Interrogatories To HTC (Nos. 9, 11, 12, 14, 52, and 53) and (2) Initial Objections and Responses To Complainants' Contention Interrogatories to HTC (Nos. 54-56) (Paul C. Goulet et al.) [including Certificate of Service], Investigation No. 337-TA-885, October 11, 2013 (11 pgs.)

Examiner's Signature: /Tuan Nguyen/ Date Considered: 09/18/2015

Initial if reference was considered, whether or not citation is in conformance with MPEP. Mark through citation if not considered. Include a copy of this citation form with your next correspondence to the Applicant(s).

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /T.N./

INFORMATION DISCLOSURE CITATION FORM FOR PATENT APPLICATION (FORM PTO-1449) (Substitute)	Docket No. 891.0013.U5(US)	Serial No.: 14/612712
	Applicant(s): Claus H. Jorgensen	
	Filing Date: herewith	Group: 2656

U.S. PATENT DOCUMENTS

Examiner Initials	Document Number (Number-Kind Code)	Publication Date (MM-DD-YYYY)	Name of Patentee or Applicant	Class	Sub-class
	US-				
	US-				
	US-				
	US-				
	US-				
	US-				
	US-				

FOREIGN PATENT DOCUMENTS

Examiner Initials	Document Number (Country Code-Number-Kind Code)	Publication Date (MM-DD-YYYY)	Name Of Patentee of Applicant	Translation? Yes/No/n/a
	- -			
	- -			
	- -			
	- -			

OTHER DOCUMENTS (Author (Capitalize), Title, Date, Pages, Etc., if known)

	Proposed Constructions for Claim Terms of U.S. Patent No. 6,035,189, U.S. Patent No. 6,373,345, U.S. Patent No. 6,711,211, U.S. Patent No. 7,187,945, U.S. Patent No. 8,140,650, U.S. Patent No. 8,363,824, and U.S. Patent No. 7,366,529[1] (Paul C. Goulet et al.) [including Declaration of Iain Richardson (with Exhibits A, B) and Certificate of Service], Investigation No. 337-TA-885, September 9, 2013 (35 pages)
	Complainants Nokia Corporation And Nokia Inc.'s Proposed Claim Constructions and Identification of Extrinsic Evidence (Jonas R. McDavit et al.) [including Proposed Claim Constructions and Identification of Extrinsic Evidence and Certificate of Service], Investigation No. 337-TA-885, September 9, 2013 (12 pages)
	Joint Claim Construction Chart (Jonas R. McDavit et al.) [including Joint Claim Construction Chart and Certificate of Service], Investigation No. 337-TA-885, September 13, 2013 (15 pages)
	HTC Corporation, HTC America, Inc., and Google Inc.'s Initial Claim Construction Brief for U.S. Patent No. 6,035,189; U.S. Patent No. 6,711,211; and U.S. Patent No. 8,140,650 (Shamita D. Etienne-Cummings et al.) [including Exhibits 1-11 and Certificate of Service], Investigation No. 337-TA-885, January 8, 2013 (255 pages)
	Respondents' Initial Markman Brief Regarding Disputed Claim Terms In U.S. Patent Nos. 6,373,345, 7,187,945, 8,363,824, and 7,366,529 (Paul C. Goulet et al.) [including Exhibits 1-24 and Certificate of Service], Investigation No. 337-TA-885, September 16, 2013 (400 pages)
	Google Inc.'s Initial Claim Construction Brief (Shamita D. Etienne-Cummings et al.) [including Exhibits 1-32 and Certificate of Service], Investigation No. 337-TA-847, December 20, 2012 (690 pages)
	Respondents HTC Corp. and HTC America, Inc's, Opening Claim Construction Brief (Blair M. Jacobs et al.) [including Exhibits 1-19 and Certificate of Service], Investigation No. 337-TA-847, December 20, 2012 (371 pages)
	Complainants' Nokia Corporation, Nokia Inc., and Intellisync Corporation, Opening Claim Construction Brief (Jason Berrebi et al.) [including Exhibits A-D and Certificate of Service], Investigation No. 337-TA-847, December 20, 2012 (106 pages)
	Google Inc.'s Reply Brief on Construction of Disputed Terms of U.S. Patent No. 6,141,664, U.S. Patent No. 7,209,911, U.S. Patent No. 5,884,190, and U.S. Patent No. 7,366,529 (Shamita D. Etienne-Cummings et al.) [including Exhibits 33-37 and Certificate of Service], Investigation No. 337-TA-847, January 8, 2013 (151 pages)
	Complainants' Nokia Corporation, Nokia Inc., and Intellisync Corporation Responsive Claim Construction Brief (Jason Berrebi et al.) [including Certificate of Service], Investigation No. 337-TA-847, January 8, 2013 (48 pages)

Examiner's Signature: /Tuan Nguyen/	Date Considered: 09/18/2015

Initial if reference was considered, whether or not citation is in conformance with MPEP. Mark through citation if not considered. Include a copy of this citation form with your next correspondence to the Applicant(s).

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /T.N./

INFORMATION DISCLOSURE CITATION FORM FOR PATENT APPLICATION (FORM PTO-1449) (Substitute)	Docket No. 891.0013.U5(US)	Serial No.: 14/612712
	Applicant(s): Claus H. Jorgensen	
	Filing Date: herewith	Group: 2656

U.S. PATENT DOCUMENTS

Examiner Initials	Document Number (Number-Kind Code)	Publication Date (MM-DD-YYYY)	Name of Patentee or Applicant	Class	Sub-class
	US-				
	US-				
	US-				
	US-				
	US-				
	US-				
	US-				

FOREIGN PATENT DOCUMENTS

Examiner Initials	Document Number (Country Code-Number-Kind Code)	Publication Date (MM-DD-YYYY)	Name Of Patentee of Applicant	Translation? Yes/No/n/a
	- -			
	- -			

OTHER DOCUMENTS (Author (Capitalize), Title, Date, Pages, Etc., if known)

	Exhibit C-1: Invalidity of U.S. Patent No. 8,363,824 in light of United States Patent No. 7,515,431 to Stephen P. Zadesky, et al. ("Zadesky"), HTC Corp. and HTC America, Inc., October 11, 2013, 11 pages
	Exhibit C-2: Invalidity of U.S. Patent No. 8,363,824 in light of United States Patent No. 7,336,228 to Lin Lu, et al. ("Lu") , HTC Corp. and HTC America, Inc., October 11, 2013, 8 pages
	Exhibit C-3: Invalidity of U.S. Patent No. 8,363,824 in light of United States Patent Application Publication No. US 2005/0282593 to Michael F. Spence, et al. ("Spence"), HTC Corp. and HTC America, Inc., October 11, 2013, 8 pages
	Exhibit C-4: Invalidity of U.S. Patent No. 8,363,824 in light of PalmOne Zire 31 and U.S. Patent No. 7,366,228 to Lu, HTC Corp. and HTC America, Inc., October 11, 2013, 11 pages
	Exhibit C-5: Invalidity of U.S. Patent No. 8,363,824 in light of Apple iPod Nano (1st Generation), HTC Corp. and HTC America, Inc., October 11, 2013, 11 pages
	Exhibit C-6: Invalidity of U.S. Patent No. 8,363,824 in light of Apple iPod Mini (1st Generation), HTC Corp. and HTC America, Inc., October 11, 2013, 9 pages
	Exhibit C-7: Invalidity of U.S. Patent No. 8,363,824 in light of Nokia 9300, HTC Corp. and HTC America, Inc., October 11, 2013, 13 pages
	Exhibit C-8: Invalidity of U.S. Patent No. 8,363,824 in light of Blackberry 857, HTC Corp. and HTC America, Inc., October 11, 2013, 11 pages
	Respondents' Rebuttal Markman Brief Regarding Disputed Claim Terms in U.S. Patent Nos. 6,373,345; 7,187,945; 8,363,824; and 7,366,529 (Paul C. Goulet et al.) [including Exhibits 1-34 and Certificate of Service], Investigation No. 337-TA-885, September 23, 2013 (548 pages)
	HTC Corp., HTC America, Inc., and Google Inc.'s Rebuttal Claim Construction Brief for U.S. Patent No. 6,035,189, U.S. Patent No. 6,711,211, and U.S. Patent No. 8,140,650 529 (Shamita D. Etienne-Cummings et al.) [including Exhibits 1-11, 16-19 and Certificate of Service], Investigation No. 337-TA-885, September 23, 2013 (281 pages)
	Proposed Terms for Claim Construction of U.S. Patent No. 6,035,189, U.S. Patent No. 6,373,345, U.S. Patent No. 6,711,211, U.S. Patent No. 7,187,945, U.S. Patent No. 8,140,650, U.S. Patent No. 8,363,824 and U.S. Patent No. 7,366,529[1] (Paul C. Goulet et al.) [including Certificate of Service], Investigation No. 337-TA-885, September 23, 2013 (7 pages)

Examiner's Signature: /Tuan Nguyen/	Date Considered: 09/18/2015

Initial if reference was considered, whether or not citation is in conformance with MPEP. Mark through citation if not considered. Include a copy of this citation form with your next correspondence to the Applicant(s).

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /T.N./

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14612712	JORGENSEN, CLAUS H.
	Examiner	Art Unit
	TUAN D NGUYEN	2656

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	09/18/2015								
	1	-								
	2	-								
	3	-								
	4	-								
	5	-								
	6	-								
	7	-								
	8	-								
	9	-								
	10	-								
	11	-								
	12	-								
	13	-								
	14	-								
	15	-								
	16	-								
	17	-								
	18	-								
	19	-								
	20	-								
	21	-								
	22	-								
	23	-								
	24	-								
	25	✓								
	26	✓								
	27	✓								
	28	✓								
	29	✓								
	30	✓								
	31	✓								
	32	✓								
	33	✓								
	34	✓								
	35	✓								
	36	✓								

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000096

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14612712	JORGENSEN, CLAUS H.
	Examiner	Art Unit
	TUAN D NGUYEN	2656

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	09/18/2015								
	37	✓								
	38	✓								
	39	✓								
	40	✓								
	41	✓								
	42	✓								

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000097

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L18	1	("8953780").PN.	USPAT; USOCR	OR	OFF	2015/09/18 13:48
S1	28	((Claus) near2 (Jorgensen)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2015/09/18 08:31
S2	10054	H04M1/0214.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2015/09/18 08:32
S3	4454	H04M1/0266.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2015/09/18 08:33
S4	6236	H04M1/04.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2015/09/18 08:33
S5	2994	H04M1/0264.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2015/09/18 08:33
S6	4261	H04M1/0262.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2015/09/18 08:33
S7	1309	H04M1/0277.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2015/09/18 08:33
S8	6624	H04M1/0216.cpc.	US-PGPUB; USPAT; USOCR;	OR	OFF	2015/09/18 08:33

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000098

			FPRS; EPO; JPO; DERWENT; IBM_TDB			
S9	32404	S2 S3 S4 S5 S6 S7 S8	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2015/09/18 08:34
S10	508	S9 and camera and printed adj circuit adj board and battery	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2015/09/18 08:35
S11	235	camera and printed adj circuit adj board and battery and one adj piece same housing	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2015/09/18 08:51
S12	12654	camera and printed adj circuit adj board and battery	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2015/09/18 08:52
S13	1013	S12 and (cut adj out hole) same rear	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2015/09/18 08:53
S14	918	S13 not S10	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2015/09/18 08:53
S15	390	S14 and @ad<"20060329"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2015/09/18 08:55
S16	70	S11 and @ad<"20060329"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2015/09/18 08:55
S17	448	S15 S16	US-PGPUB;	OR	OFF	2015/09/18

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000099

			USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			08:55
S18	748	"4262733" "4275625" "4276763" "4281859" "4283278" "4290471" "4293273" "4353190" "4358125" "4376541" "4385846" "4410865" "4420037" "4429507" "4447854" "4471821" "4480467" "4482305" "4501973" "4534532" "4549420" "4559141" "4586697" "4594734" "4619131" "4625531" "4630855" "4754843" "4795347" "4843858" "4903823" "4909011" "4911627" "4957372" "4967463" "4986367" "5022524" "5215374" "5304054" "5421650" "5509587" "5511355" "5516013" "5826600" "5937468" "5957182" "5969332" "6116072" "6205834" RE36873	US-PGPUB; USPAT; USOCR	OR	OFF	2015/09/18 08:59
S19	50	(("4262733") or ("4275625") or ("4276763") or ("4281859") or ("4283278") or ("4290471") or ("4293273") or ("4353190") or ("4358125") or ("4376541") or ("4385846") or ("4410865") or ("4420037") or ("4429507") or ("4447854") or ("4471821") or ("4480467") or ("4482305") or ("4501973") or ("4534532") or ("4549420") or ("4559141") or ("4586697") or ("4594734") or ("4619131") or ("4625531") or ("4630855") or ("4754843") or ("4795347") or ("4843858") or ("4903823") or ("4909011") or ("4911627") or ("4957372") or ("4967463") or ("4986367") or ("5022524") or ("5215374") or ("5304054") or ("5421650") or ("5509587") or ("5511355") or ("5516013") or ("5826600") or ("5937468") or ("5957182") or ("5969332") or ("6116072") or ("6205834") or ("RE36873")).PN.	USPAT; USOCR	OR	OFF	2015/09/18 09:00

EAST Search History (Interference)

<This search history is empty>

9/18/2015 1:57:32 PM
C:\Users\tnguyen27\Documents\EAST\Workspaces\14612712.wsp

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000100

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14612712	JORGENSEN, CLAUS H.
	Examiner	Art Unit
	TUAN D NGUYEN	2656

CPC- SEARCHED		
Symbol	Date	Examiner
H04M1/0214, 1/0266, 1/04, 1/0264, 1/0262, 1/0277, 1/0216	9/18/15	TN

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner

SEARCH NOTES		
Search Notes	Date	Examiner
PLUS and inventor search	9/18/15	TN
EAST	9/18/15	TN

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner

	/TUAN D NGUYEN/ Primary Examiner.Art Unit 2656

To: USPTO@hspatent.com,Nokia.IPR@nokia.com,
From: PAIR_eOfficeAction@uspto.gov
Cc: PAIR_eOfficeAction@uspto.gov
Subject: Private PAIR Correspondence Notification for Customer Number 10948

Sep 24, 2015 05:20:32 AM

Dear PAIR Customer:

Harrington & Smith, Attorneys At Law, LLC
4 Research Drive, Suite 202
Shelton, CT 06484
UNITED STATES

The following USPTO patent application(s) associated with your Customer Number, 10948 , have new outgoing correspondence. This correspondence is now available for viewing in Private PAIR.

The official date of notification of the outgoing correspondence will be indicated on the form PTOL-90 accompanying the correspondence.

Disclaimer:
The list of documents shown below is provided as a courtesy and is not part of the official file wrapper. The content of the images shown in PAIR is the official record.

Application	Document	Mailroom Date	Attorney Docket No.
14612712	CTNF	09/24/2015	891.0013.U5(US)
	892	09/24/2015	891.0013.U5(US)
	1449	09/24/2015	891.0013.U5(US)

To view your correspondence online or update your email addresses, please visit us anytime at https://sportal.uspto.gov/secure/myportal/privatepair.

If you have any questions, please email the Electronic Business Center (EBC) at EBC@uspto.gov with 'e-Office Action' on the subject line or call 1-866-217-9197 during the following hours:

Monday - Friday 6:00 a.m. to 12:00 a.m.

Thank you for prompt attention to this notice,

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENT APPLICATION INFORMATION RETRIEVAL SYSTEM

OPAP AKIMA-2
DEC 2 8 2015
PATENT & TRADEMARK OFFICE

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.: 14/612,712 Confirmation No.: 4999
Applicant(s): Jorgensen, Claus H.
Filed: 02/03/2015
Art Unit: 2656
Examiner: Nguyen, Tuan Duc
Title: Portable Electronic Device

Attorney Docket No.: 891.0013.U5(US)
Customer No.: 10,948

Commissioner For Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Amendment

Sir:

This is in response to the Office Action mailed 09/24/2015 in regard to the above-identified patent application. Please amend the Application as indicated on the following pages. Please charge deposit account 50-1924 the amount of $1,280.00 as payment for the extra claim fee.

Amendments to the Claims are reflected in the listing of claims which begin on page 2 of this paper.

Remarks begin on page 9 of this paper.

01/07/2016 EEKUBAY1 00000038 501924 14612712
01 FC:1202 1280.00 DA

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1-24. (Canceled)

25. (Currently amended) ~~An apparatus~~ A portable electronic device comprising:

a one piece housing forming enclosed exterior lateral sides and a rear side;

a cut out in the rear side of said housing;

a camera located in said housing and extending to said cut out at said rear side;

an engine section comprising a printed circuit board, a transceiver, a processor and a memory;

a user input section located above the engine section and a battery, wherein the user input section is located adjacent the battery and the engine section;

wherein the battery and engine section are housed in the housing and the user input is located in ~~a hole through a front side~~ an opening between said exterior lateral sides of [[the]] said one piece housing of the portable electronic device.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000104

26. (Currently amended) ~~An apparatus~~ A portable electronic device according to claim 25 wherein said one piece housing has a front side extending from and between the lateral sides.

27. (Currently amended) ~~An apparatus~~ A portable electronic device according to claim 26 wherein the front side extends parallel to the lateral edges.

28. (Currently amended) ~~An apparatus~~ A portable electronic device according to claim 27 wherein the front side forms at least a side of the [[hole]] opening through which the input device is located.

29. (Currently amended) ~~An apparatus~~ A portable electronic device according to claim 25 wherein the user input and [[the]] a front side of the housing lie in a side by side arrangement.

30. (Currently amended) ~~An apparatus~~ A portable electronic device according to claim [[29]] 25 wherein the one piece ~~front side of the~~ housing and the user input form a continuous [[front]] surface of the portable electronic device.

31. (Currently amended) ~~An apparatus~~ A portable electronic device to claim 25 wherein the battery is located adjacent the engine section in a side by side arrangement.

32. (Currently amended) ~~An apparatus~~ A portable electronic device according to claim 25 further comprising a cut out portion ~~comprising the cut out~~ wherein the cut out portion projects from the rear side of the housing.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000105

33. (Currently amended) ~~An apparatus~~ A portable electronic device according to claim 32 where the camera is partially located in the cut out portion.

34. (Currently amended) ~~An apparatus~~ A portable electronic device according to claim 25 further comprising a door configured to support an electronic module.

35. (Currently amended) ~~An apparatus~~ A portable electronic device according to claim 34 wherein the electronic module is configured to interface to the engine section.

36. (Currently amended) A housing for ~~an apparatus~~ a portable electronic device comprising: [[;]]

a one piece housing forming enclosed exterior lateral sides and a rear side;

a cut out in the rear side of said housing, said cut out configured to receive at least part of a camera;

wherein the housing is configured to receive a battery and an engine section, wherein the battery and engine section are housed in the housing, and wherein a user input is located in an opening between said exterior lateral sides ~~a hole through a front side~~ of [[the]] said one piece housing of the portable electronic device.

37. (Currently amended) A housing for ~~an apparatus~~ a portable electronic device according to claim 36 further comprising: [[;]]

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000106

a front side extending between the lateral edges, said lateral sides and front side forming a aperture configured to receive the user input wherein the user input and the front side of the housing form a continuous front surface of the portable electronic device.

38. (Previously presented) A housing according to claim 36 wherein the one piece housing has been extruded.

39. (Previously presented) A housing according to claim 36 wherein the one piece housing comprises a metal.

40. (Previously presented) A housing according to claim 36 wherein the housing has substantially at least one of an open top or bottom aperture.

41. (Previously presented) A housing according to claim 40 wherein a antenna module is located at a aperture in the housing.

42. (Previously presented) A housing according to claim 41 wherein the antenna module is enclosed by a antenna cover.

43. (New) A portable electronic device according to claim 30 further comprising a bracket wherein the user input section and the one piece housing define an interior volume and the bracket is configured to support said user input section.

44. (New) A portable electronic device according to claim 25 further comprising a second camera located on a front side of the portable electronic device.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000107

45. (New) A portable electronic device according to claim 25 wherein the user input section is located directly adjacent the battery and the engine section.

46. (New) A mobile phone comprising:

a one piece housing of the mobile phone forming enclosed exterior lateral sides and a rear side of the mobile phone;

a cut out in the rear side of said housing;

a camera located in said housing and extending to said cut out at said rear side;

an engine section comprising a printed circuit board, a transceiver, a processor and a memory;

a user input section located above the engine section and a battery, wherein the user input section is located adjacent the battery and the engine section;

wherein the battery and engine section are housed in the housing and the user input is located in an opening between said exterior lateral sides of said one piece housing of the mobile phone.

47. (New) A mobile phone according to claim 46 wherein said one piece housing has a front side extending from and between the lateral sides.

48. (New) A mobile phone according to claim 47 wherein the front side extends parallel to the lateral edges.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000108

49. (New) A mobile phone according to claim 48 wherein the front side forms at least a side of the opening through which the input device is located.

50. (New) A mobile phone according to claim 46 wherein the user input and a front side of the housing lie in a side by side arrangement.

51. (New) A mobile phone according to claim 46 wherein the one piece housing and the user input form a continuous surface of the mobile phone.

52. (New) A mobile phone according to claim 51 further comprising a bracket wherein the user input section and the one piece housing define an interior volume and the bracket is configured to support said user input section.

53. (New) A mobile phone according to claim 46 wherein the battery is located adjacent the engine section in a side by side arrangement.

54. (New) A mobile phone according to claim 46 further comprising a cut out portion wherein the cut out portion projects from the rear side of the housing.

55. (New) A mobile phone according to claim 54 where the camera is partially located in the cut out portion.

56. (New) A mobile phone according to claim 46 further comprising a second camera on a front side of the mobile phone.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000109

57. (New) A mobile phone according to claim 46 further comprising a door configured to support an electronic module.

58. (New) A mobile phone according to claim 57 wherein the electronic module is configured to interface to the engine section.

59. (New) A mobile phone according to claim 46 wherein the user input section is located directly adjacent the battery and the engine section.

60. (New) A mobile phone according to claim 46 wherein the transceiver is a mobile phone transceiver.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000110

REMARKS

Claims 25-42 were rejected under 35 U.S.C. §101 as claiming the same invention as that of claims 1-18 of prior U.S. Patent No. 8,953,780. The claims have been amended above to overcome this rejection.

Claims 30 and 37 were rejected under 35 U.S.C. §112(b) or 35 U.S.C. §112 (pre-AIA), second paragraph, as being indefinite. The claims have been amended above to address the examiner's concerns.

Claims 43-60 have been added above to further claim the features recited therein. Support for the these claims may be found throughout the originally filed specification, claims, and drawings, for example, at paragraphs [0025] - [0033], and Figs. 7-13.

For all of the foregoing reasons, it is respectfully submitted that all of the claims now present in the application are clearly novel and patentable over the prior art of record. Accordingly, favorable reconsideration and allowance is respectfully requested. If there are any additional charges with respect to this Amendment or otherwise, please charge deposit account 50-1924 for any fee deficiency. Should any unresolved issue remain, the examiner is invited to call applicant's attorney at the telephone number indicated below.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000111

OPAP AKIMA-2
DEC 28 2015
PATENT & TRADEMARK OFFICE

Respectfully submitted,

12/23/15

Juan Juan (Reg. No. 60,564) Date

Customer No.: 10948
Harrington & Smith,
Attorneys At Law, LLC
4 Research Drive
Shelton, CT 06484-6212
203-925-9400

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail on the date shown below in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

12/23/2015
Date

Elaine F. Mian

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000112

OPAP
JAN 04 2016
PATENT & TRADEMARK OFFICE

IFW

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.: 14/612,712 Confirmation No.: 4999
Applicant(s): Jorgensen, Claus H.
Filed: 02/03/2015
Art Unit: 2656
Examiner: Nguyen, Tuan Duc
Title: Portable Electronic Device

Attorney Docket No.: 891.0013.U5(US)
Customer No.: 10,948

Commissioner For Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Information Disclosure Statement

(37 C.F.R. §1.97(c))

Sir:

The following information is being disclosed to the U.S. Patent and Trademark Office as information that may be material to the examination of the above-identified patent application.

Applicant's Attorney is aware of the art listed on the enclosed Form PTO-1449. Copies of the non-U.S. patent art are enclosed with the Form PTO-1449 for the Examiner's use.

Also enclosed is a copy of a search report issued in regard to a Chinese counterpart application.

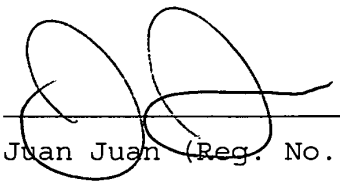
01/12/2016 MBLANCO 00000009 501924 14612712
01 FC:1806 180.00 DA

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000113

Please charge deposit account 50-1924 the amount of $180.00 as payment of the fee under 37 C.F.R. §1.17(p). Please charge deposit account 50-1924 for any fee deficiency.

The filing of this Statement is not to be construed as a representation that a search has been made regarding the claimed invention (37 C.F.R. §1.97(g)) or that no other possible material information exists. In addition, the filing of this Statement is not to be construed to be an admission that the information cited in the Statement is, or is considered to be, material to Patentability (37 C.F.R. §1.97(h)).

Respectfully submitted,



12/30/15

Juan Juan (Reg. No. 60,564) Date

Customer No.: 10948
Harrington & Smith,
Attorneys At Law, LLC
4 Research Drive
Shelton, CT 06484-6212
203-925-9400

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail on the date shown below in an envelope addressed to: Commissioner For Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

12/30/2015 Claire F. Mian

Date Name of Person Making Deposit

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000114

INFORMATION DISCLOSURE CITATION FORM FOR PATENT APPLICATION (FORM PTO-1449) (Substitute)	Docket No. 891.0013.U5(US)	Serial No.: 14/612,712
	Applicant(s): Jorgensen, Claus H.	
	Filing Date: February 3, 2015	Group: 2656

U.S. PATENT DOCUMENTS

Examiner Initials	Document Number (Number-Kind Code)	Publication Date (MM-DD-YYYY)	Name of Patentee or Applicant	Class	Sub-class
	US-6,600,662 B1	07-29-2003	Emmert et al.	361	814
	US-6,011,699	01-04-2000	Murray et al.	361	814
	US-7,414,855 B1	08-19-2008	Arnold	361	752
	US-6,978,165 B2	12-20-2005	Martinez et al.	455	575.7
	US-7,738,656 B2	06-15-2010	Yoda	379	433.01
	US-5,410,141	04-25-1995	Koenck et al.	235	472
	US-6,285,327 B1	09-04-2001	See	343	702
	US-6,594,472 B1	07-15-2003	Curtis et al.	455	90
	US-6,967,280 B1	11-22-2005	Boatwright et al.	174	35 GC
	US-6,321,070 B1	11-20-2001	Clark et al.	455	90
	US-6,496,685 B2	12-17-2002	Peterzell et al.	455	90
	US-6,959,210 B2	10-25-2005	Nakamura	455	575.3
	US-7,283,853 B2	10-16-2007	Kanazawa et al.	455	575.1
	US-2006/0160585 A1	07-20-2006	Miyagawa et al.	455	575.7
	US-2006/0050169 A1	03-09-2006	Misawa	348	333.06
	US-7,711,400 B2	05-05-2010	Nuovo	455	575.8

OPAP AKIMA-10 JAN 04 2016 PATENT & TRADEMARK OFFICE

FOREIGN PATENT DOCUMENTS

Examiner Initials	Document Number (Country Code-Number-Kind Code)	Publication Date (MM-DD-YYYY)	Name Of Patentee of Applicant	Translation? Yes/No/n/a
	WO-02/054722-A1	07-11-2002	Vertu Ltd.	
	WO-02/054727-A1	07-11-2002	Nokia Mobile Developments Limited	
	CN-1464716-A	12-31-2003	Quanta Computer Inc.	Abstract only
	CN-2747799-Y	12-21-2005	Guangda Computer Co.	Abstract only
	CN-1507735-A	06-23-2004	Matsushita Electric Ind. Co., Ltd.	Abstract only
	GB-2 360 972-A	10-10-2001	Nokia Mobile Phones Limited	
	TW-488610-U	05-21-2002	Yang, Chang-Ke	Abstract only

OTHER DOCUMENTS (Author (Capitalize), Title, Date, Pages, Etc., if known)

	"A high-impedance ground plane applied to a cellphone handset geometry", Broas, R.F.J.,et al., IEEE, Vol. 49, Issue 7, July 2001, pp. 1262-1265

Examiner's Signature:	Date Considered:

Initial if reference was considered, whether or not citation is in conformance with MPEP. Mark through citation if not considered. Include a copy of this citation form with your next correspondence to the Applicant(s).

INFORMATION DISCLOSURE CITATION FORM FOR PATENT APPLICATION (FORM PTO-1449) (Substitute)	Docket No. 891.0013.U5(US) Serial No.: 14/612,712 Applicant(s): Jorgensen, Claus H. Filing Date: February 3, 2015 Group: 2656

U.S. PATENT DOCUMENTS

Examiner Initials	Document Number (Number-Kind Code)	Publication Date (MM-DD-YYYY)	Name of Patentee or Applicant	Class	Sub-class
	US-6,112,077	08-29-2000	Spitaletta et al.	455	407
	US-6,181,954 B1	01-30-2001	Monroe et al.	455	557
	US-6,352,434 B1	03-05-2002	Emmert	439	65
	US-7,324,152	01-29-2008	Yoon	348	360
	US-7,353,003 B2	04-01-2008	Boman et al.	455	90.3
	US-7,388,616 B2	06-17-2008	Yamazaki	348	373
	US-7,724,532 B2	05-25-2010	Zadesky et al.	361	752
	US-2004/0125947 A1	07-01-2004	Charlier et al.	379	433.07
	US-2006/0197863 A1	07-07-2006	Kim	348	335
	US-2005/0282594 A1	12-22-2005	Oldham	455	575.3
	US-5,164,542	11-17-1992	Hart	174	35 MS
	US-6,625,030 B1	09-23-2003	Haixiong	361	737
	US-6,490,439 B1	12-03-2002	Croft et al.	455	90
	US-2003/0092468 A1	05-15-2003	North	455	556
	US-2006/0062624 A1	03-23-2006	Choi	400	481
	US-2005/0140778 A1	06-30-2005	Kim et al.	348	14.02
	US-2004/0252220 A1	12-16-2004	Oda et al.	348	333.06

FOREIGN PATENT DOCUMENTS

Examiner Initials	Document Number (Country Code-Number-Kind Code)	Publication Date (MM-DD-YYYY)	Name Of Patentee of Applicant	Translation? Yes/No/n/a
	CN-2660807-Y	12-01-2004	Xianxin Electronics Co. Ltd.	Abstract only
	CN-1725783-A	01-25-2006	LG Electronics (China) Research & Development Center Co., Ltd.	Bibl. data only
	JPH-06-026339-U	01-17-1990		Yes
	JP-2000-156135-	06-06-2000	Kenwood Corp.	Yes
	JP-2002-125031-	04-26-2002	Sony Corp.	Yes
	JP-2002-271664-	09-20-2002	Sanyo Electric Co. Ltd.	Yes
	JP-2003-274234-	09-26-2003	Casio Comput. Co. Ltd.	Yes

OTHER DOCUMENTS (Author (Capitalize), Title, Date, Pages, Etc., if known)

Examiner's Signature:	Date Considered:

Initial if reference was considered, whether or not citation is in conformance with MPEP. Mark through citation if not considered. Include a copy of this citation form with your next correspondence to the Applicant(s).

INFORMATION DISCLOSURE CITATION FORM FOR PATENT APPLICATION (FORM PTO-1449) (Substitute)	Docket No. 891.0013.U5(US) Serial No.: 14/612,712 Applicant(s): Jorgensen, Claus H. Filing Date: February 3, 2015 Group: 2656

U.S. PATENT DOCUMENTS

Examiner Initials	Document Number (Number-Kind Code)	Publication Date (MM-DD-YYYY)	Name of Patentee or Applicant	Class	Sub-class
	US-				
	US-				
	US-				
	US-				
	US-				
	US-				
	US-				
	US-				
	US-				
	US-				
	US-				
	US-				
	US-				
	US-				
	US-				

FOREIGN PATENT DOCUMENTS

Examiner Initials	Document Number (Country Code-Number-Kind Code)	Publication Date (MM-DD-YYYY)	Name Of Patentee of Applicant	Translation? Yes/No/n/a
	JP-2003-289358-	10-10-2003	Matsushita Electric Ind. Co. Ltd.	Yes
	JPH-07-273685-	10-20-1995	Canon Inc.	Yes
	JP-2004-187134-	07-02-2004	Nidec Copal Corp.	Yes
	JP-2004-222193-	08-05-2004	Mitsubishi Electric Corp.	Yes
	JP-2004-312300-	11-04-2004	NEC Corp.	Yes
	JP-2005-026881-	01-27-2005	Kyocera Corp.	Yes
	JP-2005-286430-	10-13-2005	Sharp Corp.	Yes
	JP-2005-341047	12-08-2005	Mitsubishi Electric Corp.	Yes

OTHER DOCUMENTS (Author (Capitalize), Title, Date, Pages, Etc., if known)

Examiner's Signature:	Date Considered:

Initial if reference was considered, whether or not citation is in conformance with MPEP. Mark through citation if not considered. Include a copy of this citation form with your next correspondence to the Applicant(s).

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
11 July 2002 (11.07.2002)

PCT

(10) International Publication Number
WO 02/054722 A1

(51) International Patent Classification[7]: H04M 1/02, H01M 2/10, H05K 5/00, H01H 9/02

(21) International Application Number: PCT/GB01/05742

(22) International Filing Date:
21 December 2001 (21.12.2001)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
0031800.6 29 December 2000 (29.12.2000) GB

(71) Applicant *(for all designated States except US)*: **VERTU LTD** [GB/GB]; 51 Eastcheap, London EC3M 1JP (GB).

(72) Inventors; and

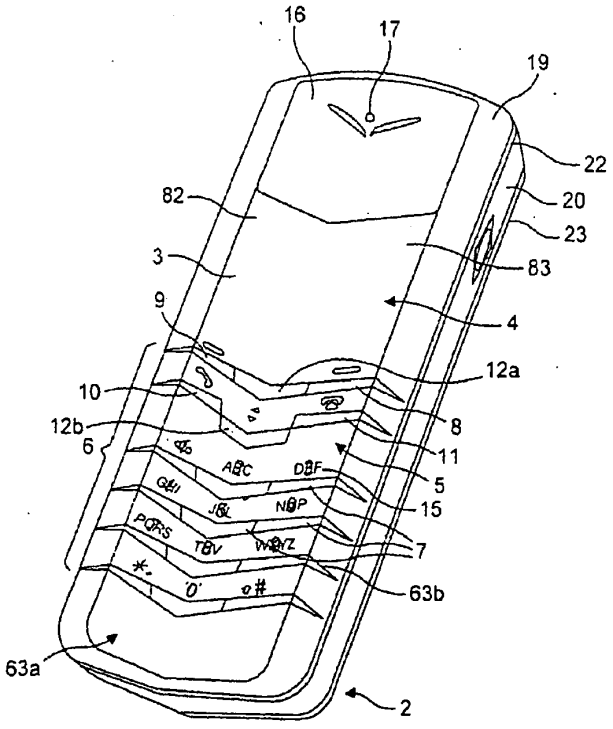
(75) Inventors/Applicants *(for US only)*: **HUTCHISON, Mark** [GB/GB]; Chargans, Beech Hill Road, Arford, Headley, Hants GU34 8DB (GB). **TELFORD, Stephen** [GB/GB]; 49 Lightsfield, Oakley, Basingstoke, Hants RG23 7BL (GB). **PORTER, Timothy** [GB/GB]; 6 Hazel Close, Alderholt, Fordingbridge, Hants SP6 3DQ (GB). **ASHALL, Peter** [GB/GB]; 18 Wilcroft Drive, Wokingham RG40 3HY (GB).

(74) Agents: **HAWS, Helen** et al.; Nokia IPR Department, Nokia House, Summit Avenue, Farnborough, Hampshire GU14 0NG (GB).

(81) Designated States *(national)*: AE, AG, AL, AM, AT, AT (utility model), AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, CZ (utility model), DE, DE (utility model), DK, DK (utility model), DM, DZ, EC, EE, EE (utility model), ES, FI, FI (utility model), GB, GD, GE,

[Continued on next page]

(54) Title: A CASING



(57) Abstract: The invention relates to casings for consumer electronic devices. The casing is reusable with engines having different processing capabilities. The casing is comprising hausing elements defining a cavity for receiving an engine and a battery for powering the engine. It includes means for releasably attaching the hausing elements one to another. There is a dividing member for defining a battery cavity accessible to the user and an engine cavity. There are mounting means for removably mounting the engine and battery.

WO 02/054722 A1

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000118

GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SK (utility model), SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.

(84) **Designated States** *(regional)*: ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— *with international search report*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000119

A Casing

The invention relates to the customisation of consumer electronic devices and in particular to casings for such devices and associated methods.

Items of technical equipment are generally bought for their functionality. They are quickly superseded and replaced when a faster, cheaper to operate, smaller, or higher specification alternative is released onto the market, the previous model being discarded. The value of the product to its user is in what it can achieve, and perhaps to an extent the image that attaches to the ownership of such an item. As fashion is constantly changing so is the image promoted by owning an individual item, particularly in a fast moving technical area. What may have been the height of fashion can swiftly become out moded.

In fast moving technical areas changes are prompted by, amongst other things, the requirement to make the product smaller, cheaper, cheaper to use, have greater functionality, make use of emerging technologies or move with the latest tastes in design.

Generally when a radically new technical product is brought onto the market, for an initial period the product is elite and expensive. Consequently only limited numbers are produced. In the early years, because of the inherent rarity and the cost of components, there is a propensity to repair as much as possible. Despite the economic requirement for repair, as soon as a better product is launched, the previous item is soon obsolete and abandoned. The drive for innovation is the challenge of technical advancement and reduction of costs. This pattern has been followed with many items including the first colour televisions, and the first video recorders.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000120

In other products such as personal computers upgrading is a possibility, but these upgrades are possible only within carefully predefined limits. The casings being retained as a matter of convenience, it being the retention of the maximum amount of the existing technological hardware that drives the changes.

In accordance with a first aspect of the present invention there is provided a reusable casing for a consumer electronic device having an operating face carrying a user interface including a plurality of user input elements, the casing comprising: housing elements defining a cavity for receiving an engine providing the electronic functionality of the device and a battery for powering the engine; means for releasably attaching the housing elements one to another to provide access to the cavity for receiving the engine; a dividing member for defining a battery cavity accessible to the user and an engine cavity, the housing member accommodating a connection between the battery and the engine; mounting means for removably mounting the engine within the engine cavity; and mounting means for removably mounting the battery within the battery cavity.

In accordance with a second aspect of the present invention there is provided a method of modifying a consumer electronic device having an operating face carrying a user interface including a plurality of user input elements and having hardware providing a predetermined processing capability for supporting electronic functionality of the device comprising, removing the engine from the casing; and replacing the engine with another engine having hardware providing a different predetermined processing capability.

In accordance with a third aspect of the present invention there is provided a kit of parts for a reusable consumer electronic device comprising: a casing having an operating face carrying a user interface including a plurality of user input elements, the casing defining a cavity for receiving an engine providing the electronic functionality of the device; a first engine including hardware

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000121

providing a first predetermined processing capability for supporting electronic functionality of the device; and a second engine including hardware providing a second predetermined processing capability for supporting electronic functionality of the device, the first and second predetermined processing capabilities being different.

In accordance with a fourth aspect of the present invention there is provided use of a casing of a consumer electronic device having an operating face carrying a user interface including a plurality of user input elements and an engine having hardware providing a predetermined processing capability for supporting electronic functionality of the device, for housing another engine having hardware defining a different predetermined processing capability such that a consumer electronic device having different operational characteristics is produced.

Devices such as personal digital assistants and computers have historically been designed with the foreknowledge that within periods as short as months, more desirable products with vastly greater functionality will have overtaken the current models. The devices are accordingly built with these periods of time in mind.

The various aspects of the present invention result from a radically different approach to consumer electronic devices. A reusable casing for a consumer electronic device that may be precious, and customisable with sentimental value, turns the drives for previous innovation on their heads. In embodiments of the present invention it is the casing that is the more enduring element of a technical device.

When creating a reusable casing there are new considerations. Future engines as yet undesigned need to be accommodated. Future technologies need to be factored in. One result is that the engine size will probably not

remain the same. To account for this in embodiments of the present invention the means for defining the battery cavity may be replaceable to provide different respective volumes for the battery and engine cavities. In this way as engines with greater functionality become smaller a larger battery can be utilised should this be desirable to fill the vacant space and provide a longer battery life.

By displacing the battery and the engine along the length of the casing, for example end-to end, reductions in the size of the engine can be directly translated into an increase in size for the battery. In conventional devices where the engine and battery are back to back, this direct correspondence does not occur as the battery size is determined by the casing itself rather than the engine size.

The battery cavity is desirably accessible to a user for replacement of a battery.

The casing in embodiments of the invention will be the most enduring feature of the device. It will perhaps out live a succession of engines. The display may be a replaceable module as is the engine and the battery. Alternatively the display may be one of the enduring elements of the design.

In order to be flexible enough for future developments the casing may be provided with external connectors allowing for greater capability than is provided for by the functionality of a current engine. This allows higher data capacity, for example, to be provided in the future when the processing capability of the engines increases. This may mean that one or more of the electrical connectors provided on the casing is not arranged to convey signals. In the interim the connector could be used for another purpose.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000123

The casing may be a conventional one part casing or a clam shell, or other two or more part arrangement, where the user input elements or keys may be located on a different face to a display. In such two part arrangements generally respective casing portions are fixed such that one is movable relative to the other. The movement may be rotational or lateral.

When a casing is to be reusable it can be made from more valuable materials as these will not be redundant and cast asiden when the next best technology comes along. A vast range of materials become available for customisation of elements of the device in fact there are virtually no bounds. Embodiments of the invention may use precious and semi-precious materials including gem stones, other jewels and minerals, metals including those ranging from gold, silver, and platinum through to alloys such as steel. Materials such as ceramics in their various forms are also available for use in embodiments of the invention, the brittle nature of these materials, being able to be accommodated by the design of some embodiments. In addition, materials not generally considered in the context of technological devices, such as skins, leather being a particular example and wood and similar materials can also be utilised in embodiments of the invention.

As well as the materials themselves individual elements can be customised with surface decoration that could include veneers of desired materials on plastic or other subframes. The elements could have instead, or in addition, surface texture provided by a particular finish or an engraving or encrustation with gems or other stones or materials.

Embodiments of the invention will now be described in more detail with reference to Figures 1 to 21 of the accompanying drawings of which:

Figure 1 is a perspective view of an electronic device showing one embodiment of the invention;

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000124

Figure 2 shows front, rear, sides and top views of the electronic device of figure 1;

Figure 3 is a schematic representation of an electronic device suitable for embodiments of the present invention;

Figure 4 is an exploded view of the face of an electronic device of one embodiment of the invention without keys;

Figure 5 is a view of one layer of a light guide;

Figures 6a and 6b are sections through the electronic device of Figure 1 in the display region;

Figure 7 is a perspective view of a side frame element and located rails for constructing a casing

Figure 8 is a perspective view of the rear of the device with the battery cover removed;

Figures 9a and 9b are sections through the electronic device of Figure 1 in the battery region;

Figure 10 is a perspective view of the rear of the device with the battery cover in place;

Figures 11a and 11b are sections showing other embodiments of the invention;

Figure 12 is a perspective view of part of the input region of the device illustrating the location of legends associated with keys;

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000125

Figure 13 a longitudinal section through the electronic device;

Figure 14 is a schematic section through the light guide illustrating the surfaces available for carrying the legends;

Figures 15 and 16 are perspective views of a partially constructed input region of the device;

Figure 17 is a perspective view of keys of the device including their actuation mechanisms;

Figure 18 illustrates some of the keys illustrated in Figure 17, with the key tips removed;

Figures 19a and 19b are front and rear perspective views of the outer shell of a bezel respectively;

Figures 20a and 20b are a graph showing force against distance for a key such as that illustrated in Figures 17 and 18, and a conventional key using a dome respectively; and

Figure 21 is a bottom plan view of the device of Figure 1 (with the chin face protector omitted).

Embodiments of the invention will be described in greater detail below with exemplary materials being given for some specific or individual elements of the device. Where a material or veneer is discussed in relation to an element, the particular character of the element described is one of many or several that may be provided as options to a party commissioning a personalised device in accordance with the invention. In addition the exact material or surface decoration of the element could be individually commissioned.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000126

The embodiment illustrated in Figure 1 is a handheld electronic device 1 with a precious retainable casing 2. The casing 2 of the device has been designed to be customisable to individual taste with precious materials. To enable individual devices to be created, the number of external parts that the casing is formed from is relatively large in contrast to existing electronic devices.

The casing 2 has an optically permeable front face 3 providing a seamless transition from a display region 4 to an input region 5 that includes a key array 6. The key array 6 includes a first group of alphanumeric keys 7, for entering numbers and text. Each of the twelve alphanumeric keys 7 is provided with a figure "0-9" or a sign "#" or "*", respectively. In an alpha mode each key is associated with a number of letters and special signs used in text editing. The key array 6 additionally comprises two soft keys 8, 9, two application keys 10, 11, two scroll keys 12, and an on/off key 13.

The functionality of the soft keys 8, 9 may depend on the state of the electronic device and position within the menu accessed using the scroll keys 12. The current functionality of the soft keys 8, 9 can be shown in separate fields in the display region 4 just above the respective keys 8, 9.

The two application keys 10, 11 are used to access different applications of the device. For example, in this embodiment the device is a personal digital assistant (PDA), and the types of applications it provides are categorised as "assistant" applications or "extras" applications. Assistant applications may include calendar, notes and contacts functions, and extras applications may include functions such as games, calculator, clock, alarm clock, composer and voice recorder. Application key 10 provides access to a menu listing such assistant applications and application key 11 to a menu listing such extras applications.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000127

The two direction keys or scroll keys 12, in the handset illustrated are placed centrally on the front surface of the electronic device between the display region 4 and the group of alphanumeric keys 7 perform a scrolling function.

The seamless face 3 is formed from an optically seamless light guide 14 providing light to illuminate the display region 4 and key legends 15 located on the light guide 14 and associated with individual keys of the key array 6.

The front face 3 is overlaid with a pillow 16 providing apertures 17 to channel sound from a loud speaker 18 and providing an appropriate feel for an element of the device that may be located close to the user's ear in certain applications. The front face 3 is surrounded by a bezel 19 that can be made from a precious metal. This acts to protect the edges of the light guide 14 and can help in some embodiments in securing the elements of the casing 2 together.

The keys of the key array in this particular embodiment are arranged to provide particular sensory guidance to the user. Aspects of the design also allow the light guide 14 to be made from a wide range of materials including those that are brittle and so need to be carefully handled and protected from shattering.

The casing 2 is formed from the front face 3 surrounded by the bezel 19, a side frame 20 and a back cover 21. The interface between the side frame 20 and the bezel 19 and the side frame 20 and the rear cover 21 are shielded by rails 22, 23 in this embodiment. The rails 22, 23 hide raw edges from view and exposure to ensure that the device 1 is both long lasting and elegant. The construction of the casing 2 enables the casing 2 to be opened with ease to update the engine 24 inside when desired. The casing 2 is also designed to allow the device to accommodate different sized and shaped engines 24, which may be necessary through its life.

Other elements of the design will be discussed in greater detail with reference to the later drawings. By way of introduction, the device will be briefly discussed with reference to its functional elements.

The electronic device 1, includes the key array 6, a display 25, an antenna 26, an ear piece speaker 18, a polyphonic speaker 27, and a microphone 28. Fig. 3 shows schematically and functionally elements of the device 1. The microphone 28 records the user's speech (for example when the device is in voice recorder mode), and the analogue signals formed thereby are A/D converted by an A/D converter before the speech is encoded in an audio part 29. The encoded speech signal is transferred to processor 30. The processor 30 may support software in the device. The processor 30 also forms the interface to peripheral units of the apparatus. These may include a Random Access Memory (RAM) 31 and a Flash Read Only Memory (ROM) 32, the display 25, and the key array 6.

Conversely, speech stored in the memory 31 or 32 is played to the user by the audio part 29 decoding the stored encoded speech signal and forwarding the signal to the speaker for audible output.

Peripheral units of the apparatus may also include a memory card 33. Such a memory card may be removable, and, for example, carry information which may be used in a plurality of devices, or may be transferred from one device to another.

The display 25 may form a permanent part of the casing or, to increase the potential for upgrading the engine throughout the life of the casing it may be a module that can be replaced to, for example, account for the inevitable improvements in graphics that may occur.

As discussed above, the front face 3 is optically permeable and acts as a light guide. The seamless light guide, passing light over the display region 4 as

well as providing light to illuminate the key legends 15 reduces the number of lighting elements required to illuminate the device and provides a seamless transition from one area of the front of the device to another. By using this technique for delivering light and also allowing the light guide 14 to form the front surface of the device 1 as in the embodiment disclosed, the device is visually striking, there being no visible transition from the display region 4 to the input region 5 where the key array 6 is located.

The embodiment illustrated in Figure 1 has a light permeable front face 3 that can be formed from sapphire or a similar precious stone. As soon as a mineral such as sapphire is used in place of other more flexible light permeable materials such as plastics, additional problems are introduced associated with the character of the material. In designing a durable device having, for example, a brittle material for a front piece 3 there are many difficulties. In one manifestation of the embodiment illustrated in Figures 1, 2 and 4 to 6, the light guide 14 is an optically seamless composite layer. As can be seen most clearly in Figure 4, a plastics layer 37 that may be formed from Perspex or other transparent and/or translucent materials runs the entire length of the front face 3. There is a cut-out 38 for accommodating the ear piece speaker 18 that is optimised for use close to the ear. There is another cut-out accommodating a light pipe diffuser 39. This is located under the pillow 16 and extends across the width of the device 1. By placing the light pipe 39 under the pillow 16, a bright area on the front face is avoided and the light visible in the light guide will be diffused. LEDs 40, 41 are located at each side of the device at each end of the pipe 39. Light from the LEDs 40, 41 is channelled through the pipe 39 and diffused. The light pipe 39 in this embodiment, is coated with reflective material so that light is channelled through the surface 42 that runs along the top of the LCD display 25. Embodiments without the coating provide some of the advantages. The diffused light is accordingly channelled into and along the major axis of the light guide 14 to provide substantially uniform lighting for the LCD 25.

In this way light is pumped into the light guide 14 along the major axis from above the LCD 25. The light from the light pipe 39 illuminates the display region 4 and provides lighting for the input region 5. As illustrated in Figure 15, additional LEDs 43 or other lighting elements are positioned along the edges of the Perspex layer or sheet 37 in the input region 5 to further illuminate the legends 15 for the keys of the array 6. The surface of extending portions 78 of the Perspex layer or sheet 37 is shaped to channel light from adjacent top firing LEDs 43 or the like towards the upper surface of the main portion of the layer or sheet 37. This assists in providing substantially uniform lighting for the input region. The additional LEDs 43 or the like are shielded from view by the bezel 19 to avoid light spots being visible and encouraging a uniform diffuse light across the light guide.

The LCD 25 itself is bonded to the rear surface of the Perspex sheet 37 with an energy absorbing adhesive sheet 45. Using this technique and ensuring that there are no air gaps between the front of the LCD 25 and the Perspex sheet 37, provides a robust solution for mounting the LCD 25. The surface of the LCD 25 that is delicate and generally needs a protective layer distanced from it is protected by the Perspex layer 37 adhered to one of its faces. The drivers 44 for the LCD 25 can be seen in Figure 5.

In the embodiment illustrated the Perspex layer 37 includes apertures 48 for locating individual keys and allowing the key shafts 49 to travel to make contact with a printed circuit board 50 located within the casing 2 to register user input. An independently inventive key layout, suitable for use with the general concept discussed, will be described in greater detail below. As the key layout is likely to be one of the most enduring elements of the design, it has been designed with future requirements for the casing in mind. The skilled man will be aware that modifications to the key arrangement can be made while still providing the flexibility to accommodate future engine requirements. For example, a joystick, or similar rotational device or multi-

directional key could be utilised for input as could other input mechanisms traditionally used on laptop computers.

As can be seen most clearly from Figure 4, the second layer of the composite light guide 51 is made in a number of sections 52 - 58. This is to allow for the choice of brittle materials to be used for the second layer 51. Sapphire has properties including its scratch resistance and optical clarity that make it suitable for use in this context although the material of this element is selectable a ceramic material could be utilised in this arrangement. Other suitable materials are glass and other minerals and precious and semi precious stones. When a transparent material such as sapphire is used, however, the light guide provides an external surface to the device. Arrangements for the second layer similar to those disclosed in concept in the illustrated embodiment are not necessary when the materials are not brittle. Alternative arrangements will, however, be apparent to the skilled man for accommodating brittle materials in this context.

As mentioned above sapphire is brittle. When considering how to introduce such a material into a casing 2 that is to be long lasting and durable, problems arise. This is particularly the case when the device 1 will inevitably be subjected to knocks and is likely to be dropped many times in its long existence. All brittle parts are bonded to a carrier formed from e.g. plastic or titanium in order to better absorb shock. In the embodiment described, the sapphire is formed in individual sections 52 - 58 for ease of manufacture. Each of the pieces is adhered to the Perspex layer 37 using a UV curing adhesive based on hybrid acrylic technology. In order to increase the durability of the composite light guide 14 and strengthen it against damage, the sections 52 - 58 are adhered to a more flexible Perspex layer 37 leaving gaps 59 extending across the entire width. These gaps 59 act as hinges to allow the composite layer 14 to be relatively flexible along its major axis. In the embodiment illustrated, the layout of the key array 6 has been designed with this in mind. The alpha numeric keys 7 are arranged in groups of three

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000132

extending across the whole width of the second layer of the composite 51. The function keys or soft key 8, 9 are also arranged in two groups of three. The soft keys 8, 9 and the top scroll key 12a follows the line of the alpha numeric keys 7. The application keys 10, 11 and the bottom scroll key 12b, which is displaced from the line of the others, defines the lower edge of one of the elements 57 and the upper edge of another of the elements 56. This makes the second row of keys 10, 11, 12b distinctive whilst still avoiding problems in manufacture of the elements 52 - 58. The specific key array 6 illustrated has other properties and advantages that will be discussed later.

Although the embodiment described is designed with a brittle material such as sapphire in mind, the resultant arrangement could be formed from any number of other materials including plastics that provide the required optical characteristics. Similarly different key arrangements could be used without departing from individually inventive concepts that are disclosed.

When using a brittle material for a front face light guide 14 problems are also encountered when connecting the front face 3 to the rest of the casing elements. In the illustrated embodiment the edges of the brittle elements 52 - 58 are protected by the bezel 19 that sits around the whole of the face. The bezel 19, in this embodiment, is formed from a bezel support 60 overlaid with a 0.5 mm thick metal sheet, the bezel cover 61. The metal sheet 61 is bonded to the bezel support 60, that may be formed from plastic, with an adhesive such as a two part epoxy adhesive or a two part acrylic adhesive. As the metal sheet 61 is relatively thin this keeps the weight of the casing 2 down and also allows relatively precious metals such as titanium or gold to be used at relatively lower cost. The bezel 19 could, however, be a single part and/ or be formed from a single material for example titanium nickel or chrome.

The transparent face 3 in this particular embodiment is securely held in place by a robust mechanism. The Perspex layer 37 to which the elements 52 - 58

are bonded extends beyond the area covered by the elements to provide a lip or edge 62 around the whole of the composite light guide 14. This edge 62 is used to secure the front face 3 in position as it is tucked under the bezel 19 that defines the perimeter of the front face and squeezed between the bezel 19 and the side frame 20.

As can be seen in Figure 1, the bezel 19 is punctuated with front face protectors 63 whose function will be described in more detail later. These front face protectors 63, in this particular embodiment play a role in holding the casing elements together.

The front face protectors 63 have a tip part 64 that extends over the bezel 19 and a shaft 65 that passes through the bezel 19 and into the plastic side frame 20. The shaft 65 may be tightened onto the frame 20 using a nut 95. In this case the nut stops the front face protectors from falling out of the device. In one embodiment the shafts 65 are screwed into the tips 64 at one end and into the side frame element 20 at the other although other manners of connection could be employed. The shaft 65 and tip 64 could also be one piece rather than two. The bezel 19 and the Perspex layer 37 of the transparent face 2 are captured by the front face protector 63 and side frame element 20 as can be seen in figure 9b. The front face protectors 63 accordingly grip the transparent face 3 securely between the side frame 20 and the bezel 19. The front face protectors 63 are only located next to the key array 6. In order to secure the transparent face 3 around its perimeter additional screws 66 are added to draw the bezel 19 towards the side frame 20 and squeeze the transparent face 3 in place. In one embodiment, the screws 66 thread through the side frame 20 and tap into the bezel support 60. Once the bezel support 60 is secured to the side frame 20 the outer shell 61 of the bezel 19 can be adhered to the support 60 to hide the tapped screw ends 66. Alternatively the bezel 19 is stuck to the support first (a sub-assembly) and this sub-assembly is then screwed to the frame.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000134

As can be seen in the figures, although the more flexible transparent substrate 37 is overlaid by the bezel 19 secured in position by the front face protectors 63 and other connectors, the sapphire is maintained spaced from the bezel 19 so that it is protected from chipping or other damage as a result of contact. The edges of the sapphire elements do not protrude above the edge of the bezel 19 to provide further protection for the more vulnerable edges. In the arrangement described, the transparent face 3 is gripped in position between the bezel 19 and the side frame 20. The more flexible substrate 37 could, however receive screws or other fasteners to located it relative to the other frame members without damaging the more brittle sapphire layer. The choice of material for the bezel is one open to selection. Precious metals including gold, platinum, silver, steel amongst others would be suitable. The same applies to the material of the front face protectors. Both these elements and others that the skilled man will realise are suitable could be encrusted with precious or semi precious stones such as sapphires, rubies, emeralds and diamonds amongst others. Other crystals or minerals or other materials and veneers could also be utilised.

To reduce the ingress of dirt or fluids a sealant 69 is located between the bezel 19 and the transparent face 3. One way in which this can be introduced is to paint a seal on the underside of the bezel 19 which when dry is compressed between the transparent light guide 14 and the bezel 19 when the bezel 19 and the side frame 20 are pulled together.

As can be seen in Figure 6 or 9, a first rail 22 is located in the interface between the side frame element 20 and the front face 3. The rail 22 hides the discontinuity between the parts from sight and protects vulnerable edges to enhance the durability of the device 1. The rail 22 may be a stamped metal piece 'T' shaped in section extending around the perimeter of the side frame 20. The stem of the 'T' 68 is trapped between the side frame member 20 and the bezel 19 as these two pieces are drawn together on assembly. The stem of the T has apertures 70 that sit over corresponding projections 71 on the

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000135

side frame 20 member to prevent it from being withdrawn from between the two parts when in position. The top of the T acts as a carrier plate to which an additional extruded piece 72 is soldered or otherwise adhered to provide a seamless finish. The stem could instead be formed from a plastics material.

The side frame member 20 in this particular embodiment is a plastic support 73 with an exterior cover 74. The cover 74 may again be a metal sheet formed, for example, from a precious metal or perhaps a wood veneer or another layer such as leather or other skin. The bonding agent most suitable for adhering the layer to the plastic frame member 73 will differ depending upon the materials that need to be adhered. For metal to plastic a suitable adhesive is a 2 part epoxy resin or 2 part acrylic adhesive. For metal to metal the adhesive would be a reactive polyurethane film or a two part epoxy resin. Similarly the back cover 21 in this embodiment may have a plastic frame and be covered with for example a leather, wood or perhaps metal veneer. With the flexible veneer materials such as leather, it is preferable for the material to be taut on the frame. This is achieved during the veneering process using conventional techniques.

The transparent face 3 provides a seamless transition between the display 4 and the input regions 5. In the display region 4, the LCD 25 is located behind the transparent face 3 and in the input region 5 the key mechanism 75 lies behind it. In one embodiment described, the key mechanism 75 can be seen through the front face 3. However, in other embodiments the inner surface 76 of the Perspex substrate 37 may be coated with an opaque material to prevent the inside of the device being seen. Alternative methods of obscuring the inner workings of the device from view such as introducing additional opaque layers or obscuring the view in other ways will be apparent to the skilled man.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000136

For embodiments where, for example, the key operating mechanism 75 can be viewed through the front face 3, it may be desirable to obscure the PCB 50 from view.

The constructed casing 2 provides a housing for the printed circuit board 50 holding the engine components 24, and a battery 79. A memory card holder 80 is provided to accommodate a memory card 81. For operation under some radio protocols this will clearly not be necessary.

Returning briefly to the front of the device, located above the display region 4 is the pillow 16 so named because it designed for the user to rest his or her ear against when making or listening to a voice recording or the like. The pillow 16 overlays the ear piece 18 of the device. As described previously there is a cut-out in the Perspex substrate 37 of the light guide 14 to accommodate the ear piece 18, the pillow 16, in the illustrated embodiment is adhered to the Perspex substrate 37 covering the ear piece 18. The pillow 16 provides suitable apertures 17 to channel sound to the user. The characteristics of pillow 16 both in terms of the material and surface decoration may be selectable by a commissioning party.

The Perspex and sapphire light guide 14 is relatively cold to the touch, the material of the pillow 16 can be chosen to be a material that is inherently warmer to the touch and less prone to marking than a transparent shiny surface. Materials that are thought to be particularly suitable are ceramics or wood and leather veneers. The shape of the pillow 16 obscures part of the LCD 25, providing opposing triangular sections 82, 83 that are used to indicate battery capacity and the like.

To complete the structure, the casing 2 has a rear cover 21 and internal compartments 84, 85 suitable for retaining the engine 24 the battery 79 and in this embodiment a removable memory card 81. The device illustrated, in common with many other consumer electronic devices, advantageously

allows access to the battery compartment 85 as the battery 79 may periodically need replacement. In order for the engine 24 to be protected during this activity, the battery 79 is retained in a compartment providing connectors to the engine 24. Along side the battery compartment 85 in this embodiment is the memory card holder 80. The user may wish to remove the memory card 81, for example to use it in another device or to transfer information to/from another device. For this reason it is convenient for the back cover 21 to be removable to expose both the battery 79 and the memory card 81. The battery compartment 85 and memory card holder 80 are provided by an internal casing element 87 that is secured to the side frame 20. This may be formed from plastic or one of many other suitable materials. In one embodiment the compartments are formed from stamped metal sheet which may be stainless steel.

The battery contacts 90 protrude into the battery cavity 85 to provide a simple way of connecting the battery 79 to the engine 24. The battery connection will typically be have a power connector 91, a ground 92 and two signal connectors 93, 94.

In the embodiment illustrated, the power 91a,b,c and ground 92a,b,c connectors are divided into three. This reduces the resistance between the battery 79 and the engine 24 as the leads are in parallel, it also reduces the chance of power being lost to the engine 24 as a result of a harmonic resonance frequency of the connector being reached as at all times there is likely to be at least part of each three part connector completing the circuit between the engine 24 and the battery 79.

The casing 2 is completed by assembling the back cover 21 to the side frame 20. In the illustrated embodiment, the back cover 21 is formed from three pieces 96, 97, 98. A first piece 96 overlays the antenna location. In this embodiment it provides an aperture 99 in which the polyphonic speaker 27 is located to provide for polyphonic sound. This additional speaker 27 has not

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000138

been optimised for use in close proximity to the ear as has the speaker 18 located beneath the pillow 16. This allows it to be more effective as a handsfree speaker and enables a greater range of tones to be utilised, for example in a tune composer. As the first piece 96 also covers the antenna its dielectric constant is relevant.

In a device of this type where the casing 2 is to survive generations of engines 24, the materials from which is formed are important. They should be hard wearing and durable, retaining their attributes for years longer than is currently required. For this reason ceramics have been considered as an option for the back cover 21 for some embodiments of the invention. Other materials already discussed such as metals or precious metals or veneers would also be possible. With ceramics, however, despite having many desirable characteristics, for locations near an antenna relevant for devices containing such an element, the dielectric constant of the material interferes with the desired transmission pattern.

To provide many of their desirable characteristics without the dielectric constant becoming too high, the rear cover piece 96 can be formed from a material with a lower dielectric constant with a suitable depth of layer deposited on it. This technique and suggested materials could be used for other elements of the casing.

The rear casing element 96 covering the antenna is again screwed to the side frame element 20 and in the process captures the second rail 23 similar in construction to the first rail 22 between the side frame 20 and the back cover 21. Again the rail 23 is provided with apertures 70 that are positioned over corresponding projections 71 on the side frame 20 to more securely hold the rail 23 in position when the back cover 21 is attached.

A second rear casing element 97 covers the battery compartment 85 and the memory card holder 80. This element is releasably secured to the other

casing elements using screws 99 to allow relatively easy access to the memory card 81 and battery 79. In a preferred embodiment a quarter turn of a screw 100 releases the cover element 97 to allow it to be removed. The same action can disconnect the battery 79 to allow the memory card 81 to be removed.

The second rear casing element 97 is attached to the side frame 20 in a similar manner to that described in relation to the first rear casing element.

The third element of the rear casing 98 covers the handsfree speaker 27. This may be only relatively thin and formed from a precious material such as gold. It will be provided with a suitable aperture 102 to channel sound from the polyphonic speaker 27 that may be used in hands free mode and for providing an audible ring tone.

In the embodiment described the front 3 and rear casing elements 96, 97, 98 are secured to the side frame 20. A silicon sealant 69 or similar may be extruded around the inside of the back cover 21 to prevent unwanted ingress of dirt and fluid.

The skilled man will realise that the number of parts and the manner in which they are connected can be changed without departing from the several inventive concepts described. For example, in other embodiments the casing may be held together using other techniques and in other ways.

As well as obscuring exposed edges, the rails 22, 23 provide additional elements for customisation as they can be formed from a variety of different materials, in particular different types of precious metal for example gold or platinum as discussed previously in relation to the bezel. The material for the entire 'T'shaped piece or the extruded element could be a precious metal. They also act to protect vulnerable edges of veneered frames from exposure to potentially damaging forces. In doing this unsightly edges are obscured

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000140

from view. This provides quality and durability in keeping with the overall concept of a retainable casing for an electronic device. Regardless of the material of the veneer, this is a convenient arrangement for securing all the elements in place for a durable finish.

In an alternative embodiment illustrated in Figure 4b, instead of providing rails 22, 23 to protect exposed edges, the adjacent edges themselves are turned inward 105, 106 and held in close proximity. This arrangement also provides the advantage of protection and keeps unsightly discontinuities from view.

A casing with an optically permeable front face provides new opportunities. In a particular embodiment, described with reference to figures 12 and 14 legends 15 associated with the keys of the key array 6 are located on both the front 37a and rear 37b surfaces of the Perspex layer 37. With electronic devices becoming ever more sophisticated, it is common for each key provided to have a number of different functions. It is useful to be able to label visually the different possible functions associated with a key. For the alpha numeric keys 7 in particular, each key is associated with a single digit and a group of letters or symbols. Ideally these should be displayed clearly.

Historically the keys have held the associated legends. As devices have become smaller this has, however, becomes more difficult, it being an especial problem to distinguish between the different legends for respective modes of operation as the letters and numbers are so small. In the illustrated embodiment, the legends 15 for associated keys are located on respective surfaces of the light guide 14 which, as the device is tilted, move together or apart depending upon the angle from which they are viewed. This provides a visual distinction between the legends 15 on the different surfaces which can be used to distinguish between the modes of operation. As the front face is optically permeable, the legends appear to float in or above the device. By spacing the legends along an axis perpendicular to the third dimension, the

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000141

thickness of the front face, the front face is given some prominence, thus an additional dimension has been added to the normally opaque front face.

In the embodiment illustrated the legends 15 are located on the outermost and innermost surfaces of the Perspex layer 37a, 37b. The legends 15 appear to be floating in the light permeable layer. The manner in which the legend 15 is located on the layer is a matter of choice for the skilled man. One method is to print the legend on to the surface using an etched plate filled with ink. Another way may be by using PVD (Physical Vapour Deposition) techniques to deposit the 'printing' directly onto the Perspex layer. Other techniques for fixing legends could be used including attaching labels.

In the embodiment discussed the legends 15a 15b are located on opposing surfaces of the Perspex layer 37a 37b. This enables a single element, the Perspex layer 37, to be printed instead of each of the sapphire or other pieces 52 - 58. Problems encountered with ink wearing off when printing techniques are used are also avoided by protecting the surfaces containing the printing with the second layer. In other embodiments and to increase the depth of spacing of the legends and hence the separations possible when viewed at different angles it may be desirable to place the legends on the innermost 37a and outermost surfaces 51a of the composite. In order to fix the legend 15 printed on the outer surface 51a where it may encounter wear, a coating or other protective layer may be provided over the surface. This may not be necessary if PVD techniques are used to produce the legend 15 as such techniques produce a bond between the deposited layer and the substrate that is more hard wearing. In still other embodiments the legend 15 could be provided on the underside 51b of the sapphire elements and on the innermost layer of the Perspex substrate 37b. Again by avoiding the external surfaces of the transparent layer the problem of wear of the legends 15 is largely avoided. The outermost legend is protected by the top layer 51 of the composite light guide 14 and the innermost legend 15 is not accessible.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000142

In sandwiching the legends between two optically permeable layers 37, 51 which of the two sandwiching layers carries the legend is largely immaterial. The properties of the respective materials, if indeed they are different, and other factors can be taken into account in deciding which layer 37b, 51b actually carries the legend. With a composite optically permeable substrate, the more layers that are provided, the more visually distinguishable legends can be accommodated. For example with two composite layers there are three available planes for legends, with three layers, four planes and so on. If all the legends were placed adjacent a single key, the visual distinction may cause difficulty with large numbers of layers being used to distinguish functionalities. Other embodiments could use the different planes for legends at different locations on the device so that one set of keys has a legend in a first plane, a second set of keys in a second plane and so on.

To accentuate the illusion of the legends floating, or to increase the distinction between the two layers, the thickness of the optically permeable layer between the respective layers carrying the legends can be increased. In the same way these features can be reduced by decreasing the thickness between the planes carrying the legends.

The ink or paint can be chosen by the skilled man to provide a number of effects. The ink may, for example, be required to pearlesce or fluoresce, or be black, white, or one or more of a wide range of colours. As the legend is located on a light guide, fluorescent and pearlescent materials enhance the visibility of the legends. The type script, colour or other character of the legend or element carrying the legend may be selected by a commissioning party.

Instead of techniques that add ink or other visible materials to the surface merely etching the layers may be sufficient to make the legends visible if the illumination is adequate.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000143

Embodiments illustrating the location of legends associated with keys in a light permeable face has been described with reference to the illustrated embodiments in the context of other independently inventive features claimed in copending applications. The skilled man will realise that many alterations to the specific features disclosed can be made without departing from the scope of the invention.

The skilled man will be aware that the character described above in relation to specific elements of the device can be mixed and matched to suit many distinct design options.

The input region of the device will now be described in more detail, primarily with regard to Figures 9 and 15 to 21

The input region 5 comprises a key array 6, as described above. In this embodiment, the key array is made up of a plurality of individual keys 7-13. Each of these individual keys comprises a key tip 64 and shaft 49 extending from substantially the centre of the key tip 64, together with an upper bearing 103, O ring 107, circlet 108, spring plate 110 and lower bearing 109 positioned respectively along the shaft 49a from the key tip 64. The spring plate 110 is supported by a spring plate support 114 provided on the PCB 118. The spring plate comprises a main body, and a tongue 111 formed from a single piece of sheet metal. The tongue has been formed by stamping an inner portion of the sheet, so that two sides and an end of the tongue are free from the remaining main body of the sheet. The spring plate also has a portion or portions stamped out to provide an aperture for the key shaft 49 and spring plate support 114. One end 113 of the spring plate comprises contacts for contacting respective contact regions on the PCB. As will be appreciated by a person skilled in the art, a single contact could be used for this purpose, but the provision of two contacts provides greater reliability. The spring plate support 114 comprises three members upstanding from the PCB 118. These members may form part of a unitary structure, or may be

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000144

separate elements. The first member comprises a recess 115 dimensioned to receive one end 112 of the spring plate 110 and hold that end 112 in position. The second member of the support 114 comprises a lip 116 extending towards the first member. This lip 116 is provided to restrict the upward movement of the other end 113 of the spring plate 110. The third member of the support 114 comprises a recess 117 for receiving the end of the tongue. This third member is positioned relative to the second member, such that the tongue of the spring plate 110 has to be flexed in order for the end of the tongue to correspond with its recess 117. Optionally, the spring plate support may comprise a fourth member comprising a lip extending towards the second member. In this case, the PCB contact regions are extended to the surface of this lip, so as to bring them closer to the spring plate contacts. Alternatively the contact region bearing lip may be formed as part of the second member itself, or eliminated altogether.

As mentioned above, in the present embodiment, the individual keys are grouped in threes, their tips extending across the whole width of the second layer of the composite 51. This facilitates manufacture of the brittle elements 52 to 58. The tips of the alphanumeric keys 7, soft keys 8, 9 and top scroll key 12a are in alignment with those of the other keys in their group. In the remaining group of keys, however, the tip of the bottom scroll key 12b is displaced from the line of the tips of the other two keys in its group, namely the application keys 10, 11. In any event, in each group the edges of adjacent key tips complement each other, and are closely spaced. This eliminates the need for the composite 51, or other filler material, to extend between the key tips. It also has the advantage of simplifying the overall appearance of the input region of the device to the user. Further properties and advantages of the specific key array 6 will be discussed below.

As can be seen in particular from Figures 17 and 18, the spring plates 110 and supports 114 of adjacent alphanumeric keys 7 are positioned perpendicular to each other. This provides a geometrically simple solution to

the problem that the spring plates cannot be positioned in alignment with the keys themselves. One cause of this problem in the embodiment illustrated is that the spring plate of each outer key is longer than the average length of its corresponding key tip, and this extra length cannot be accommodated elsewhere. This is primarily because the spring plate of each central key is only minimally smaller than the average length of the corresponding key tip, and the keys are closely abutted (there is only a gap of about 0.245 between the keys) so that there is insufficient space to allow for the extra length. Furthermore, whilst the key shaft 49 of each key is substantially central to the key tip 64, the key shaft aperture of the spring plate 110 is off-centre. This exacerbates the problem for the outer keys, and even results in the spring plate of each centre key not being able to be accommodated in the space under its corresponding key tip.

The keys may be constructed, and the input region of the device assembled as follows. Upper bearings are inserted into the apertures 48 of the Perspex layer of the device. Ruby bearings are preferably selected for this purpose, for three main reasons. Firstly, ruby is very hard wearing, and will thus be able to handle multiple operations of the keys over a substantial period of time. Secondly, the upper bearings of this device are larger in diameter than the corresponding widths of the key tips, which means that they will be visible in situations in which the front face of the device is transparent (e.g. second layer 51 may be sapphire). Hence, advantage may be taken of the fact that a ruby is an attractive jewel, which the user will be pleased to see. Thirdly, the use of a hard material such as ruby will provide greater accuracy of fit of the key in the device, as opposed to using a resilient material, such as PFTE.

Lower bearings 109 are provided in a titanium plate which is fixed to the rear of the PCB 118. The inner and outer diameter of the lower bearings 109 are smaller than the upper bearings 103, but their centres are aligned. They are also preferably made of different material – the material of the lower bearings having shock absorbing qualities such as PFTE.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000146

The key shafts 49 are machined, to have a first portion 49a of appropriate thickness to pass through the inner diameter of the upper bearings 103 and a second reduced diameter portion 49 to pass through the inner diameter of the lower bearings 109. Shaft 49 and circlet 108 may be machined from a single piece of metal, or the circlet 108 may be subsequently attached to the shaft 49. They are preferably formed of stainless steel. Further, an O ring 107 is provided adjacent the circlet 108, on the thicker diameter portion 49a of the shaft 49, to provide a water seal. Both the circlet 108 and the O ring have an outer diameter smaller than that of the upper bearing, so that they are not visible to the user when in situ. However, the circlet has an outer diameter sufficiently larger than the inner diameter of the upper bearing, so as to prevent the key from falling out of the device.

The key tips are crafted into the desired shape from a desired material, which may be a metal such as gold, platinum, silver, or stainless steel. They may also bear precious stones. For example a key tip or tips may be diamond encrusted, or have a precious stone set in it. Once a key shaft has been passed through an upper bearing, a key tip is joined to it. This may be achieved using conventional braising techniques.

The spring plate supports 114 are provided on the PCB 118. Each spring plate support 114 is preferably of unitary structure, manufactured from lightweight metal such as aluminium. The supports may then be soldered onto the PCB using conventional techniques. The spring plate supports 114 are positioned to hold the spring plates 110 so that the centres of their shaft apertures align with those of the lower bearings 109. Contact regions for the spring plate contacts are provided on the PCB (or the lip of the second or fourth member of the support as described above).

The spring plates 110 themselves are provided by stamping sheet metal, such as beryllium cooper with gold flash or the like. The plates 110 are affixed to

the supports114 by positioning one end 113 of the spring plate under the lip 116 of the second member of the support 114, fitting the other end 112 of the spring plate in the recess 115 of the first member of the support 114, flexing the tongue so that its end corresponds to the recess 117 of the third member of the support 114, and positioning the end of the tongue in that recess. When in position, the free end 113 of the spring plate 110 is naturally biased upwards toward the restraining lip 116.

The dimensions of various components of the keys and their relative positions are important in smooth key operation. The distance between the upper and lower bearings has been maximised by placing them either side of the spring plate switching mechanism and passing the shaft through the spring plate. In such a position, the bearings hold the key straight when it is operated, thereby avoiding contact with neighbouring key tips or the need to place keys further apart to prevent such contact. This, in turn, results in good switching functionality and feel.

Also, the dimensions of the keys are such that the lower surface of each key tip 64 contacts the surface of the Perspex layer 37 before excess pressure can be applied to the spring plate 110. In the present embodiment, the circlet 108 is positioned along the shaft such that it gently rests on the spring plate when the keys are in their normal non-depressed state. Also, the thicker portion of the shaft is of an appropriate length that, when in the normal state, there is a gap between the lower surface of the key tips and the surface of the Perspex layer 37 which is the same as, or only slightly greater than the distance the circlet 108 has to travel to cause the spring plate contacts to contact the contact regions.

This overcomes a potential problem of pressure being applied to the spring plate if the switch itself provides the end stop for the motion.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000148

The dimensions of the keys are also important for the external appearance of the device. Preferably, the key tips are of a thickness that they protrude from the surface of the second layer 51 of the composite, at least when the keys are in the aforementioned normal state. When the composite is substantially transparent, this will give the impression of floating keys, and add to the three dimensional effect mentioned earlier concerning the key legends 15. Furthermore, the key tips should be sufficiently deep to be partially sunk into the second layer of the composite, and preferably have at least two opposing substantially flat sides which correspond with sides of the second layer to prevent lateral rotation of the keys. A gap of the order of 0.1mm is achieved in the present device between the keys and second layer of the composite: a gap insignificant to the human eye and suitable for assisting in the prevention of lateral rotation of the keys. Lateral rotation is further hindered in the present embodiment, by virtue of the provision of mirrored slanting of the sides of adjacent keys.

In order to ensure the correct relative spacing of elements of the key, the Perspex layer 37, PCB 118, and titanium plate 77 are clamped together. In this embodiment, the clamping is provided by the front face protectors 63, and by the provision of additional tapped bosses in projections 68 of the Perspex plate and associated fixing means. Consequently, once the keys have been positioned, the Perspex layer, PCB and titanium plate can be clamped together using the bosses and fixing means, thereby holding the keys in place and forming a manageable module. This module may then be readily installed in the device using the front face protectors as described above with reference to Figure 9B.

Operation of the keys of the device will now be described. As the user applies pressure to a key tip, the shaft moves downwards, travelling through the bearings and shaft aperture of the spring plate. This results in the circlet applying pressure to the part of the main body of the spring plate which defines the shaft aperture. Continued pressure on the key tip will then cause

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000149

the circlet to apply an increasing force to this part of the spring plate, causing the main body to deform around the circlet. Eventually, this deformation will cause the tongue to overcentre, resulting in the free end 113 of the spring plate 110 flicking from its naturally biased position (upwards towards the restraining lip 116) to a second position, in which the spring plate contacts contact the contact regions on the PCB. An electrical signal is consequently sent to the processor indicative of actuation of that key. This arrangement gives a distinct click providing a clear quality indication to the user that the key has been actuated. As the user removes pressure from the key tip, the circlet, in tum, removes pressure from the spring plate 110. The tongue promptly returns to its normal position, and the free end of the spring plate flicks up to its naturally biased position, breaking the contact. This again gives a distinct click providing a clear quality indication to the user that the key has been deactivated.

Figure 20a is a graph illustrating the force against distance profile for a key such as that illustrated in Figures 17 and 18. This profile improves the tactility of the key over, for example, a typical keydome arrangement, which had a fairly flat profile as can be seen in Figure 20b. When using a conventional key dome type arrangement, the user has to apply a constant force until the point where the key actuates. As a result, he does not get a tactile indication that he is nearing the position when actuation is likely to occur. In contrast, when using the device illustrated in Figures 17 and 18, the user can realise the fact that he is nearing the position when actuation is likely to occur as he is having to increase the force applied for a given travel of the key. Furthermore, the user is informed when actuation takes place, and again when deactuation takes place, by respective clicking sounds provided by the key.

The central V shaped key tips of the embodiment illustrated in Figure 1 enable the user to determine the central vertical axis of the device both by sight and by touch. This is made even easier by the pillow 16 being provided

with an apex. Consequently the user can quickly locate a desired central key. The apexes of each central key tip also identify the mid point along the length of the key tip, the point from which the key shaft 49 extends. Hence, they facilitate more accurate depression of the key. This, in turn, may assist in the prevention of contact with neighbouring key tips or the need to place keys further apart to prevent such contact.

Likewise, in this embodiment, the combination of adjacent outer key tips and front face protectors forming a V shape enable the user to determine the position of the vertical axes to one side of which the outer keys lie. Consequently, the user can quickly locate a desired outer key. The key location process is facilitated in this embodiment as the outer key tips extend to the interface between the second layer of the composite 51 and the bezel 19.

The front face of the device illustrated in Figure 1 is protected by the pillow and front face protectors, 63. The front face 3 is slightly convex, with the highest points lying along its central longitudinal axis. Hence, ordinarily, if placed face down, the device would rest on this axis, resulting in scratches to its surface. Clearly, this is not acceptable, particularly when the second layer of composite is sapphire or the like. The device illustrated in Figure 1 has been designed to avoid this problem. The pillow 16 and face protector 63a prevent the device resting on the second layer of composite. Also, as mentioned above, in the preferred embodiment the key tips protrude slightly from the surface. Hence, the central key tips too may protect the second layer of composite from damage. However, preferably the pillow 16 and chin front face protector 63a are raised sufficiently above the front surface, that the device does not rest on the central key tips either, so as to protect them from damage too.

The device is also designed so that the front face is protected if the edge of the face is knocked. As can be seen from the plan view of the device,

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000151

depicted in Figure 21, the bezel front face protectors 63b protrude beyond the surface of the second layer of composite along the interface with the bezel, thereby protecting the second layer of composite from damage in that region. They also reduce the likelihood of damage to the bezel due to knocks. Moreover, they protrude further than the adjacent key tips, hence protecting those key tips from damage too.

One further benefit of the front face protectors 63, particularly the bezel is that they are dimensioned so as to prevent the keys from being accidentally actuated if, for example, the device was placed face down. That is, the top surface of the front face protector tips should either be at the same level or higher than the top surface of a key tip (e.g. as in the relationship between the protectors 63b and the adjacent outer key tips) or, if they are at a lower level than the top surface of a key tip, the distance between the top surface of the protector and key tips must be smaller than the distance the key needs to travel in order for the spring plate contacts to contact the PCB contact region for actuation the key.

In order to commission a casing for an electronic device there will be a list of designated casing elements the characteristics of which are selectable by a commissioning party. This list of possible parts for personalisation may be provided in amongst other ways on a computer, on a web site or as a paper list in a suitable store. The party commissioning the device can then select the characteristics of the designated elements from a set of possible options provided. In alternative embodiments the scope for originality in the characteristics of individual ones of the designated elements may be greater and the commissioner may be given a practically free hand in determining the material, and other additions such as surface decoration by etching or engraving and, amongst other things, encrustation.

The entire process could be computerised so that the selected characters of the device are readily conveyed to a manufacturing location or location for

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000152

realisation of the selected characters for the designated elements. This could be via an intermediary that records the customers specifications for later use and utilises the skills of a range of craftspersons to make the required elements and co-ordinates the collocation of the individual elements for assembly. The device will be described in greater detail below with exemplary materials being given for specific elements of the device. Where a material or veneer is discussed in relation to an element, the reader should be aware that the particular character of the element described is one of many or several that may be provided as options to a party commissioning a personalised device. In addition the exact material or surface decoration of the element could be individually commissioned. As another option the specification of the commissioner could be directly forwarded to a location with the selected elements in stock for immediate assembly. In this embodiment either individually commissioned elements would not be possible at all or restricted to a relatively small number of tasks that can be performed after the initial materials and finish of an element have been decided, such as engraving and possibly jewel encrustation.

For greater freedom in individually commissioned elements, these elements could be individually designed and fabricated and finally forwarded for assembly with the less unique elements. Should assembly of the elements require particular skills or for perhaps other reasons the assembly may occur at yet another location.

The formed article is then conveyed to the end user.

Aspects of the invention have been discussed with reference to a personal digital assistant function. It will be clear to the skilled man that these aspects apply equally to other consumer electronic devices supporting in addition or as an alternative other functions, such as, amongst others games, and calculators.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000153

In the future, although the casing will probably be maintained in substantially the same condition, the engine could be replaced with an engine that perhaps has greater processing power or allows for different functionality, for example improved graphics. To replace the engine will be a relatively simple manner of removing the existing engine and replacing it with a new one. the battery and internal casing walls may be changed at the same time if greater battery volume is then possible.

The present invention includes any novel feature or combination of features disclosed herein either explicitly or any generalisation thereof irrespective of whether or not it relates to the claimed invention or mitigates any or all of the problems addressed.

In view of the foregoing description it will be evident to a person skilled in the art that various modifications may be made within the scope of the invention.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000154

Claims

1. A reusable casing for a consumer electronic device having an operating face carrying a user interface including a plurality of user input elements, the casing comprising:

housing elements defining a cavity for receiving an engine providing the electronic functionality of the device and a battery for powering the engine;

means for releasably attaching the housing elements one to another to provide access to the cavity for receiving the engine;

a dividing member for defining a battery cavity accessible to the user and an engine cavity, the housing member accommodating a connection between the battery and the engine;

mounting means for removably mounting the engine within the engine cavity; and

mounting means for removably mounting the battery within the battery cavity.

2. A reusable casing according to claim 1 wherein the means for defining the battery cavity is replaceable to provide different respective volumes for the battery and engine cavities.

3. A reusable casing according to claim 1 or 2 wherein the battery and the engine are displaced along the length of the casing.

4. A reusable casing according to any preceding claim wherein the design of a replacement means for receiving the engine and battery is dependent upon the size and shape of a second engine and battery pair.

5. A reusable casing according to any preceding claim wherein the battery cavity is accessible to a user for replacing a battery.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000155

6. A reusable casing according to any preceding claim wherein the user interface comprises a display.

7. A consumer electronic device comprising an engine and a reusable casing according to any preceding claim.

8. A device according to claim 7 wherein the casing is provided with external connectors allowing for greater capability than is provided for by the functionality of the engine.

9. A device according to claim 7 or 8 wherein at least one of the connectors is free from signals.

10. Use of a casing of a consumer electronic device having an operating face carrying a user interface including a plurality of user input elements and an engine having hardware providing a predetermined processing capability for supporting electronic functionality of the device, for housing another engine having hardware defining a different predetermined processing capability such that a portable communication device having different operational characteristics is produced.

11. A method of modifying a consumer electronic device having an operating face carrying a user interface including a plurality of user input elements and having hardware providing a predetermined processing capability for supporting electronic functionality of the device comprising
removing the engine from the casing; and
replacing the engine with another engine having hardware providing a different predetermined processing capability.

12. A kit of parts for a reusable consumer electronic device comprising:

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000156

a casing having an operating face carrying a user interface including a plurality of user input elements, the casing defining a cavity for receiving an engine providing the electronic functionality of the device;

a first engine including hardware providing a first predetermined processing capability for supporting electronic functionality of the device; and

a second engine including hardware providing a second predetermined processing capability for supporting electronic functionality of the device, the first and second predetermined processing capabilities being different.

13. A casing substantially as hereinbefore described with reference to figures 1 to 10, 11a and 12 to 21 of the accompanying drawings.

14. A casing substantially as hereinbefore described with reference to figures 1 to 10, 11b and 12 to 21 of the accompanying drawings.

15. A consumer electronic device substantially as hereinbefore described with reference to figures 1 to 10, 11a and 12 to 21 of the accompanying drawings.

16. A consumer electronic device substantially as hereinbefore described with reference to figures 1 to 10, 11b and 12 to 21 of the accompanying drawings.

17. A kit of parts substantially as hereinbefore described with reference to figures 1 to 10, 11a and 12 to 21 of the accompanying drawings.

18. A kit of parts substantially as hereinbefore described with reference to figures 1 to 10, 11b and 12 to 21 of the accompanying drawings.

19. A method substantially as hereinbefore described with reference to figures 1 to 10, 11a and 12 to 21 of the accompanying drawings.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000157

20. A method substantially as hereinbefore described with reference to figures 1 to 10, 11b and 12 to 21 of the accompanying drawings.

21. Use of a casing of a consumer electronic device substantially as hereinbefore described with reference to figures 1 to 10, 11a and 12 to 21 of the accompanying drawings.

22. Use of a casing of a consumer electronic device substantially as hereinbefore described with reference to figures 1 to 10, 11b and 12 to 21 of the accompanying drawings.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000158

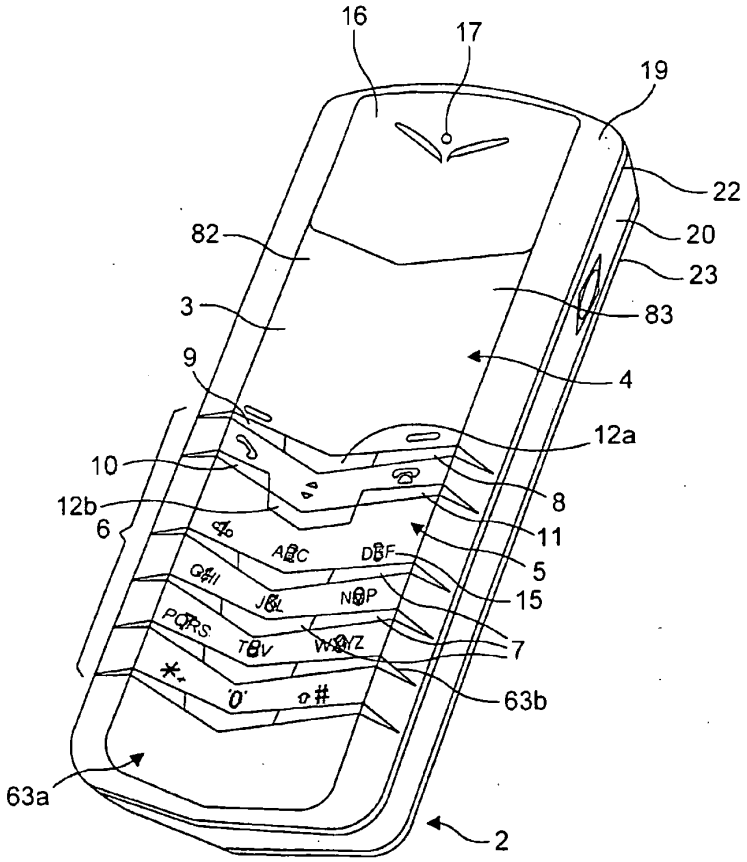


FIG. 1

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000159

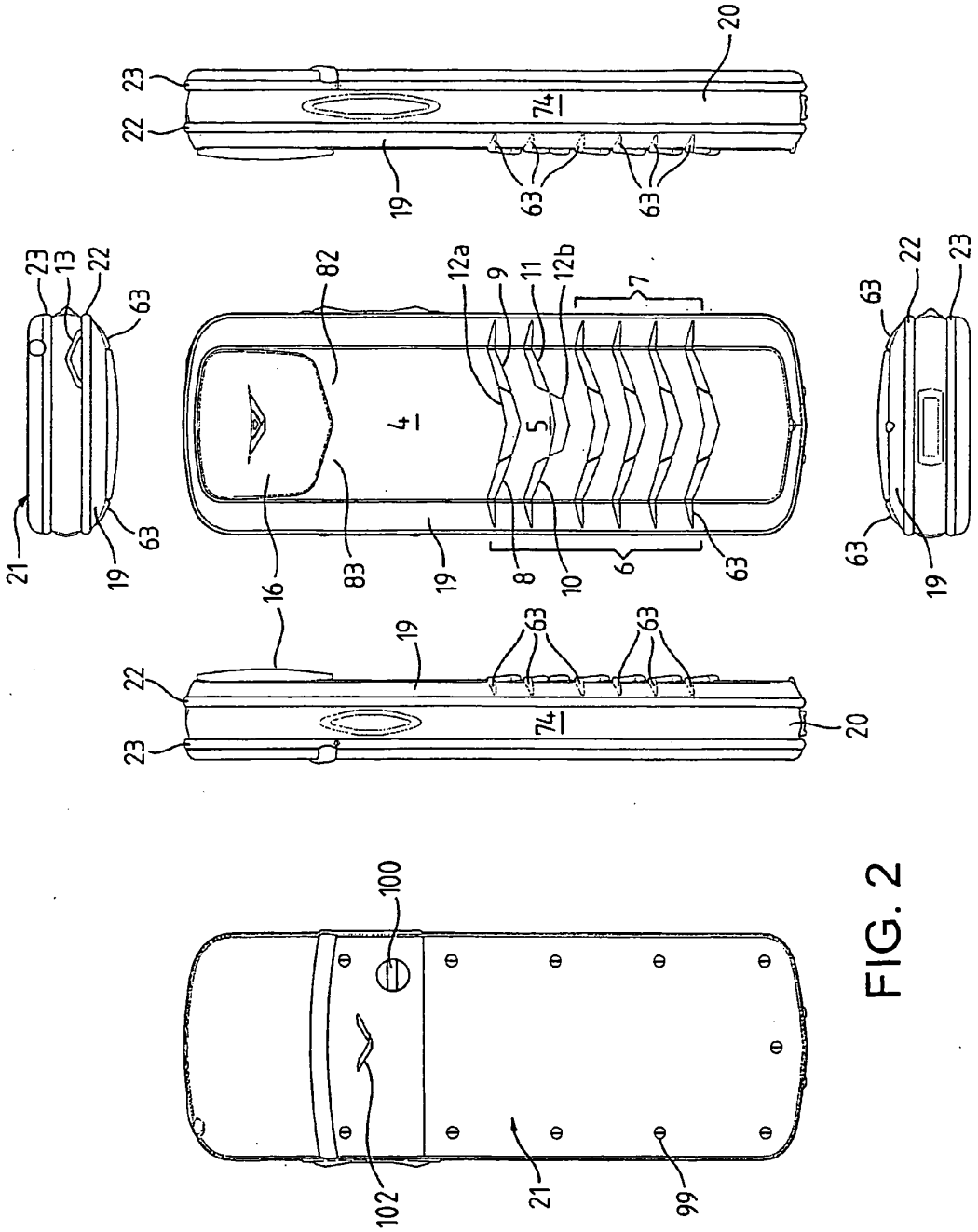


FIG. 2

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000160

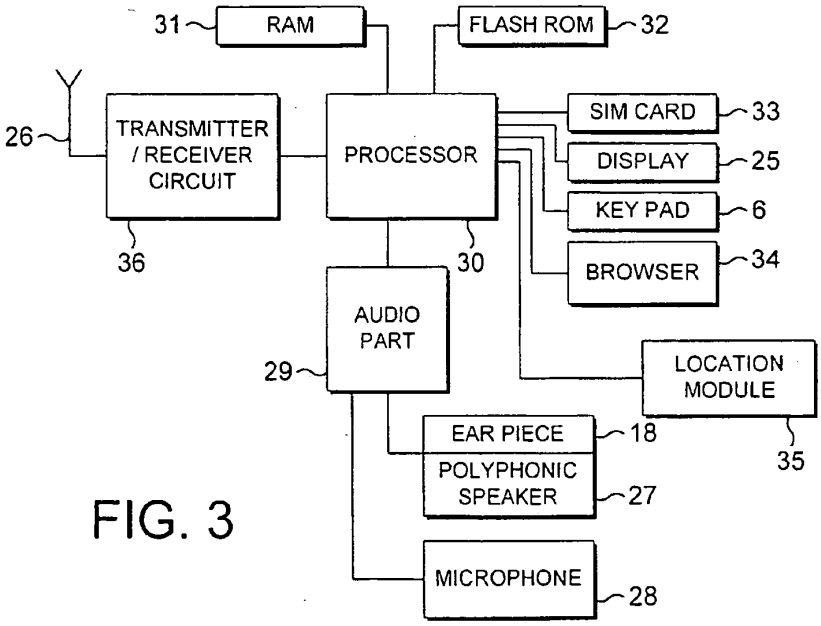
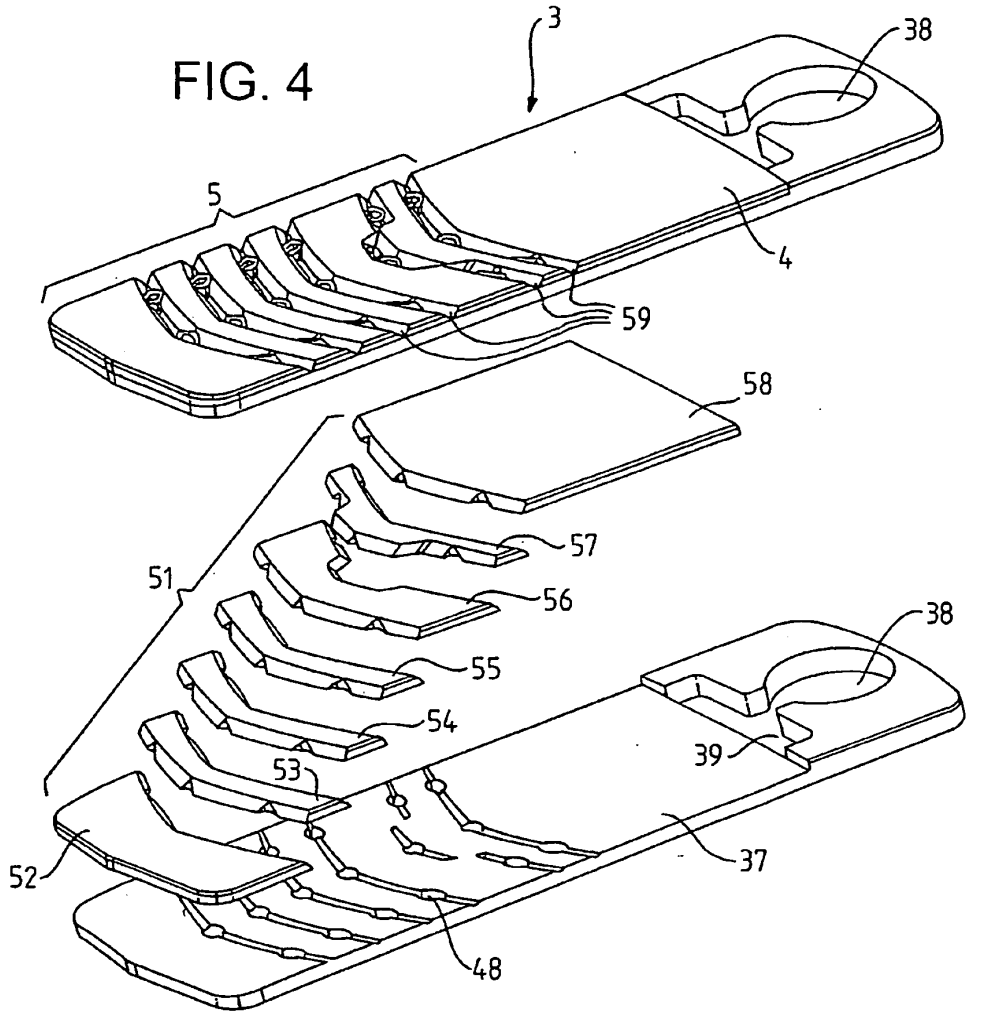


FIG. 3

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000161

FIG. 4



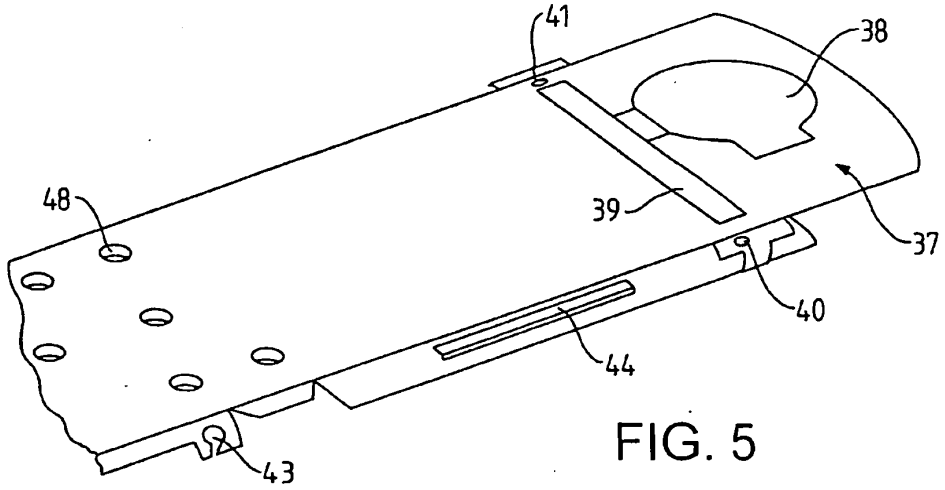


FIG. 5

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000162

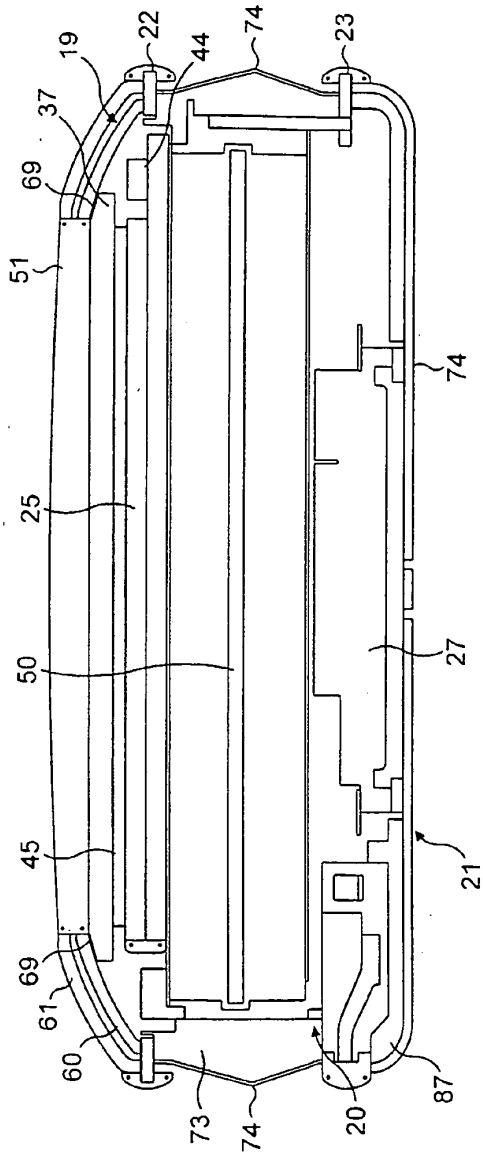


FIG. 6a

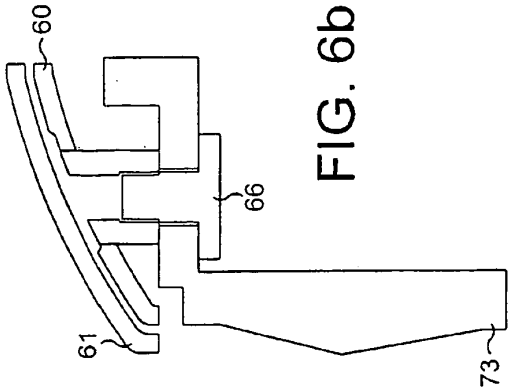


FIG. 6b

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000163

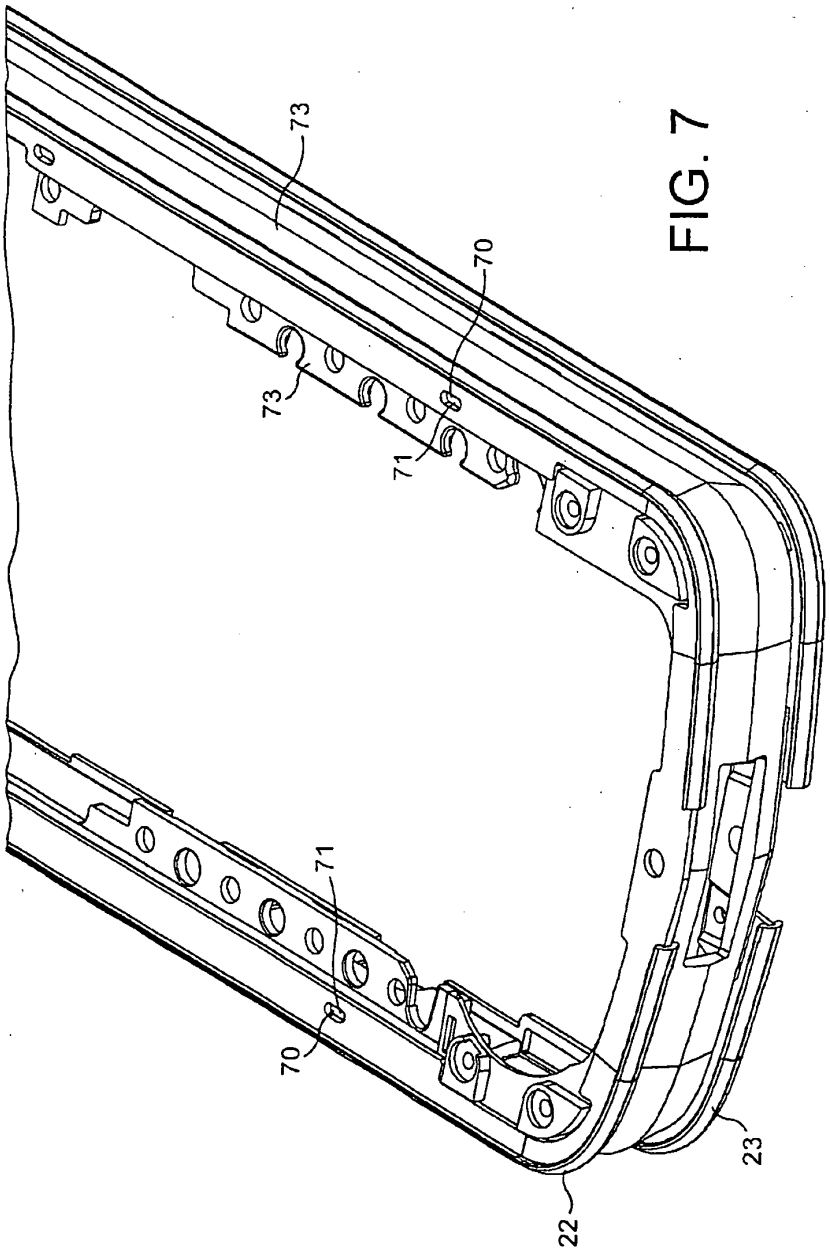


FIG. 7

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000164

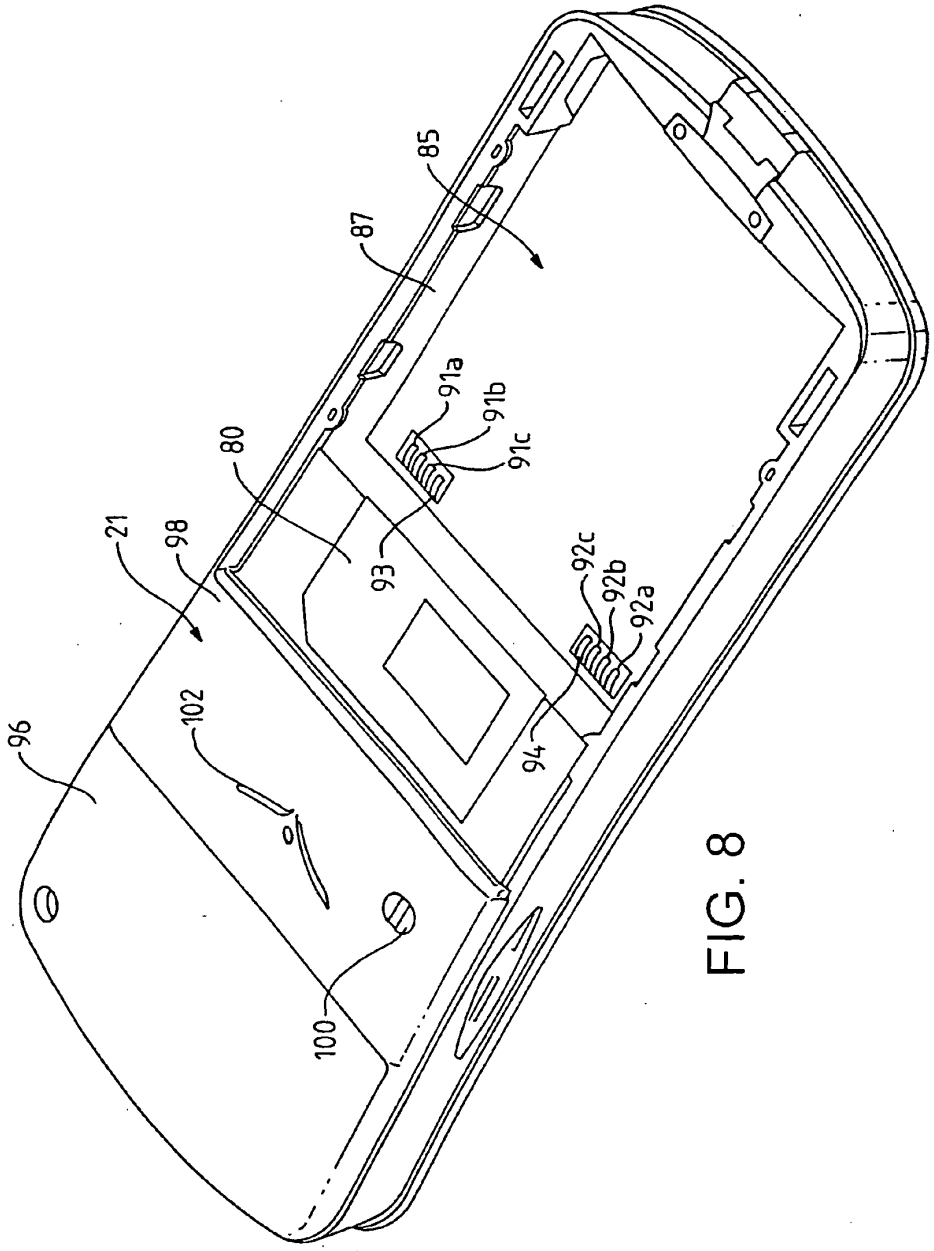


FIG. 8

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000165

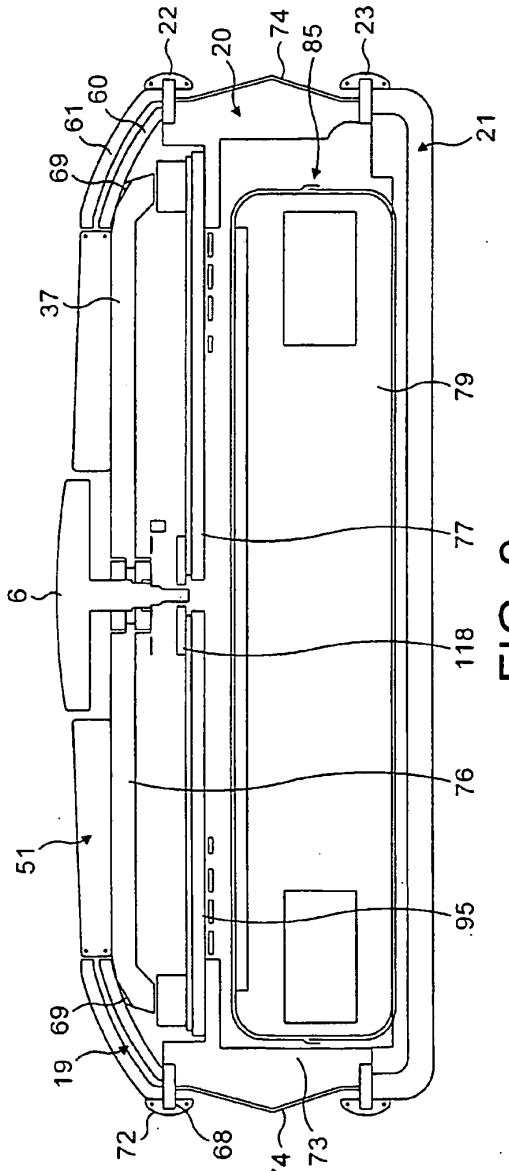


FIG. 9a

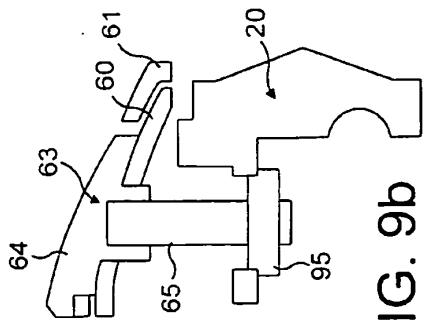


FIG. 9b

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000166

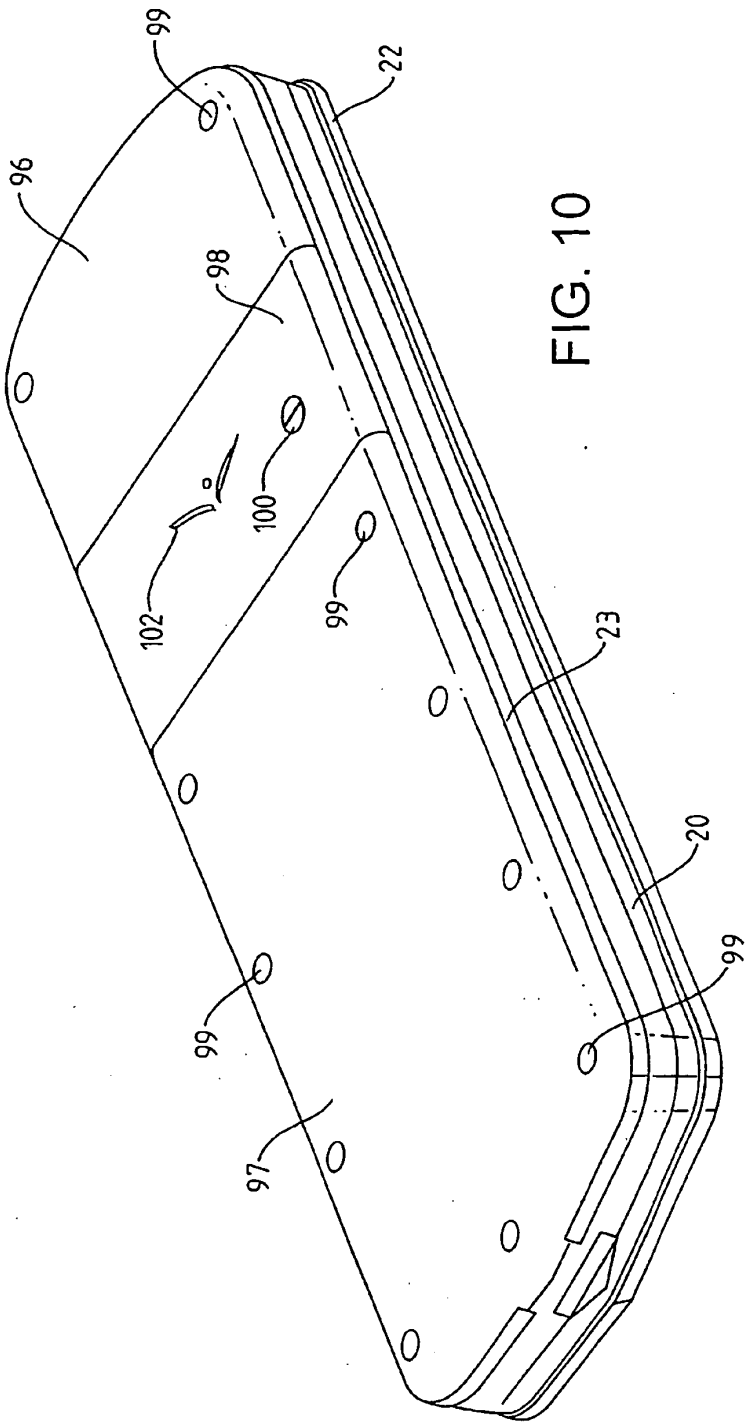


FIG. 10

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000167

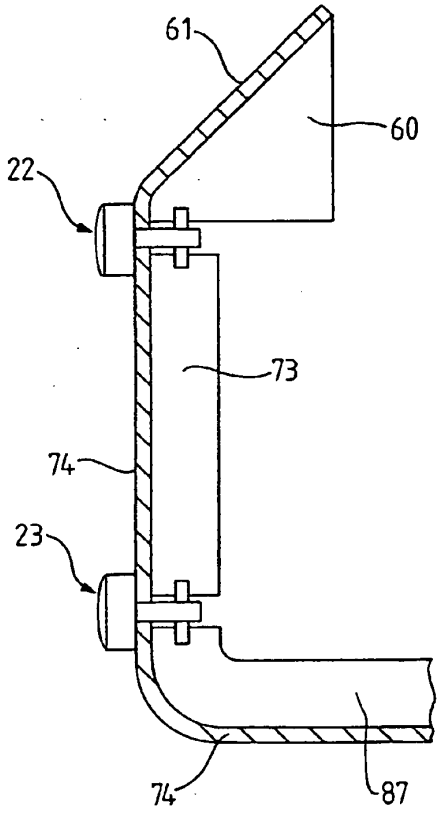


FIG. 11a

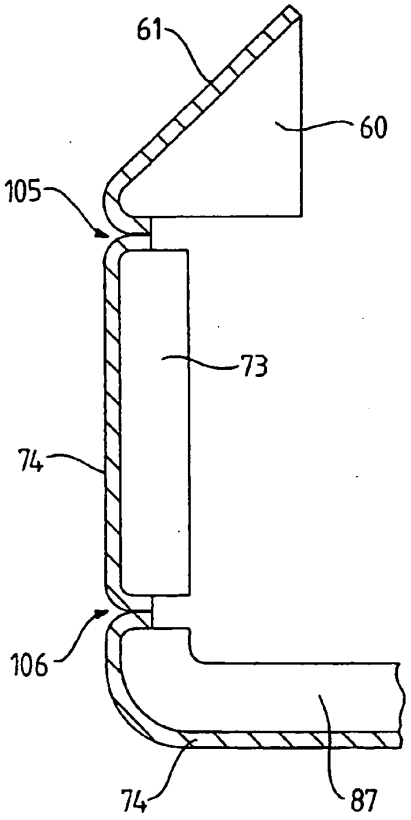


FIG. 11b

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000168

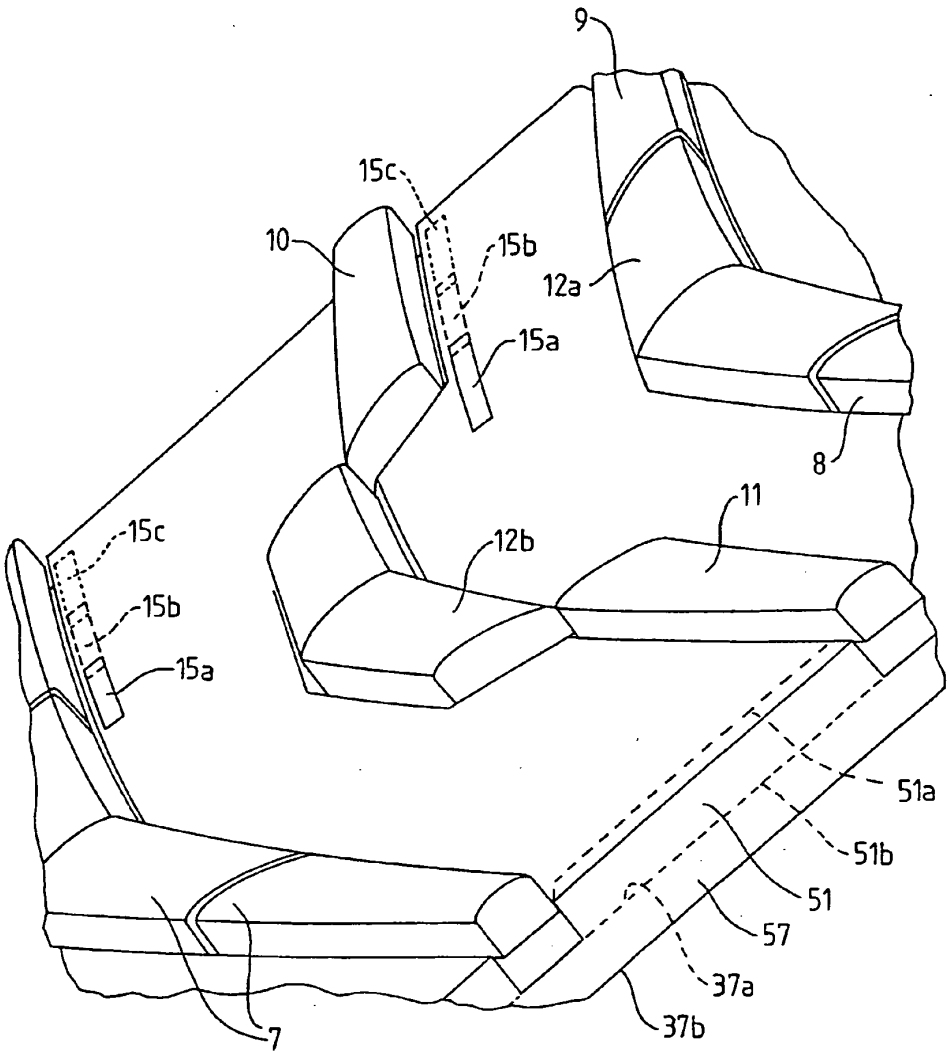


FIG. 12

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000169

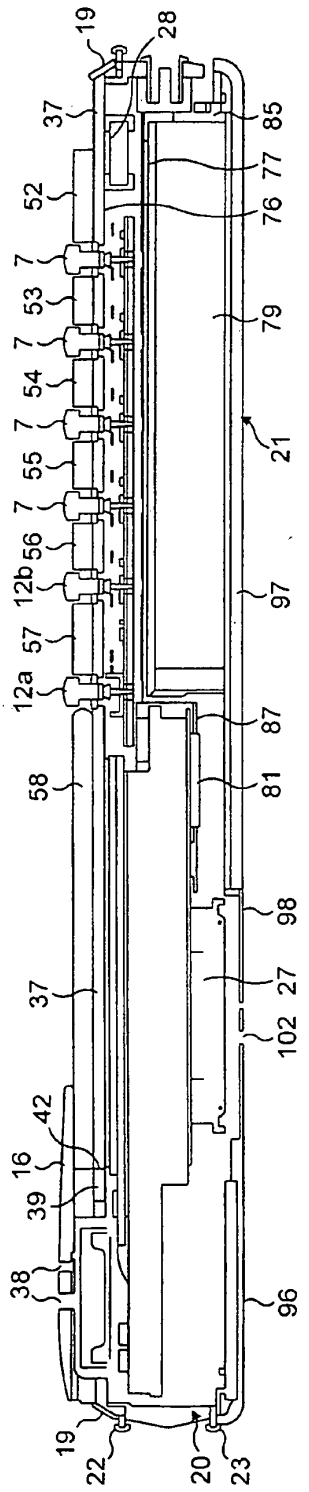


FIG. 13

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000170

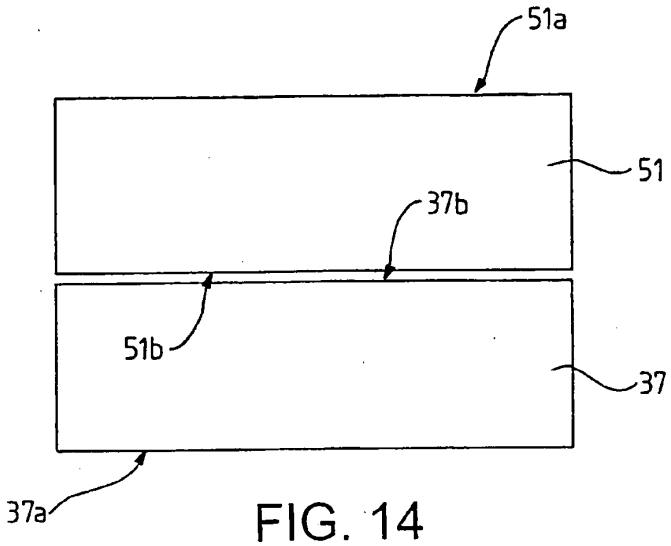


FIG. 14

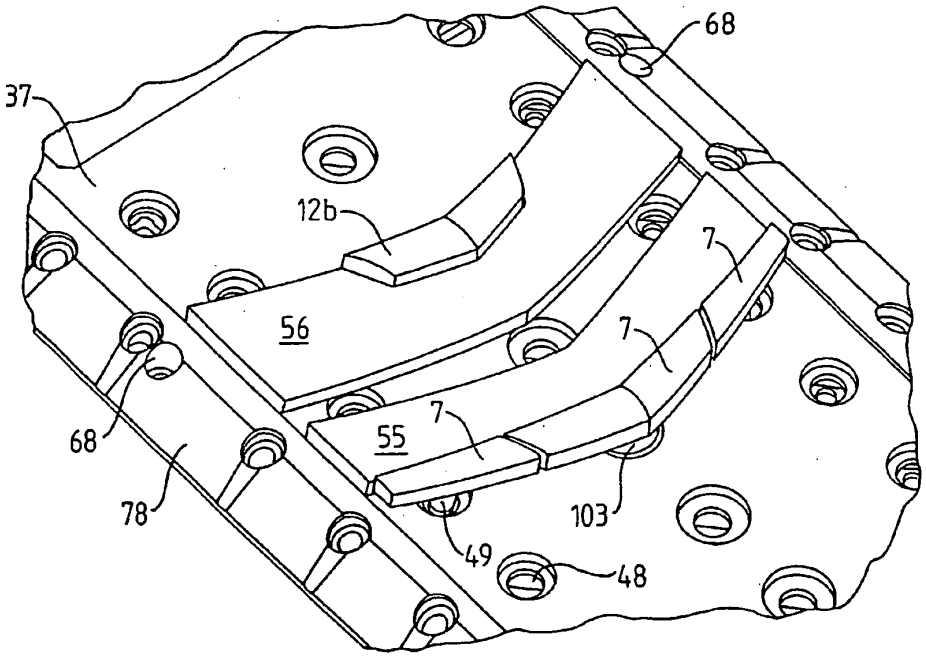


FIG. 15

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000171

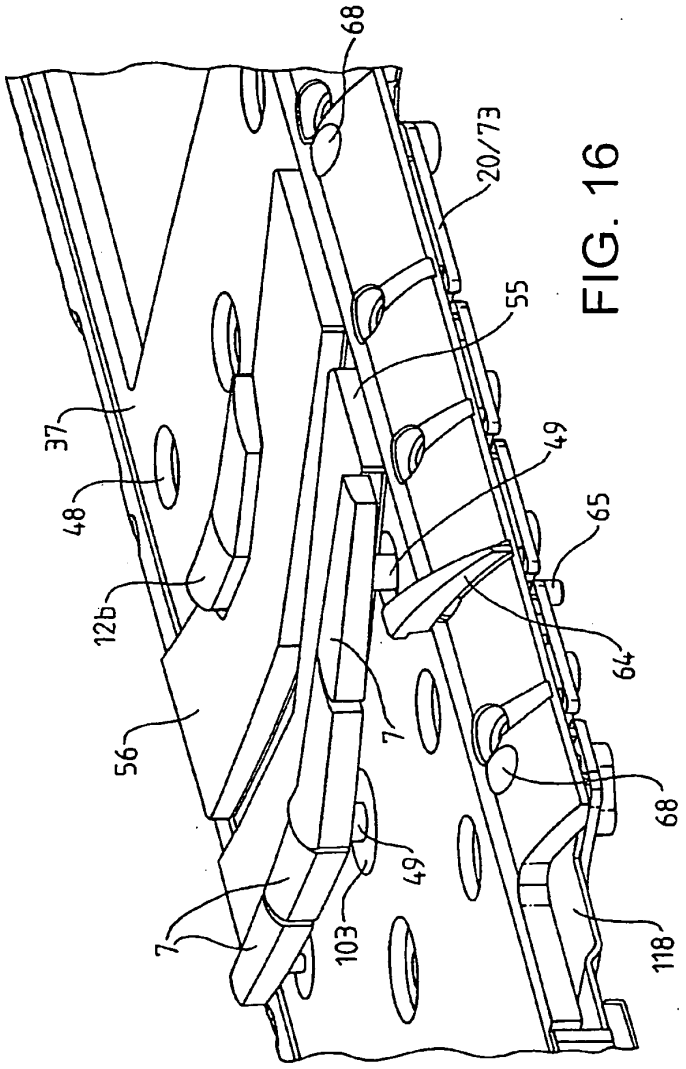


FIG. 16

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000172

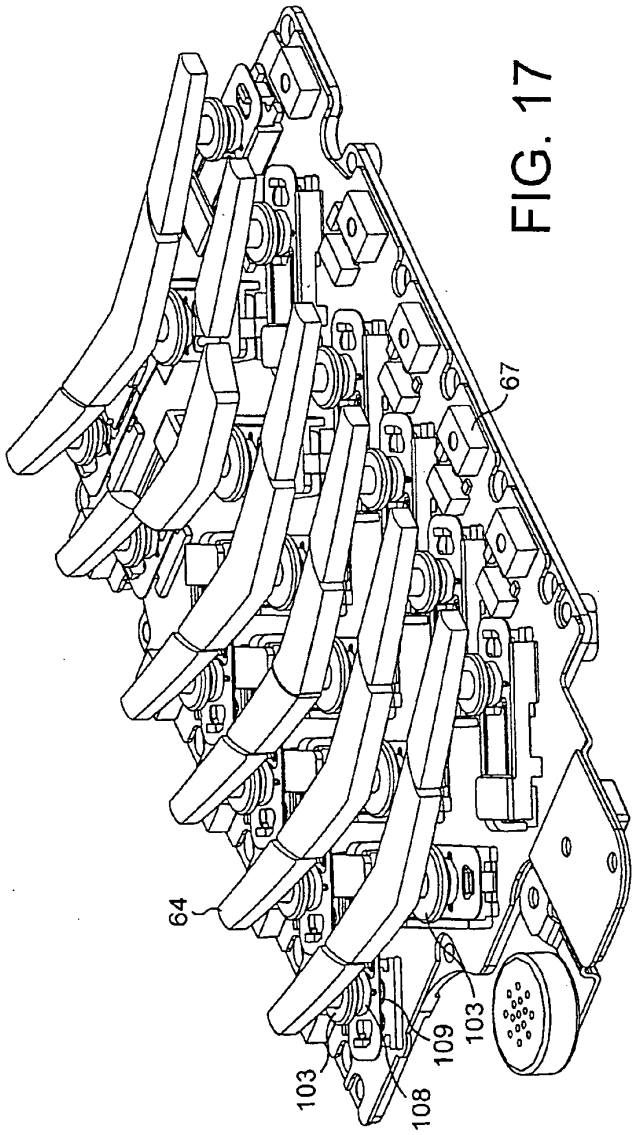


FIG. 17

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000173

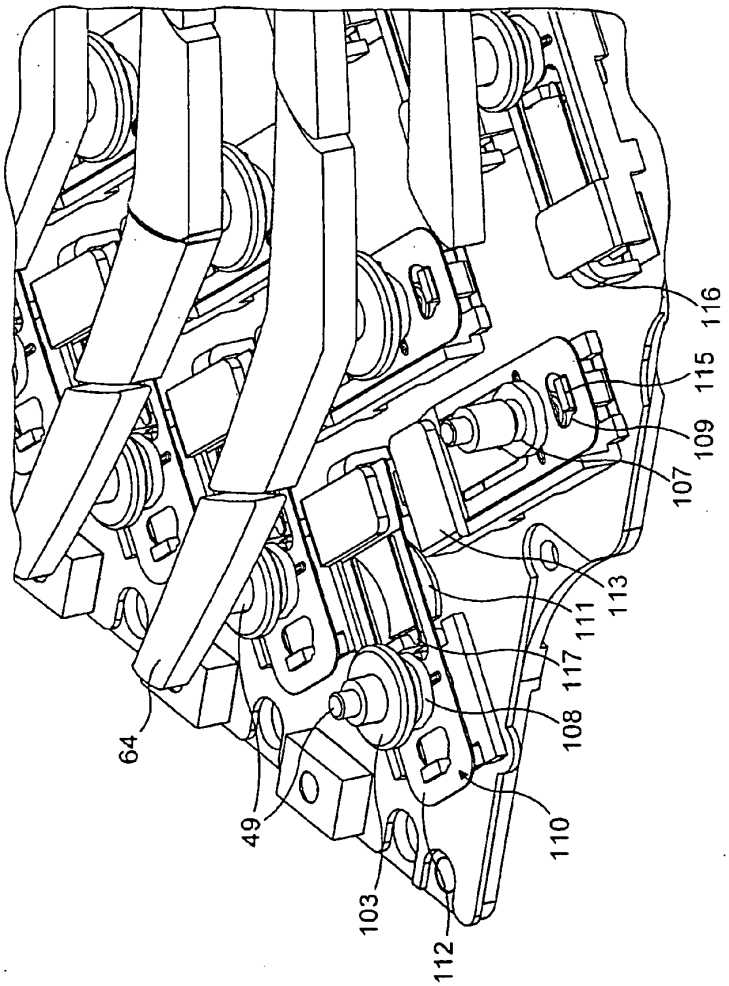


FIG. 18

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000174

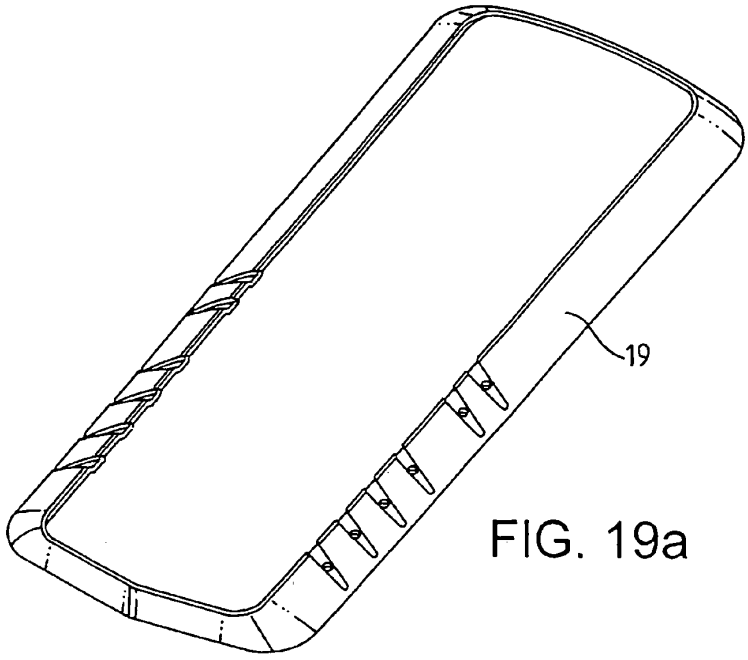


FIG. 19a

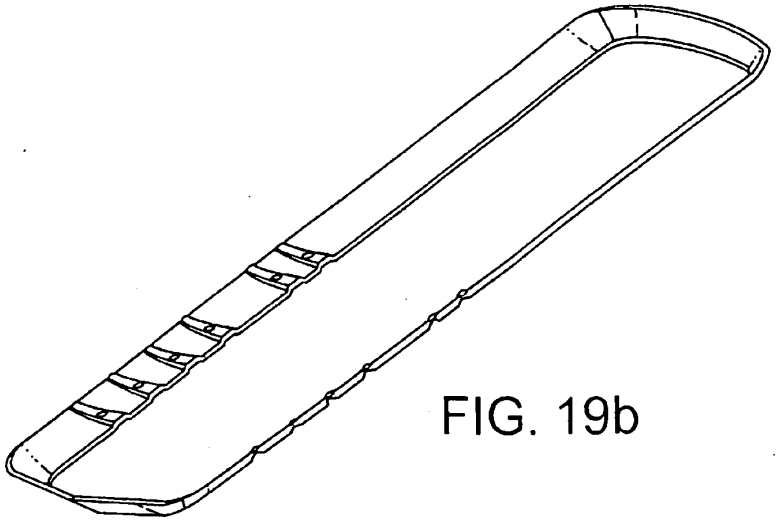


FIG. 19b

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000175

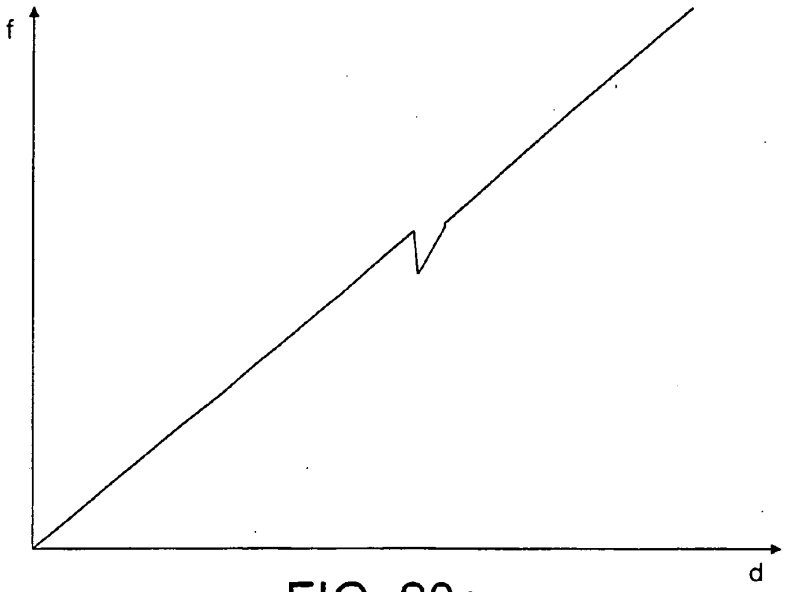


FIG. 20a

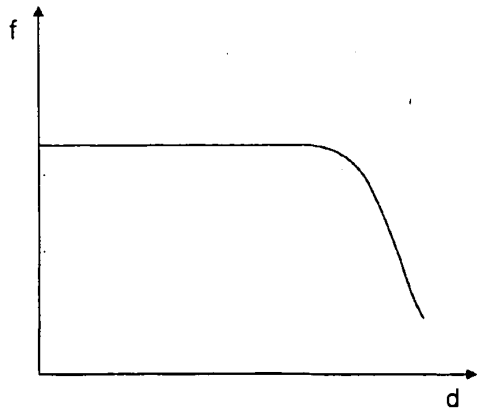


FIG. 20b

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000176

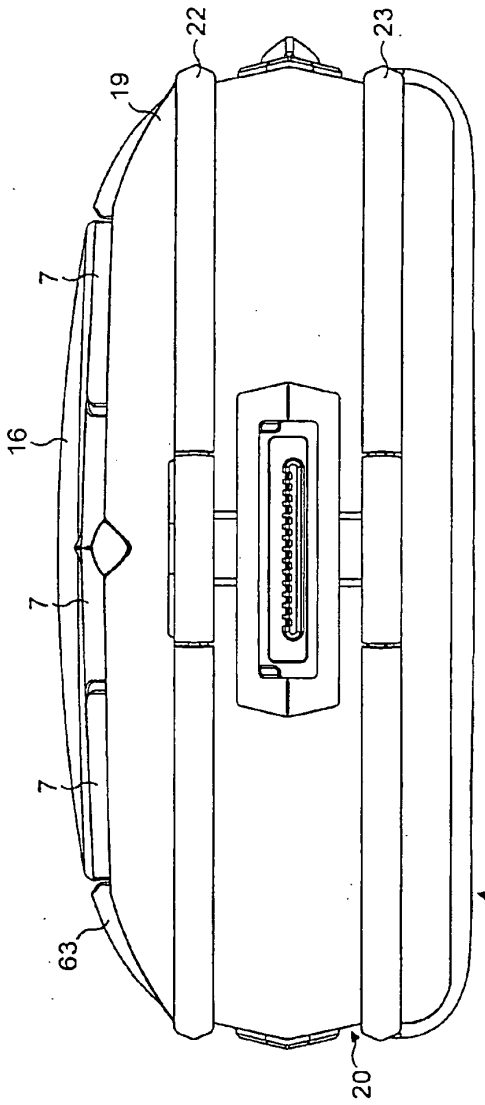


FIG. 21

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000177

INTERNATIONAL SEARCH REPORT

International Application No
PCT/GB 01/05742

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 H04M1/02 H01M2/10 H05K5/00 H01H9/02

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 H04M H01M H05K H01H G06F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
WPI Data, EPO-Internal, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DE 299 16 458 U (SENNHEISER ELECTRONIC, WEDEMARK, DE) 13 January 2000 (2000-01-13) page 1, line 1-7 page 3, line 1 -page 4, line 3 page 5, line 21 - line 27 figures 1-7 page 4 ---	1,3,5,7, 10-12
X	US 6 135 582 A (AULD DAVID ET AL, BOQNTON BEACH, US) 24 October 2000 (2000-10-24) column 5, line 20 - line 22 figures 1,2,4,5	1,5-7
A	--- -/--	8,10-12

[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
12 April 2002	18/04/2002

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax (+31-70) 340-3016	Peis, S

Form PCT/ISA/210 (second sheet) (July 1992)

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000178

INTERNATIONAL SEARCH REPORT

International Application No
PCT/GB 01/05742

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication,where appropriate, of the relevant passages	Relevant to claim No.
A	US 5 872 831 A (ACKMANN DENNIS ET AL., THOUSAND OAKS, US) 16 February 1999 (1999-02-16) column 1, line 16 - line 41 column 2, line 5 - line 14 column 4, line 1 - line 9 figures 3,6,7	1-4,7,8, 10-12
A	---	8,10-12
A	WO 00 64127 A (BADER HARALD ;SIEMENS AG (DE)) 26 October 2000 (2000-10-26) page 1, line 16 - line 30 claim 9 figures 1-4	1,5-7, 10-12
A	--- EP 0 665 655 A (HEWLETT PACKARD CO, PALO ALTO, US) 2 August 1995 (1995-08-02) column 3, line 5 - line 28 claim 1 figure 3A	1,8

Form PCT/ISA/210 (continuation of second sheet) (July 1992)

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000179

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No
PCT/GB 01/05742

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 29916458 U	13-01-2000	DE 29916458 U1	13-01-2000
		EP 1085588 A1	21-03-2001
US 6135582 A	24-10-2000	NONE	
US 5872831 A	16-02-1999	CN 1182995 A	27-05-1998
		FR 2756106 A1	22-05-1998
		GB 2319655 A ,B	27-05-1998
WO 0064127 A	26-10-2000	WO 0064127 A1	26-10-2000
		EP 1169840 A1	09-01-2002
EP 0665655 A	02-08-1995	US 5446783 A	29-08-1995
		EP 0665655 A2	02-08-1995
		JP 7226807 A	22-08-1995
		SG 66219 A1	20-07-1999

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000180

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
11 July 2002 (11.07.2002)

PCT

(10) International Publication Number
WO 02/054727 A1

(51) International Patent Classification[7]: H04M 1/02

(21) International Application Number: PCT/US01/49323

(22) International Filing Date:
26 December 2001 (26.12.2001)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
0031819.6 29 December 2000 (29.12.2000) GB

(71) Applicant *(for all designated States except US)*: **NOKIA MOBILE DEVELOPMENTS (NMD) LIMITED** [GB/GB]; 51 Eastcheap, London EC3M 1JP (GB).

(72) Inventors; and

(75) Inventors/Applicants *(for US only)*: **NUOVO, Frank** [US/US]; 1612 Stradella Road, Los Angeles, CA 90077 (US). **HUTCHISON, Mark** [GB/GB]; Chargans, Beech Hill Road, Arford, Headley, Hants GU35 8DB (GB).

(74) Agents: **RIVERS, Brian** et al.; Nokia Inc. MD 1-4-755, 6000, Connection Drive, Irving, TX 75039 (US).

(81) Designated States *(national)*: AE, AG, AL, AM, AT, AT (utility model), AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, CZ (utility model), DE, DE (utility model), DK, DK (utility model), DM, DZ, EC, EE, EE (utility model), ES, FI, FI (utility model), GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SK (utility model), SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.

(84) Designated States *(regional)*: ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:
— *with international search report*
— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

WO 02/054727 A1

(54) Title: CASING FOR A MOBILE TELEPHONE

(57) Abstract: The invention relates to the customisation of consumer electronic devices. The casing is formed from a number of elements capable of individual formation. The materials of the individual elements are selected from a preselected set by a commissioning party. The selected elements are utilised in manufacturing a casing.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000181

CASING FOR A MOBILE TELEPHONE

The invention relates to the customisation of consumer electronic devices.

Over recent years consumer electronic devices ranging from calculators to personal digital assistants and electronic diaries have become more and more widely used. For popular brands, the number of similar devices in existence is vast. This is particularly the case with the most popular models of personal digital assistants.

Items of technical equipment are generally bought for their functionality. They are quickly superseded and replaced when a faster, cheaper to operate, smaller, or higher specification alternative is released onto the market, the previous model being discarded. The value of the product to its user is in what it can achieve, and perhaps to an extent the image that attaches to the ownership of such an item. As fashion is constantly changing so is the image promoted by owning an individual item, particularly in a fast moving technical area. What may have been the height of fashion can swiftly become out moded.

In fast moving technical areas changes are prompted by, amongst other things, the requirement to make the product smaller, cheaper to manufacture, cheaper to operate, have greater functionality, make use of emerging technologies or move with the latest tastes in design.

Generally when a radically new technical product is brought onto the market, for an initial period the product is relatively elite and expensive. Consequently only limited numbers are produced. In the early years, because of the inherent rarity and the likely high cost of components, there is a propensity to repair as much as possible. Despite the economic requirement for repair, as soon as a more desirable product is launched, the previous item is soon

obsolete and abandoned. The drive for innovation is the challenge of technical advancement and reduction of costs. This pattern has been followed with many items including the first colour televisions, and the first video recorders.

In other products such as personal computers upgrading is a possibility, but these upgrades are possible only within carefully predefined limits. The casings are retained as a matter of convenience, it being the retention of the maximum amount of the existing technological hardware that drives the changes. The casing itself will be replaced when the predefined limits for upgrading the product are exceeded.

In accordance with the present invention there is provided a customisable casing for a consumer electronic device defining an internal space for accommodating an engine and including an operating face carrying a user interface having a plurality of user input elements, a rear face, and a side frame spacing the operational and rear faces one from the other providing external surfaces of the device, the casing comprising a plurality of casing elements capable of individual formation wherein the character of the individual casing elements are respectively selected by a commissioning party.

The consumer electronic device may be a portable device, such as a calculator or personal digital assistant.

The present invention provides a radically different approach to consumer electronic devices. The casing is initially created from a number of individual elements, a plurality of which will have had some freedom in their selection to create a potentially unique personalised item.

The casing is assembled from a large number of parts respective ones of which have characters selected by a commissioning party. The

characteristics of individual elements may be selected from a set of available options or individually commissioned. A selected character may take the form of amongst other things the choice of material of an element and the surface decoration on an element. A surface decoration may be an encrustation, a veneer, an image, a colour or an engraving, for example.

By selecting the characteristics of respective ones of the plurality of casing elements prior to manufacture, the degree to which customisation is available can be vastly increased as it is no longer necessary for customisation to occur at or after the point of sale.

The more elements that are available for customisation and the more options available to the selector, the greater the likelihood that a casing will be unique. This is of course particularly the case when the customisation of one or more of the elements is done by hand or with total freedom, for example if a hand engraved message is provided on an element of the device the item will immediately become unique.

With this degree of interest being taken in the casing, the engine and its functionality, although important may even become secondary. An electronic engine can be readily superseded, whereas a customised casing, especially one that has high monetary and/or sentimental value cannot so easily be replaced. Casings in accordance with embodiments of the invention may be reusable to accommodate new hardware in engines providing additional processing capability to add to the functionality or performance of the device. This may result in there being some intentional redundancy in the external interfaces of the device to accommodate future, as yet unrealisable, possibilities.

The casing may be a conventional one part casing or a clam shell, or other two or more part arrangement, where the user input elements or keys may be located on a different face to a display. In such two part arrangements

generally respective casing portions are fixed such that one is movable relative to the other. The movement may be rotational or lateral.

A vast range of materials is available for customisation of elements of the device in fact there are virtually no bounds. Embodiments of the invention use precious and semi precious materials including gem stones, other jewels and minerals, metals including those ranging from gold, silver, and platinum through to alloys such as steel. Materials such as ceramics in their various forms are also available for use in embodiments of the invention, the brittle nature of these materials, being able to be accommodated by the design of some embodiments. In addition, materials not generally considered in the context of technological devices, such as skins, leather being a particular example and wood and similar materials can also be utilised in embodiments of the invention.

As well as the materials themselves individual elements can be customised with surface decoration that could include veneers of desired materials on plastic or other subframes. The elements could have instead, or in addition, surface texture provided by a particular finish or an engraving or encrustation with gems or other stones or materials.

Embodiments of the invention will now be described in more detail with reference to Figures 1 to 21 of the accompanying drawings of which:

Figure 1 is a perspective view of an electronic device showing one embodiment of the invention;

Figure 2 shows front, rear, sides and top views of the electronic device of figure 1;

Figure 3 is a schematic representation of an electronic device suitable for embodiments of the present invention;

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000185

Figure 4 is an exploded view of the face of an electronic device of one embodiment of the invention without keys;

Figure 5 is a view of one layer of a light guide;

Figures 6a and 6b are sections through the electronic device of Figure 1 in the display region;

Figure 7 is a perspective view of a side frame element and located rails for constructing a casing

Figure 8 is a perspective view of the rear of the device with the battery cover removed;

Figures 9a and 9b are sections through the electronic device of Figure 1 in the battery region;

Figure 10 is a perspective view of the rear of the device with the battery cover in place;

Figures 11a and 11b are sections showing other embodiments of the invention;

Figure 12 is a perspective view of part of the input region of the device illustrating the location of legends associated with keys;

Figure 13 a longitudinal section through the electronic device;

Figure 14 is a schematic section through the light guide illustrating the surfaces available for carrying the legends;

Figures 15 and 16 are perspective views of a partially constructed input region of the device;

Figure 17 is a perspective view of keys of the device including their actuation mechanisms;

Figure 18 illustrates some of the keys illustrated in Figure 17, with the key tips removed;

Figures 19a and 19b are front and rear perspective views of the outer shell of a bezel respectively;

Figures 20a and 20b are a graph showing force against distance for a key such as that illustrated in Figures 17 and 18, and a conventional key using a dome respectively; and

Figure 21 is a bottom plan view of the device of Figure 1 (with the chin face protector omitted).

Embodiments of the invention will be described in greater detail below with exemplary materials being given for some specific or individual elements of the device. Where a material or veneer is discussed in relation to an element, the particular character of the element described is one of many or several that may be provided as options to a party commissioning a personalised device in accordance with the invention. In addition the exact material or surface decoration of the element could be individually commissioned.

The embodiment illustrated in Figure 1 is a handheld electronic device 1 with a precious retainable casing 2. The casing 2 of the device has been designed to be customisable to individual taste with precious materials. To enable individual devices to be created, the number of external parts that the casing is formed from is relatively large in contrast to existing electronic devices.

The casing 2 has an optically permeable front face 3 providing a seamless transition from a display region 4 to an input region 5 that includes a key array 6. The key array 6 includes a first group of alphanumeric keys 7, for entering numbers and text. Each of the twelve alphanumeric keys 7 is provided with a figure "0-9" or a sign "#" or "*", respectively. In an alpha mode each key is associated with a number of letters and special signs used in text editing. The key array 6 additionally comprises two soft keys 8, 9, two application keys 10, 11, two scroll keys 12, and an on/off key 13.

The functionality of the soft keys 8, 9 may depend on the state of the electronic device and position within the menu accessed using the scroll keys 12. The current functionality of the soft keys 8, 9 can be shown in separate fields in the display region 4 just above the respective keys 8, 9.

The two application keys 10, 11 are used to access different applications of the device. For example, in this embodiment the device is a personal digital assistant (PDA), and the types of applications it provides are categorised as "assistant" applications or "extras" applications. Assistant applications may include calendar, notes and contacts functions, and extras applications may include functions such as games, calculator, clock, alarm clock, composer and voice recorder. Application key 10 provides access to a menu listing such assistant applications and application key 11 to a menu listing such extras applications.

The two direction keys or scroll keys 12, in the handset illustrated are placed centrally on the front surface of the electronic device between the display region 4 and the group of alphanumeric keys 7 perform a scrolling function.

The seamless face 3 is formed from an optically seamless light guide 14 providing light to illuminate the display region 4 and key legends 15 located on the light guide 14 and associated with individual keys of the key array 6.

The front face 3 is overlaid with a pillow 16 providing apertures 17 to channel sound from a loud speaker 18 and providing an appropriate feel for an element of the device that may be located close to the user's ear in certain applications. The front face 3 is surrounded by a bezel 19 that can be made from a precious metal. This acts to protect the edges of the light guide 14 and can help in some embodiments in securing the elements of the casing 2 together.

The keys of the key array in this particular embodiment are arranged to provide particular sensory guidance to the user. Aspects of the design also allow the light guide 14 to be made from a wide range of materials including those that are brittle and so need to be carefully handled and protected from shattering.

The casing 2 is formed from the front face 3 surrounded by the bezel 19, a side frame 20 and a back cover 21. The interface between the side frame 20 and the bezel 19 and the side frame 20 and the rear cover 21 are shielded by rails 22, 23 in this embodiment. The rails 22, 23 hide raw edges from view and exposure to ensure that the device 1 is both long lasting and elegant. The construction of the casing 2 enables the casing 2 to be opened with ease to update the engine 24 inside when desired. The casing 2 is also designed to allow the device to accommodate different sized and shaped engines 24, which may be necessary through its life.

Other elements of the design will be discussed in greater detail with reference to the later drawings. By way of introduction, the device will be briefly discussed with reference to its functional elements.

The electronic device 1, includes the key array 6, a display 25, an antenna 26, an ear piece speaker 18, a polyphonic speaker 27, and a microphone 28. Fig. 3 shows schematically and functionally elements of the device 1. The

microphone 28 records the user's speech (for example when the device is in voice recorder mode), and the analogue signals formed thereby are A/D converted by an A/D converter before the speech is encoded in an audio part 29. The encoded speech signal is transferred to processor 30. The processor 30 may support software in the device. The processor 30 also forms the interface to peripheral units of the apparatus. These may include a Random Access Memory (RAM) 31 and a Flash Read Only Memory (ROM) 32, the display 25, and the key array 6.

Conversely, speech stored in the memory 31 or 32 is played to the user by the audio part 29 decoding the stored encoded speech signal and forwarding the signal to the speaker for audible output.

Peripheral units of the apparatus may also include a memory card 33. Such a memory card may be removable, and, for example, carry information which may be used in a plurality of devices, or may be transferred from one device to another.

As discussed above, the front face 3 is optically permeable and acts as a light guide. The seamless light guide, passing light over the display region 4 as well as providing light to illuminate the key legends 15 reduces the number of lighting elements required to illuminate the device and provides a seamless transition from one area of the front of the device to another. By using this technique for delivering light and also allowing the light guide 14 to form the front surface of the device 1 as in the embodiment disclosed, the device is visually striking, there being no visible transition from the display region 4 to the input region 5 where the key array 6 is located.

The embodiment illustrated in Figure 1 has a light permeable front face 3 that can be formed from sapphire or a similar precious stone. As soon as a mineral such as sapphire is used in place of other more flexible light permeable materials such as plastics, additional problems are introduced

associated with the character of the material. In designing a durable device having, for example, a brittle material for a front piece 3 there are many difficulties. In one manifestation of the embodiment illustrated in Figures 1, 2 and 4 to 6, the light guide 14 is an operatically seamless composite layer. As can be seen most clearly in Figure 4, a plastics layer 37 that may be formed from Perspex or other transparent and/or translucent materials runs the entire length of the front face 3. There is a cut-out 38 for accommodating the ear piece speaker 18 that is optimised for use close to the ear. There is another cut-out accommodating a light pipe diffuser 39. This is located under the pillow 16 and extends across the width of the device 1. By placing the light pipe 39 under the pillow 16, a bright area on the front face is avoided and the light visible in the light guide will be diffused. LEDs 40, 41 are located at each side of the device at each end of the pipe 39. Light from the LEDs 40, 41 is channelled through the pipe 39 and diffused. The light pipe 39 in this embodiment, is coated with reflective material so that light is channelled through the surface 42 that runs along the top of the LCD display 25. Embodiments without the coating provide some of the advantages. The diffused light is accordingly channelled into and along the major axis of the light guide 14 to provide substantially uniform lighting for the LCD 25.

In this way light is pumped into the light guide 14 along the major axis from above the LCD 25. The light from the light pipe 39 illuminates the display region 4 and provides lighting for the input region 5. As illustrated in Figure 15, additional LEDs 43 or other lighting elements are positioned along the edges of the Perspex layer or sheet 37 in the input region 5 to further illuminate the legends 15 for the keys of the array 6. The surface of extending portions 78 of the Perspex layer or sheet 37 is shaped to channel light from adjacent top firing LEDs 43 or the like towards the upper surface of the main portion of the layer or sheet 37. This assists in providing substantially uniform lighting for the input region. The additional LEDs 43 or the like are shielded from view by the bezel 19 to avoid light spots being visible and encouraging a uniform diffuse light across the light guide.

The LCD 25 itself is bonded to the rear surface of the Perspex sheet 37 with an energy absorbing adhesive sheet 45. Using this technique and ensuring that there are no air gaps between the front of the LCD 25 and the Perspex sheet 37, provides a robust solution for mounting the LCD 25. The surface of the LCD 25 that is delicate and generally needs a protective layer distanced from it is protected by the Perspex layer 37 adhered to one of its faces. The drivers 44 for the LCD 25 can be seen in Figure 5.

In the embodiment illustrated the Perspex layer 37 includes apertures 48 for locating individual keys and allowing the key shafts 49 to travel to make contact with a printed circuit board 50 located within the casing 2 to register user input. An independently inventive key layout, suitable for use with the general concept discussed, will be described in greater detail below.

As can be seen most clearly from Figure 4, the second layer of the composite light guide 51 is made in a number of sections 52 - 58. This is to allow for the choice of brittle materials to be used for the second layer 51. Sapphire has properties including its scratch resistance and optical clarity that make it suitable for use in this context although the material of this element is selectable a ceramic material could be utilised in this arrangement. Other suitable materials are glass and other minerals and precious and semi precious stones. When a transparent material such as sapphire is used, however, the light guide provides an external surface to the device. Arrangements for the second layer similar to those disclosed in concept in the illustrated embodiment are not necessary when the materials are not brittle. Alternative arrangements will, however, be apparent to the skilled man for accommodating brittle materials in this context.

As mentioned above sapphire is brittle. When considering how to introduce such a material into a casing 2 that is to be long lasting and durable, problems arise. This is particularly the case when the device 1 will inevitably be

subjected to knocks and is likely to be dropped many times in its long existence. All brittle parts are bonded to a carrier formed from e.g. plastic or titanium in order to better absorb shock. In the embodiment described, the sapphire is formed in individual sections 52 - 58 for ease of manufacture. Each of the pieces is adhered to the Perspex layer 37 using a UV curing adhesive based on hybrid acrylic technology. In order to increase the durability of the composite light guide 14 and strengthen it against damage, the sections 52 - 58 are adhered to a more flexible Perspex layer 37 leaving gaps 59 extending across the entire width. These gaps 59 act as hinges to allow the composite layer 14 to be relatively flexible along its major axis. In the embodiment illustrated, the layout of the key array 6 has been designed with this in mind. The alpha numeric keys 7 are arranged in groups of three extending across the whole width of the second layer of the composite 51. The function keys or soft key 8, 9 are also arranged in two groups of three. The soft keys 8, 9 and the top scroll key 12a follows the line of the alpha numeric keys 7. The application keys 10, 11 and the bottom scroll key 12b, which is displaced from the line of the others, defines the lower edge of one of the elements 57 and the upper edge of another of the elements 56. This makes the second row of keys 10, 11, 12b distinctive whilst still avoiding problems in manufacture of the elements 52 - 58. The specific key array 6 illustrated has other properties and advantages that will be discussed later.

Although the embodiment described is designed with a brittle material such as sapphire in mind, the resultant arrangement could be formed from any number of other materials including plastics that provide the required optical characteristics. Similarly different key arrangements could be used without departing from individually inventive concepts that are disclosed.

When using a brittle material for a front face light guide 14 problems are also encountered when connecting the front face 3 to the rest of the casing elements. In the illustrated embodiment the edges of the brittle elements 52 - 58 are protected by the bezel 19 that sits around the whole of the face. The

bezel 19, in this embodiment, is formed from a bezel support 60 overlaid with a 0.5 mm thick metal sheet, the bezel cover 61. The metal sheet 61 is bonded to the bezel support 60, that may be formed from plastic, with an adhesive such as a two part epoxy adhesive or a two part acrylic adhesive. As the metal sheet 61 is relatively thin this keeps the weight of the casing 2 down and also allows relatively precious metals such as titanium or gold to be used at relatively lower cost. The bezel 19 could, however, be a single part and/ or be formed from a single material for example titanium nickel or chrome.

The transparent face 3 in this particular embodiment is securely held in place by a robust mechanism. The Perspex layer 37 to which the elements 52 - 58 are bonded extends beyond the area covered by the elements to provide a lip or edge 62 around the whole of the composite light guide 14. This edge 62 is used to secure the front face 3 in position as it is tucked under the bezel 19 that defines the perimeter of the front face and squeezed between the bezel 19 and the side frame 20.

As can be seen in Figure 1, the bezel 19 is punctuated with front face protectors 63 whose function will be described in more detail later. These front face protectors 63, in this particular embodiment play a role in holding the casing elements together.

The front face protectors 63 have a tip part 64 that extends over the bezel 19 and a shaft 65 that passes through the bezel 19 and into the plastic side frame 20. The shaft 65 may be tightened onto the frame 20 using a nut 95. In this case the nut stops the front face protectors from falling out of the device. In one embodiment the shafts 65 are screwed into the tips 64 at one end and into the side frame element 20 at the other although other manners of connection could be employed. The shaft 65 and tip 64 could also be one piece rather than two. The bezel 19 and the Perspex layer 37 of the transparent face 2 are captured by the front face protector 63 and side frame

element 20 as can be seen in figure 9b. The front face protectors 63 accordingly grip the transparent face 3 securely between the side frame 20 and the bezel 19. The front face protectors 63 are only located next to the key array 6. In order to secure the transparent face 3 around its perimeter additional screws 66 are added to draw the bezel 19 towards the side frame 20 and squeeze the transparent face 3 in place. In one embodiment, the screws 66 thread through the side frame 20 and tap into the bezel support 60. Once the bezel support 60 is secured to the side frame 20 the outer shell 61 of the bezel 19 can be adhered to the support 60 to hide the tapped screw ends 66. Alternatively the bezel 19 is stuck to the support first (a sub-assembly) and this sub-assembly is then screwed to the frame.

As can be seen in the figures, although the more flexible transparent substrate 37 is overlaid by the bezel 19 secured in position by the front face protectors 63 and other connectors, the sapphire is maintained spaced from the bezel 19 so that it is protected from chipping or other damage as a result of contact. The edges of the sapphire elements do not protrude above the edge of the bezel 19 to provide further protection for the more vulnerable edges. In the arrangement described, the transparent face 3 is gripped in position between the bezel 19 and the side frame 20. The more flexible substrate 37 could, however receive screws or other fasteners to located it relative to the other frame members without damaging the more brittle sapphire layer. The choice of material for the bezel is one open to selection. Precious metals including gold, platinum, silver, steel amongst others would be suitable. The same applies to the material of the front face protectors. Both these elements and others that the skilled man will realise are suitable could be encrusted with precious or semi precious stones such as sapphires, rubies, emeralds and diamonds amongst others. Other crystals or minerals or other materials and veneers could also be utilised.

To reduce the ingress of dirt or fluids a sealant 69 is located between the bezel 19 and the transparent face 3. One way in which this can be introduced

is to paint a seal on the underside of the bezel 19 which when dry is compressed between the transparent light guide 14 and the bezel 19 when the bezel 19 and the side frame 20 are pulled together.

As can be seen in Figure 6 or 9, a first rail 22 is located in the interface between the side frame element 20 and the front face 3. The rail 22 hides the discontinuity between the parts from sight and protects vulnerable edges to enhance the durability of the device 1. The rail 22 may be a stamped metal piece 'T' shaped in section extending around the perimeter of the side frame 20. The stem of the 'T' 68 is trapped between the side frame member 20 and the bezel 19 as these two pieces are drawn together on assembly. The stem of the T has apertures 70 that sit over corresponding projections 71 on the side frame 20 member to prevent it from being withdrawn from between the two parts when in position. The top of the T acts as a carrier plate to which an additional extruded piece 72 is soldered or otherwise adhered to provide a seamless finish. The stem could instead be formed from a plastics material.

The side frame member 20 in this particular embodiment is a plastic support 73 with an exterior cover 74. The cover 74 may again be a metal sheet formed, for example, from a precious metal or perhaps a wood veneer or another layer such as leather or other skin. The bonding agent most suitable for adhering the layer to the plastic frame member 73 will differ depending upon the materials that need to be adhered. For metal to plastic a suitable adhesive is a 2 part epoxy resin or 2 part acrylic adhesive. For metal to metal the adhesive would be a reactive polyurethane film or a two part epoxy resin. Similarly the back cover 21 in this embodiment may have a plastic frame and be covered with for example a leather, wood or perhaps metal veneer. With the flexible veneer materials such as leather, it is preferable for the material to be taut on the frame. This is achieved during the veneering process using conventional techniques.

The transparent face 3 provides a seamless transition between the display 4 and the input regions 5. In the display region 4, the LCD 25 is located behind the transparent face 3 and in the input region 5 the key mechanism 75 lies behind it. In one embodiment described, the key mechanism 75 can be seen through the front face 3. However, in other embodiments the inner surface 76 of the Perspex substrate 37 may be coated with an opaque material to prevent the inside of the device being seen. Alternative methods of obscuring the inner workings of the device from view such as introducing additional opaque layers or obscuring the view in other ways will be apparent to the skilled man.

For embodiments where, for example, the key operating mechanism 75 can be viewed through the front face 3, it may be desirable to obscure the PCB 50 from view.

The constructed casing 2 provides a housing for the printed circuit board 50 holding the engine components 24, and a battery 79. The casing 2 may also provide a memory card holder 80 to accommodate a memory card 81. For operation under some radio protocols this will clearly not be necessary.

Returning briefly to the front of the device, located above the display region 4 is the pillow 16 so named because it designed for the user to rest his or her ear against when making or listening to a voice recording or the like. The pillow 16 overlays the ear piece 18 of the device. As described previously there is a cut-out in the Perspex substrate 37 of the light guide 14 to accommodate the ear piece 18, the pillow 16, in the illustrated embodiment is adhered to the Perspex substrate 37 covering the ear piece 18. The pillow 16 provides suitable apertures 17 to channel sound to the user. The characteristics of pillow 16 both in terms of the material and surface decoration may be selectable by a commissioning party.

The Perspex and sapphire light guide 14 is relatively cold to the touch, the material of the pillow 16 can be chosen to be a material that is inherently warmer to the touch and less prone to marking than a transparent shiny surface. Materials that are thought to be particularly suitable are ceramics or wood and leather veneers. The shape of the pillow 16 obscures part of the LCD 25, providing opposing triangular sections 82, 83 that are used to indicate battery capacity and the like.

To complete the structure, the casing 2 has a rear cover 21 and internal compartments 84, 85 suitable for retaining the engine 24 the battery 79 and in this embodiment a removable memory card 81. The device illustrated, in common with many other consumer electronic devices, advantageously allows access to the battery compartment 85 as the battery 79 may periodically need replacement. In order for the engine 24 to be protected during this activity, the battery 79 is retained in a compartment providing connectors to the engine 24. Along side the battery compartment 85 in this embodiment is the memory card holder 80. The user may wish to remove the memory card 81, for example to use it in another device or to transfer information to/from another device. For this reason it is convenient for the back cover 21 to be removable to expose both the battery 79 and the memory card 81. The battery compartment 85 and memory card holder 80 are provided by an internal casing element 87 that is secured to the side frame 20. This may be formed from plastic or one of many other suitable materials. In one embodiment the compartments are formed from stamped metal sheet which may be stainless steel.

The battery contacts 90 protrude into the battery cavity 85 to provide a simple way of connecting the battery 79 to the engine 24. The battery connection will typically be have a power connector 91, a ground 92 and two signal connectors 93, 94.

In the embodiment illustrated, the power 91a,b,c and ground 92a,b,c connectors are divided into three. This reduces the resistance between the battery 79 and the engine 24 as the leads are in parallel, it also reduces the chance of power being lost to the engine 24 as a result of a harmonic resonance frequency of the connector being reached as at all times there is likely to be at least part of each three part connector completing the circuit between the engine 24 and the battery 79.

The casing 2 is completed by assembling the back cover 21 to the side frame 20. In the illustrated embodiment, the back cover 21 is formed from three pieces 96, 97, 98. A first piece 96 overlays the antenna location. In this embodiment it provides an aperture 99 in which the polyphonic speaker 27 is located to provide for polyphonic sound. This additional speaker 27 has not been optimised for use in close proximity to the ear as has the speaker 18 located beneath the pillow 16. This allows it to be more effective as a handsfree speaker and enables a greater range of tones to be utilised, for example in a tune composer. As the first piece 96 also covers the antenna its dielectric constant is relevant.

In a device of this type where the casing 2 is to survive generations of engines 24, the materials from which is formed are important. They should be hard wearing and durable, retaining their attributes for years longer than is currently required. For this reason ceramics have been considered as an option for the back cover 21 for some embodiments of the invention. Other materials already discussed such as metals or precious metals or veneers would also be possible. With ceramics, however, despite having many desirable characteristics, for locations near an antenna relevant for devices containing such an element, the dielectric constant of the material interferes with the desired transmission pattern.

To provide many of their desirable characteristics without the dielectric constant becoming too high, the rear cover piece 96 can be formed from a

material with a lower dielectric constant with a suitable depth of layer deposited on it. This technique and suggested materials could be used for other elements of the casing.

The rear casing element 96 covering the antenna is again screwed to the side frame element 20 and in the process captures the second rail 23 similar in construction to the first rail 22 between the side frame 20 and the back cover 21. Again the rail 23 is provided with apertures 70 that are positioned over corresponding projections 71 on the side frame 20 to more securely hold the rail 23 in position when the back cover 21 is attached.

A second rear casing element 97 covers the battery compartment 85 and the memory card holder 80. This element is releasably secured to the other casing elements using screws 99 to allow relatively easy access to the memory card 81 and battery 79. In a preferred embodiment a quarter turn of a screw 100 releases the cover element 97 to allow it to be removed. The same action can disconnect the battery 79 to allow the memory card 81 to be removed.

The second rear casing element 97 is attached to the side frame 20 in a similar manner to that described in relation to the first rear casing element.

The third element of the rear casing 98 covers the handsfree speaker 27. This may be only relatively thin and formed from a precious material such as gold. It will be provided with a suitable aperture 102 to channel sound from the polyphonic speaker 27 that may be used in hands free mode and for providing an audible ring tone.

In the embodiment described the front 3 and rear casing elements 96, 97, 98 are secured to the side frame 20. A silicon sealant 69 or similar may be extruded around the inside of the back cover 21 to prevent unwanted ingress of dirt and fluid.

The skilled man will realise that the number of parts and the manner in which they are connected can be changed without departing from the several inventive concepts described. For example, in other embodiments the casing may be held together using other techniques and in other ways.

As well as obscuring exposed edges, the rails 22, 23 provide additional elements for customisation as they can be formed from a variety of different materials, in particular different types of precious metal for example gold or platinum as discussed previously in relation to the bezel. The material for the entire 'T'shaped piece or the extruded element could be a precious metal. They also act to protect vulnerable edges of veneered frames from exposure to potentially damaging forces. In doing this unsightly edges are obscured from view. This provides quality and durability in keeping with the overall concept of a retainable casing for an electronic device. Regardless of the material of the veneer, this is a convenient arrangement for securing all the elements in place for a durable finish.

In an alternative embodiment illustrated in Figure 4b, instead of providing rails 22, 23 to protect exposed edges, the adjacent edges themselves are turned inward 105, 106 and held in close proximity. This arrangement also provides the advantage of protection and keeps unsightly discontinuities from view.

A casing with an optically permeable front face provides new opportunities. In a particular embodiment, described with reference to figures 12 and 14 legends 15 associated with the keys of the key array 6 are located on both the front 37a and rear 37b surfaces of the Perspex layer 37. With electronic devices becoming ever more sophisticated, it is common for each key provided to have a number of different functions. It is useful to be able to label visually the different possible functions associated with a key. For the alpha numeric keys 7 in particular, each key is associated with a single digit and a group of letters or symbols. Ideally these should be displayed clearly.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000201

Historically the keys have held the associated legends. As devices have become smaller this has, however, becomes more difficult, it being an especial problem to distinguish between the different legends for respective modes of operation as the letters and numbers are so small. In the illustrated embodiment, the legends 15 for associated keys are located on respective surfaces of the light guide 14 which, as the device is tilted, move together or apart depending upon the angle from which they are viewed. This provides a visual distinction between the legends 15 on the different surfaces which can be used to distinguish between the modes of operation. As the front face is optically permeable, the legends appear to float in or above the device. By spacing the legends along an axis perpendicular to the third dimension, the thickness of the front face, the front face is given some prominence, thus an additional dimension has been added to the normally opaque front face.

In the embodiment illustrated the legends 15 are located on the outermost and innermost surfaces of the Perspex layer 37a, 37b. The legends 15 appear to be floating in the light permeable layer. The manner in which the legend 15 is located on the layer is a matter of choice for the skilled man. One method is to print the legend on to the surface using an etched plate filled with ink. Another way may be by using PVD (Physical Vapour Deposition) techniques to deposit the 'printing' directly onto the Perspex layer. Other techniques for fixing legends could be used including attaching labels.

In the embodiment discussed the legends 15a 15b are located on opposing surfaces of the Perspex layer 37a 37b. This enables a single element, the Perspex layer 37, to be printed instead of each of the sapphire or other pieces 52 - 58. Problems encountered with ink wearing off when printing techniques are used are also avoided by protecting the surfaces containing the printing with the second layer. In other embodiments and to increase the depth of spacing of the legends and hence the separations possible when viewed at different angles it may be desirable to place the legends on the innermost 37a

and outermost surfaces 51a of the composite. In order to fix the legend 15 printed on the outer surface 51a where it may encounter wear, a coating or other protective layer may be provided over the surface. This may not be necessary if PVD techniques are used to produce the legend 15 as such techniques produce a bond between the deposited layer and the substrate that is more hard wearing. In still other embodiments the legend 15 could be provided on the underside 51b of the sapphire elements and on the innermost layer of the Perspex substrate 37b. Again by avoiding the external surfaces of the transparent layer the problem of wear of the legends 15 is largely avoided. The outermost legend is protected by the top layer 51 of the composite light guide 14 and the innermost legend 15 is not accessible.

In sandwiching the legends between two optically permeable layers 37, 51 which of the two sandwiching layers carries the legend is largely immaterial. The properties of the respective materials, if indeed they are different, and other factors can be taken into account in deciding which layer 37b, 51b actually carries the legend. With a composite optically permeable substrate, the more layers that are provided, the more visually distinguishable legends can be accommodated. For example with two composite layers there are three available planes for legends, with three layers, four planes and so on. If all the legends were placed adjacent a single key, the visual distinction may cause difficulty with large numbers of layers being used to distinguish functionalities. Other embodiments could use the different planes for legends at different locations on the device so that one set of keys has a legend in a first plane, a second set of keys in a second plane and so on.

To accentuate the illusion of the legends floating, or to increase the distinction between the two layers, the thickness of the optically permeable layer between the respective layers carrying the legends can be increased. In the same way these features can be reduced by decreasing the thickness between the planes carrying the legends.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000203

The ink or paint can be chosen by the skilled man to provide a number of effects. The ink may, for example, be required to pearlesce or fluoresce, or be black, white, or one or more of a wide range of colours. As the legend is located on a light guide, fluorescent and pearlescent materials enhance the visibility of the legends. The type script, colour or other character of the legend or element carrying the legend may be selected by a commissioning party.

Instead of techniques that add ink or other visible materials to the surface merely etching the layers may be sufficient to make the legends visible if the illumination is adequate.

Embodiments illustrating the location of legends associated with keys in a light permeable face has been described with reference to the illustrated embodiments in the context of other independently inventive features claimed in copending applications. The skilled man will realise that many alterations to the specific features disclosed can be made without departing from the scope of the invention.

The skilled man will be aware that the character described above in relation to specific elements of the device can be mixed and matched to suit many distinct design options.

The input region of the device will now be described in more detail, primarily with regard to Figures 9 and 15 to 21

The input region 5 comprises a key array 6, as described above. In this embodiment, the key array is made up of a plurality of individual keys 7-13. Each of these individual keys comprises a key tip 64 and shaft 49 extending from substantially the centre of the key tip 64, together with an upper bearing 103, O ring 107, circlet 108, spring plate 110 and lower bearing 109 positioned respectively along the shaft 49a from the key tip 64. The spring

plate 110 is supported by a spring plate support 114 provided on the PCB 118. The spring plate comprises a main body, and a tongue 111 formed from a single piece of sheet metal. The tongue has been formed by stamping an inner portion of the sheet, so that two sides and an end of the tongue are free from the remaining main body of the sheet. The spring plate also has a portion or portions stamped out to provide an aperture for the key shaft 49 and spring plate support 114. One end 113 of the spring plate comprises contacts for contacting respective contact regions on the PCB. As will be appreciated by a person skilled in the art, a single contact could be used for this purpose, but the provision of two contacts provides greater reliability. The spring plate support 114 comprises three members upstanding from the PCB 118. These members may form part of a unitary structure, or may be separate elements. The first member comprises a recess 115 dimensioned to receive one end 112 of the spring plate 110 and hold that end 112 in position. The second member of the support 114 comprises a lip 116 extending towards the first member. This lip 116 is provided to restrict the upward movement of the other end 113 of the spring plate 110. The third member of the support 114 comprises a recess 117 for receiving the end of the tongue. This third member is positioned relative to the second member, such that the tongue of the spring plate 110 has to be flexed in order for the end of the tongue to correspond with its recess 117. Optionally, the spring plate support may comprise a fourth member comprising a lip extending towards the second member. In this case, the PCB contact regions are extended to the surface of this lip, so as to bring them closer to the spring plate contacts. Alternatively the contact region bearing lip may be formed as part of the second member itself, or eliminated altogether.

As mentioned above, in the present embodiment, the individual keys are grouped in threes, their tips extending across the whole width of the second layer of the composite 51. This facilitates manufacture of the brittle elements 52 to 58. The tips of the alphanumeric keys 7, soft keys 8, 9 and top scroll key 12a are in alignment with those of the other keys in their group. In the

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000205

remaining group of keys, however, the tip of the bottom scroll key 12b is displaced from the line of the tips of the other two keys in its group, namely the application keys 10, 11. In any event, in each group the edges of adjacent key tips complement each other, and are closely spaced. This eliminates the need for the composite 51, or other filler material, to extend between the key tips. It also has the advantage of simplifying the overall appearance of the input region of the device to the user. Further properties and advantages of the specific key array 6 will be discussed below.

As can be seen in particular from Figures 17 and 18, the spring plates 110 and supports 114 of adjacent alphanumeric keys 7 are positioned perpendicular to each other. This provides a geometrically simple solution to the problem that the spring plates cannot be positioned in alignment with the keys themselves. One cause of this problem in the embodiment illustrated is that the spring plate of each outer key is longer than the average length of its corresponding key tip, and this extra length cannot be accommodated elsewhere. This is primarily because the spring plate of each central key is only minimally smaller than the average length of the corresponding key tip, and the keys are closely abutted (there is only a gap of about 0.245 between the keys) so that there is insufficient space to allow for the extra length. Furthermore, whilst the key shaft 49 of each key is substantially central to the key tip 64, the key shaft aperture of the spring plate 110 is off-centre. This exacerbates the problem for the outer keys, and even results in the spring plate of each centre key not being able to be accommodated in the space under its corresponding key tip.

The keys may be constructed, and the input region of the device assembled as follows. Upper bearings are inserted into the apertures 48 of the Perspex layer of the device. Ruby bearings are preferably selected for this purpose, for three main reasons. Firstly, ruby is very hard wearing, and will thus be able to handle multiple operations of the keys over a substantial period of time. Secondly, the upper bearings of this device are larger in diameter than

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000206

the corresponding widths of the key tips, which means that they will be visible in situations in which the front face of the device is transparent (e.g. second layer 51 may be sapphire). Hence, advantage may be taken of the fact that a ruby is an attractive jewel, which the user will be pleased to see. Thirdly, the use of a hard material such as ruby will provide greater accuracy of fit of the key in the device, as opposed to using a resilient material, such as PFTE.

Lower bearings 109 are provided in a titanium plate which is fixed to the rear of the PCB 118. The inner and outer diameter of the lower bearings 109 are smaller than the upper bearings 103, but their centres are aligned. They are also preferably made of different material – the material of the lower bearings having shock absorbing qualities such as PFTE.

The key shafts 49 are machined, to have a first portion 49a of appropriate thickness to pass through the inner diameter of the upper bearings 103 and a second reduced diameter portion 49 to pass through the inner diameter of the lower bearings 109. Shaft 49 and circlet 108 may be machined from a single piece of metal, or the circlet 108 may be subsequently attached to the shaft 49. They are preferably formed of stainless steel. Further, an O ring 107 is provided adjacent the circlet 108, on the thicker diameter portion 49a of the shaft 49, to provide a water seal. Both the circlet 108 and the O ring have an outer diameter smaller than that of the upper bearing, so that they are not visible to the user when in situ. However, the circlet has an outer diameter sufficiently larger than the inner diameter of the upper bearing, so as to prevent the key from falling out of the device.

The key tips are crafted into the desired shape from a desired material, which may be a metal such as gold, platinum, silver, or stainless steel. They may also bear precious stones. For example a key tip or tips may be diamond encrusted, or have a precious stone set in it. Once a key shaft has been passed through an upper bearing, a key tip is joined to it. This may be achieved using conventional braising techniques.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000207

The spring plate supports 114 are provided on the PCB 118. Each spring plate support 114 is preferably of unitary structure, manufactured from lightweight metal such as aluminium. The supports may then be soldered onto the PCB using conventional techniques. The spring plate supports 114 are positioned to hold the spring plates 110 so that the centres of their shaft apertures align with those of the lower bearings 109. Contact regions for the spring plate contacts are provided on the PCB (or the lip of the second or fourth member of the support as described above).

The spring plates 110 themselves are provided by stamping sheet metal, such as beryllium cooper with gold flash or the like. The plates 110 are affixed to the supports114 by positioning one end 113 of the spring plate under the lip 116 of the second member of the support 114, fitting the other end 112 of the spring plate in the recess 115 of the first member of the support 114, flexing the tongue so that its end corresponds to the recess 117 of the third member of the support 114, and positioning the end of the tongue in that recess. When in position, the free end 113 of the spring plate 110 is naturally biased upwards toward the restraining lip 116.

The dimensions of various components of the keys and their relative positions are important in smooth key operation. The distance between the upper and lower bearings has been maximised by placing them either side of the spring plate switching mechanism and passing the shaft through the spring plate. In such a position, the bearings hold the key straight when it is operated, thereby avoiding contact with neighbouring key tips or the need to place keys further apart to prevent such contact. This, in turn, results in good switching functionality and feel.

Also, the dimensions of the keys are such that the lower surface of each key tip 64 contacts the surface of the Perspex layer 37 before excess pressure can be applied to the spring plate 110. In the present embodiment, the circlet

108 is positioned along the shaft such that it gently rests on the spring plate when the keys are in their normal non-depressed state. Also, the thicker portion of the shaft is of an appropriate length that, when in the normal state, there is a gap between the lower surface of the key tips and the surface of the Perspex layer 37 which is the same as, or only slightly greater than the distance the circlet 108 has to travel to cause the spring plate contacts to contact the contact regions.

This overcomes a potential problem of pressure being applied to the spring plate if the switch itself provides the end stop for the motion.

The dimensions of the keys are also important for the external appearance of the device. Preferably, the key tips are of a thickness that they protrude from the surface of the second layer 51 of the composite, at least when the keys are in the aforementioned normal state. When the composite is substantially transparent, this will give the impression of floating keys, and add to the three dimensional effect mentioned earlier concerning the key legends 15. Furthermore, the key tips should be sufficiently deep to be partially sunk into the second layer of the composite, and preferably have at least two opposing substantially flat sides which correspond with sides of the second layer to prevent lateral rotation of the keys. A gap of the order of 0.1mm is achieved in the present device between the keys and second layer of the composite: a gap insignificant to the human eye and suitable for assisting in the prevention of lateral rotation of the keys. Lateral rotation is further hindered in the present embodiment, by virtue of the provision of mirrored slanting of the sides of adjacent keys.

In order to ensure the correct relative spacing of elements of the key, the Perspex layer 37, PCB 118, and titanium plate 77 are clamped together. In this embodiment, the clamping is provided by the front face protectors 63, and by the provision of additional tapped bosses in projections 68 of the Perspex plate and associated fixing means. Consequently, once the keys have been positioned, the Perspex layer, PCB and titanium plate can be clamped

together using the bosses and fixing means, thereby holding the keys in place and forming a manageable module. This module may then be readily installed in the device using the front face protectors as described above with reference to Figure 9B.

Operation of the keys of the device will now be described. As the user applies pressure to a key tip, the shaft moves downwards, travelling through the bearings and shaft aperture of the spring plate. This results in the circlet applying pressure to the part of the main body of the spring plate which defines the shaft aperture. Continued pressure on the key tip will then cause the circlet to apply an increasing force to this part of the spring plate, causing the main body to deform around the circlet. Eventually, this deformation will cause the tongue to overcentre, resulting in the free end 113 of the spring plate 110 flicking from its naturally biased position (upwards towards the restraining lip 116) to a second position, in which the spring plate contacts contact the contact regions on the PCB. An electrical signal is consequently sent to the processor indicative of actuation of that key. This arrangement gives a distinct click providing a clear quality indication to the user that the key has been actuated. As the user removes pressure from the key tip, the circlet, in turn, removes pressure from the spring plate 110. The tongue promptly returns to its normal position, and the free end of the spring plate flicks up to its naturally biased position, breaking the contact. This again gives a distinct click providing a clear quality indication to the user that the key has been deactivated.

Figure 20a is a graph illustrating the force against distance profile for a key such as that illustrated in Figures 17 and 18. This profile improves the tactility of the key over, for example, a typical keydome arrangement, which had a fairly flat profile as can be seen in Figure 20b. When using a conventional key dome type arrangement, the user has to apply a constant force until the point where the key actuates. As a result, he does not get a tactile indication that he is nearing the position when actuation is likely to occur. In contrast,

when using the device illustrated in Figures 17 and 18, the user can realise the fact that he is nearing the position when actuation is likely to occur as he is having to increase the force applied for a given travel of the key. Furthermore, the user is informed when actuation takes place, and again when deactuation takes place, by respective clicking sounds provided by the key.

The central V shaped key tips of the embodiment illustrated in Figure 1 enable the user to determine the central vertical axis of the device both by sight and by touch. This is made even easier by the pillow 16 being provided with an apex. Consequently the user can quickly locate a desired central key. The apexes of each central key tip also identify the mid point along the length of the key tip, the point from which the key shaft 49 extends. Hence, they facilitate more accurate depression of the key. This, in turn, may assist in the prevention of contact with neighbouring key tips or the need to place keys further apart to prevent such contact.

Likewise, in this embodiment, the combination of adjacent outer key tips and front face protectors forming a V shape enable the user to determine the position of the vertical axes to one side of which the outer keys lie. Consequently, the user can quickly locate a desired outer key. The key location process is facilitated in this embodiment as the outer key tips extend to the interface between the second layer of the composite 51 and the bezel 19.

The front face of the device illustrated in Figure 1 is protected by the pillow and front face protectors, 63. The front face 3 is slightly convex, with the highest points lying along its central longitudinal axis. Hence, ordinarily, if placed face down, the device would rest on this axis, resulting in scratches to its surface. Clearly, this is not acceptable, particularly when the second layer of composite is sapphire or the like. The device illustrated in Figure 1 has been designed to avoid this problem. The pillow 16 and face protector 63a

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000211

prevent the device resting on the second layer of composite. Also, as mentioned above, in the preferred embodiment the key tips protrude slightly from the surface. Hence, the central key tips too may protect the second layer of composite from damage. However, preferably the pillow 16 and chin front face protector 63a are raised sufficiently above the front surface, that the device does not rest on the central key tips either, so as to protect them from damage too.

The device is also designed so that the front face is protected if the edge of the face is knocked. As can be seen from the plan view of the device, depicted in Figure 21, the bezel front face protectors 63b protrude beyond the surface of the second layer of composite along the interface with the bezel, thereby protecting the second layer of composite from damage in that region. They also reduce the likelihood of damage to the bezel due to knocks. Moreover, they protrude further than the adjacent key tips, hence protecting those key tips from damage too.

One further benefit of the front face protectors 63, particularly the bezel is that they are dimensioned so as to prevent the keys from being accidentally actuated if, for example, the device was placed face down. That is, the top surface of the front face protector tips should either be at the same level or higher than the top surface of a key tip (e.g. as in the relationship between the protectors 63b and the adjacent outer key tips) or, if they are at a lower level than the top surface of a key tip, the distance between the top surface of the protector and key tips must be smaller than the distance the key needs to travel in order for the spring plate contacts to contact the PCB contact region for actuation the key.

In order to commission a casing for an electronic device there will be a list of designated casing elements the characteristics of which are selectable by a commissioning party. This list of possible parts for personalisation may be provided in amongst other ways on a computer, on a web site or as a paper

list in a suitable store. The party commissioning the device can then select the characteristics of the designated elements from a set of possible options provided. In alternative embodiments the scope for originality in the characteristics of individual ones of the designated elements may be greater and the commissioner may be given a practically free hand in determining the material, and other additions such as surface decoration by etching or engraving and, amongst other things, encrustation.

The entire process could be computerised so that the selected characters of the device are readily conveyed to a manufacturing location or location for realisation of the selected characters for the designated elements. This could be via an intermediary that records the customers specifications for later use and utilises the skills of a range of craftspersons to make the required elements and co-ordinates the collocation of the individual elements for assembly. The device will be described in greater detail below with exemplary materials being given for specific elements of the device. Where a material or veneer is discussed in relation to an element, the reader should be aware that the particular character of the element described is one of many or several that may be provided as options to a party commissioning a personalised device. In addition the exact material or surface decoration of the element could be individually commissioned. As another option the specification of the commissioner could be directly forwarded to a location with the selected elements in stock for immediate assembly. In this embodiment either individually commissioned elements would not be possible at all or restricted to a relatively small number of tasks that can be performed after the initial materials and finish of an element have been decided, such as engraving and possibly jewel encrustation.

For greater freedom in individually commissioned elements, these elements could be individually designed and fabricated and finally forwarded for assembly with the less unique elements. Should assembly of the elements

require particular skills or for perhaps other reasons the assembly may occur at yet another location.

The formed article is then conveyed to the end user.

Aspects of the invention have been discussed with reference to a personal digital assistant function. It will be clear to the skilled man that these aspects apply equally to other consumer electronic devices supporting in addition or as an alternative other functions, such as, amongst others games, and calculators.

The present invention includes any novel feature or combination of features disclosed herein either explicitly or any generalisation thereof irrespective of whether or not it relates to the claimed invention or mitigates any or all of the problems addressed.

In view of the foregoing description it will be evident to a person skilled in the art that various modifications may be made within the scope of the invention.

Claims

1. A customisable casing for a consumer electronic device defining an internal space for accommodating an engine and including an operating face for carrying a user interface having a plurality of user input elements, a rear face, and a side frame spacing the operating and rear faces one from the other, the operating, rear and side faces providing external surfaces of the device, the casing comprising a plurality of casing elements capable of individual formation wherein the character of the individual casing elements are respectively selected by a commissioning party.

2. A customisable casing according to claim 1 wherein a character of at least one of the respective casing elements capable of individual formation is selected from a predetermined set.

3. A customisable casing according to claim 1 or 2 wherein a character of at least one of the respective casing elements capable of individual formation is fashioned to individual specification.

4. A customisable casing according to any preceding claim wherein casing elements capable of individual formation comprise respective elements of a key structure.

5. A customisable casing according to claim 4 wherein the elements of the key structure comprise bearings.

6. A customisable casing according to any preceding claim wherein casing elements capable of individual formation define the exterior surface of the casing.

7. A customisable casing according to any preceding claim wherein casing elements capable of individual formation are visible from the exterior of the casing.

8. A customisable casing according to any preceding claim wherein a character of the individually formable elements comprises a surface decoration.

9. A customisable casing according to claim 8 wherein the surface decoration comprises a veneer.

10. A customisable casing according to claim 9 wherein the veneer is selected from the group comprising leather and wood.

11. A customisable casing according to claim 9 or 10 wherein the material of the veneer is a precious metal.

12. A customisable casing according to any one of claims 9 to 11 wherein the material of the veneer is a metal.

13. A customisable casing according to any one of claims 9 to 12 wherein the veneer is formed on a substrate of plastics material.

14. A customisable casing according to any one of claims 9 to 13 wherein the surface decoration comprises an engraving.

15. A customisable casing according to any one of claims 9 to 14 wherein the surface decoration comprises encrustation.

16. A customisable casing according to claim 15 wherein the encrustation comprises precious or semi-precious stones.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000216

17. A customisable casing according to any preceding claim wherein the material of an element comprises a character of an individually formable element.

18. A customisable casing according to claim 17 wherein the material comprises a precious stone.

19. A customisable casing according to claim 17 wherein the material comprises a mineral.

20. A customisable casing according to claim 17 wherein the material comprises a ceramic material.

21. A customisable casing according to claim 17 wherein the material comprises a crystal.

22. A customisable casing according to claim 17 wherein the material comprises a jewel.

23. A customisable casing according to claim 17 wherein the material is sapphire, diamond or glass.

24. A customisable casing according to claim 17 wherein the material comprises a metal.

25. A customisable casing according to any preceding claim wherein the casing is usable with respective engines having hardware providing respective processing functionalities.

26. A customisable casing according to any preceding claim wherein the casing is long lasting and durable.

27. A consumer electronic device comprising a casing according to any preceding claim.

28. A device according to claim 27 wherein the device is a personal digital assistant.

29. A casing substantially as hereinbefore described with reference to figures 1 to 10, 11a and 12 to 21 of the accompanying drawings.

30. A casing substantially as hereinbefore described with reference to figures 1 to 10, 11b and 12 to 21 of the accompanying drawings.

31. A consumer electronic device substantially as hereinbefore described with reference to figures 1 to 10, 11a and 12 to 21 of the accompanying drawings.

32. A consumer electronic device substantially as hereinbefore described with reference to figures 1 to 10, 11b and 12 to 21 of the accompanying drawings.

33. A method of providing means for the commissioning of a customised casing for a consumer electronic device defining an internal space for accommodating an engine, the casing having a user interface including a plurality of keys for user input, the method comprising:

providing a list of options for selecting the character of predetermined casing elements capable of individual formation to a commissioning party; and

communicating the selections for initiating production of the customised casing.

34. A method according to claim 33 further comprising:

receiving the characters of a plurality of casing elements capable of individual formation respectively selected by a commissioning party; and

assembling a casing in accordance with the selected characters in response to receiving the characters.

35. A method of producing a consumer electronic device comprising producing a casing in accordance with claim 34, selecting an engine having a desired functionality and assembling the casing and engine.

36. A method according to any one of claims 33 to 35 further comprising the step of dispatching the assembled casing.

37. A method according to any preceding claim wherein a character of at least one of the respective casing elements capable of individual formation is selected from a predetermined set.

38. A method according to any preceding claim wherein a character of at least one of the respective casing elements capable of individual formation is fashioned to individual specification.

39. A method of assembling a casing in accordance with claim 38 when dependent on claim 34 comprising forming an individual element and assembling with other casing elements to produce a customised casing.

40. A method according to any of claims 33 to 39 wherein the casing comprises a front face, rear face and side frame incorporating the casing elements having characters in accordance with respective selections.

41. A method according to any of claims 33 to 40 wherein the character of a casing element is defined by the material from which the element is formed.

42. A method according to any of claims 33 to 41 wherein the character of a casing element is defined by a surface decoration provided on the casing element.

43. A method substantially as hereinbefore described with reference to figures 1 to 10, 11a and 12 to 21 of the accompanying drawings.

44. A method substantially as hereinbefore described with reference to figures 1 to 10, 11b and 12 to 21 of the accompanying drawings.

45. A method for enabling production of a customised casing for a consumer electronic device defining an internal space for accommodating an engine, the casing having a user interface including a plurality of user input elements for user input, the method comprising:

designating a plurality of casing elements capable of individual formation, the character of which is selectable by a commissioning party;

allowing the character of each of the plurality of casing elements to be respectively selected by the commissioning party; and

communicating the selections for realisation of the customised casing.

46. A method according to claim 45 wherein the step of communicating is automated.

47. A method according to claim 45 or 46 wherein the step of allowing the character of each of the plurality of casing elements to be selected comprises providing a list of available options associated with each element with a selectable character.

48. A method according to any of claims 45 to 47 wherein the step of allowing is automated.

49. A method according to any of claims 45 to 48 further comprising

receiving the selections; and

assembling a casing in accordance with the selected characters in response to receiving the selections.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000220

50. A method in accordance with claim 49, comprising selecting an engine having a desired functionality and assembling the casing and engine.

51. A method according to claim 50 further comprising the step of dispatching the assembled casing.

52. A method according to any of claims 45 to 51 wherein a character of at least one of the respective casing elements capable of individual formation is selected from a predetermined set.

53. A method according to any of claims 45 to 52 wherein a character of at least one of the respective casing elements capable of individual formation is fashioned to individual specification.

54. A method of assembling a casing in accordance with claim 53 when dependent on claim 49 comprising forming an individual element and assembling with other casing elements to produce a customised casing.

55. A method according to any of claims 45 to 54 wherein the casing comprises a front face, rear face and side frame incorporating the casing elements having characters in accordance with respective selections.

56. A method according to any of claims 45 to 55 wherein the character of a casing element is defined by the material from which the element is formed.

57. A method according to any of claims 45 to 56 wherein the character of a casing element is defined by a surface decoration provided on the casing element.

58. A method for producing a customised casing for a consumer electronic device defining an internal space for accommodating an engine, the casing

having a user interface including a plurality of user input elements for user input, the method comprising:

receiving the characters of a plurality of casing elements capable of individual formation respectively selected by a commissioning party; and

assembling a casing in accordance with the selected characters in response to receiving the characters.

59. A method of producing a consumer electronic device comprising producing a casing in accordance with claim 58, selecting an engine having a desired functionality and assembling the casing and engine.

60. A method according to claim 59 further comprising the step of dispatching the assembled casing.

61. A method according to any of claims 58 to 60 wherein a character of at least one of the respective casing elements capable of individual formation is selected from a predetermined set.

62. A method according to any of claims 58 to 61 wherein a character of at least one of the respective casing elements capable of individual formation is fashioned to individual specification.

63. A method of assembling a casing in accordance with claim 62 when dependent on claim 58 comprising forming an individual element and assembling with other casing elements to produce a customised casing.

64. A method according to any of claims 58 to 63 wherein the casing comprises a front face, rear face and side frame incorporating the casing elements having characters in accordance with respective selections.

65. A method according to any of claims 58 to 64 wherein the character of a casing element is defined by the material from which the element is formed.

66. A method according to any of claims 58 to 65 wherein the character of a casing element is defined by a surface decoration provided on the casing element.

5

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000223

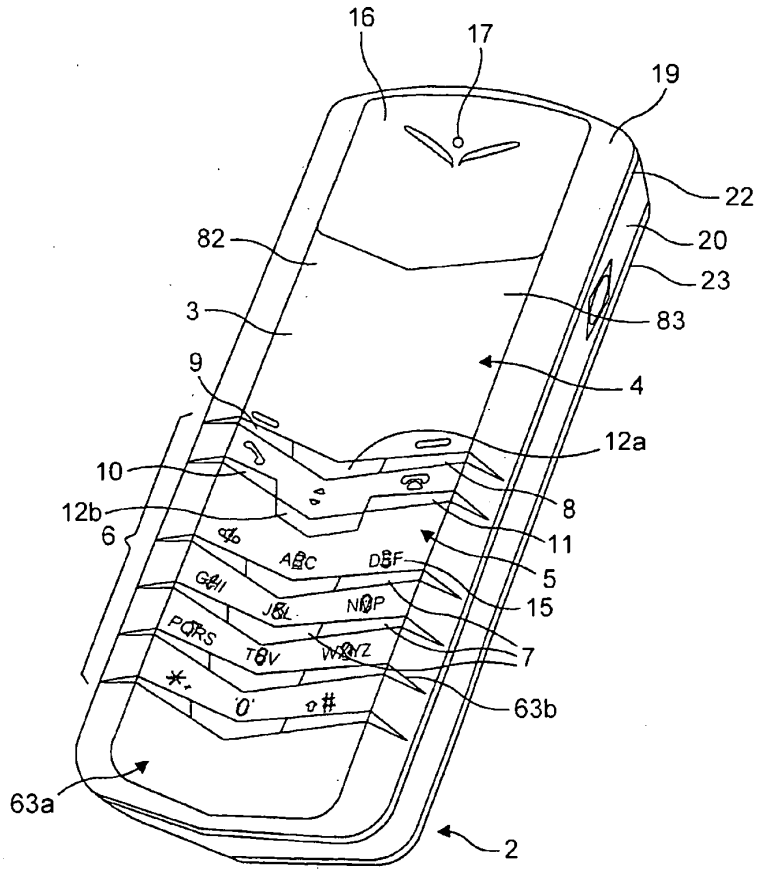


FIG. 1

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000224

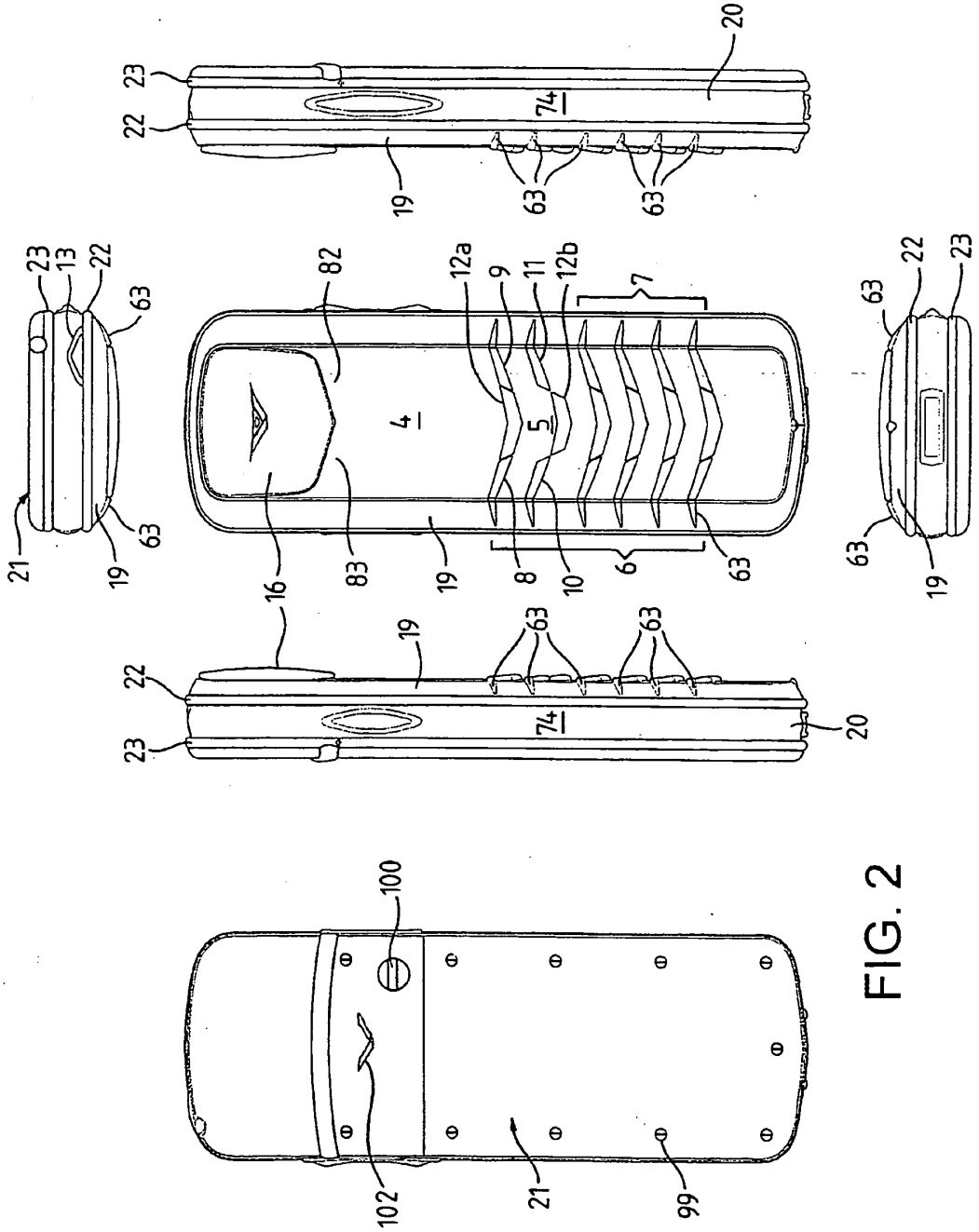


FIG. 2

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000225

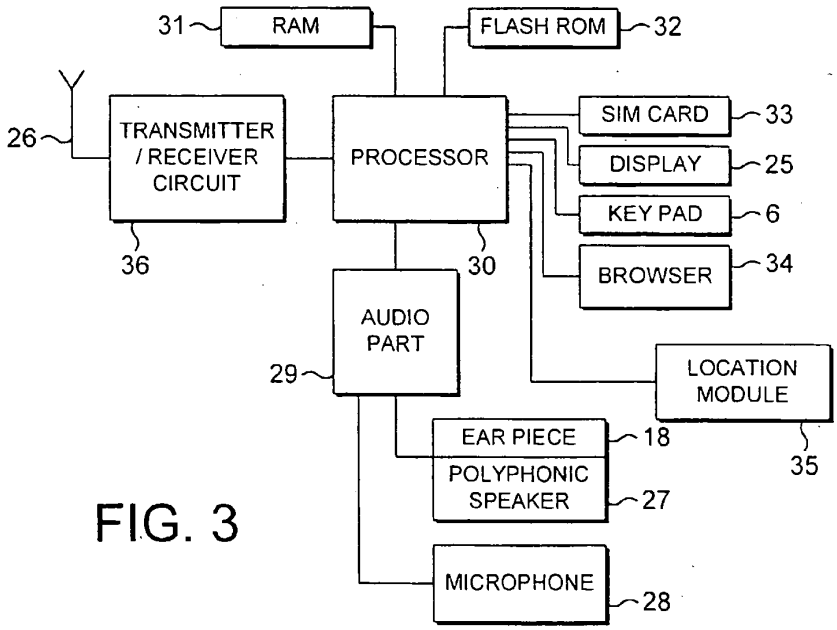
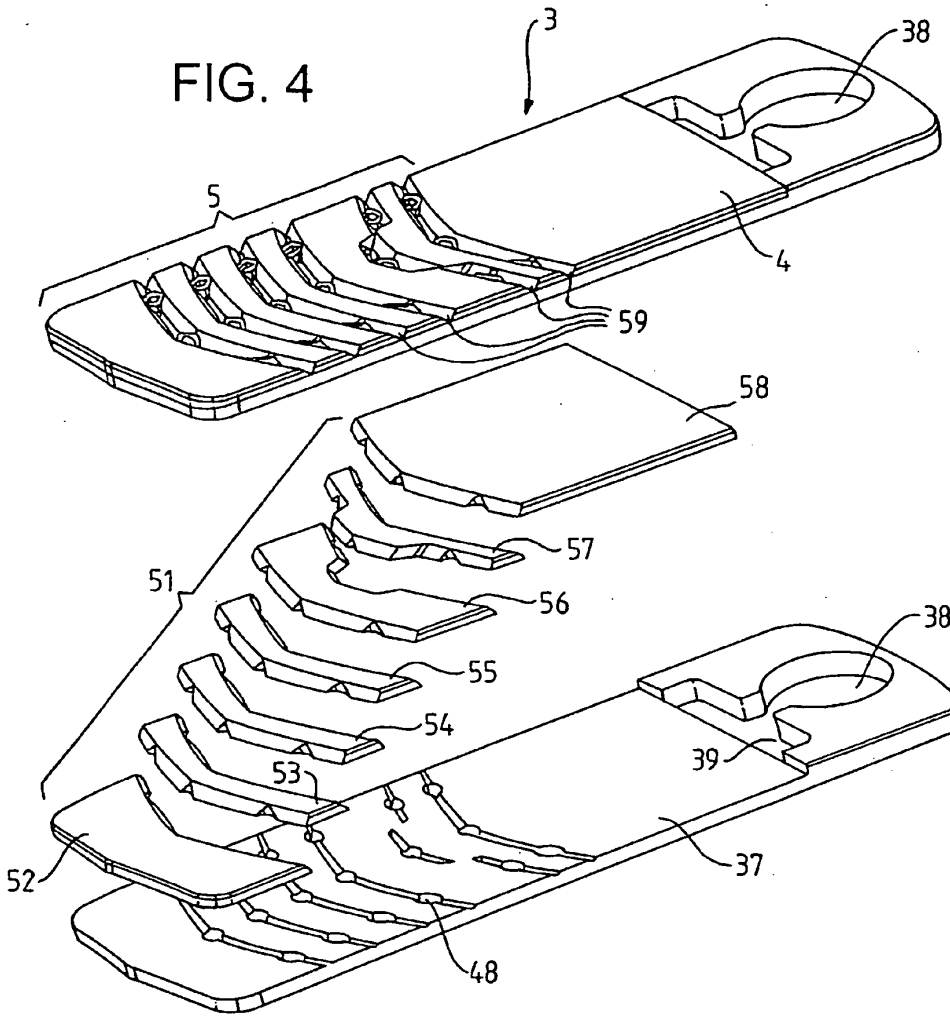


FIG. 3

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000226

FIG. 4



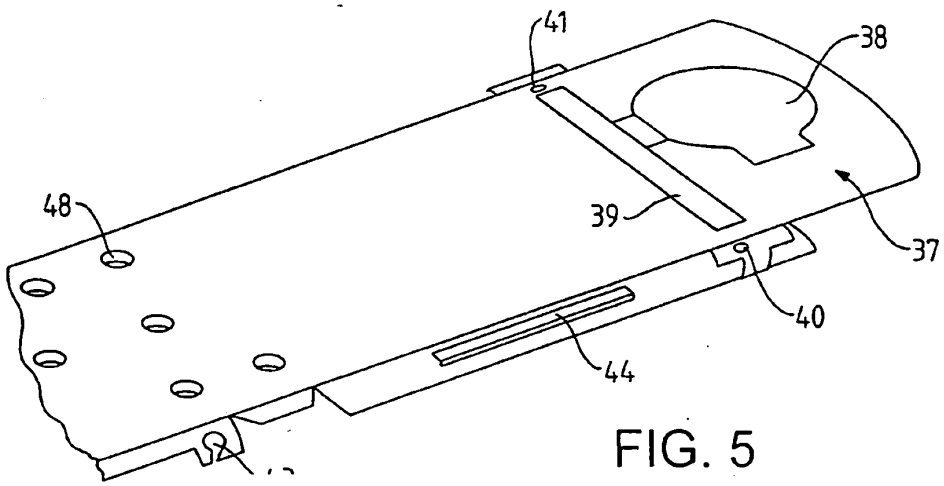


FIG. 5

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000227

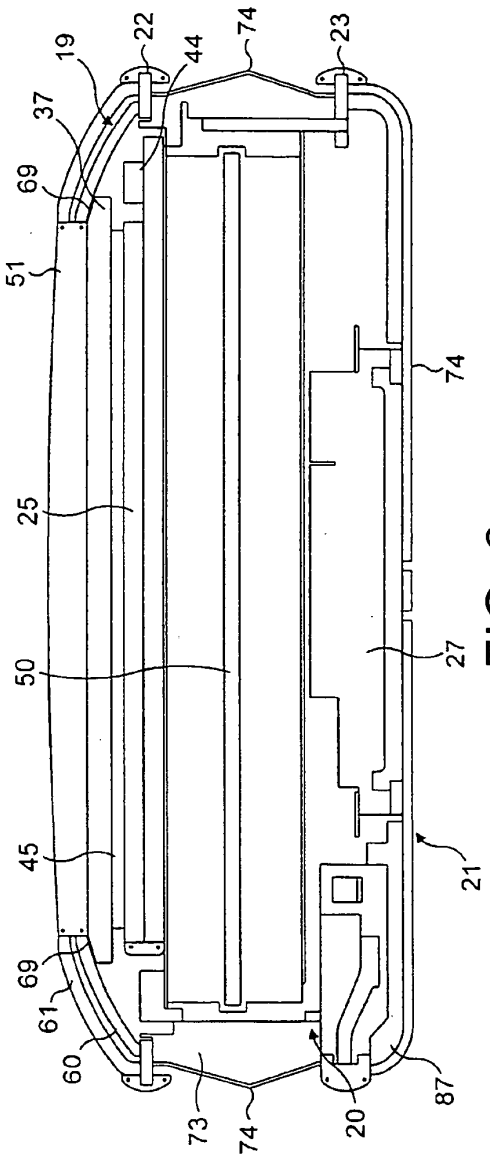


FIG. 6a

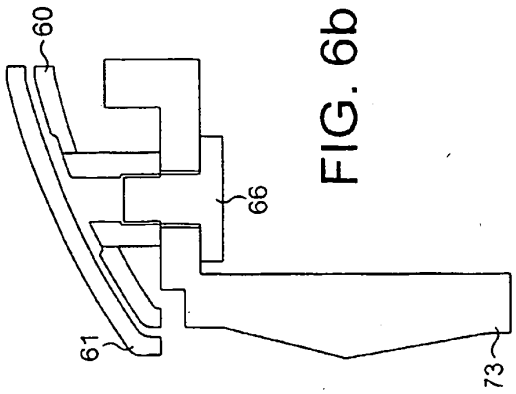


FIG. 6b

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000228

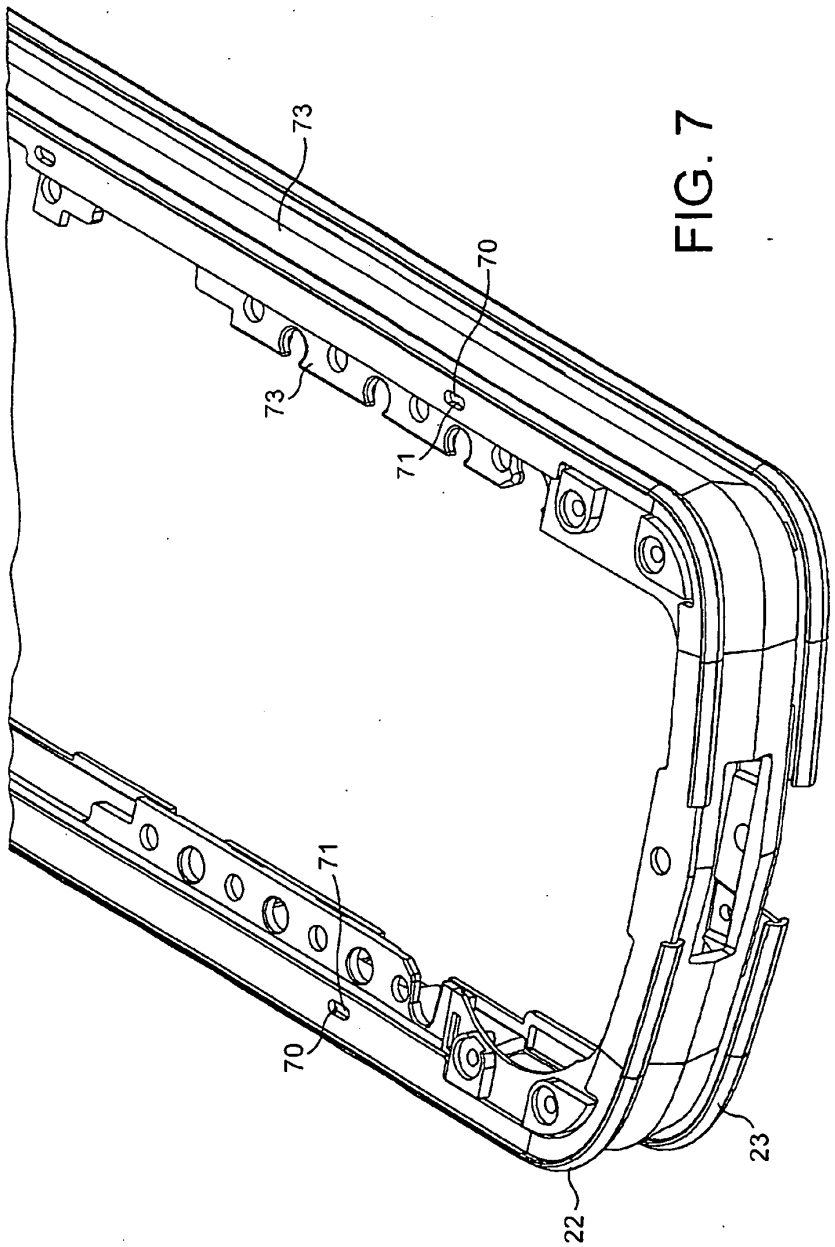


FIG. 7

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000229

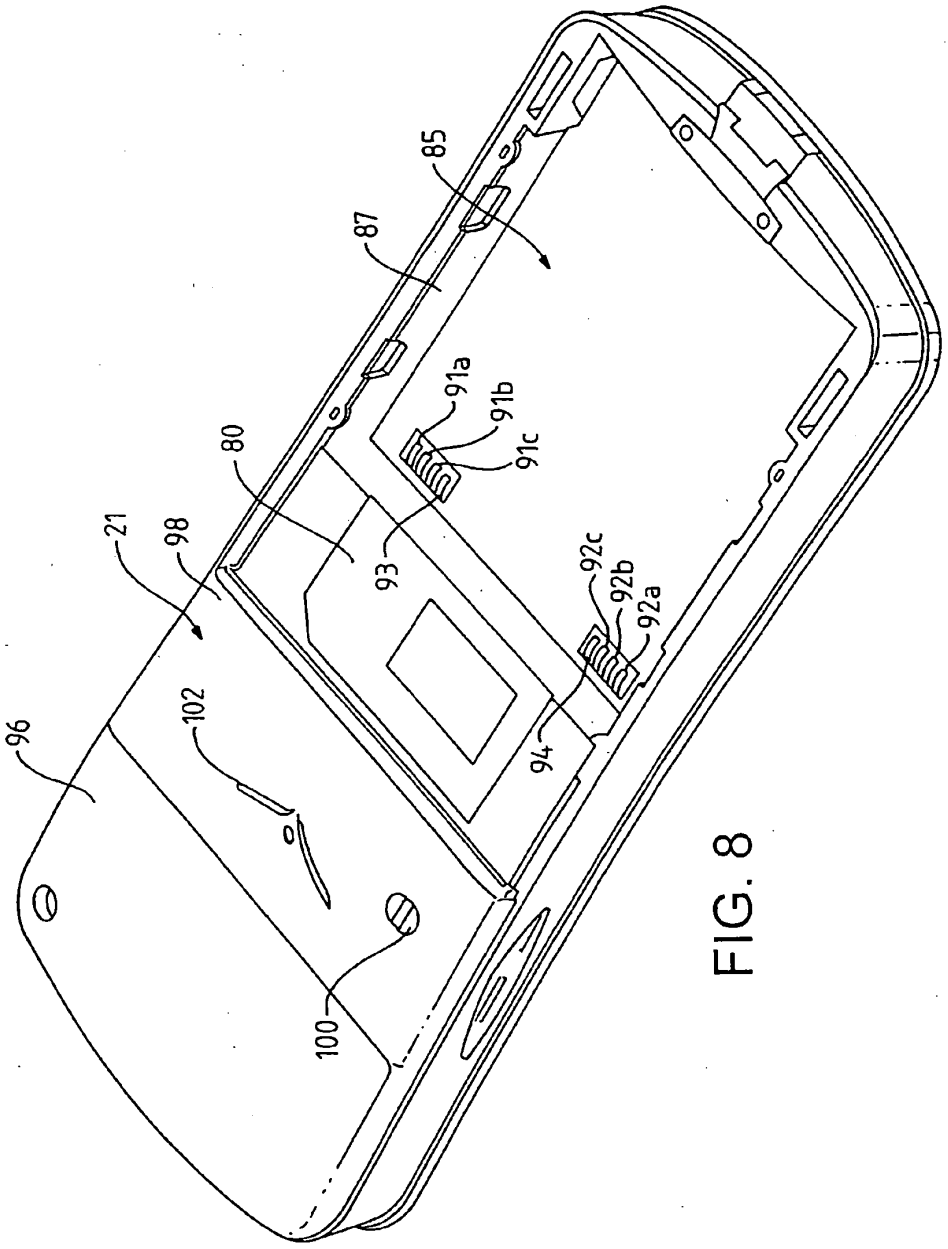


FIG. 8

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000230

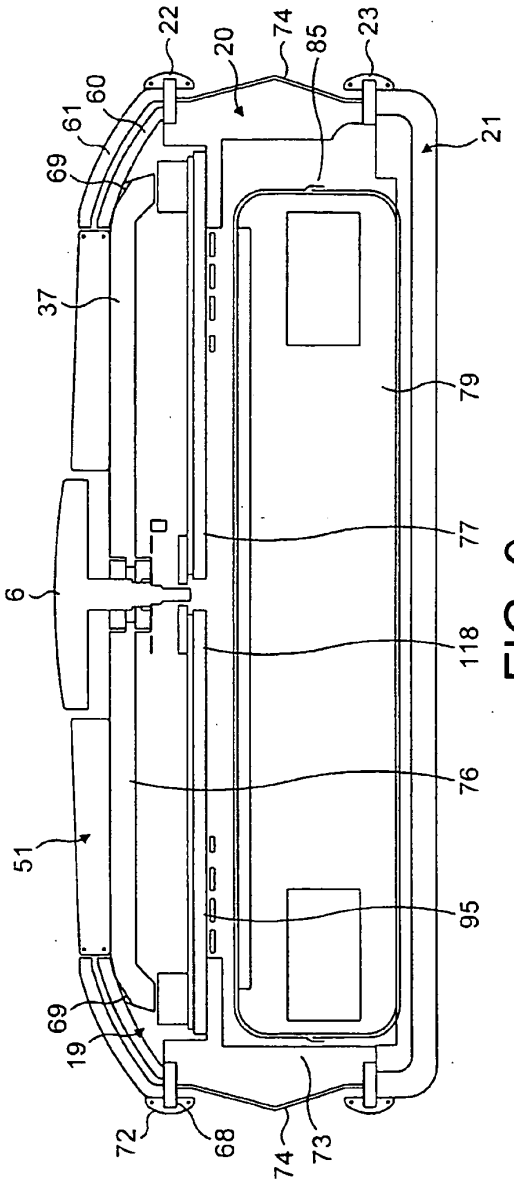


FIG. 9a

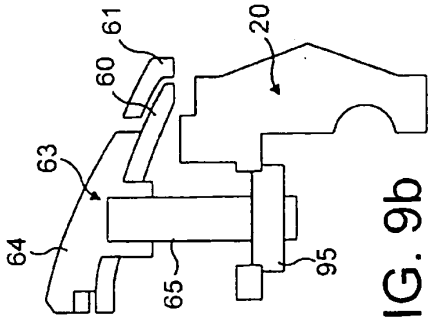


FIG. 9b

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000231

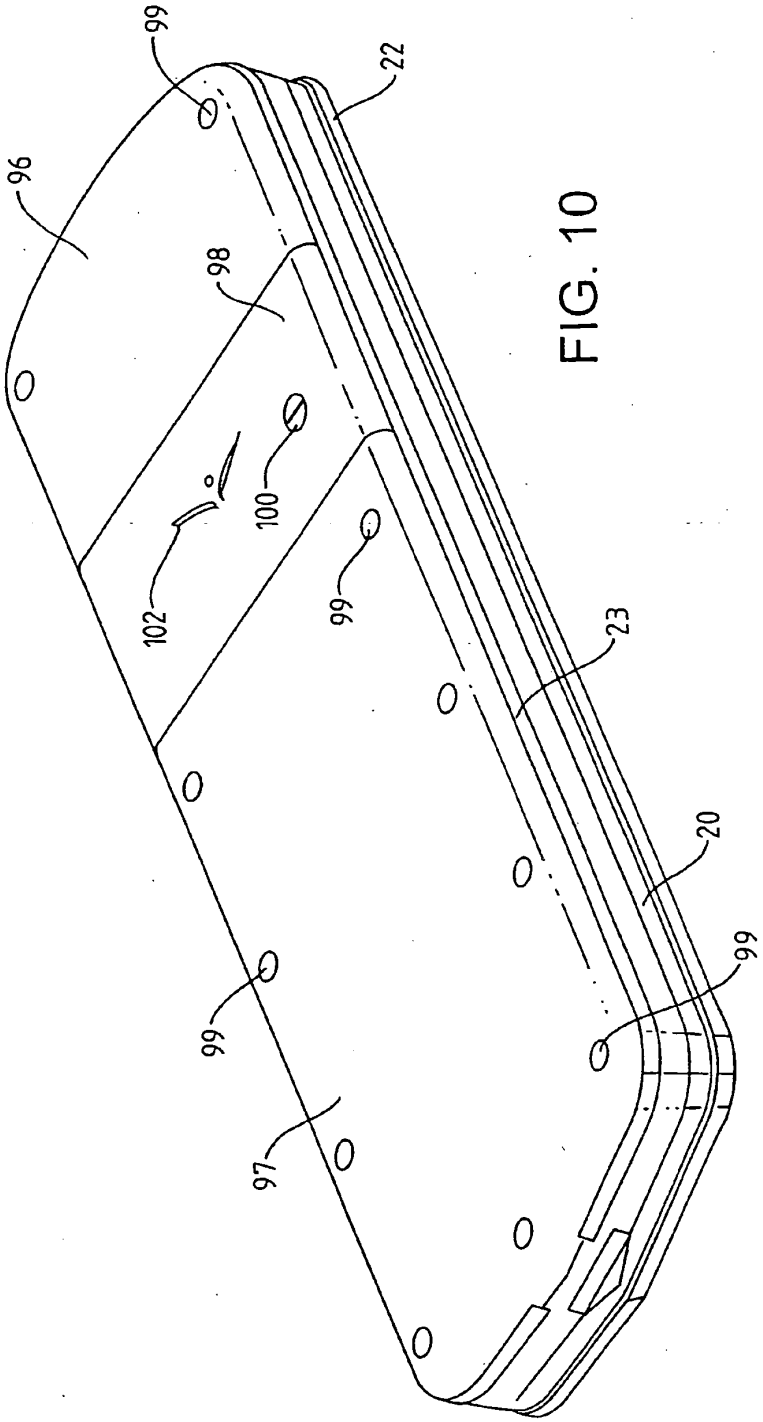


FIG. 10

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000232

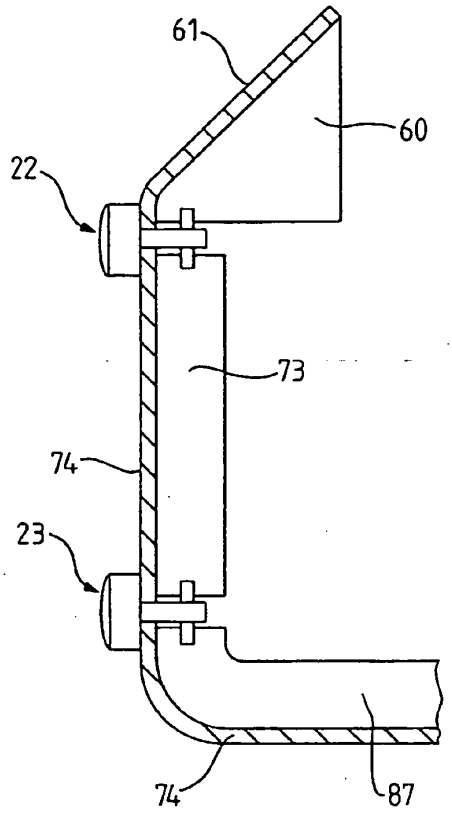


FIG. 11a

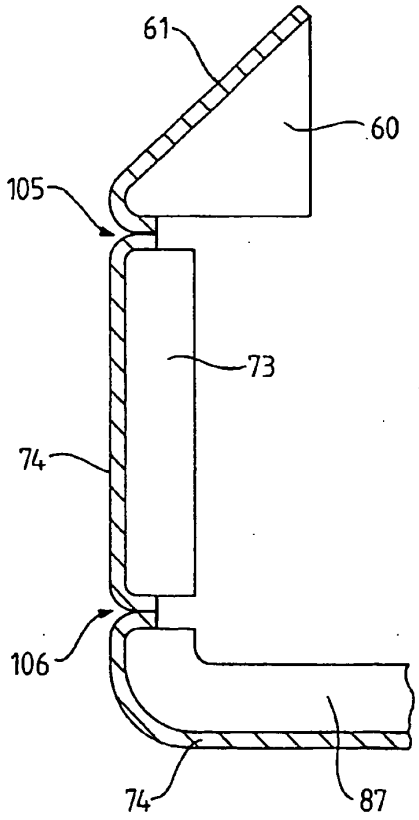


FIG. 11b

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000233

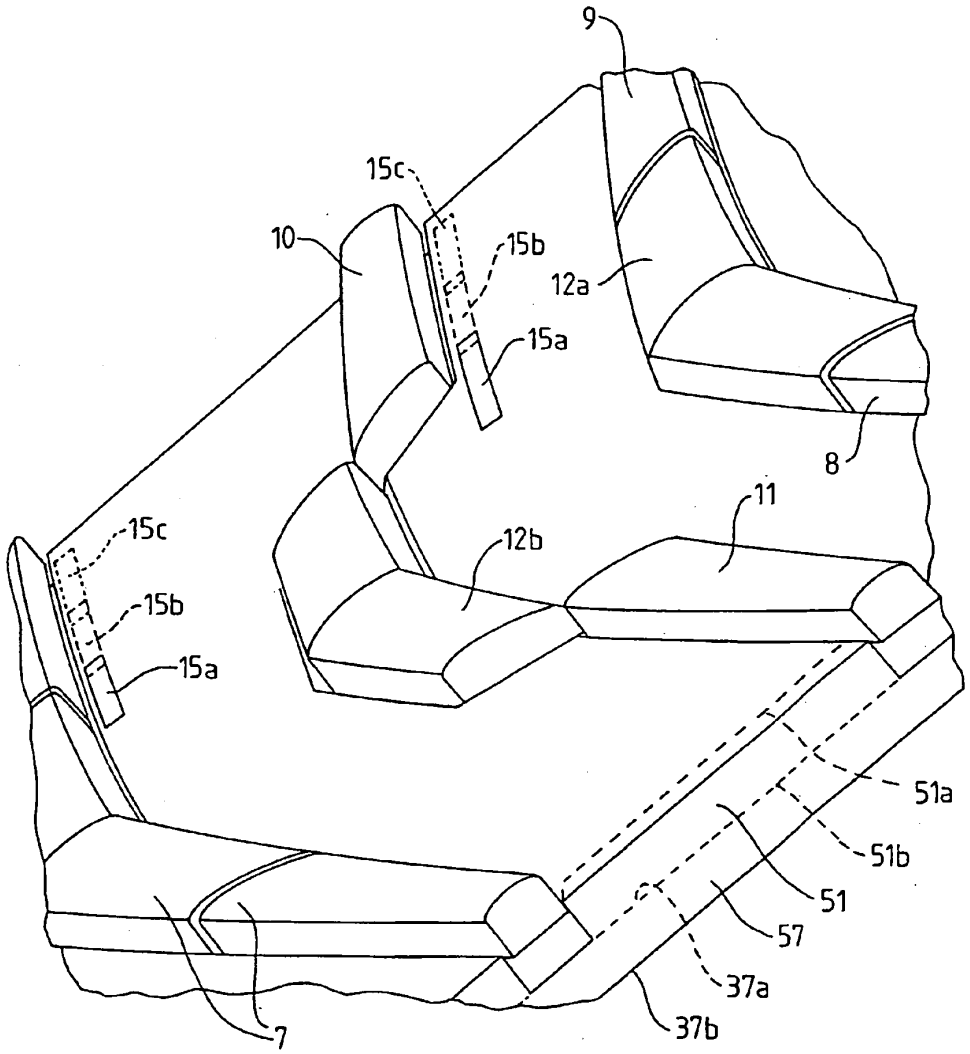


FIG. 12

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000234

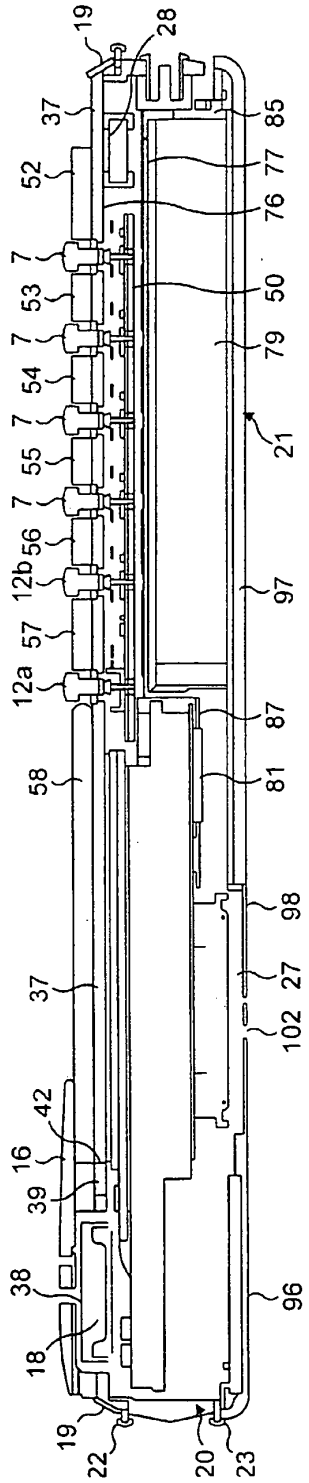


FIG. 13

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000235

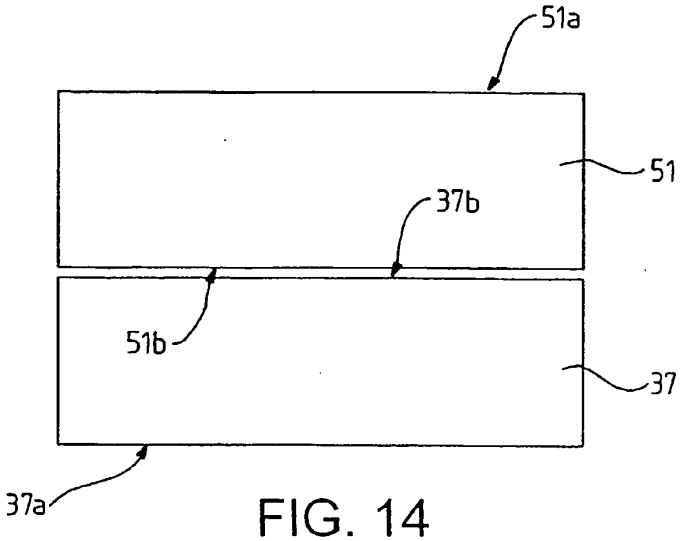


FIG. 14

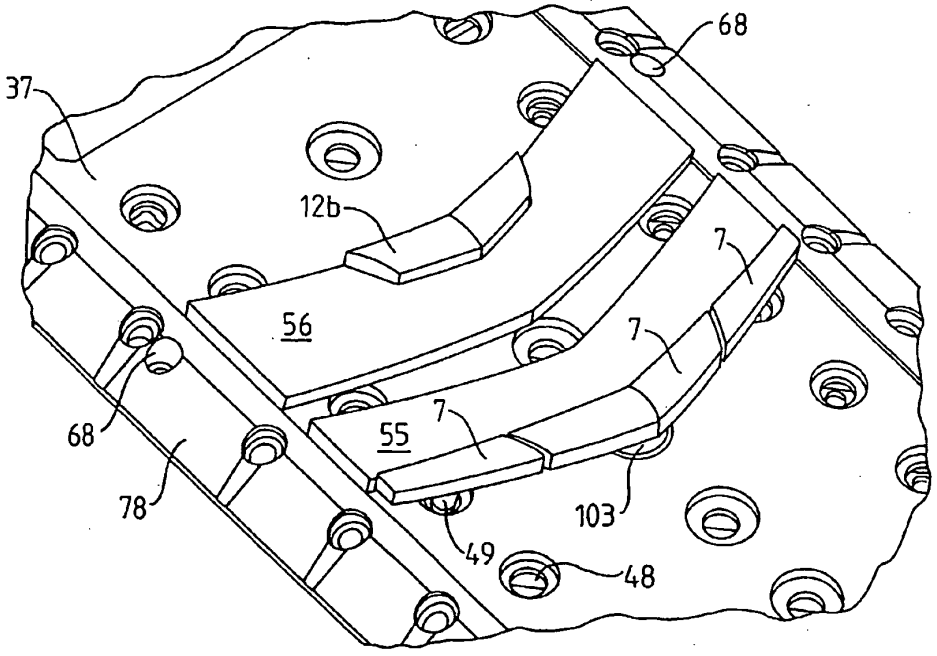


FIG. 15

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000236

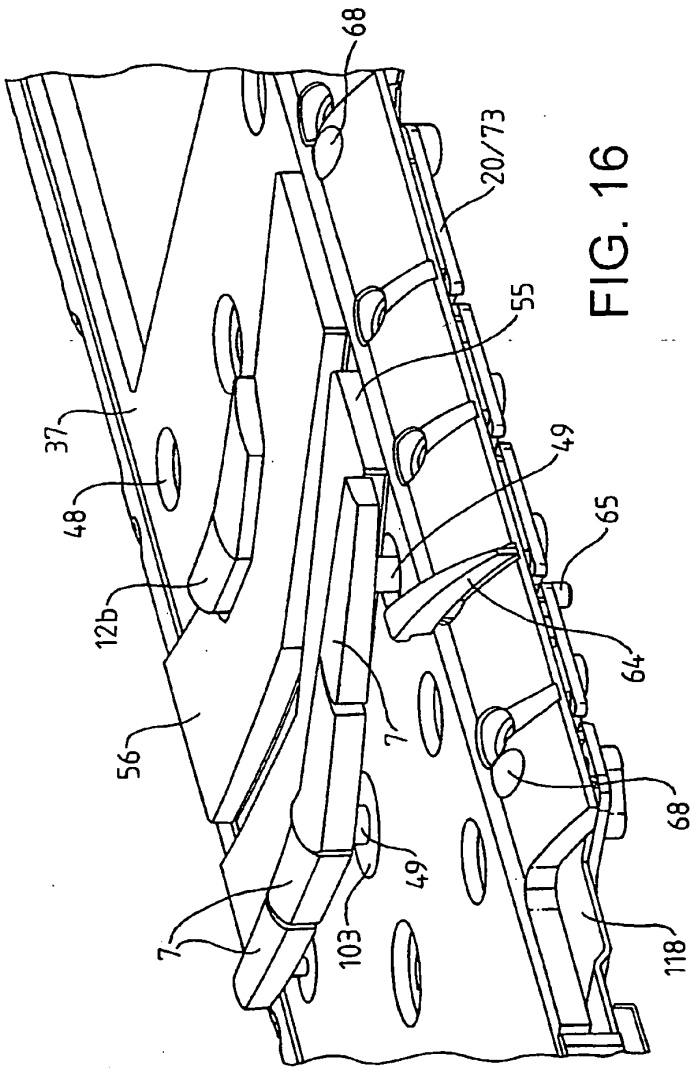


FIG. 16

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000237

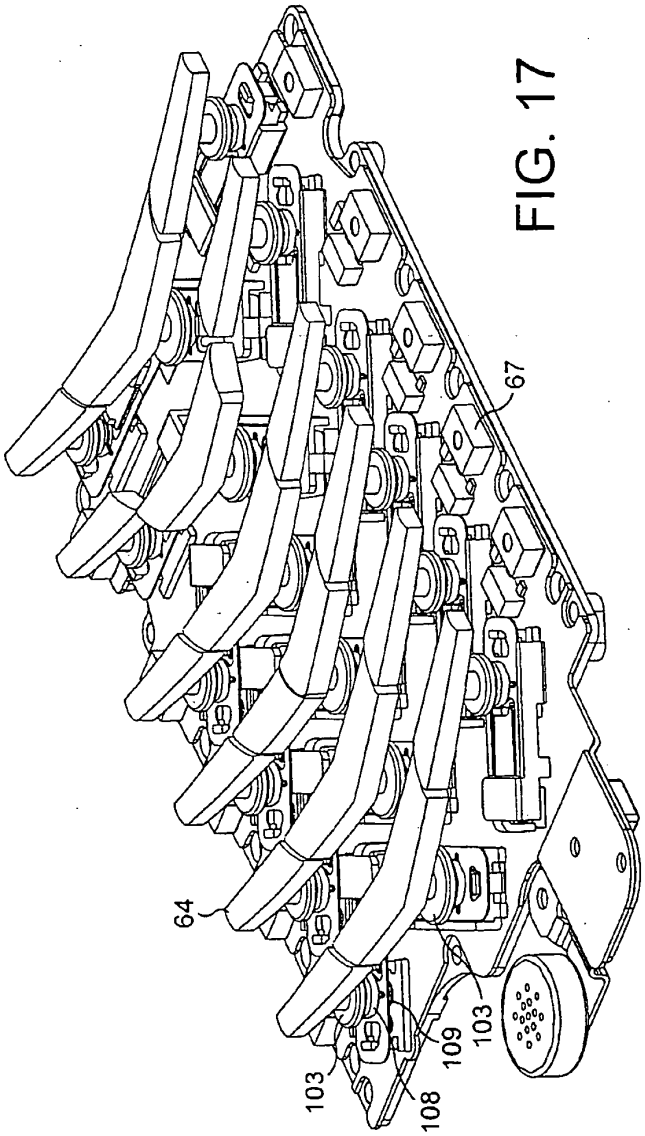


FIG. 17

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000238

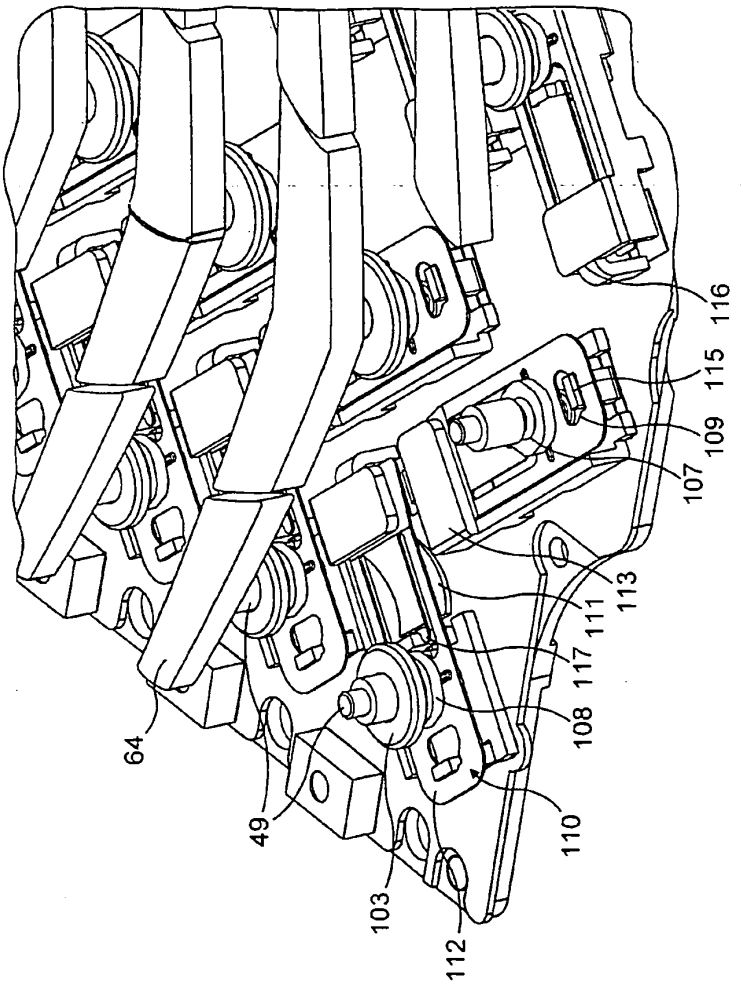


FIG. 18

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000239

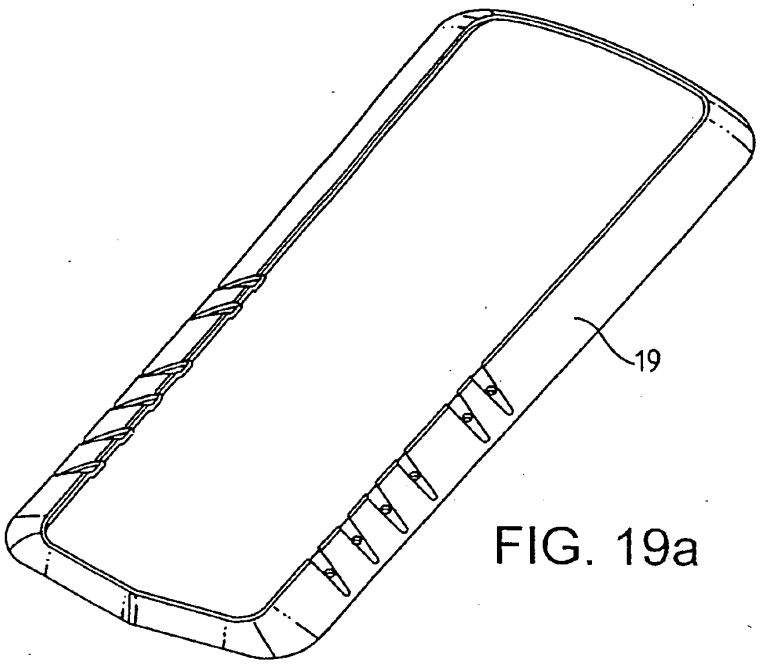


FIG. 19a

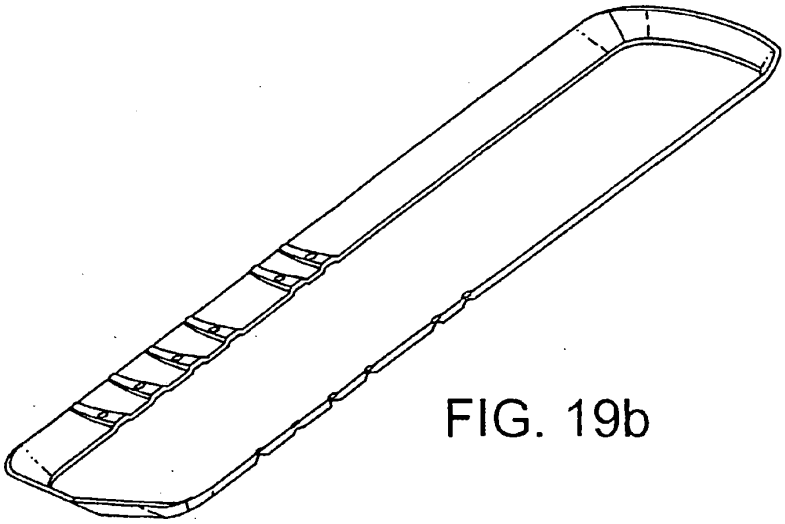


FIG. 19b

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000240

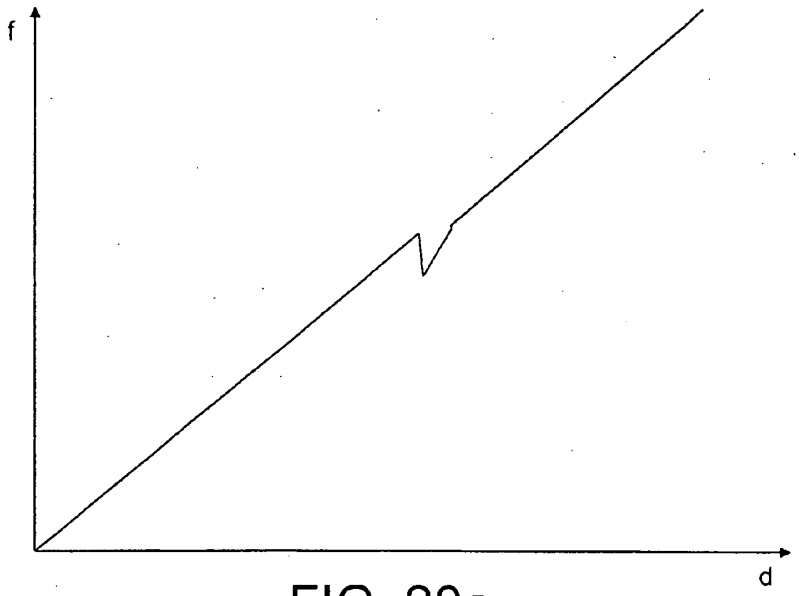


FIG. 20a



FIG. 20b

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000241

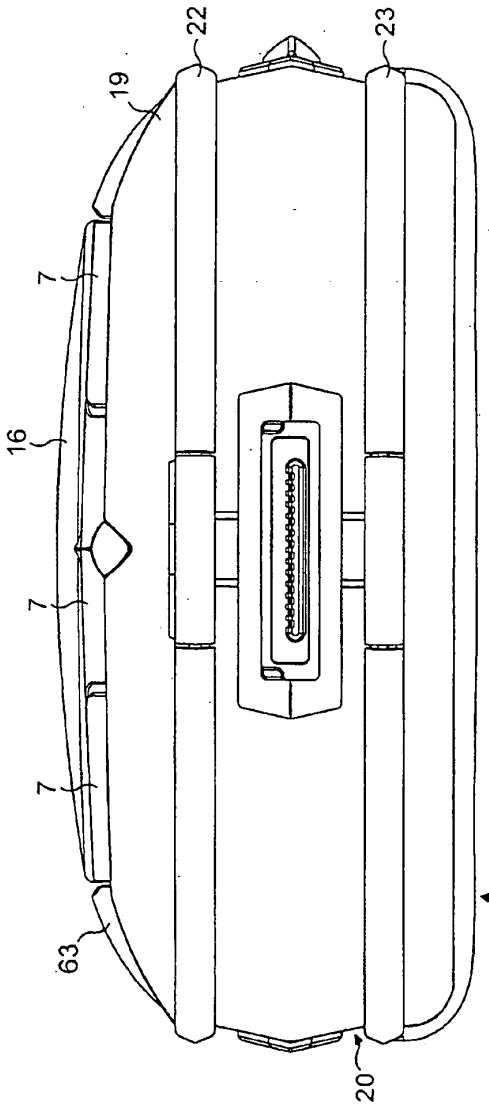


FIG. 21

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000242

INTERNATIONAL SEARCH REPORT

International Application No
PCT/US 01/49323

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 H04M1/02

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 H04M

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
WPI Data, EPO-Internal, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	GB 2 293 517 A (MOTOROLA INC) 27 March 1996 (1996-03-27) abstract page 1, line 12 -page 3, line 6 page 4, line 4 -page 8, line 33 figures 1-3	1-32
Y	---	33-66
Y	WO 00 77666 A (I2 TECHNOLOGIES INC) 21 December 2000 (2000-12-21) abstract page 1, line 9 -page 2, line 33 page 4, line 5 -page 5, line 23 figures 1,2	33-44

	-/--	

[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

° Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
6 May 2002	13/05/2002

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax (+31-70) 340-3016	Golzio, D

Form PCT/ISA/210 (second sheet) (July 1992)

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000243

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5 357 439 A (WATANABE MASAHIRO ET AL) 18 October 1994 (1994-10-18) abstract column 1, line 7-45 column 5, line 49 -column 13, line 34; figures 1-12 column 30, line 20 -column 31, line 47; figures 51,52	45-66
X	EP 1 026 868 A (ERICSSON TELEFON AB L M) 9 August 2000 (2000-08-09) abstract column 1, line 50 -column 2, line 49 column 4, line 36-51 column 5, line 18-32 column 8, line 10-37 figures 1-5 column 8, line 51 -column 9, line 3	1-32
A	EP 0 932 288 A (NISSHA PRINTING) 28 July 1999 (1999-07-28) abstract column 2, line 9 -column 4, line 26 figures 5,10	9-24
A	PATENT ABSTRACTS OF JAPAN vol. 1999, no. 02, 26 February 1999 (1999-02-26) -& JP 10 304034 A (KAWAI MUSICAL INSTR MFG CO LTD), 13 November 1998 (1998-11-13) abstract figures 1-5	10
A	PATENT ABSTRACTS OF JAPAN vol. 2000, no. 13, 5 February 2001 (2001-02-05) & JP 2000 295329 A (SAKAN SANGYO KK;DAIDOJI YASUO), 20 October 2000 (2000-10-20) abstract	9,10
A	DE 299 04 922 U (LEMKE OLIVER) 27 April 2000 (2000-04-27) abstract page 1, line 13 -page 4, line 4 figure 1	10
A	DE 200 14 882 U (JUNGMANN VOLKER) 28 December 2000 (2000-12-28) the whole document	8-14

-/--

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000244

INTERNATIONAL SEARCH REPORT

International Application No
PCT/US 01/49323

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication,where appropriate, of the relevant passages	Relevant to claim No.
A	PATENT ABSTRACTS OF JAPAN vol. 2000, no. 05, 14 September 2000 (2000-09-14) -& JP 2000 036704 A (KANAGATA MUKAWA:KK), 2 February 2000 (2000-02-02) abstract figures 1-8 ---	16,22,23
A	PATENT ABSTRACTS OF JAPAN vol. 2000, no. 14, 5 March 2001 (2001-03-05) & JP 2000 305987 A (YKK ARCHITECTURAL PRODUCTS INC), 2 November 2000 (2000-11-02) abstract -----	33-66

Form PCT/ISA/210 (continuation of second sheet) (July 1992)

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000245

INTERNATIONAL SEARCH REPORT

nformation on patent family members

Ir itional Application No
PCT/US 01/49323

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
GB 2293517	A	27-03-1996	AU	690307 B2	23-04-1998
			AU	3051895 A	04-04-1996
			BR	9504702 A	08-10-1996
			CA	2157625 A1	21-03-1996
			CN	1123999 A	05-06-1996
			ES	2111476 A1	01-03-1998
			FR	2724798 A1	22-03-1996
			IT	RM950618 A1	20-03-1996
			JP	8097888 A	12-04-1996
			SG	38879 A1	17-04-1997
			ZA	9507946 A	18-04-1996
WO 0077666	A	21-12-2000	AU	5607500 A	02-01-2001
			WO	0077666 A2	21-12-2000
US 5357439	A	18-10-1994	JP	3125791 B2	22-01-2001
			JP	3264244 A	25-11-1991
EP 1026868	A	09-08-2000	EP	1026868 A1	09-08-2000
			AU	3150700 A	25-08-2000
			CN	1346565 T	24-04-2002
			WO	0046968 A1	10-08-2000
			EP	1149485 A1	31-10-2001
			TR	200102206 T2	21-01-2002
EP 0932288	A	28-07-1999	EP	0932288 A1	28-07-1999
			CN	1231790 A	13-10-1999
			WO	9813980 A1	02-04-1998
			US	2001040001 A1	15-11-2001
JP 10304034	A	13-11-1998	NONE		
JP 2000295329	A	20-10-2000	NONE		
DE 29904922	U	27-04-2000	DE	29904922 U1	27-04-2000
DE 20014882	U	28-12-2000	DE	20014882 U1	28-12-2000
JP 2000036704	A	02-02-2000	NONE		
JP 2000305987	A	02-11-2000	NONE		

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000246

Espacenet

Bibliographic data: CN1464716 (A) — 2003-12-31

Mobile phone

Inventor(s): WU GUOXIANG [CN]; GAO XIANGLONG [CN]; ZHENG YONGFA [CN] ± (GUOXIANG WU, ; XIANGLONG GAO, ; YONGFA ZHENG)

Applicant(s): QUANTA COMP INC [CN] ± (QUANTA COMPUTER INC)

Classification: - international: ***H04M1/02;*** (IPC1-7): H04M1/02
- cooperative:

Application number: CN2002124306 20020610

Priority number (s): CN2002124306 20020610

Abstract of CN1464716 (A)

The invention discloses a mobile phone including a flap, a case, battery and battery cover board wherein the case is formed integrally and has a opening portion, the flap is coupled to the case through a first pivotal axis to make the flap rotate around the case. The battery is arranged in the case through the opening portion, the battery cover board is arranged at the opening portion to fix the battery, and the battery cover board is coupled to the case through a second pivotal axis to make the cover board rotate around the case. the battery cover board can be the keyboard module of the mobile phone, and the mobile phone can include a circuit board which is arranged between the battery and the case.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000247

[19] 中华人民共和国国家知识产权局

[51] Int. Cl[7]
H04M 1/02

[12] 发明专利申请公开说明书

[21] 申请号 02124306.9

[43] 公开日 2003 年 12 月 31 日

[11] 公开号 CN1464716A

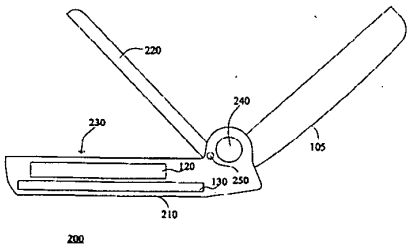
[22] 申请日 2002.6.10 [21] 申请号 02124306.9
[71] 申请人 广达电脑股份有限公司
地址 台湾省桃园县龟山乡文化二路 188 号
[72] 发明人 吴国祥 高翔龙 郑永发
[74] 专利代理机构 上海专利商标事务所
代理人 任永武

权利要求书 2 页 说明书 3 页 附图 2 页

[54] 发明名称 移动电话

[57] 摘要

一种移动电话，包括掀壳、机体、电池及电池盖板。机体为一体成形并且具有一开口部，而掀壳是藉由第一枢轴与机体耦接以使得掀壳可相对于机体旋转；电池配置于机体内，且是由开口部置入机体内；电池盖板配置于开口部用以稳固电池，且电池盖板是藉由第二枢轴与机体耦接以使得电池盖板可相对于机体旋转。电池盖板可以是移动电话的键盘模块；而第一枢轴与第二枢轴则可分别位于同侧但相异的轴线上，亦可位于同一轴线上。另外，移动电话还可包括一电路板，此电路板则配置于电池与机体之间。



ISSN1008-4274

知识产权出版社出版

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000248

1．一种移动电话，包括：

一机体，该机体是一体成形且具有一开口部；

一电池，配置于该机体内，其中，该电池是由该开口部置入该机体内；以及

一电池盖板，配置于该开口部以稳固该电池，其特征在于，该电池盖板是藉一枢轴与该机体耦接以使该电池盖板可相对于该机体旋转。

2.如权利要求 1 所述的移动电话，其特征在于，该电池盖板是该移动电话的键盘模块。

3.如权利要求 1 所述的移动电话，其特征在于，该移动电话还包括一电路板，该电路板配置于该电池与该机体之间。

4.一种移动电话，包括：

一机体，该机体是一体成形且具有一开口部;

一掀壳，藉助一第一枢轴与该机体耦接以使该掀壳可相对于该机体旋转；

一电池，配置于该机体内，该电池是由该开口部置入该机体内；以及

一电池盖板，配置于该开口部以稳固该电池，其特征在于，，该电池盖板是藉助一第二枢轴与该机体耦接以使该电池盖板可相对于该机体旋转。

5.如权利要求 4 所述的移动电话，其特征在于，该电池盖板是该移动电话的键盘模块。

6.如权利要求 5 所述的移动电话，其特征在于，该移动电话还包括一电路板，该电路板配置于该电池与该机体之间。

7.如权利要求 6 所述的移动电话，其特征在于，该第一枢轴与该第二枢轴是分别位于同侧但相异的轴线上。

8.如权利要求 4 所述的移动电话，其特征在于，该移动电话还包括一电路板，该电路板配置于该电池与该机体之间。

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000249

9.如权利要求 4 所述的移动电话，其特征在于，该第一枢轴与该第二枢轴是分别位于同侧但相异的轴线上。

10.如权利要求 4 所述的移动电话，其特征在于，该第一枢轴与该第二枢轴是位于同一轴线上。

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000250

移动电话

(1)技术领域

本发明有关一种移动电话，特别是有关一种具有一体成形的机体的移动电话。

(2)背景技术

随着电子产业的快速发展、技术的日新月异，许多通讯产品皆推陈出新。近年来可携式电子产品的功能日益多元化，如移动电话，早已成为消费大众生活所必需。现在各厂商所推出的移动电话其功能差别不大，因此如何让移动电话外部结构的强度更大，外型的设计能更加流畅且具有美感，就成了另一个吸引消费者的卖点。

请参照图 1，它是传统移动电话的结构示意图。移动电话 100 具有掀壳 105 及机体 110。一般而言，移动电话 100 的机体 110 内配置有电池 120 及电路板 130，而键盘模块 140 则固定于机体 110 上。电池 120 的装卸是通过电池盖 150 的开启而进行的。在使用移动电话 100 的过程中，有时会因握持不稳等人为的疏忽，而致使移动电话 100 摔落至地，而通常的结果则是电池盖 150 与机体 110 分离，电池 120 因此而自机体 110 内脱离出来。更有甚者，甚至会造成机体 110 内电子及机构组件等的损坏。电池盖 150 的设置，其目的在于方便电池 120 的装卸，但也正因为如此，才会使得移动电话 100 的强度不够，受外力冲击时易使电池 120 自机体 110 内脱离。另外，在移动电话 100 的设计上，因受限于电池盖 150 的设置，因此，亦必定会使得移动电话 100 在外形设计时受到局限。

由上文可知，传统的移动电话，具有以下的缺点：

一、移动电话的强度不足：因为移动电话机体表面设置有电池盖，易因外力的冲击而使得电池盖与机体分离，造成电池自机体中摔出，以及可能造成机体内部电子组件及机构组件的损坏。

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000251

二、移动电话的外形设计受到局限：因要方便于电池的装卸，故机体表面电池盖的设置乃为必要，所以，移动电话的外形设计将会受到限制。

(3)发明内容

有鉴于此，本发明的目的就是在提供一种移动电话，可使：移动电话的强度获得增强，同时使移动电话的外形设计不再受到局限。

为实现上述目的，本发明的移动电话，包括掀壳、机体、电池及电池盖板。机体为一体成形并且具有一开口部，而掀壳是藉由第一枢轴与机体耦接以使得掀壳可相对于机体旋转；电池配置于机体内，且是由开口部置入机体内；电池盖板则配置于开口部用以稳固电池，且电池盖板是藉由第二枢轴与机体耦接以使得电池盖板可相对于机体旋转。

电池盖板可以是移动电话的键盘模块；而第一枢轴与第二枢轴则可分别位于同侧但相异的轴线上，亦可位于同一轴线上。另外，移动电话还可包括一电路板，此电路板则配置于电池与机体之间。

本发明所提供的移动电话，其机体是为一体成形的设计，机体表面不设置电池盖，电池的装卸是以掀开与机体相耦接的键盘模块而进行的，此种设计，使得机体整体结构获得强化，使移动电话的外形设计能更加多元外。

为进一步说明本发明的目的、结构特点和效果，以下将结合附图对本发明进行详细的描述。

(4)附图说明

图 1 是传统移动电话的结构示意图。

图 2 是依照本发明的一较佳实施例的移动电话结构示意图。

(5)具体实施方式

请参照图 2，它是本发明的一较佳实施例的移动电话结构示意图。移动电话 200 包括有掀壳 105、机体 210、电池 120 及电池盖板，电池盖板例如是移动电话 200 的键盘模块 220。机体 210 是为一体成形并具有开口部 230，且掀壳 105 是藉由枢轴 240 与机体 210 耦接，以使得掀壳 105 可相对于机体 210

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000252

旋转，使掀壳 105 能进行开掀或闭合的动作；重要的是，为增加机体 210 的结构强度，机体结构必须完整而不被破坏，故机体 210 采用一体成形的设计方式，其背面不设置电池盖，而另设计开口部 230 以容许电池 120 置入机体 210。另一方面，键盘模块 220 则配置于开口部 230，用以稳固电池 120，避免电池松动；且键盘模块 220 是藉由枢轴 250 与机体 210 耦接，以使得键盘模块 220 可相对于机体 210 旋转，更换电池时，仅需将键盘模块 220 旋开即可将电池 120 取出或置入。移动电话 200 还可以包括一电路板 130，电路板 130 则可配置于电池 120 与机体 210 之间。在本实施例中，枢轴 240 与枢轴 250 可分别位于同侧（如图 2 所示）但相异的轴线上，亦可位于相同的轴线上（即枢轴 240 与枢轴 250 重合）。

本发明的移动电话至少具有以下优点：

一、移动电话的强度获得增强：因为移动电话的机体是为一体成形，不再设置电池盖，电池是由机体的开口部置入机体，且有键盘模块加以稳固。因此，将不会有因外力的冲击而使得电池自机体中摔出的情况发生，亦不会再造成机体内部电子组件及机构组件的损坏。

二、移动电话的外形设计不再受到局限：一体成形的机体，使得移动电话的外形能具有更加多元的设计。

当然，本技术领域中的普通技术人员应当认识到，以上的实施例仅是用来说明本发明，而并非用作为对本发明的限定，只要在本发明的实质精神范围内，对以上所述实施例的变化、变型都将落在本发明权利要求书的范围内。

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000253

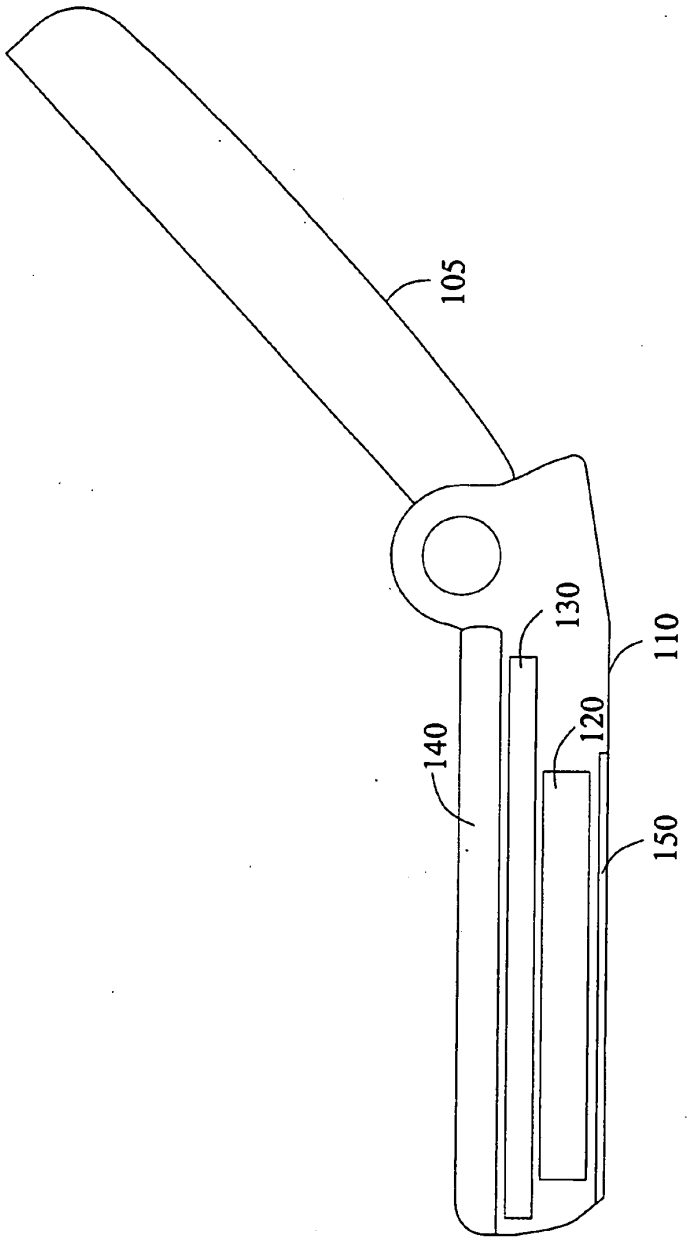


图 1

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000254

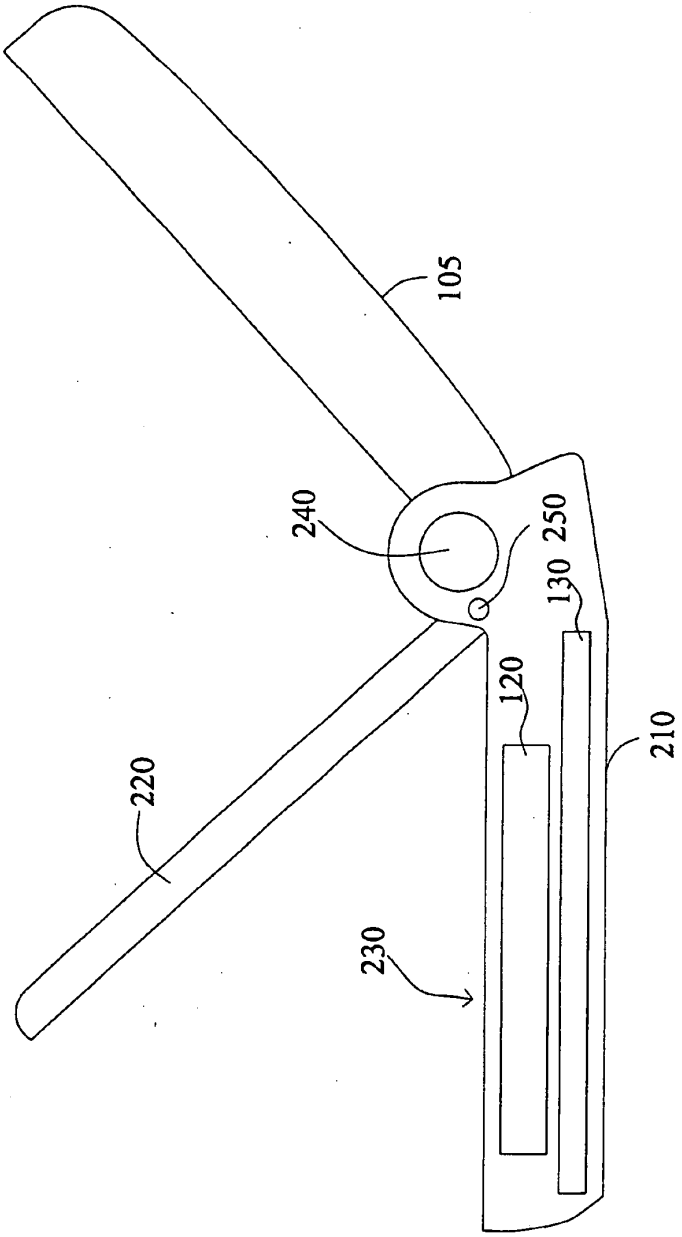


图 2

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000255

Espacenet

Bibliographic data: CN2747799 (Y) — 2005-12-21

Case structure of metal cell phone

Inventor(s): ZHENG YONGFA [CN]; GAO XIANGLONG [CN] ± (YONGFA ZHENG, ; XIANGLONG GAO)

Applicant(s): GUANGDA COMP CO LTD [CN] ± (GUANGDA COMPUTER CO LTD)

Classification: - international: ***H04M1/02;*** (IPC1-7): H04M1/02
- cooperative:

Application number: CN20042116603U 20041207

Priority number (s): CN20042116603U 20041207

Abstract of CN2747799 (Y)

The utility model provides a case structure of metal cell phone, comprising an upper cap and a lower cap. The both sides of the upper cap are respectively provided with a slide groove, and the both sides of the lower cap are respectively provided with a slide block opposite to the slide grooves. When the slide blocks are embedded in the slide grooves and are slid in the slide grooves, the upper cap and the lower cap are spliced, and a cell phone body is arranged between the upper cap and the lower cap. The lower cap further comprises an antenna cap groove and a battery cap groove. When an antenna cap and a battery cap are respectively clamped in the antenna cap groove and the battery cap groove, the upper cap and the lower cap can be further fixed.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000256

[19] 中华人民共和国国家知识产权局

[51] Int. Cl[7]
H04M 1/02

[12] 实用新型专利说明书

专利号 ZL 200420116603.X

[45] 授权公告日 2005 年 12 月 21 日

[11] 授权公告号 CN 2747799Y

[22] 申请日 2004.12.7
[21] 申请号 200420116603.X
[73] 专利权人 广达电脑股份有限公司
地址 台湾省桃园县
[72] 设计人 郑永发 高翔龙

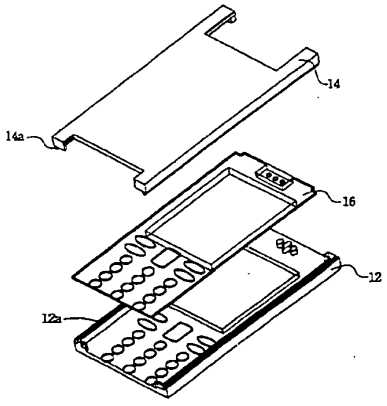
[74] 专利代理机构 北京市柳沈律师事务所
代理人 陶凤波 侯 宇

权利要求书 2 页 说明书 5 页 附图 5 页

[54] 实用新型名称 金属手机壳体结构

[57] 摘要

一种金属手机壳体结构，包括一上盖与一下盖。上盖的两侧分别具有一滑槽，下盖的两侧分别具有相对于滑槽的一滑块，当滑块嵌入滑槽而于滑槽中滑动时，上盖与下盖接合，且上盖与下盖间容纳一手机主体。下盖进一步包括一天线盖凹槽与一电池盖凹槽。当一天线盖与一电池盖分别卡制于天线盖凹槽与电池盖凹槽时，可进一步固定上盖与下盖。



ISSN1008-4274

知识产权出版社出版

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000257

1. 一种金属手机壳体结构，其特征在于所述金属手机壳体结构至少包括:

一上盖，所述上盖的两侧分别具有一滑槽；及

一下盖，所述下盖的两侧分别具有相对于所述滑槽的一滑块，当所述滑块嵌入所述滑槽而于所述滑槽中滑动时，所述上盖与所述下盖接合，且所述上盖与所述下盖间容纳一手机主体。

2. 如权利要求 1 所述的金属手机壳体结构，其特征在于所述滑块的截面呈一凸形。

3. 如权利要求 1 所述的金属手机壳体结构，其特征在于所述滑槽的截面呈一凹形。

4. 如权利要求 1 所述的金属手机壳体结构，其特征在于所述滑块的截面呈一倒 L 形。

5. 如权利要求 1 所述的金属手机壳体结构，其特征在于所述滑槽的截面呈一 L 形。

6. 如权利要求 1 所述的金属手机壳体结构，其特征在于所述下盖进一步具有一天线盖凹槽。

7. 如权利要求 6 所述的金属手机壳体结构，其特征在于可进一步通过将一天线盖卡制于所述天线盖凹槽，固定所述上盖与所述下盖。

8. 如权利要求 1 所述的金属手机壳体结构，其特征在于所述下盖进一步具有一电池盖凹槽。

9. 如权利要求 8 所述的金属手机壳体结构，其特征在于可进一步通过将一电池盖卡制于所述电池盖凹槽，固定所述上盖与所述下盖。

10. 如权利要求 1 所述的金属手机壳体结构，其特征在于所述金属手机壳体结构以铝挤压成型方式制造。

11. 一种金属手机壳体结构，其特征在于所述金属手机壳体结构至少包括:

一上盖，所述上盖的两侧分别具有一上盖滑槽;

一下盖，所述下盖的两侧分别具有一下盖滑槽；及

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000258

至少一接合组件，所述接合组件具有相对于所述上盖滑槽的一上盖滑块，及相对所述下盖滑槽的一下盖滑块，当所述上盖滑块嵌入所述上盖滑槽而于所述上盖滑槽中滑动，且所述下盖滑块嵌入所述下盖滑槽而于所述下盖滑槽中滑动时，所述上盖与所述下盖接合，且所述上盖与所述下盖间容纳一手机主体。

12. 如权利要求 11 所述的金属手机壳体结构，其特征在于所述上盖滑块的截面呈一Ω形。

13. 如权利要求 11 所述的金属手机壳体结构，其特征在于所述下盖滑块的截面呈一Ω形。

14. 如权利要求 11 所述的金属手机壳体结构，其特征在于所述上盖滑槽的截面呈一倒Ω形。

15. 如权利要求 11 所述的金属手机壳体结构，其特征在于所述下盖滑槽的截面呈一倒Ω形。

16. 如权利要求 11 所述的金属手机壳体结构，其特征在于所述下盖进一步具有一天线盖凹槽。

17. 如权利要求 16 所述的金属手机壳体结构，其特征在于可进一步通过将一天线盖卡制于所述天线盖凹槽，固定所述上盖与所述下盖。

18. 如权利要求 11 所述的金属手机壳体结构，其特征在于所述下盖进一步具有一电池盖凹槽。

19. 如权利要求 11 所述的金属手机壳体结构，其特征在于可进一步通过将一电池盖卡制于所述电池盖凹槽，固定所述上盖与所述下盖。

20. 如权利要求 11 所述的金属手机壳体结构，其特征在于所述金属手机壳体结构以铝挤压成型方式制造。

21. 如权利要求 11 所述的金属手机壳体结构，其特征在于所述组合组件以橡胶制成。

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000259

金属手机壳体结构

技术领域

本实用新型涉及一种手机壳体结构，且更具体地讲，涉及一种金属手机壳体结构。

背景技术

目前一般的手机壳体大多使用塑料材质所制成，塑料手机壳体具较低硬度，往往容易因撞击而破裂，且具较短暂的使用寿命。此外，塑料手机壳体一般是以注塑成型方式制作，往往容易产生壳体成型不良的问题。故优选的方式乃是使用金属材质所制成的手机壳体。金属手机壳体具有优选的硬度与使用寿命，且于制造时具有较高的合格率。

一般使用金属深抽方式制造金属手机壳体。金属深抽方式是通过多个模具，将一金属薄片逐步加压变形成为所需的外型。但使用金属深抽方式所制造的金属手机壳体外型具有较多限制，例如无法形成常见的垂直或锐利转折。这是因为金属深抽方式实际上为通过压力延展金属薄片，故于转折处的厚度较小，往往容易因轻微的应力而破裂。

此外，一般手机壳体是使用卡扣加以接合，亦即，构成手机壳体的上下盖侧边，具有多个垂直突出的卡扣，上下盖是通过卡扣扣合而结合成手机壳体。然而，如上所述，使用金属深抽方式无法制造锐利角度的转折外型，故往往需通过二次加工，于上下盖上再次加工形成卡扣，进而增加制造所需的时间与成本。

因此，需要一种改进的金属手机壳体结构，得以提升组装金属手机壳体时的便利性，节省组装所需的工时。此外，亦需一种改进的金属手机壳体制造方式，得以简化制造过程所需的模具，提高生产合格率，且可制造具较大转折角度的手机壳体外型。

实用新型内容

因此本实用新型的一目的在于提供一种金属手机壳体结构，具有改进

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000260

的滑槽滑块接合方式，得以更便利地组装。

根据本实用新型的上述目的，提出一种金属手机壳体结构，包括一上盖与一下盖。上盖的两侧分别具有一滑槽。下盖的两侧分别具有相对于滑槽的一滑块，当滑块嵌入滑槽而于滑槽中滑动时，上盖与下盖接合，且上盖与下盖间容纳一手机主体。

根据本实用新型的另一目的，提出一种金属手机壳体结构，包括一上盖、一下盖与一接合组件。上盖的两侧分别具有一上盖滑槽。下盖的两侧分别具有一下盖滑槽。接合组件具有相对于上盖滑槽的一上盖滑块，及相对于下盖滑槽的一下盖滑块，当上盖滑块嵌入上盖滑槽而于上盖滑槽中滑动，且下盖滑块嵌入下盖滑槽而于下盖滑槽中滑动时，上盖与下盖接合，且上盖与下盖间容纳一手机主体。

为此，本实用新型提供一种金属手机壳体结构，其特征在于所述金属手机壳体结构至少包括：一上盖，所述上盖的两侧分别具有一滑槽；及一下盖，所述下盖的两侧分别具有相对于所述滑槽的一滑块，当所述滑块嵌入所述滑槽而于所述滑槽中滑动时，所述上盖与所述下盖接合，且所述上盖与所述下盖间容纳一手机主体。

为此，本实用新型还提供一种金属手机壳体结构，其特征在于所述金属手机壳体结构至少包括：一上盖，所述上盖的两侧分别具有一上盖滑槽；一下盖，所述下盖的两侧分别具有一下盖滑槽；及至少一接合组件，所述接合组件具有相对于所述上盖滑槽的一上盖滑块，及相对所述下盖滑槽的一下盖滑块，当所述上盖滑块嵌入所述上盖滑槽而于所述上盖滑槽中滑动，且所述下盖滑块嵌入所述下盖滑槽而于所述下盖滑槽中滑动时，所述上盖与所述下盖接合，且所述上盖与所述下盖间容纳一手机主体。

根据本实用新型的金属手机壳体，使用滑入式的滑槽滑块结合，可简化组装的流程与工时，同时可提升组装的便利性与生产速度。且根据本实用新型的金属手机壳体结构，是以铝挤压成型方式制造，可使简化制造时所需的模具数目，亦可延长模具寿命及降低模具成本，同时可提高生产合格率，制造具较大转折角度的手机壳体外型。

附图说明

由以上本实用新型中优选具体实施例的细节描述，可以对本实用新型

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000261

的目的、观点及优点有更佳的了解。同时参考下列本实用新型的附图加以说明：

图 1 是显示依照本实用新型第一优选具体实施例的结构图。

图 2 是显示依照本实用新型第一优选具体实施例的组合图。

图 3 是显示依照本实用新型第一优选具体实施例的组合图。

图 4 是显示依照本实用新型第二优选具体实施例的剖面图。

图 5 是显示依照本实用新型第三优选具体实施例的剖面图。

图 6 是显示依照本实用新型的金属手机壳体组装完成图。

附图标记说明

12、42、52、62	上盖
12a、42a	滑槽
14、44、54、64	下盖
14a、44a	滑块
16	手机主体
52a	上盖滑槽
54a	下盖滑槽
58	组合组件
58a	上盖滑块
58b	下盖滑块
64a	天线盖凹槽
64b	电池盖凹槽
66	天线盖
68	电池盖

具体实施方式

根据本实用新型的金属手机壳体结构，是由一上盖与一下盖结合而成。上盖与下盖的两侧具有相对应的滑入式滑槽滑块组。通过此滑槽滑块组，可更便利地且稳固地结合上盖与下盖。且根据本实用新型的金属手机壳体结构，是以铝挤压成型方式制造，可简化制造所需的模具，且对于外型限制较少，可制造较锐利转折的手机壳体。

请参照图 1 至图 3，它们是显示依照本实用新型第一优选具体实施例的

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000262

结构图。如图 1 所示，根据本实用新型的金属手机壳体包括一上盖 12 与一下盖 14。上盖 12 的两侧分别具有一滑槽 12a。下盖 14 的两侧具有对应于滑槽 12a 的滑块 14a。通过将滑块 14a 嵌入滑槽 12a 而于其上滑动，可使上盖 12 与下盖 14 结合。且当上盖 12 与下盖 14 结合时，于两者间可容纳手机主体 16。

如图 2 所示，于组装时，首先将手机主体 16 组装于上盖 12。接着，通过将滑块 14a 嵌入滑槽 12a 并于其上滑动，便可结合上盖 12 与下盖 14。如图 3 所示，滑槽 12a 可设计成为凹型，且滑块 14a 可设计为相对应的凸型。

请参照图 4，图 4 是显示依照本实用新型第二优选具体实施例的剖面图。滑槽与滑块除可分别设计为如第一优选具体实施例所揭示的凹型与凸型外，亦可设计为相对应的 L 型滑槽 42a 与倒 L 型滑块 44a。通过 L 型滑槽 42a 与倒 L 型滑块 44a，亦可结合上盖 42 与下盖 44。

此外，亦可通过一结合组件，以结合上盖与下盖。图 5 是显示根据本实用新型的第三优选具体实施例，说明使用结合组件 58 以组合上盖 52 与下盖 54。上盖 52 的两侧分别具有一呈Ω形的上盖滑槽 52a，且下盖 54 的两侧亦分别具有一呈Ω形的下盖滑槽 54a。组合组件 58 具有分别对应于上盖滑槽 52a 的倒Ω形上盖滑块 58a，及对应于下盖滑槽 54a 的倒Ω形下盖滑块 58b。通过将组合组件 58 的上盖滑块 58a 与下盖滑块 58b 分别嵌入上盖滑槽 52a 与下盖滑槽 54a，便可结合上盖 52 与下盖 54。组合组件 58 可为橡胶等软垫的设计，以减缓落下冲击所造成的损坏。

请参照图 6，下盖 64 进一步包括天线盖凹槽 64a 与电池盖凹槽 64b，当上盖 62 与下盖 64 通过本实用新型的滑槽滑块方式组合之后，可进一步通过将天线盖 66 置入天线盖凹槽 64a，以及将电池盖 68 置入电池盖凹槽 64b，而进一步将上盖 62 与下盖 64 卡制固定。

上盖与下盖可使用铝挤压成型方式制造，亦即，将金属锭加热至可塑温度后，以挤压机利用油压力量使金属锭通过挤型模具，挤压出上盖与下盖的形状。铝挤压成型具有产能大，成品精度佳，可生产复杂形状及设备低廉的优点，且可适用横截面相同的各种所需形状。此外，铝挤压成型只需单一模具，亦可降低生产时所需的模具成本。

根据本实用新型的金属手机壳体，使用滑入式的滑槽滑块结合，可简化组装的流程与工时，同时可提升组装的便利性与生产速度。且根据本实

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000263

用新型的金属手机壳体结构，以铝挤压成型方式制造，可使简化制造时所需的模具数目，亦可延长模具寿命及降低模具成本，同时可提高生产良率，制造具较大转折角度的手机壳体外型。

虽然本实用新型已以一优选具体实施例揭示如上，然而，其并非用以限定本实用新型，本领域中的普通技术人员，在不脱离本实用新型的精神和范围的前提下，当然可作各种更动与润饰，因此本实用新型的保护范围还应当视包括以上所述的更动与润饰。

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000264

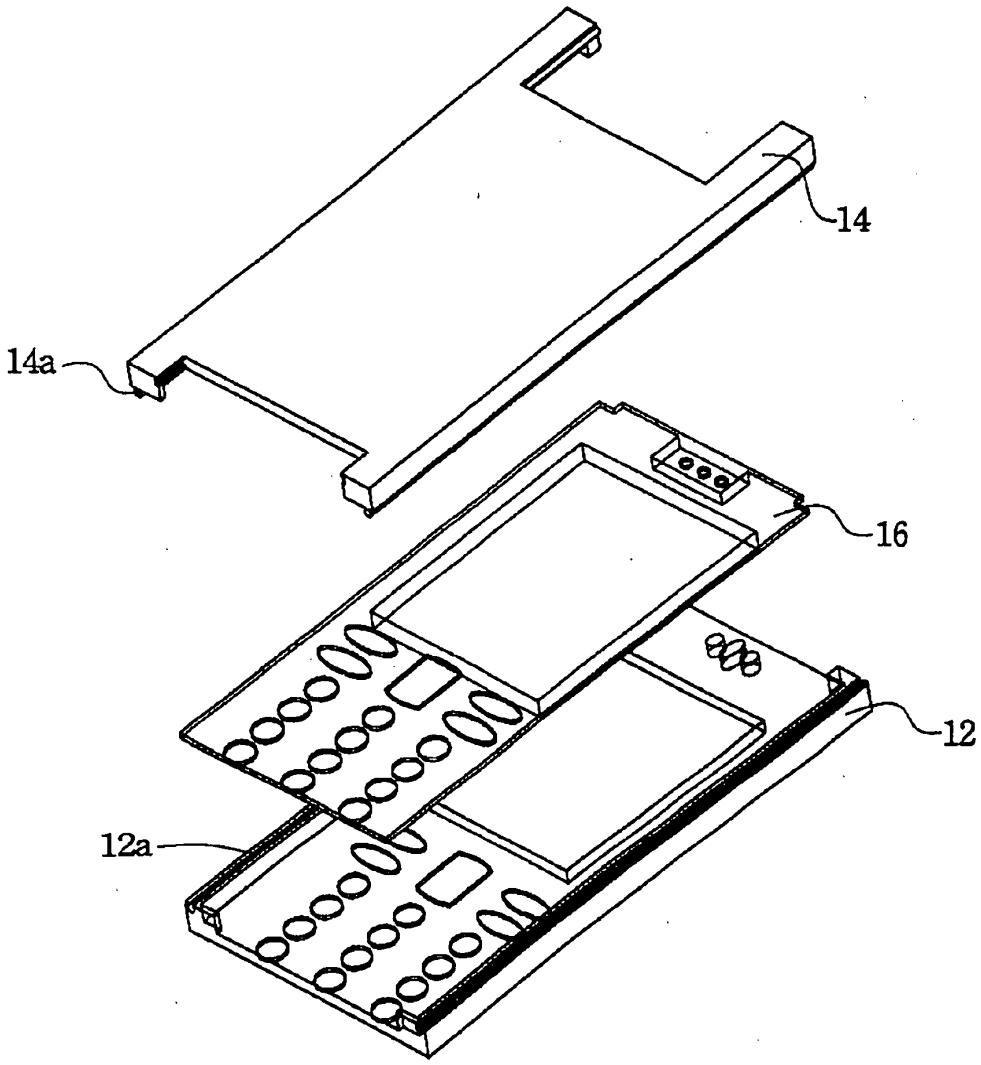


图 1

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000265

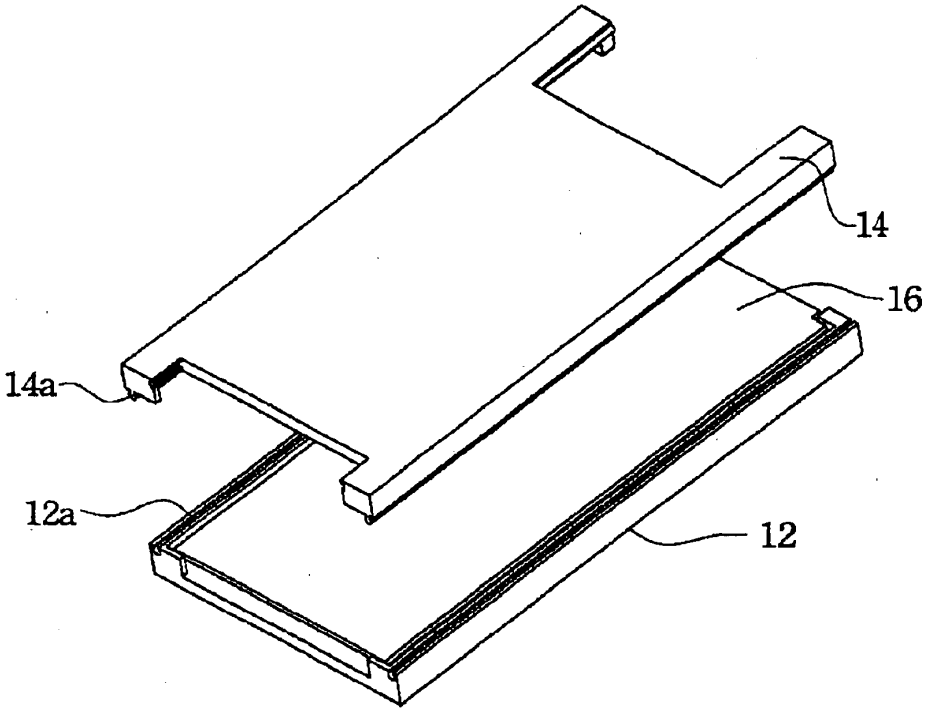


图 2

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000266

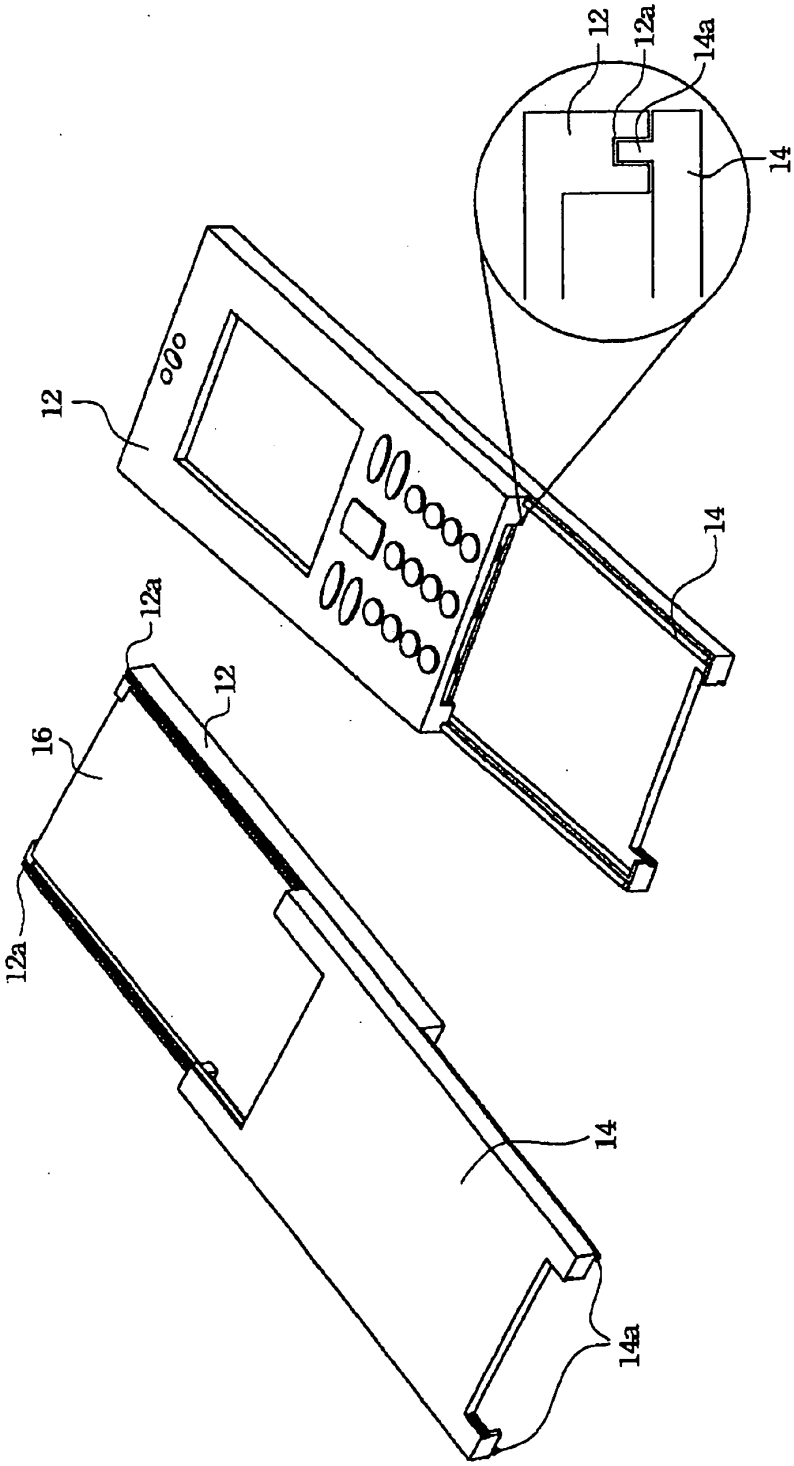


图 3

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000267

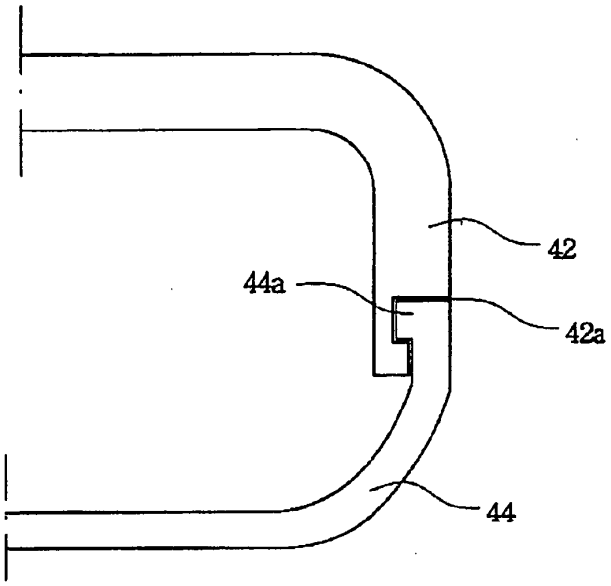


图 4

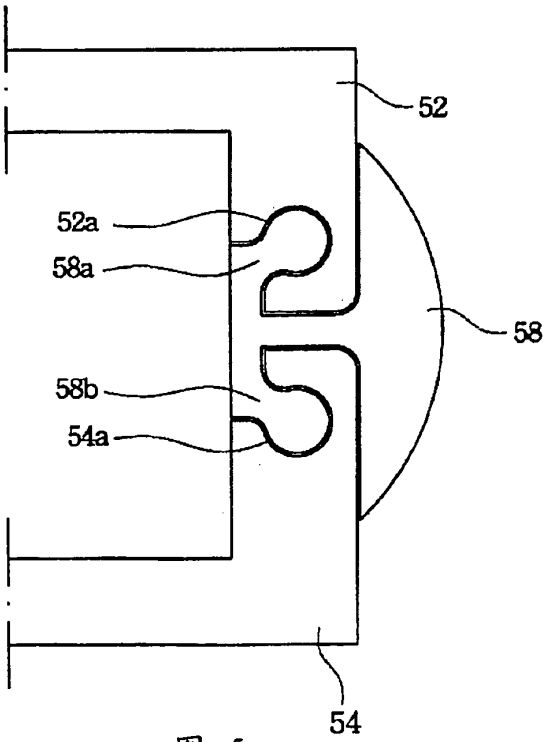


图 5

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000268

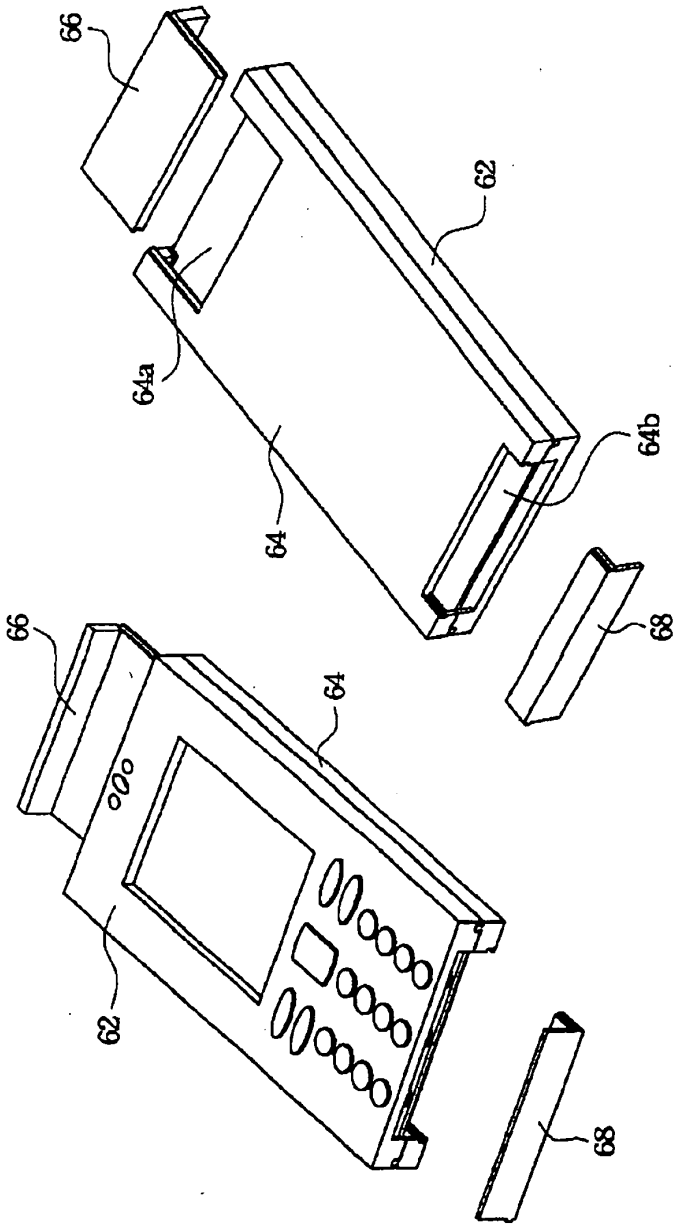


图 6

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000269

Espacenet

Bibliographic data: CN1507735 (A) — 2004-06-23

Foldable cell phone device

Inventor(s): KOICHI YAMAMOTO [JP]; HIDEHIRO YANAGIBASHI [JP] ± (YAMAMOTO KOICHI, ; YANAGIBASHI HIDEHIRO)

Applicant(s): MATSUSHITA ELECTRIC IND CO LTD [JP] ± (MATSUSHITA ELECTRIC IND. CO., LTD)

Classification: - international: ***H04M1/02;*** (IPC1-7): H04M1/02
- cooperative: **H04M1/0214**; **H04M1/0216**; H04M1/026

Application number: CN2003800177 20030204

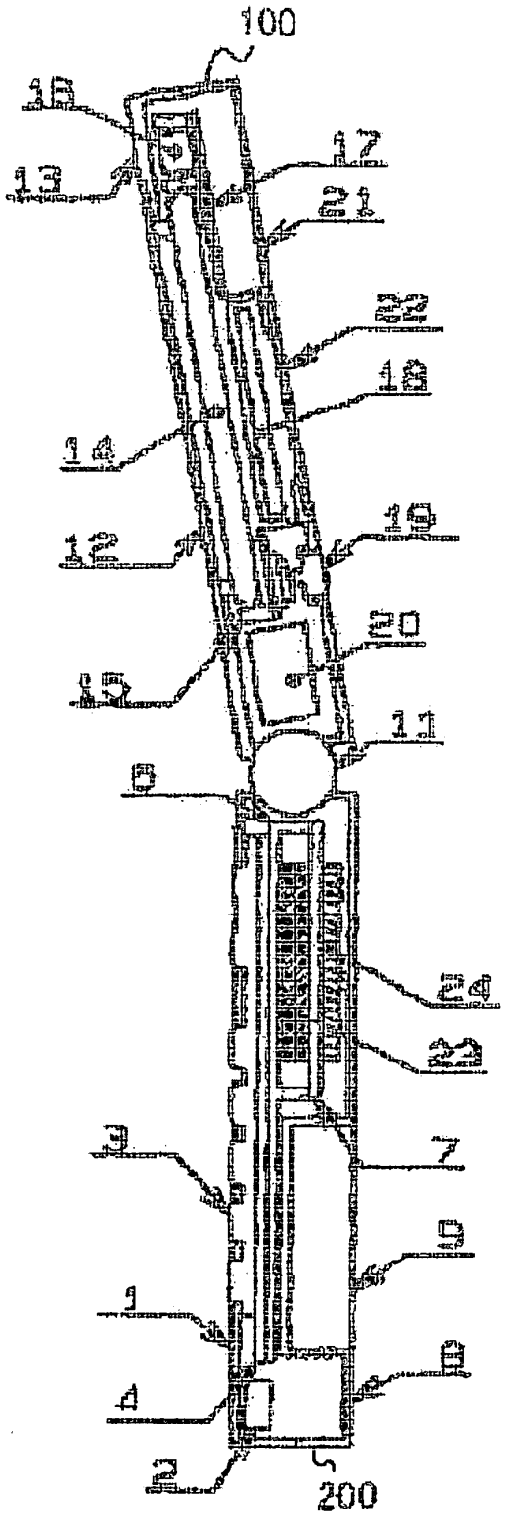
Priority number (s): JP20020026479 20020204

Also published as: GB2391740 (A) GB2391740 (B) US2011172003 (A1) US2004132511 (A1) US7885653 (B2) more

Abstract not available for CN1507735 (A)
Abstract of corresponding document: GB2391740 (A)

A foldable cell phone device, comprising an operating part (3) installed on the opposed surface of a lower casing (200) opposed to an upper casing (100) when folded up, a circuit substrate (7) installed in the lower casing (200), and a plate-like spacer (5) installed between the operating part (3) and the circuit substrate (7) and supported by a rib.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000270



Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000271

[19] 中华人民共和国国家知识产权局

[51] Int. Cl[7]
H04M 1/02

[12] 发明专利申请公开说明书

[21] 申请号 03800177.2

[43] 公开日 2004 年 6 月 23 日

[11] 公开号 CN 1507735A

[22] 申请日 2003.2.4 [21] 申请号 03800177.2
[30] 优先权
[32] 2002. 2. 4 [33] JP [31] 026479/2002
[86] 国际申请 PCT/JP2003/001091 2003.2.4
[87] 国际公布 WO2003/067857 日 2003.8.14
[85] 进入国家阶段日期 2003.10.23
[71] 申请人 松下电器产业株式会社
地址 日本大阪府
[72] 发明人 山本孝一 柳桥秀广

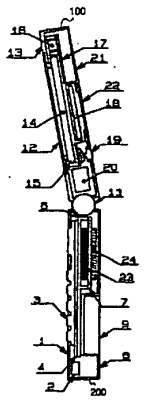
[74] 专利代理机构 北京市柳沈律师事务所
代理人 李晓舒 魏晓刚

权利要求书 1 页 说明书 7 页 附图 8 页

[54] 发明名称 翻盖式移动电话装置

[57] 摘要

本发明公开了一种翻盖式移动电话装置，其包括：操作部分(3)，其设置在折叠时与上部机壳(100)相对的下部机壳(200)的相对平面上；电路板(7)，其设置在下部机壳(200)内部；以及平的隔片(5)，其设置在操作部分(3)和电路板(7)之间并由肋支承。



ISSN1008-4274

知识产权出版社出版

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000272

1. 一种翻盖式移动电话装置，其包括具有显示器部分的上部机壳和具有操作部分的下部机壳，该两个机壳通过铰接部分可转动地安装，所述装置包括：

操作部分，其设置在折叠时与所述上部机壳相对的所述下部机壳的相对平面上；

电路板，其设置在所述下部机壳内部；以及

平的隔片，其设置在所述操作部分和所述电路板之间并由肋支承。

2. 如权利要求 1 所述的翻盖式移动电话装置，其中电池位于所述电路板的从所述隔片看的那侧上，靠近话筒，话筒的位置离所述铰接部分比离所述电路板远。

3. 如权利要求 1 所述的翻盖式移动电话装置，其中在所述电路板上，控制电路设置在所述操作部分侧的平面上，而高频电路设置在所述操作部分相对侧的平面上。

4. 如权利要求 1 所述的翻盖式移动电话装置，其中在所述电路板的方向上伸出的隔片肋形成在所述隔片上，而在所述电路板的所述方向上伸出的背面外壳肋形成在所述下部机壳的背面外壳中，所述隔片肋和所述背面外壳肋在所述电路板上的相对位置处形成。

5. 如权利要求 2 所述的翻盖式移动电话装置，其中一连接器安装在所述电路板上，所述连接器从所述电池供给电能并与所述电池的侧平面连接。

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000273

翻盖式移动电话装置

技术领域

本发明涉及移动电话，更具体地说，涉及翻盖式(fold)移动电话装置。

背景技术

近年来，薄的小型翻盖式移动电话装置已经成为主流。然而，小型化和薄的模制导致机械强度和刚度降低，并且安装部件经常损坏。特别是，采纳在前平面上有键操作部分而在后平面上有安装部件的单板结构，按压键产生的应力直接传递至安装部件，因此，安装部件也很容易损坏。另外，其结构使得在出现损坏问题时，很难采取措施。电子邮件功能的扩展使主显示器部分增大，并且要安装副显示器部分，以便当移动电话装置关闭时也可以使用；结果，翻盖式移动电话装置的上部机壳的重量增加，并且上部机壳和下部机壳的重量平衡较差。

图 1 为表示传统的翻盖式移动电话装置结构一部分的截面图。在与键电路板 25 的工作平面相对的平面上，形成控制电路 23 和高频电路 24，而键电路板 25、控制电路 23 和高频电路 24 的安装部件利用在下部背面外壳 8 中形成的下部背面外壳肋 27 支承。

当进行按压键的操作，在箭头方向压下键片(key sheet)3 时，由键电路板 25 的操作部分产生的应力传递给在与操作部分相对一侧的平面上的安装部件。其次，这个应力由在下部背面外壳 8 中形成的下部背面外壳肋 27 承受。另外，这个应力还由固定在下部背面外壳 8 上的电池 9 承受。特别是，当安装部件的边缘部分恰好位于键的底下时，按压键的小的力可在安装部件的钎焊连接部分上产生很大的应力，因此，钎焊连接部分较容易损坏。

另外，传统翻盖式移动电话装置在与键电路板的工作侧相对的平面一侧上具有安装部件，因此键按压、弯曲和扭转较容易使安装部件损坏。此外还有一个问题是，小型化和薄的模制也较容易使安装部件损坏。

又由于部件是安装在与键电路板的操作部分相对的平面上的，因此当考虑开发新的型号时，电路板的小型化和安装部件的小型化自然也会使操

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000274

作部分小型化，从而可导致工作性能不好的问题。

发明内容

因此，本发明的目的是提供一种小型薄的、但强固且刚硬的翻盖式移动电话装置。

上述目的通过在操作部分和电路板之间放置平的隔片并且利用该隔片承受由键按压操作、操作部分的弯曲和扭转产生的应力而实现。

附图说明

图 1 为表示传统翻盖式移动电话装置的下部机壳内部结构的截面图；

图 2 为表示根据本发明实施例的翻盖式移动电话装置的外观的正视图；

图 3 表示图 2 的 A-A 截面图；

图 4 表示图 2 的 B-B 截面图；

图 5 为表示当摊开在桌上时，本发明实施例的翻盖式移动电话装置结构的截面图；

图 6 为表示本发明实施例的翻盖式移动电话装置结构的分解透视图；

图 7 为表示与本实施例比较的传统翻盖式移动电话装置铰接部分结构的截面图；

图 8 为表示与本实施例比较的传统翻盖式移动电话装置铰接部分另一个结构的截面图；

图 9 为表示本发明实施例的翻盖式移动电话装置铰接部分结构的截面图；

图 10 为表示根据本发明另一实施例的翻盖式移动电话装置内部结构的截面图；和

图 11 为表示与本实施例比较的传统翻盖式移动电话装置下部机壳内部结构的截面图。

具体实施方式

现在参照附图来说明本发明的实施例。

图 2 为表示根据本发明一个实施例的翻盖式移动电话装置的外观正视图；图 3 为表示图 2 的 A-A 截面图；图 4 为表示图 2 的 B-B 截面图；图 6

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000275

为表示本发明实施例的翻盖式移动电话装置结构的分解透视图。

如图 2 和图 3 所示，该实施例的翻盖式移动电话装置包括上部机壳 100 和下部机壳 200。上部机壳 100 和下部机壳 200 通过铰接部分 11 可转动地安装在一起。

上部机壳 100 的显示器部分设置有主显示器 14 部分和副显示器 18 部分。主显示器 14 的作用是当翻盖式移动电话装置打开时作为显示器部分；而副显示器 18 的作用是当翻盖式移动电话装置关闭时作为显示器部分。主显示器 14 和副显示器 18 都与挠性板 17 电力连接，并均利用支架 15 夹持。

副显示器 18 具有显示电池电平、信号状态和时间，以及在来电呼叫时显示呼叫者号码和姓名的功能，因此，即使当关闭时，翻盖式移动电话装置也是非常方便的。另外，听筒 16 也由支架 15 夹持。

上部机壳 100 形成有上部前面外壳 13 和上部背面外壳 21。在上部背面外壳 21 内设置有话筒 20 和后键 19。另外，主显示面板 12 安装在上部前面外壳 13 上，而副显示器板 22 安装在上部背面外壳 21 上，从而保护主显示器 14 部分和副显示器 18 部分。后键 19 具有在翻盖式移动电话装置关闭时，切换在副显示器 18 部分上的显示内容的功能；当翻盖式移动电话装置打开且呼叫正进行时，记录呼叫者声音的功能；以及播放记录内容的功能。

另一方面，下部机壳 200 形成有下部前面外壳 1 和下部背面外壳 8。作为操作部分，下部机壳 200 设置有键片 3 和键板 4。在与键板 4 的操作部分相对的平面上，不设置安装部件。控制电路 23 和高频电路 24 形成在电路板 7 上，平的隔片 5 设置在键板 4 和电路板 7 之间。

高频电路 24 设置有屏蔽外壳 26，以防止电磁波侵入和保持电气性能。使用这样一些导电材料，如，磷铜、铍铜、弹簧镍银和弹簧不锈钢或无电镀树脂材料。

隔片 5 上设置有在电路板 7 的方向上伸出的隔片肋 28。另外，下部背面外壳 8 设置有在电路板 7 的方向上伸出的下部背面外壳肋 27。这些隔片肋 28 和下部背面外壳肋 27 形成的位置使它们在电路板 7 上面彼此面对。这样，电路板 7 夹在隔片肋 28 和下部背面外壳肋 27 之间，并与键板 4 平行。另外，隔片 5 由下部背面外壳 8 固定。

隔片 5 由导电的镁制成，在高频电路 24 的情况下，这可防止电磁波侵入控制电路 23，并保持电气性能。在电气性能不能满足要求的情况下，通

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000276

过在电路板 7 上安装由导电材料如磷铜、铍铜、弹性镍银和弹簧不锈钢制成的接地弹簧29，而且通过压缩接地弹簧29使隔片5和电路板7互相压紧，可以加强电气连接，并保持更稳定的电气性能。

对于电路板7，在隔片侧上形成控制电路23，并在下部背面外壳8侧上形成高频电路24，这样，电磁波侵入情况相当严重的高频电路24用屏蔽外壳26覆盖；而与高频电路24比较，电磁波侵入情况较弱的控制电路23可以使用导电的隔片 5 作为屏蔽外壳，因此不需要设置专用屏蔽外壳，可以实现理想的结构。

如果在电路板7上，控制电路23在下部背面外壳8侧上形成，而高频电路24在隔片5侧上形成；则只用隔片5作为防止电磁波侵入的措施是不够的，还需要另外的屏蔽外壳。另外，关于控制电路23，如果下部背面外壳 8 利用沉积在下部背面外壳 8 上的铝作为防止电磁波侵入的措施，则电气性能也不能满足要求，这样需要设置另外的屏蔽外壳。换句话说，可能需要两个屏蔽外壳，这会使生产成本和主体尺寸增加。

下部机壳200设置有包括电池 9、振动器6、天线10和话筒2的附加部件，这些部件容纳在下部前面外壳1和下部背面外壳8中。

关于按压键的操作，当在箭头方向按压键3时，从键板4产生的力首先传递至隔片5。然而，若隔片5由刚性大的材料(如，镁)制成，则可以减小来自于键板4的应力。另外，由于在键板4的与工作侧相对的平面上没有安装部件，则按压键产生的应力不会传递至安装部件。虽然传递给隔片5的应力传递给电路板7，但如果设定的结构是在下部背面外壳8上形成的下部背面外壳肋27承受该应力并支承电路板7，则仍可以减小电路板7的形状改变和作用在安装部件上的应力。

图 5 为表示摊开在桌子上的本实施例翻盖式移动电话装置的结构图。当使用摊开在桌子或台面上的翻盖式移动电话装置时，将相对重量最大的电池9设置在远离铰接部分11的话筒2附近的位置，可使主体的重心离铰接部分11的位置更远。这样，即使上部外壳100在箭头方向转动，其也不会落下，并保持稳定地设置。

图 7 为表示传统翻盖式移动电话装置铰接部分结构的一个例子的截面图，其中，下部前面外壳的铰接部分31形成在下部前面外壳1中。通常，为了改善主体的刚性，下部前面外壳 1 由镁材料制成。图 8 为表示传统翻

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000277

盖式移动电话装置铰接部分的另一个结构的截面图。下部前面外壳 1 由一般的树脂材料(如，丙烯腈-丁二烯-苯乙烯(ABS))制成，并且在下部前面外壳 1 中设置有通过夹物模压技术由金属制成的嵌入部件 32。该情况下，主体的刚性由嵌入部件 32 保证。

图 9 为表示本发明本实施例的翻盖式移动电话装置的铰接部分 11 结构的截面图。铰接部分 33 形成在由金属材料(如，镁)制成的隔片 5 中。这样，可以保持主体的刚度，并形成由一般的树脂材料(如，ABS)制成的下部前面外壳 1。用这种方法，不必形成由镁制成的下部前面外壳，它是一个外部部件。因此可以改善外观和提高制造性能，降低成本。

图 10 为表示本发明另一实施例的翻盖式移动电话装置下部机壳结构的截面图。近年来出现了一些产品，如，安装包括 SD 卡的介质卡(media card)的移动电话装置，并且由于功能多(如，电视电话和动画播放)消耗的电流增加；另外，电池的寿命缩短。考虑到上部机壳和下部机壳的重量平衡，在翻盖式移动电话装置中，SD 卡在理想情况下应安装在下部机壳上。考虑到这点，本实施例的移动电话装置保留上述实施例的基本结构，并在下部背面外壳 8 和高频电路 24 部分之间设置 SD 卡连接器 30。从图 10 中可看出，键板 4 和电路板 7 保留基本结构，但作了一点小改变，而 SD 卡连接器 30 设置在电路板 7 和下部背面外壳 8 之间。虽然，SD 卡连接器的厚度加到主体中，但这仍使电池 9 增厚，从而可以使用高容量电池。

下面说明从电池 9 供给电能的电池连接器部分。电池 9 包括充电电池组电池 34 和电池保护电路板 35。水平电池连接器 37 安装在电路板 7 上。如图中箭头所示，水平电池连接器 37 在相对于电路板 7 的水平方向上工作。结果，可以将与水平电池连接器 37 连接的用于电气连接的电池保护电路板 35 放置成与充电电池组电池 34 的侧平面平行，即垂直放置。

图 11 表示传统翻盖式移动电话装置的下部机壳结构的一个例子。垂直的电池连接器 36 安装在与键电路板 25 的工作侧相对的一侧上，并且如图中箭头所示，垂直的电池连接器 36 在相对于键电路板 25 的垂直方向上工作。结果，可将与垂直的电池连接器 36 固定用于电气连接的电池保护电路板 35 相对于充电电池组电池 34 的侧平面纵向放置，即水平放置。因此，电池在长度方向变长。

本发明不是仅限于上述实施例，而是可以作各种改变和改进。

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000278

本发明的移动电话装置采纳一种翻盖式移动电话装置的下述结构，它包括具有显示器部分的上部机壳和具有操作部分的下部机壳，该两个机壳通过铰接部分可转动地安装，该装置包括：操作部分，其设置在折叠时与上部机壳相对的下部机壳的相对平面上；电路板，其设置在下部机壳内部；以及平的隔片，其设置在操作部分和电路板之间并由肋支承。

在该结构中，由键按压、弯曲和扭转产生的应力由平的隔片支承，因此可以保持小且薄的尺寸，并防止对电路板等的损坏。

本发明的移动电话装置采纳翻盖式移动电话装置的下述结构，其中电池位于电路板的从隔片看的那侧上，靠近话筒，话筒的位置离铰接部分比离电路板远。

在该结构中，在下部机壳中，重心远离铰接部分，这可以在手握时改善重量平衡，使长时间的通话也可以毫无疲劳地进行。另外，当翻盖式移动电话装置具有电视电话功能并且摊开在桌子或台面上使用时，重心远离铰接部分，因此不必担心装置会在位于上部的上部机壳的方向上倾覆，可以得到重量平衡良好的稳定的翻盖式移动电话装置。

本发明的移动电话装置采纳这样的结构，其中，在电路板上，控制电路设置在操作部分侧的平面上，而高频电路设置在操作部分相对侧的平面上。

在该结构中，控制电路形成在操作部分上，而高频电路形成在下部背面外壳上，因此电磁波侵入情况严重的高频电路要用屏蔽外壳覆盖；而至于电磁波的侵入情况比高频电路小的控制电路，可以使用导电的隔片作为屏蔽外壳，不需要提供专用屏蔽外壳。

本发明的移动电话装置采纳这样的结构，其中在电路板的方向上伸出的隔片肋形成在隔片上，而在电路板的方向上伸出的背面外壳肋形成在下部机壳的背面外壳中，隔片肋和背面外壳肋在电路板上的相对位置处形成。

在该结构中，隔片上的应力由隔片肋和下部背面外壳肋同时支承，因此可以完全防止电路板等的损坏。

本发明的移动电话装置采纳这样的结构，其中一连接器安装在电路板上，连接器从电池供给电能并与电池的侧平面连接。

在该结构中，使电池连接器水平可将电池保护电路板垂直放置并缩短电池长度方向的长度，从而可进一步使翻盖式移动电话装置小型化。

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000279

如上所述，根据本发明，通过在操作部分和电路板之间设置平的隔片，以及通过接收来自于操作部分的键按压操作、弯曲和扭转产生的应力，可以实现小型薄的但强固且刚硬的翻盖式移动电话装置。

另外，当开发新的型号时，较容易制造普通的基本结构；并且在使电路板小型化时，可将电池作得更长些，并可得到高容量的电池。另外，不需要改变键板的尺寸，可以得到考虑了可操作性的具有便于使用的尺寸的键片，得到非常方便的翻盖式移动电话装置。

此外，当考虑进一步的丰富功能的可能性时(例如安装介质卡，电视电话，动画播放和音乐分配)，该结构中的电路板和电池的关系可以有效地利用空间，这样可以进行各种开发。

本发明涉及2002年2月4日申请的日本专利申请第2002-26479号，这里将其内容全部引入作为参考。

工业实用性

本发明适用于翻盖式移动电话装置。

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000280

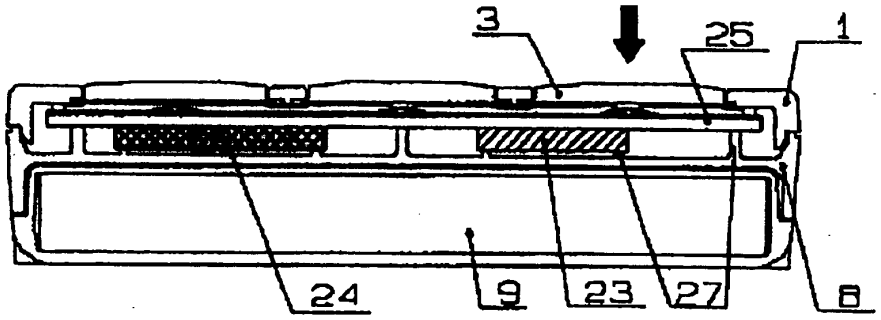


图 1

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000281

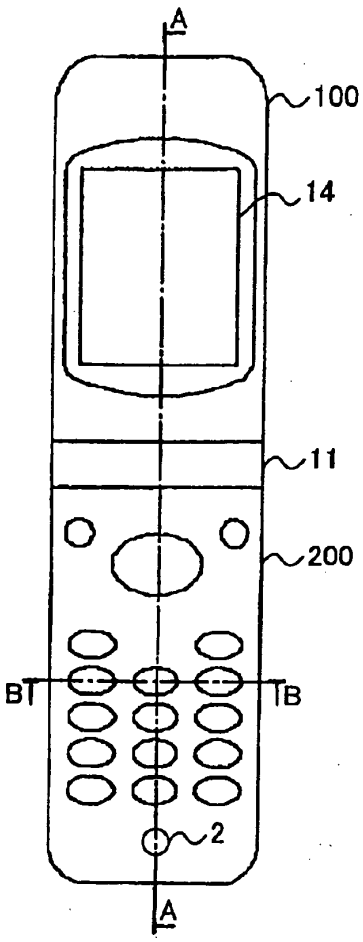


图 2

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000282

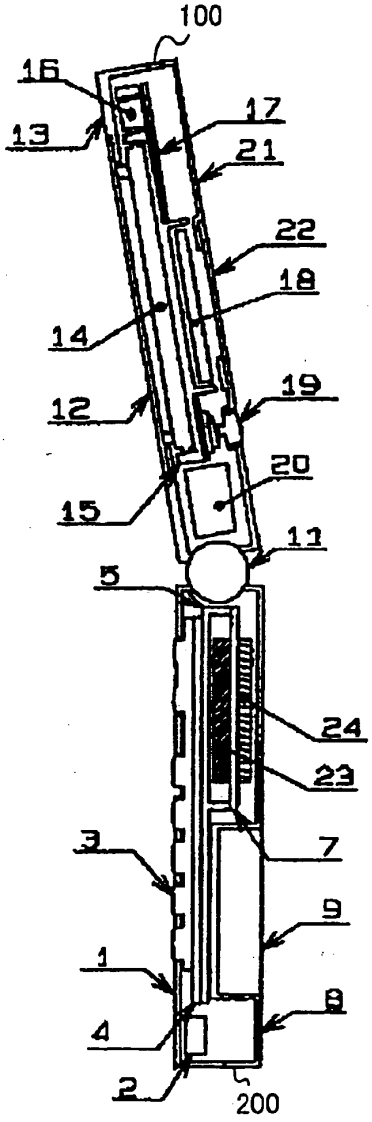


图 3

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000283

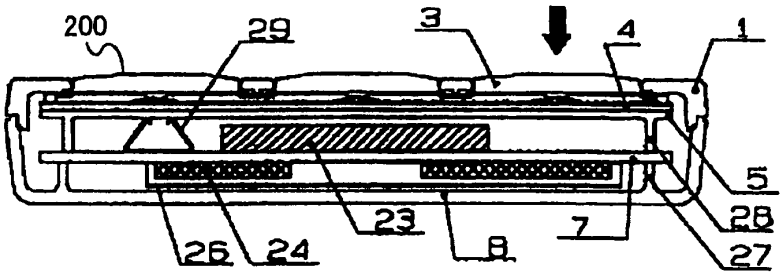


图 4

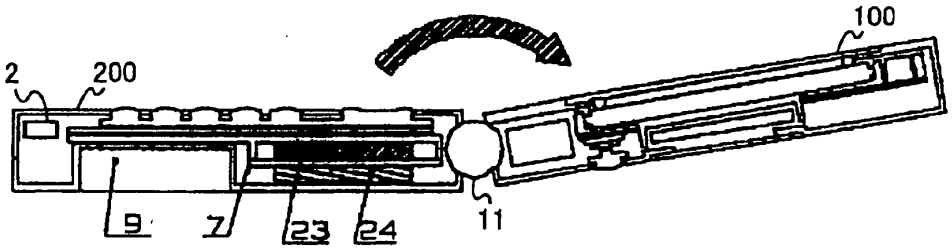


图 5

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000284

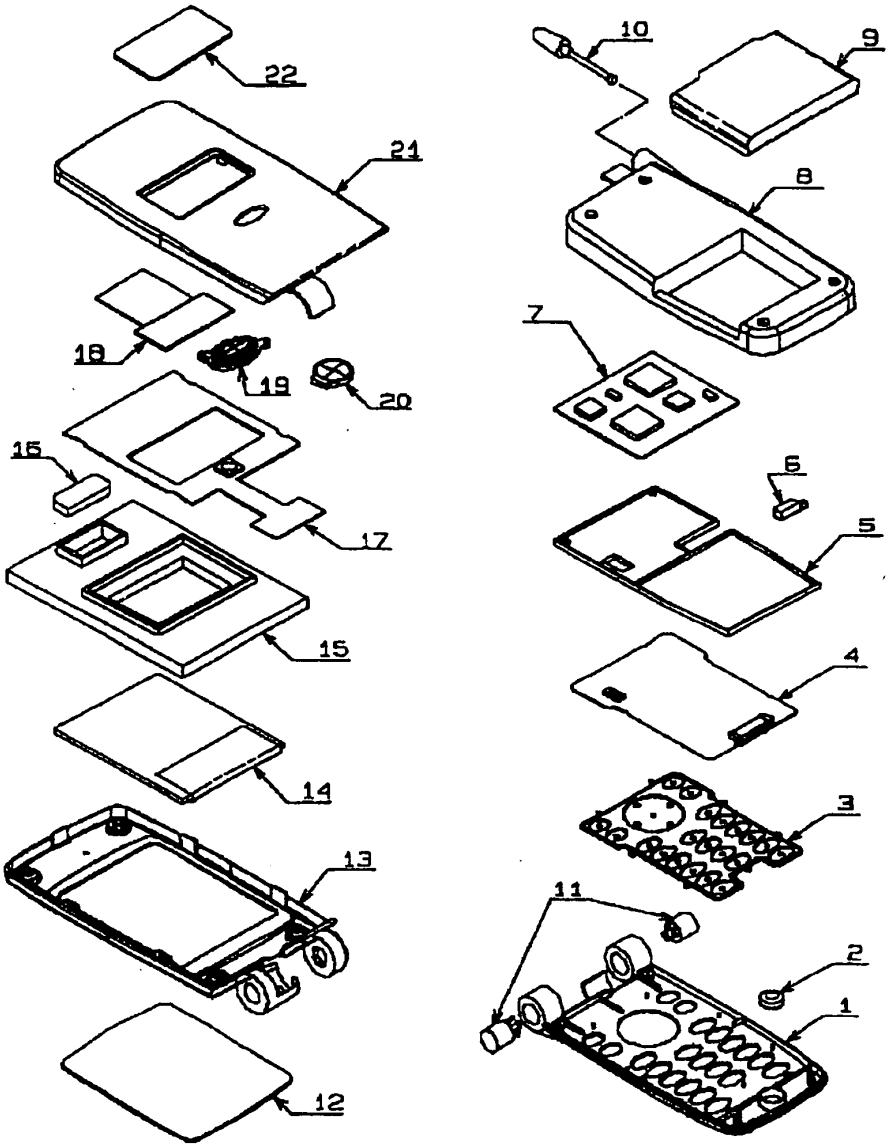


图 6

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000285

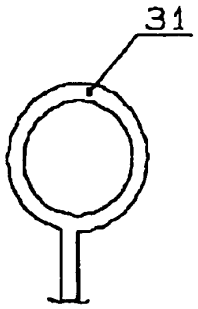


图 7

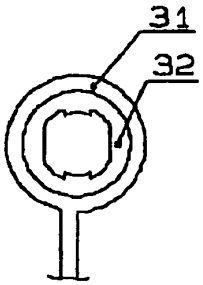


图 8

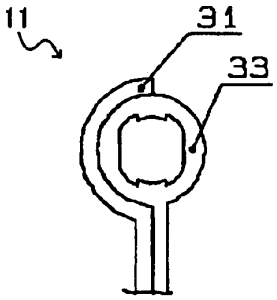


图 9

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000286

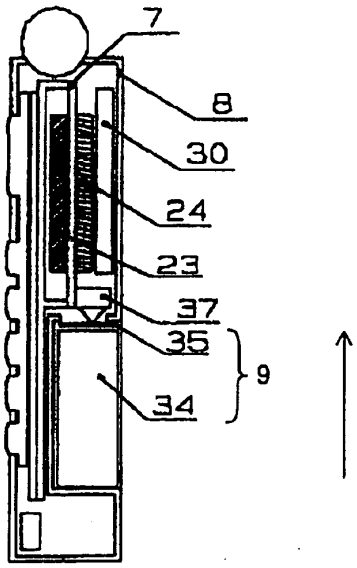


图 10

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000287

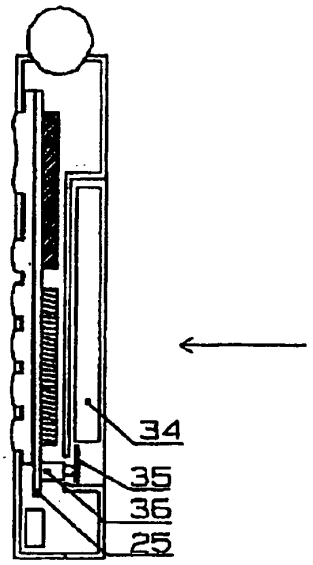


图 11

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000288

(12) UK Patent Application (19) GB (11) 2 360 972 (13) A

(43) Date of A Publication 10.10.2001

(21) Application No 0008406.1

(22) Date of Filing 05.04.2000

(71) Applicant(s)
Nokia Mobile Phones Limited
(Incorporated in Finland)
Keilalahdentie 4, 02150 Espoo, Finland

(72) Inventor(s)
Simon Wilson

(74) Agent and/or Address for Service
Venner Shipley & Co
20 Little Britain, LONDON, EC1A 7DH,
United Kingdom

(51) INT CL[7]
B29C 45/14 , H05K 5/00 // H04M 1/02

(52) UK CL (Edition S)
B5A AA2 AB12 AT14P A1R150 A1R214H A1R314C5
A1R314C6 A1R322 A1R439X A1R462 A20N3 A20T14
H1R RBL
H4J JK J36Q

(56) Documents Cited
GB 2314798 A GB 1207240 A GB 1167729 A
GB 1052052 A EP 0403975 A2 US 5432676 A
WPI Abstract Accession No. 2000-029773/200003 &
JP11297448A (YAZAKI) 29.10.1999 (see abstract)
WPI Abstract Accession No. 1988-343511/198848 &
JP63257618 A (CANON) 25.10.1988 (see abstarct)

(58) Field of Search
UK CL (Edition R) B5A AB12 AB13 AT14P AT3P
INT CL[7] B29C 39/10 45/14
Online: WPI EPODOC JAPIO

(54) Abstract Title
Portable electronic apparatus with a moulded cover

(57) A portable electronic apparatus (1) (e.g. a mobile telephone) has a one-piece cover 19 which is moulded directly onto the internal components of the apparatus (e.g. printed circuit board 2, battery 3, frame 15).

A sub-assembly, including an electronic circuit (e.g. printed circuit boards 2, 7, 11) is placed in a mould 107 and a polymer material (e.g. cellular urethane) is injected into the mould 107 such that the sub-assembly is substantially embedded in the polymer material.

A stagewise manufacturing process for manufacturing a mobile telephone is illustrated in figure 3 (not shown) in which the frame 15, moulded in a first operation, is placed in another mould to form an elastomeric moulding 16. Electronic components 4, 10 are mounted to printed circuit boards 2, 7, 11 which are assembled with an enclosure 6 in an assembly stage (102). A battery 3 is then glued to pcb 2 in another assembly stage (103). The pcb assembly and frame 15 are glued together and then placed in mould 107.

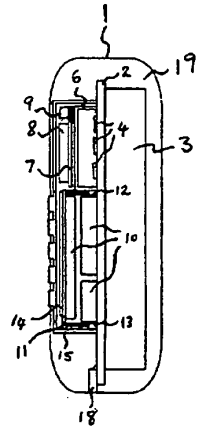


Figure 2

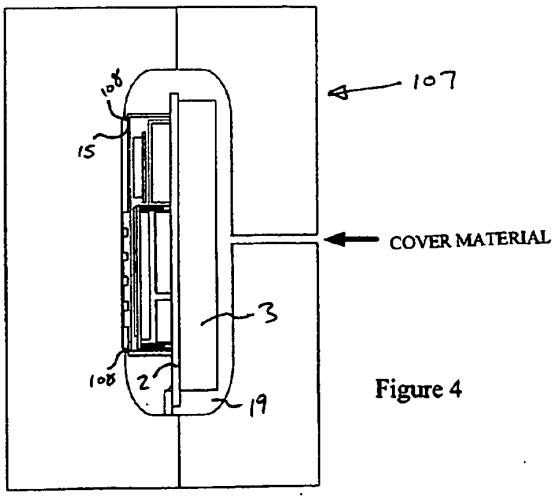


Figure 4

GB 2 360 972 A

This print incorporates corrections made under Section 117(1) of the Patents Act 1977.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000289

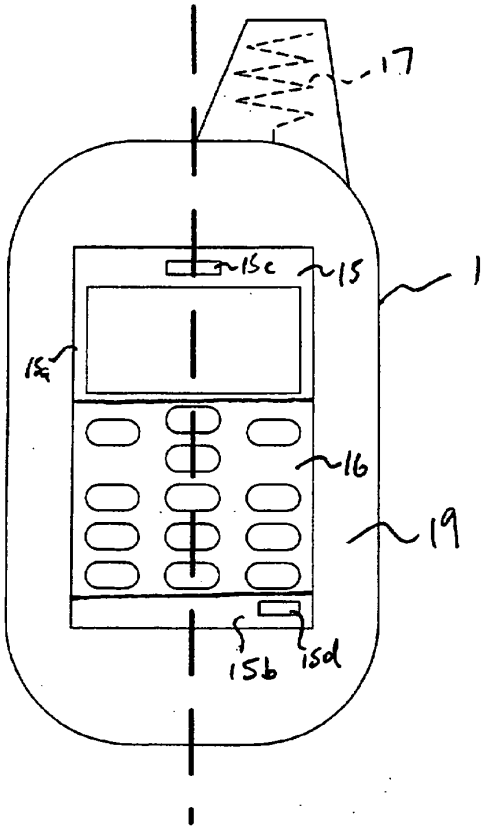


Figure 1

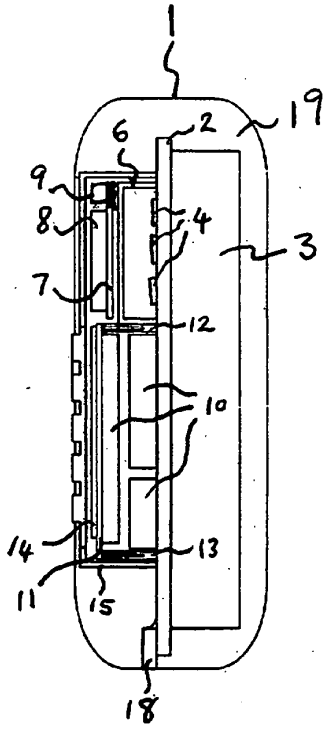


Figure 2

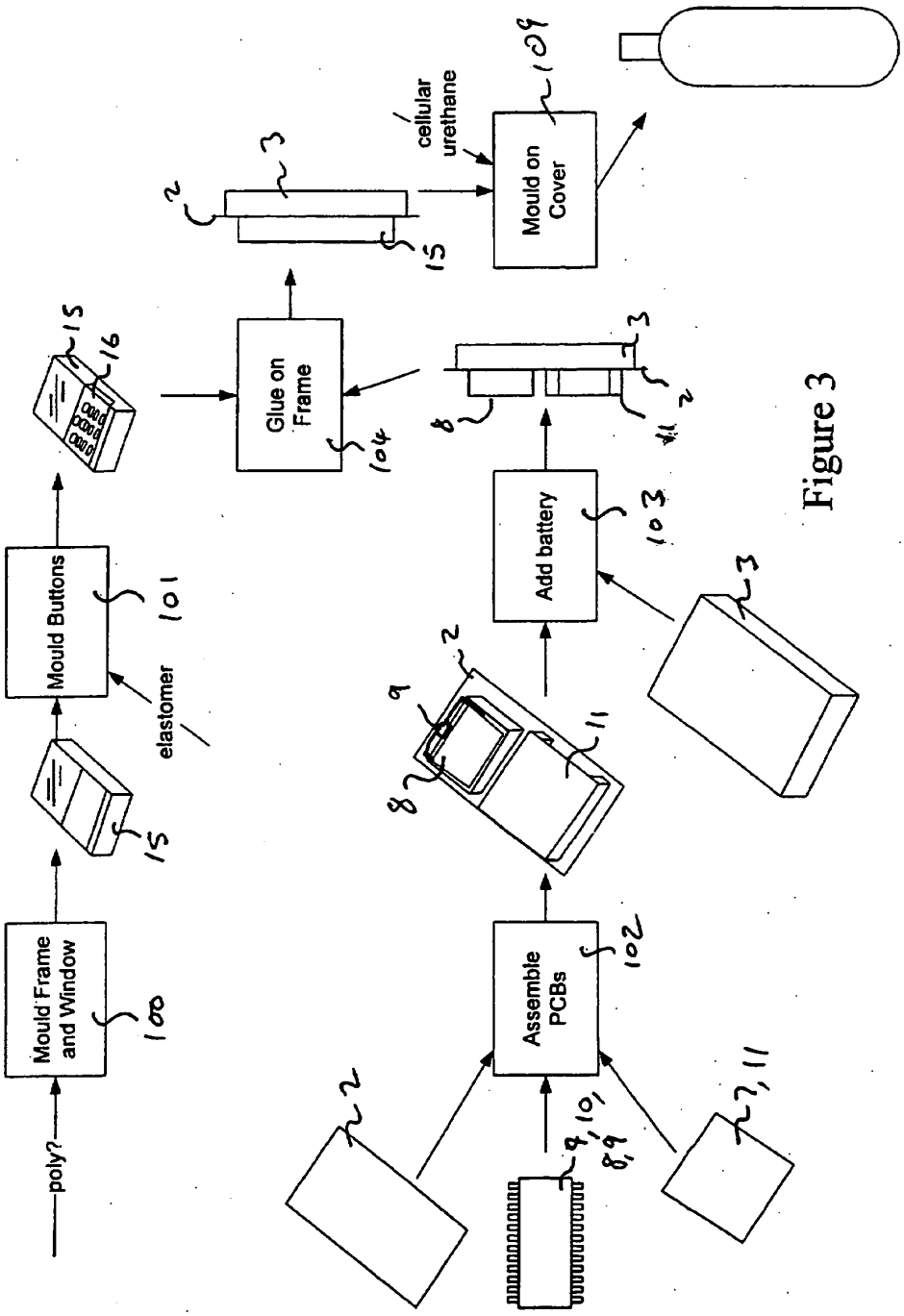


Figure 3

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000291

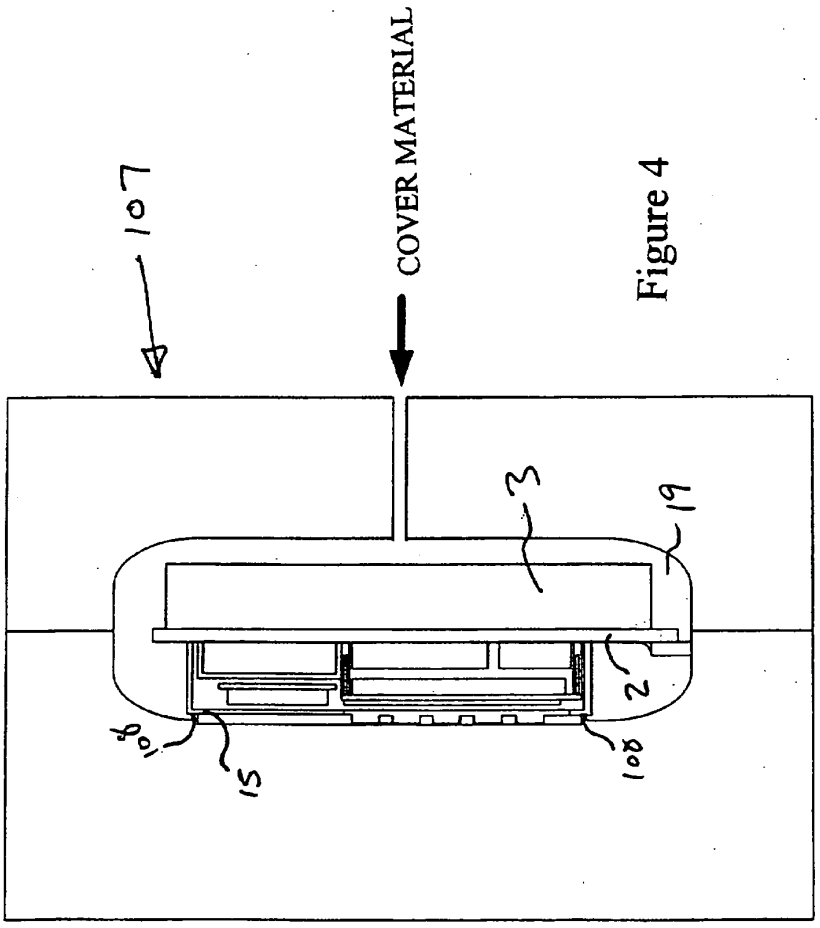


Figure 4

Portable Electronic Apparatus

Description

The present invention relates to a portable electronic apparatus and a method of manufacturing a portable electronic apparatus.

Conventionally, portable electronic apparatuses, such as mobile telephones, are made with a multi-piece cover. The cover parts are moulded as separate items, notwithstanding that they may be attached by sprues during the actual moulding process. These cover parts are then held by screws or other fastening means to each other and/or to a chassis.

When an apparatus having this form of construction is dropped or otherwise subjected to a shock, the casing is often damaged, literally coming apart at the seams. Another problem is the ingress of water at the seams. This means that special seals must be used to make a waterproof device.

According to a first aspect of the present invention, there is provided a portable electronic apparatus including a cover and an assembly including substantially all of the apparatus's circuitry, wherein the cover is a one-piece moulding and said assembly is embedded within the cover.

According to a second aspect of the present invention, there is provided a portable electronic apparatus comprising a one-piece cover. If the cover is a monocoque, the one-piece cover allows for better distribution of the forces of impact reducing the risk of cracking where the cover is formed from non-elastomeric materials.

The lack of seams between cover parts in apparatus according to the present invention reduces or removes the possibility of the ingress of water when compared with conventional designs.

The cover is preferably moulded from a polymer material such as a thermoplastic elastomer, e.g Santoprene from Advanced Elastomer Systems, or a self-skinning

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000293

foam polymer material, e.g. a cellular urethane. However, any material that can be moulded and otherwise processed at temperatures that do not harm the electronic components of the apparatus can be used, even concrete is a possibility.

The cover may have an aperture revealing a display and/or a manually operable electronic input device. Preferably, the input device comprises a pushbutton. Rotary controls are undesirable for waterproof products because some form of reliable waterproof seal between the moving part of the control and the cover material is required.

An electrical contact may be embedded within the material of the cover for connecting a circuit inside the cover to an external circuit. Means, for example a diode, is preferably provided for preventing discharging of an internal rechargeable battery in the event of short between battery charging contacts embedded in the cover, such as may occur if the apparatus is immersed in water. A disposable battery powered device would not need such a contact for obtaining operating power.

Preferably, an apparatus according to the present invention includes a user interface assembly, comprising a window and the keys of a keypad, and a printed circuit board, having electronic components including a display device mounted thereto, and the user interface assembly is glued to the printed circuit board such that the window is aligned with the display device and the whole is substantially embedded within cover.

The present invention may be applied to a portable radio device, for instance a mobile telephone.

According to the present invention, there is provided a method of manufacturing a preferred portable electronic apparatus. This method comprises placing a sub-assembly, including an electronic circuit, in a mould and injecting a polymer material into the mould such that the sub-assembly is substantially embedded in the polymer material.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000294

The cover is preferably moulded from a thermoplastic elastomer, e.g Santoprene from Advanced Elastomer Systems or a self-skinning foam polymer material, e.g. a cellular urethane.

The sub-assembly may be placed in contact with a feature of a wall of the mould so that an aperture is formed in the moulded polymer material. More preferably, the sub-assembly includes a display and the sub-assembly is placed in contact with a feature of a wall of the mould such that the display is visible through the aperture. Still more preferably, the sub-assembly includes a manually operable electronic input device and the sub-assembly is placed in contact with a feature of a wall of the mould such that the input device is operable through the aperture.

The sub-assembly and the mould may be configured such that an electrical contact is held within the polymer material after moulding for connecting said circuit to an external circuit.

A preferred method includes gluing a user interface assembly, comprising a window and the keys of a keypad to a printed circuit board, having electronic components including a display device mounted thereto, to form said sub-assembly.

The present invention is suited to the manufacture of portable radio devices, for example mobile telephones.

An embodiment of the present invention will now be described, by way of example, with reference to the accompanying drawings, in which: -
Figure 1 is a front view of a mobile telephone according to the present invention;
Figure 2 is a sectional view, along the dashed line in Figure 1, of a mobile telephone according to the present invention;
Figure 3 is a diagram illustrating a manufacturing process for producing as mobile telephone as shown in Figure 1; and
Figure 4 shows the cover of the mobile telephone of Figure 1 being moulded.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000295

Referring to Figures 1 and 2, a mobile telephone 1 is formed around a central, rigid rectangular main printed circuit board 2. In each elevation, the mobile telephone 1 is a rounded rectangle, the height being the largest dimension and the depth from front to back being the smallest dimension. The main printed circuit board 2 lies parallel to the face of the mobile telephone 1.

A rechargeable battery 3 is glued to the back face of the main printed circuit board 2. The rf circuitry components 4 of the mobile telephone 1 are mounted to an upper region of the front face of the main printed circuit board 2 and enclosed within a shielding enclosure 6 which is soldered to the main printed circuit board 2. A first subsidiary pcb 7 is mounted over the front face of the enclosure 6. A liquid crystal display 8 and a small loudspeaker 9 are mounted to the first subsidiary pcb 7 with the loudspeaker 9 above the display 8.

Baseband and control circuitry components 10 are mounted to the front face of the main printed circuit board 2 below the enclosure 6 and to the back face of a second subsidiary pcb 11. The second subsidiary pcb 11 lies parallel to the main printed circuit board 2 and in front of it. The second subsidiary pcb 11 connected physically and electrically to the main printed circuit board 2 by multiway connectors 12, 13 at its top and bottom ends.

The fixed elements 14 of a membrane keypad are formed on the front face of the second subsidiary pcb 11 and a small microphone (not shown) is mounted in the bottom right corner of the second subsidiary pcb 11.

The first and second subsidiary printed circuit boards 7, 8 are enclosed by a generally box-shaped frame 15 which is open at the back and glued to the main printed circuit board 2. The four side walls, the upper part of the front wall and a small portion along the bottom of the front wall of the frame 15 are moulded in one piece from a transparent, stiff polymer such as polycarbonate or an acrylate polymer. The region between the upper part 15a of the front wall and the small portion along the bottom 15b of the front wall is filled with an elastomeric

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000296

moulding 16. The elastomeric moulding 16 is shaped to provide the buttons for the membrane keypad.

The frame 15 has small apertures 15c, 15d aligned with the loudspeaker and the microphone 7. These apertures are closed on the inside of the frame by a waterproof membrane such as is available under the trade name Gortex (RTM).

A helical antenna 17 projects from the upper edge of the main printed circuit board 2 and terminals 18 for connecting the battery 3 to an external charger (not shown) via a diode (not shown) to prevent discharging of the battery 3.

The main printed circuit board 2, the battery 3 and the frame 15, save for its front face, are embedded in a cellular urethane body 19 which give the mobile telephone 1 its form. The front of the frame 15 is not wholly free of the material of the body 19. The cellular urethane material extends a short distance over the margins of the front face of the frame 15 to form a watertight seal therewith. The cellular urethane body 19 also encompasses the antenna 17.

The manufacture of the mobile telephone 1 will now be described.

Referring to Figure 3, the frame 15 is moulded from polycarbonate in a first moulding operation 100. The frame 15 is then placed in another mould and an elastomeric material is injected and cured to form the elastomeric moulding 16 in a second moulding operation 101.

In parallel with the formation of the frame 15, the electronic components 4, 10, including the mobile telephone's SIM card, are mounted to the printed circuit boards 2, 7, 11 which are then assembled together with the enclosure 6 in a first assembly stage 102. The battery 3 is then glued to the back of the main printed circuit board 2 and its terminals solder to tracks on the main printed circuit board 2 in a second assembly step 103.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000297

The printed circuit board assembly and the completed frame 15 are then glued together in a third assembly step 104. The assembled internals of the mobile telephone 1 are then placed in a mould 107 (see Figure 4) with the margins of the frame 15 pressing against a rectangular ridge 108. The mould 107 is then closed and a cellular urethane is injected in a third moulding process 109. The cellular urethane encompasses the internals of the mobile telephone 1 but is kept clear of the front of the frame 15 by the ridge 108. The internal structure of the cellular urethane body 19 is cellular however a smooth skin naturally forms over the external surface of the cellular urethane body 19.

In the foregoing description, the body 19 is moulded from one material. However, the body may be moulded as a plurality of layer, for example an inner cellular layer for absorbing impact forces and an non-cellular outer layer to provide an easy to clean surface.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000298

Claims

1. A portable electronic apparatus including a cover and an assembly including substantially all of the apparatus's circuitry, wherein the cover is a one-piece moulding and said assembly is embedded within the cover.

2. A portable electronic apparatus comprising a one-piece cover.

3. An apparatus according to claim 1 or 2, wherein the cover is moulded from a polymer material.

4. An apparatus according to claim 3, wherein the polymer material is a self-skinning foam polymer material.

5. An apparatus according to any preceding claim, wherein the cover has an aperture revealing a display.

6. An apparatus according to claim 5, including a manually operable electronic input device, wherein said input device is located within said aperture.

7. An apparatus according to any one of claims 1 to 4, including a manually operable electronic input device, wherein said input device is located within an aperture in said cover.

8. An apparatus according to claim 2, including a circuit within the cover and an electrical contact within the material of the cover for connecting said circuit to an external circuit.

9. An apparatus according to any preceding claim, including a user interface assembly, comprising a window and the keys of a keypad, and a printed circuit board, having electronic components including a display device mounted thereto, wherein the user interface assembly is glued to the printed circuit board such that

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000299

the window is aligned with the display device and the whole is substantially embedded within the cover.

10. A portable radio device according to any preceding claim.

11. A mobile telephone according to claim 10.

12. A method of manufacturing a portable electronic apparatus, the method comprising placing a sub-assembly, including an electronic circuit, in a mould and injecting a polymer material into the mould such that the sub-assembly is substantially embedded in the polymer material.

13. A method according to claim 12, wherein the polymer material comprises a self-skinning foam material.

14. A method according to claim 12 or 13, wherein the sub-assembly is placed in contact with a feature of a wall of the mould so that an aperture is formed in the moulded polymer material.

15. A method according to claim 14, wherein the sub-assembly includes a a display and the sub-assembly is placed in contact with a feature of a wall of the mould such that the display is visible through the aperture.

16. A method according to claim 14 or 15, wherein the sub-assembly includes a manually operable electronic input device and the sub-assembly is placed in contact with a feature of a wall of the mould such that the input device is operable through the aperture.

17. A method according to any one of claims 12 to 16, wherein the sub-assembly and the mould are configured such that an electrical contact is held within the polymer material after moulding for connecting said circuit to an external circuit.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000300

18. A method according to any one of claim 12 to 17, including gluing a user interface assembly, comprising a window and the keys of a keypad to a printed circuit board, having electronic components including a display device mounted thereto, to form said sub-assembly.

19. A method of manufacturing a portable radio device, the method being in accordance with any one of claims 12 to 18.

20. A method of manufacturing a mobile telephone, the method being in accordance with claim 19.

21. A mobile telephone substantially as hereinbefore described with reference to Figures 1 and 2 of the accompanying drawings.

22. A method of manufacturing a mobile telephone substantially as hereinbefore described with reference to Figures 3 and 4 of the accompanying drawings.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000301

PATENTS • DESIGNS • COPYRIGHT • TRADE MARKS
The Patent Office
INVESTOR IN PEOPLE

Application No: GB 0008406.1
Claims searched: 1-22
Examiner: Monty Siddique
Date of search: 26 September 2000

Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.R): B5A (AB12, AB13, AT3P, AT14P)

Int Cl (Ed.7): B29C 39/10 45/14

Other: Online: WPI EPODOC JAPIO

Documents considered to be relevant:

Category	Identity of document and relevant passage		Relevant to claims
X	GB 2314798 A	(THE WHITAKER) page 1 lines 10-15, claim 1 etc	1, 12 at least
X	GB 1207240	(SIEMENS) page 1 lines 8-14, page 2 lines 16-19, line 37 onwards,	1 at least
X	GB 1167729	(TEXAS INSTRUMENTS) page 3 lines 8-55 etc.	1 at least
X	GB 1052052	(CONSOLIDATED...) Page 5 lines 14-19, 59-71	1, 12 at least
X	EP 0403975 A2	(HITACHI) claim 6 etc.	1, 12 at least
X	US 5432676	(HITACHI) figures 9, 10; column 5 lines 48-52, column 7 lines 25-68 etc.	1, 12 at least
X	WPI Abstract Accession No.2000-029773/200003 & JP11297448 A (YAZAKI) 29.10.1999 (see abstract)		1, 12 at least
X	WPI Abstract Accession No. 1988-343511/198848 & JP63257618 A (CANON) 25.10.1988 (see abstract)		1, 12 at least

X Document indicating lack of novelty or inventive step
Y Document indicating lack of inventive step if combined with one or more other documents of same category.
& Member of the same patent family
A Document indicating technological background and/or state of the art.
P Document published on or after the declared priority date but before the filing date of this invention.
E Patent document published on or after, but with priority date earlier than, the filing date of this application.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000302

Espacenet

Bibliographic data: TW488610 (U) — 2002-05-21

Portable electronic device

Inventor(s): SHIU JE-YUAN [TW] ± (SHIU, JE-YUAN)

Applicant(s): YANG CHANG KE ± (YANG, CHANG-KE)

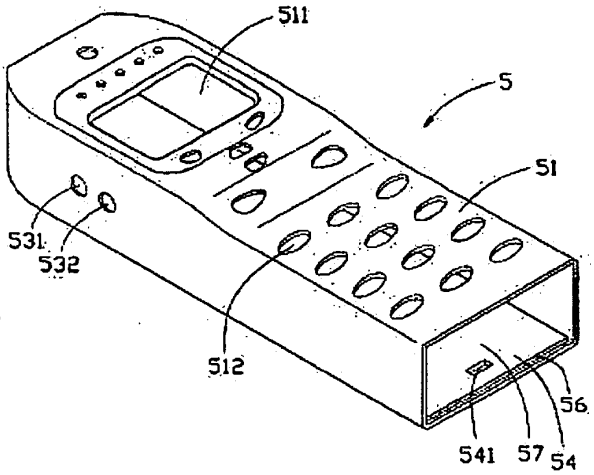
Classification: - international: ***H04B15/00;*** (IPC1-7): H05K5/04
- cooperative: **H04B15/00**

Application number: TW20010218618U 20011031

Priority number(s): TW20010218618U 20011031

Also published as: US2003100275 (A1) US7099709 (B2)

Abstract not available for TW488610 (U)
Abstract of corresponding document: US2003100275 (A1)



A metal enclosure (5) is provided on a mobile phone. The mobile phone includes the enclosure, a rear cover (4), and an electronic component assembly. The enclosure is formed as a single piece, and comprises a top wall (51), a bottom wall (54), and a periphery wall (53) between the top and bottom walls. The walls cooperatively defined an opening (57) at a rear end of the enclosure. The electronic component assembly is received in the enclosure, and the rear cover covers the opening. The mobile phone is thus completed. Because the enclosure has no joints, it is strong enough to withstand considerable shock. In addition, it provides excellent protection from EMI. Furthermore, it has a smooth attractive appearance.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000303

中華民國專利公報 [19] [12]

[11]公告編號：488610
[44]中華民國　91年 (2002)　05月21日
新型　　全 5 頁
[51] Int.Cl [07]：　H05K5/04

[54]名　稱：攜帶式電子裝置

[21]申請案號：　090218618　　[22]申請日期：中華民國　90年 (2001)　10月31日

[72]創 作 人：
許哲源　　台北縣土城市自由街二號
楊昌克　　中國大陸廣東省
[71]申 請 人：
鴻海精密工業股份有限公司　　台北縣土城市自由街二號
[74]代 理 人：

1

[57]申請專利範圍：

1.一種攜帶式電子裝置，包括：
一金屬外殼；
一金屬底蓋，其係包括上下表面，用以和上述金屬外殼配合，以形成一封閉金屬外殼；
複數按鍵，用以輸入指令；
一顯示屏，用以顯示信息；
一電路模組，用以接收與處理信號；以及
一塑膠支架，置入上述外殼中用以支承定位前述電路模組；其中
前述外殼由主面板、底板及三側壁所組成，而在外殼底端則開設有一通道。

2.如申請專利範圍第1項所述之攜帶式電子裝置，其中外殼底端通道內側開設有凹槽，以容置所述金屬底蓋。

3.如申請專利範圍第2項所述之攜帶式電子裝置，其中所述塑膠支架係由底壁及兩相對側壁組成。

4.如申請專利範圍第3項所述之攜帶式電子裝置，其中所述塑膠支架之兩相對側壁處設置有一對滑軌，以使電路模組沿其滑入與抽出。

5.如申請專利範圍第4項所述之攜帶式電子裝置，其中塑膠支架之滑軌與其底壁形成兩滑槽，以容納電池於其內。

6.如申請專利範圍第5項所述之攜帶式電子裝置，其中外殼之底板下部設置有一凹孔，俾與電池之突起彈片扣壓配合。

7.如申請專利範圍第1項所述之攜帶式電子裝置，其中所述外殼所用材料為金屬鋁。

8.如申請專利範圍第1項所述之攜帶式電子裝置，其中所述外殼所用材料為鋁合金。

9.如申請專利範圍第1項所述之攜帶式

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000304

電子裝置，其中所述外殼所用材料為金屬銅。

圖式簡單說明：

第一圖係本創作應用在行動電話之一實施例的示意圖。

第二 A 圖係第一圖所示實施例之外殼的製造方法，其為金屬毛坯被擠壓成型前之示意圖。

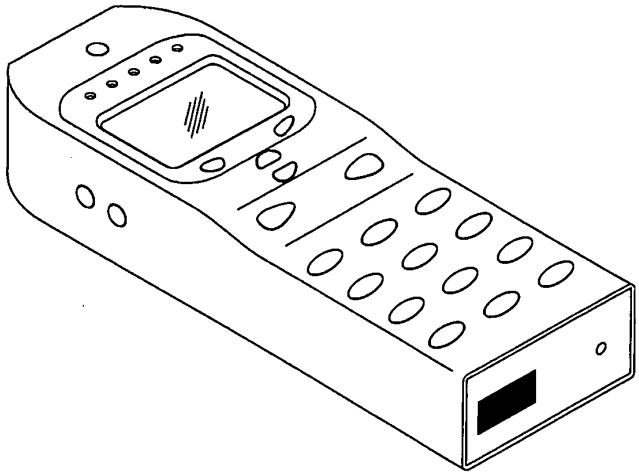
第二 B 圖係第一圖所示實施例之

外殼的製造方法，其為金屬毛坯擠壓成型後之示意圖。

第三圖係擠壓成型出之外殼經過局部衝壓技術處理後之示意圖。

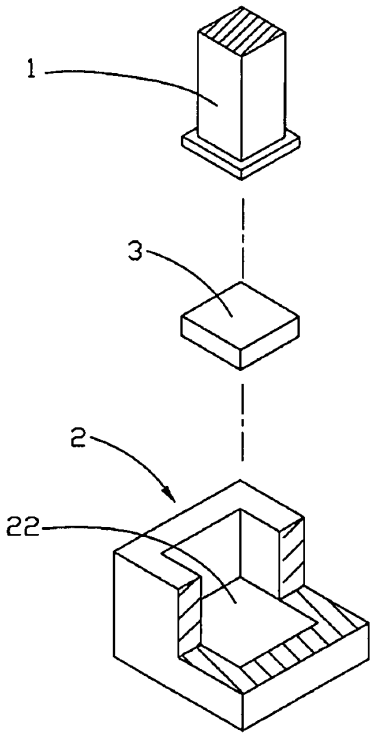
第四圖係行動電話集成電路模組與上述擠壓成型外殼之組裝示意圖。

第五圖係行動電話之底蓋與裝入集成電路模組後之金屬外殼之配合示意圖。

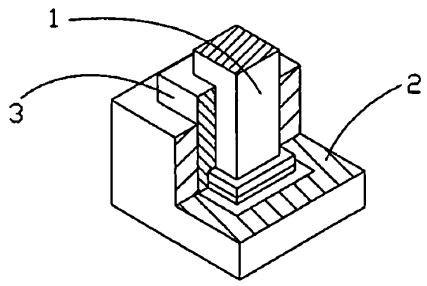


第一圖

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000305

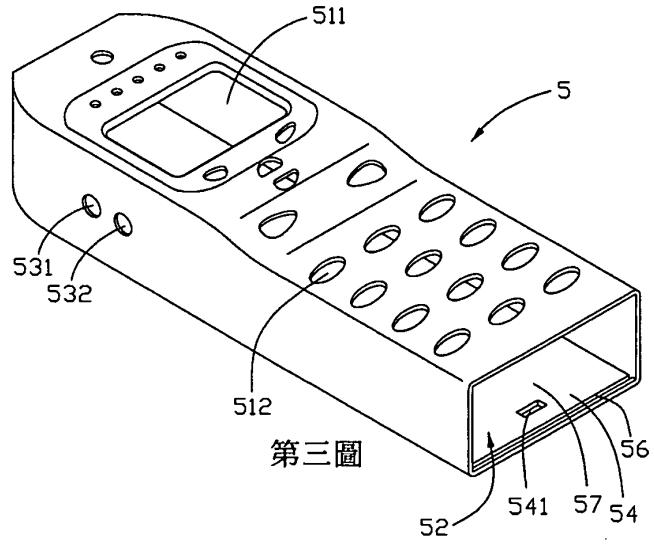


第二A圖

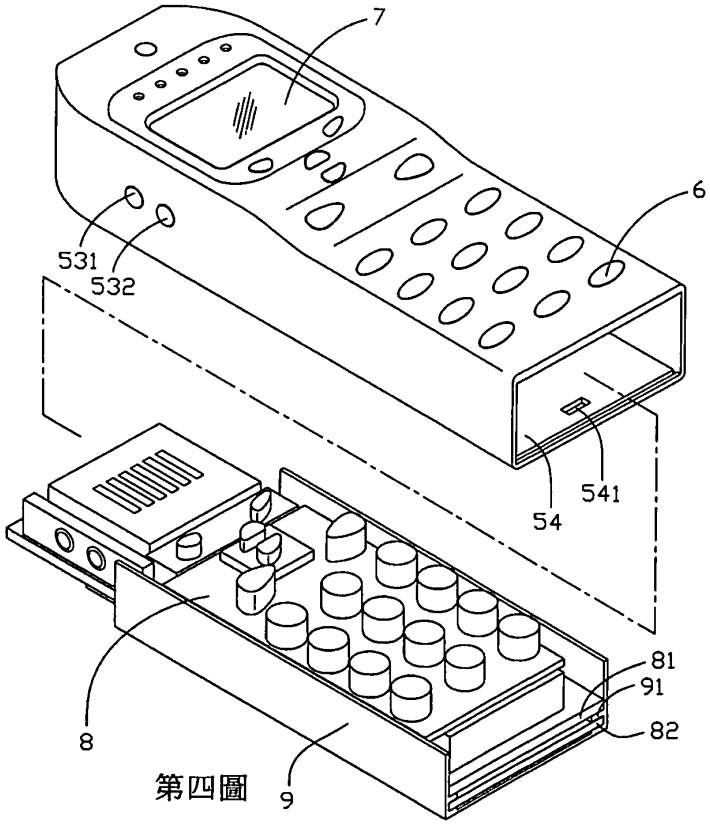


第二B圖

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000306

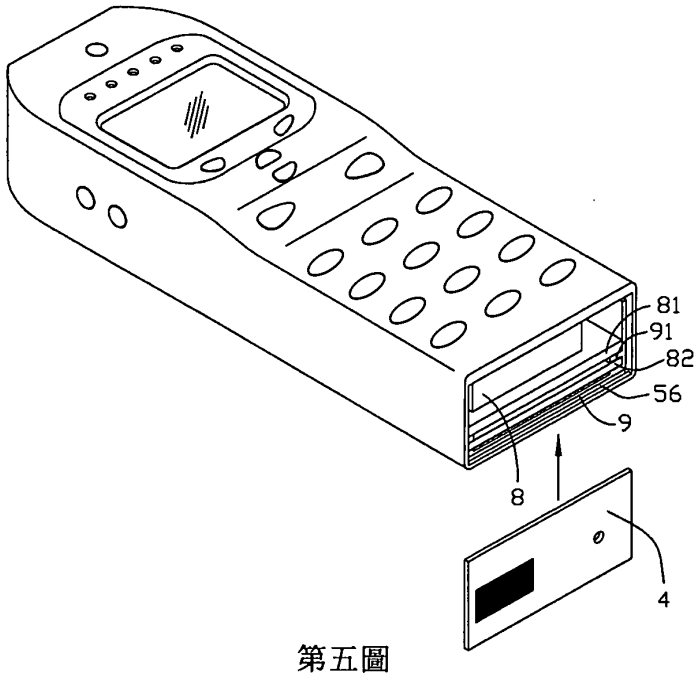


第三圖



第四圖

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000307



第五圖

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000308

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000309

Espacenet

Bibliographic data: CN2660807 (Y) — 2004-12-01

Super-thin plate type mobile telephone

Inventor(s):	LIN HAI [CN] ± (HAI LIN)
Applicant(s):	XIANXIN ELECTRONICS CO LTD [CN] ± (XIANXIN ELECTRONICS CO LTD)
Classification:	**- international:** ***H04M1/02; H04M1/725;*** (IPC1-7): H04M1/02; H04Q7/32 **- cooperative:**
Application number:	CN20032107387U 20031126
Priority number (s):	CN20032107387U 20031126

Abstract of CN2660807 (Y)

The utility model discloses an ultra-thin straight plate mobile phone, including a shell, an antenna arranged on the top of the shell; a LCD display screen arranged on the front panel of the shell and a movable keyboard; a battery arranged on the back of the shell; a circuit board arranged in the shell. The circuit main-board is detached to a keyboard plate and a main-board, both of which are arranged in staggered way, the keyboard plate is arranged behind the movable keyboard correspondingly, and the main board is connected with the keyboard plate through a flexible circuit board or a slot connector. The utility model changes the structure and installation location of the circuit main-board of the straight plate mobile phone and the key board plate is separated from the circuit board to be an isolated circuit board without adapting the structural mode of single circuit main board. Therefore, the mobile phone has compact space and structure and the thickness is reduced significantly, meeting the requirement of people of small, innovative and fashion mobile phone product.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000310

[19] 中华人民共和国国家知识产权局

[51] Int. Cl[7]
H04M 1/02
H04Q 7/32

[12] 实用新型专利说明书

[21] ZL 专利号 200320107387.8

[45] 授权公告日 2004 年 12 月 1 日

[11] 授权公告号 CN 2660807Y

[22] 申请日 2003.11.26
[21] 申请号 200320107387.8
[73] 专利权人 夏新电子股份有限公司
地址 361012 福建省厦门市体育路 45 号
[72] 设计人 林 海

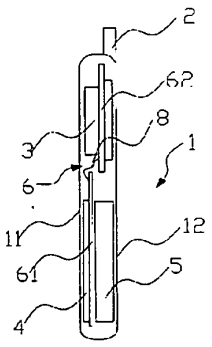
[74] 专利代理机构 厦门市首创君合专利事务所有限公司
代理人 李雁翔

权利要求书 2 页 说明书 5 页 附图 2 页

[54] 实用新型名称 一种超薄直板式移动电话

[57] 摘要

本实用新型公开了一种超薄直板式移动电话，它包括：机壳；设于机壳上顶部的天线；安装于机壳前面板的 LCD 显示屏幕以及活动键盘；安装于机壳后部的电池；以及设于机壳内的电路板，所述的电路主板拆分为交错布置的键盘板和主板，键盘板对应设于活动键盘后，主板与键盘板通过柔性电路板或插槽式连接器相连。本实用新型将直板式移动电话的电路主板的结构和安装位置作了变动，不再采用单一电路主板的结构方式，而是将键盘板从电路主板中分离出来，独立作为一块电路板，于是移动电话空间结构紧凑，厚度大幅度减薄，满足了人们对移动电话产品小型化、新颖化、时尚化的需求。



ISSN1008-4274

知识产权出版社出版

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000311

1、一种超薄直板式移动电话，它包括：

机壳；

设于机壳上顶部的天线；

安装于机壳前面板的 LCD 显示屏幕以及活动键盘；

安装于机壳后下部的电池；以及

设于机壳内的电路主板，其特征在于：所述的电路主板拆分为交错布置的键盘板和主板，键盘板对应设于活动键盘后，主板与键盘板通过柔性电路板或插槽式连接器相连。

2、根据权利要求 1 所述的超薄直板式移动电话，其特征在于：所述的主板与键盘板位于不同平面，键盘板比主板更靠近机壳前面板。

3、根据权利要求 1 所述的超薄直板式移动电话，其特征在于：所述的 LCD 显示屏幕与活动键盘分别位于机壳前面板上半部分与下半部分。

4、根据权利要求 1 或 3 所述的超薄直板式移动电话，其特征在于：所述的主板位于移动电话机壳上半部分。

5、根据权利要求 1 所述的超薄直板式移动电话，其特征在于：所述的电池安装于键盘板后部，电池与主板平行放置。

6、根据权利要求 1 或 5 所述的超薄直板式移动电话，其特征在于：所述的电池以外的按键板背面区域放置有电子元器件。

7、根据权利要求 6 所述的超薄直板式移动电话，其特征在于：

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000312

所述的电子元器件包括板间连接器和 I/O 连接器。

8、根据权利要求 1 或 7 所述的超薄直板式移动电话，其特征在于：所述的除板间连接器和 I/O 连接器外的电子元器件都集中于主板背面。

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000313

一种超薄直板式移动电话

所属技术领域

本实用新型涉及一种直板式移动电话，特别是涉及一种超薄直板式移动电话。

背景技术

现有的直板式移动电话，其机体形状和结构如图 1 所示，包括机壳 1；设于机壳 1 上顶部的天线 2；设于机壳 1 前面板 11 上半部分的 LCD 显示屏幕 3；设于机壳 1 前面板 12 下半部分的活动键盘 4；安装于机壳 1 下半部后部 12 的电池 5；以及安装于机壳 1 内的电路主板 6。射频、基带电路、板间连接器、I/O 连接器、电源和人机界面电路（LCD 显示、键盘电路等）等元器件 7 安装于电路主板 6 后面。电路主板 6 的前侧安装有 LCD 显示屏幕 3 和活动键盘 4，后下侧安装有电池 5，所以机壳的下部往往向后凸起。

为了满足长时间通话和待机的需要，人们希望移动电话电池 5 的容量做的尽可能的大，但由于电池 5 长度和宽度都受到机壳 1 的长度和宽度的限制，另现在移动电话的长宽也在朝着越来越小的方向发展，所以，要增加电池的容量就只能通过增加电池 5 的厚度来实现。目前电池 5 厚度普遍较厚，所以安装了电池的移动电话的机体后半部凸出一块，又高了许多，使移动电话显得很笨重（如图 1 所示）。这样的移动电话，体积大，厚度厚，后面凸出一块，携带很不方便，使

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000314

用很不方便。

实用新型内容

本实用新型的目的旨在解决现有技术的直板式移动电话所存在的问题，提供一种结构新颖紧凑的一种超薄型的移动电话。

本实用新型解决其技术问题所采用的技术是：一种超薄直板式移动电话，它包括：机壳；设于机壳上顶部的天线；安装于机壳前面板的 LCD 显示屏幕以及活动键盘；安装于机壳后部的电池；以及设于机壳内的电路板，所述的电路主板拆分为交错布置的键盘板和主板，键盘板对应设于活动键盘后，主板与键盘板通过柔性电路板或插槽式连接器相连。

所述的主板与键盘板位于不同平面，键盘板比主板更靠近机壳前面板。

所述的 LCD 显示屏幕与活动键盘分别位于机壳前面板上半部分与下半部分。

所述的主板位于移动电话机壳上半部分。

所述的电池安装于键盘板后部，电池与主板平行放置。

所述的电池以外的按键板背面区域放置有电子元器件。

所述的电子元器件包括板间连接器和 I/O 连接器。

所述的除板间连接器和 I/O 连接器外的电子元器件都集中于主板背面。

本实用新型将直板式移动电话的电路主板的结构和安装位置作了变动，不再采用单一电路主板的结构方式，而是将键盘板从电路主

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000315

板中分离出来，独立作为一块电路板，于是移动电话空间结构紧凑，厚度大幅度减薄，满足了人们对移动电话产品小型化、新颖化和时尚化的需求。键盘板和主板交错布置，主板与键盘板不在同一平面上，键盘板位于主板前，电池与主板平行放置，因此机壳的下部即使安装上电池也不会向后凸起，移动电话厚度大大降低，产品便于携带、使用，更时尚，更具有竞争力。电路主板拆分为交错布置的键盘板和主板，结构设计新颖紧凑，安装位置和厚度有了很大的灵活性，键盘板可做的更薄，放在更靠近机壳前面板的位置，于是就留有更多的后部空间于电池。键盘板背面可放置有若干电子元器件，结构紧凑。键盘板背面放置板间连接器和 I/O 连接器，将使移动电话结构最小化。目前电路芯片的高度集成使大多数电子元器件，如除板间连接器和 I/O 连接器外的电子元器件可都集中于主板后侧。

附图说明

下面结合附图对本实用新型的结构、特点和功效作具体说明。

图 1 是现有的直板式移动电话的机体形状及其内部结构的侧面示意图。

图 2 是本实用新型实施例一的直板式移动电话的组成结构及其内部结构的侧面的示意图。

图 3 是本实用新型实施例一的直板式移动电话的电池和按键板组合的结构示意图。

图 4 是本实用新型实施例二的直板式移动电话的组成结构及其内部结构的侧面的示意图。

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000316

具体实施例

一、实施例一

一种超薄直板式移动电话，如图 2、3 所示，它包括：机壳 1；设于机壳 1 上顶部的天线 2；安装机壳 1 前面板 11 的 LCD 显示屏幕 3 以及活动键盘 4；安装于机壳 1 后部的电池 5；以及设于机壳 1 内的电路主板 6，所述的电路主板 6 拆分为交错布置的键盘板 61 和主板 62，键盘板 61 对应设于活动键盘 4 后，主板 62 与键盘板 61 通过柔性电路板 8 相连。

机壳 1 由内凹的前面板 11 和内凹的后面板 12 拆卸固定联结而成。前面板 11、后面板 12 的上顶部在对应位置各开有半圆形槽，两半圆形槽组成了圆孔，其为天线 2 的定位孔。前面板 11 上半部开有固定 LCD 显示屏幕 3 的矩形孔；前面板 11 下半部开有对应于活动键盘 4 的若干按键的若干通孔。机壳 1 内设置有固定 LCD 显示屏幕 3、活动键盘 4、电池 5 以及电路主板 6 的结构。

键盘板 61 和主板 62 交错布置，因此不在同一平面上，键盘板 61 对应设置于活动键盘 4 后，主板 62 位于键盘板 61 后上部，既主板 62 位于机壳 1 上半部分。

电池 5 安装于键盘板 61 后部，电池 5 与主板 62 平行放置，因此机壳的下部即使安装上电池也不会向后凸起，移动电话厚度大大降低，产品便于携带、使用，更时尚，更具有竞争力。

电池 5 以外的按键板 61 背面区域放置有小的电子元器件，如板间连接器 611 和 I/O 连接器 612。移动电话的除板间连接器 611 和 I/O

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000317

连接器 612 外的电子元器件 7 如射频、基带电路、电源和人机界面电路 LCD 显示电路、键盘电路等都集中设置于主板 62 背面。

二、实施例二

如图 4 所示，本实施例与实施例一不同之处在于：主板 62 与键盘板 61 通过插槽式连接器 8‘相连。

以上所述，仅为本实用新型较佳实施例而已，故不能以此限定本实用新型实施的范围，即依本实用新型申请专利范围及说明书内容所作之等效变化与修饰，皆应仍属本实用新型专利涵盖之范围内。

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000318

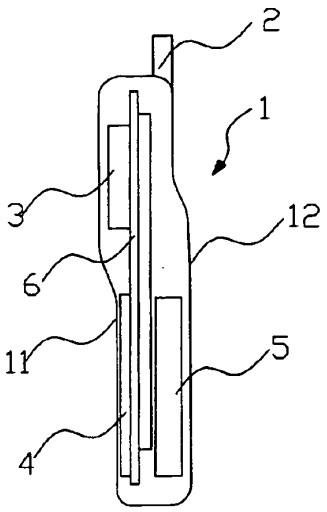


图1

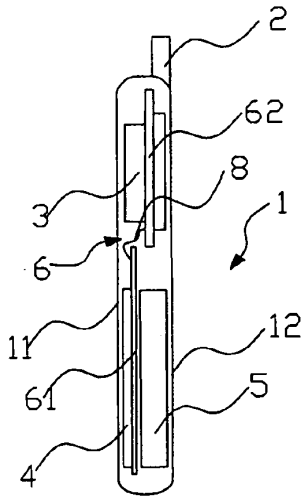


图2

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000319

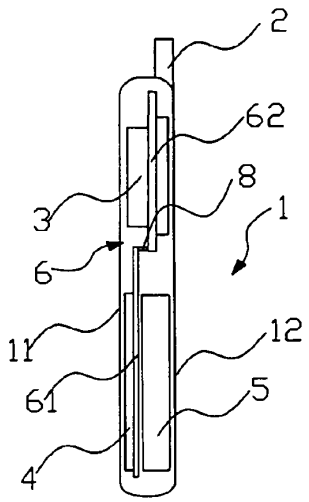


图3

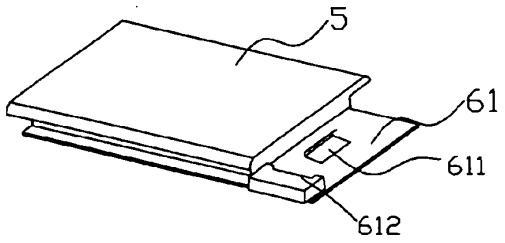


图4

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000320

CN2660807 Y

Title :

一种超薄直板式移动电话

An ultra-thin candy bar mobile phone

Abstract :

本实用新型公开了一种超薄直板式移动电话，它包括：机壳；设于机壳上顶部的天线；安装于机壳前面板的LCD显示屏幕以及活动键盘；安装于机壳后部的电池；以及设于机壳内的电路板，所述的电路主板拆分为交错布置的键盘板和主板，键盘板对应设于活动键盘后，主板与键盘板通过柔性电路板或插槽式连接器相连。本实用新型将直板式移动电话的电路主板的结构和安装位置作了变动，不再采用单一电路主板的结构方式，而是将键盘板从电路主板中分离出来，独立作为一块电路板，于是移动电话空间结构紧凑，厚度大幅度减薄，满足了人们对移动电话产品小型化、新颖化、时尚化的需求。

The utility model discloses a thin candy bar mobile phone, it includes: chassis; antenna located at the top of the chassis; mounted on the chassis front panel LCD display screen and active **keyboard**; installed in the chassis rear **battery**; and chassis, **circuit boards**, **circuit board** described the split **keyboard** staggered **board** and **motherboard**, **keyboard** plate corresponding to the located in the active **keyboard**, **motherboard** and **keyboard** plate by a flexible **circuit board** or slot connector. Made changes in the structure and installation location of the present invention will be candy bar mobile phone **circuit board**, is no longer a single **circuit board** structure, but the **keyboard** plate separated from the **circuit board**, independent as a **board**, then move phone space is compact, the thickness is substantially thinned, and to meet the miniaturization of mobile phone products, innovative, fashion needs.

Claim(s) :

1、一种超薄直板式移动电话，它包括： 机壳： 设于机壳上顶部的天线； 安装于机壳前面板的LCD显示屏幕以及活动键盘； 安装于机壳后下部的电池；以及 设于机壳内的电路主板，其特征在于：所述的电路主板拆分为交 错布置的键盘板和主板，键盘板对应设于活动键盘后，主板与键盘板 通过柔性电路板或插槽式连接器相连。

1, an ultra-thin candy bar mobile phone, which includes: chassis; antenna located at the top of the chassis; mounted on the chassis front panel LCD display screen and active **keyboard**; installed in the chassis after the lower part of the **battery**; and chassis, **circuit board**, characterized in that: as described in the **circuit board** split the **keyboard** plate corresponding to the staggered layout of the **keypad board** and **motherboard** located in the active **keyboard**, the Main **Board** and **keyboard** through the flexible **circuit board** slot connector.

2、根据权利要求1所述的超薄直板式移动电话，其特征在于： 所述的主板与键盘板位于不同平面，键盘板比主板更靠近机壳前面 板。

2, according to claim 1 wherein the ultra-thin candy bar mobile phone, characterized in that: as described in the **motherboard** and **keyboard** plate is located in a different plane, the **keyboard** plate more than the **motherboard** close to the chassis front panel.

3、根据权利要求1所述的超薄直板式移动电话，其特征在于： 所述的LCD显示屏幕与活动键盘分别位于机壳前面板上半部分与下 半部分。

3, ultra-thin candy bar mobile phone according to claim 1, characterized in that: said LCD display screen with the active **keyboard** located in the chassis front panel of the upper part and the lower half.

4、根据权利要求1或3所述的超薄直板式移动电话，其特征在 于：所述的主板位于移动电话机壳上半部分。

4, according to claims 1 or 3 as described in the ultra-thin candy bar mobile phone, characterized in that: as described in the **motherboard** located in the upper half of the mobile phone cases.

5、根据权利要求1所述的超薄直板式移动电话，其特征在于： 所述的电池安装于键盘板后部，电池与主板平行放置。

5, according to claim 1 wherein the ultra-thin candy bar mobile phone, characterized in that:

6、根据权利要求1或5所述的超薄直板式移动电话，其特征在 于：所述的电池以外的按键板背面区域放置有电子元器件。

7、根据权利要求6所述的超薄直板式移动电话，其特征在于： 所述的电子元器件包括板间连接器和1/0连接器。

8、根据权利要求1或1所述的超薄直板式移动电话，其特征在于： 所述的除板间连接器和1/0连接器外的电子元器件都集中于主板背 面。

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000321

said **battery** installed in the back of the **keyboard** plate, the **battery** and the **motherboard** placed parallel.

6, according to claim 1 or 5 as described in the ultra-thin candy bar mobile phone, characterized in that: said **battery** outside the back of the key **board** area to place electronic components.

7, according to claim 6, slim straight plate mobile phone, characterized in that: as described in the electronic components, including inter-**board** connectors and 1/0 connector.

8, according to claims 1 or 1 as described in the ultra-thin candy bar mobile phone, characterized in that: the electronic components described in addition to the cubicle connector and 1/0 connector are concentrated in the back of the **motherboard**.

Description :

一种超薄直板式移动电话 所属技术领域 本实用新型涉及一种直板式移动电话，特别是涉及一种超薄直板 式移动电话。

背景技术 现有的直板式移动电话，其机体形状和结构如图1所示，包括机 壳1;设于机壳1上顶部的天线2;设于机壳1前面板11上半部分的 L(3)显示屏幕3;设于机壳1前面板12下半部分的活动键盘4;安装 于机壳1下半部后部12的电池5;以及安装于机壳1内的电路主板6。

射频、基带电路、板间连接器、1/0连接器、电源和人机界面电路（LCD 显示、键盘电路等）等元器件7安装于电路主板6后面。电路主板6 的前侧安装有LCD显示屏幕3和活动键盘4，后下侧安装有电池5， 所以机壳的下部往往向后凸起。

为了满足长时间通话和待机的需要，人们希望移动电话电池5的 容量做的尽可能的大，但由于电池5长度和宽度都受到机壳1的长度 和宽度的限制，另现在移动电话的长宽也在朝着越来越小的方向发 展，所以，要增加电池的容量就只能通过增加电池5的厚度来实现。

目前电池5厚度普遍较厚，所以安装了电池的移动电话的机体后半部 凸出一块，又高了许多，使移动电话显得很笨重（如图1所示）。这 样的移动电话，体积大，厚度厚，后面凸出一块，携带很不方便，使 用很不方便。

实用新型内容 本实用新型的目的旨在解决现有技术的直板式移动电话所存在 的问题，提供一种结构新颖紧凑的一种超薄型的移动电话。

本实用新型解决其技术问题所采用的技术是：一种超薄直板式移 动电话，它包括：机壳；设于机壳上顶部的天线；安装于机壳前面板 的LCD显示屏幕以及活动键盘；安装于机壳后部的电池；以及设于机 壳内的电路板，所述的电路主板拆分为交错布置的键盘板和主板，键 盘板对应设于活动键盘后，主板与键盘板通过柔性电路板或插槽式连 接器相连。

A thin candy bar mobile phone the technical field of the present invention involves a candy bar mobile phones, especially involving an ultra-thin candy bar mobile phone. background skills for existing candy bar mobile phone, its body shape and structure shown in Figure 1, including the chassis 1; the chassis 1 on the top of the antenna; located in the casing 1 of the front panel 11 half of the L (3) of the display screen; located on the chassis front panel 12 the lower half of the active **keyboard**; installed in the chassis one of the lower half of the rear 12 of the **battery**; **circuit board** installed in the chassis 1 6.

RF and base band **circuit board** connector, 1/0 connector, power and man-machine interface **circuit** (LCD display, the **keyboard circuit**, etc.) components installed on the **circuit board** 6 behind. The front side of the **circuit board** installed in the LCD display screen 3 and active **keyboard**, installed under side of the **battery** 5, the chassis lower part often back bulge.

In order to meet the needs of the long talk and standby, It is hoped that the capacity of mobile phone **batteries** do as much as possible, but the **battery** 5 length and width by a length and width restrictions of the chassis, and the other mobile The phone aspect is also getting smaller and smaller direction, Therefore, to increase the capacity of the **battery** can only increase the thickness of the **battery** 5.

The **battery** 5 thickness is generally thicker, so the body of the mobile phone **battery** is installed, half of the bulge a high mobile phone is very bulky (as shown in Figure 1). Such as mobile phones, bulky, thick thickness, followed by a bulge, inconvenient to carry, very easy to

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000322

所述的主板与键盘板位于不同平面，键盘板比主板更靠近机壳前 面板。

所述的LCD显示屏幕与活动键盘分别位于机壳前面板上半部分 与下半部分。

所述的主板位于移动电话机壳上半部分。

所述的电池安装于键盘板后部，电池与主板平行放置。

所述的电池以外的按键板背面区域放置有电子元器件。

所述的电子元器件包括板间连接器和1/0连接器。

所述的除板间连接器和1/0连接器外的电子元器件都集中于主 板背面。

本实用新型将直板式移动电话的电路主板的结构和安装位置作 了变动，不再采用单一电路主板的结构方式，而是将键盘板从电路主 板中分离出来，独立作为一块电路板，于是移动电话空间结构紧凑， 厚度大幅度减薄，满足了人们对移动电话产品小型化、新颖化和时尚 化的需求。键盘板和主板交错布置，主板与键盘板不在同一平面上， 键盘板位于主板前，电池与主板平行放置，因此机壳的下部即使安装 上电池也不会向后凸起，移动电话厚度大大降低，产品便于携带、使 用，更时尚，更具有竞争力。电路主板拆分为交错布置的键盘板和主 板，结构设计新颖紧凑，安装位置和厚度有了很大的灵活性，键盘板 可做的更薄，放在更靠近机壳前面板的位置，于是就留有更多的后部 空间于电池。键盘板背面可放置有若干电子元器件，结构紧凑。键盘 板背面放置板间连接器和1/0连接器，将使移动电话结构最小化。目 前电路芯片的高度集成使大多数电子元器件，如除板间连接器和1/0 连接器外的电子元器件可都集中于主板后侧。

附图说明 下面结合附图对本实用新型的结构、特点和功效作具体说明。

图1是现有的直板式移动电话的机体形状及其内部结构的侧面示 意图。

图2是本实用新型实施例一的直板式移动电话的组成结构及其内 部结构的侧面的示意图。

图3是本实用新型实施例一的直板式移动电话的电池和按键板组 合的结构示意图。

图4是本实用新型实施例二的直板式移动电话的组成结构及其内 部结构的侧面的示意图。

具体实施例 一、实施例一 一种超薄直板式移动电话，如图2、3所示，它包括：机壳1；设于机壳1上顶部的天线2;安装机壳1前面板11的LCD显示屏幕3 以及活动键盘4;安装于机壳1后部的电池5;以及设于机壳1内的 电路主板6，所述的电路主板6拆分为交错布置的键盘板61和主板62，键盘板61对应设于活动键盘4后，主板62与键盘板61通过柔 性电路板8相连。

机壳1由内凹的前面板11和内凹的后面板12拆卸固定联结而 成。前面板11、后面板12的上顶部在对应位置各开有半圆形槽，两 半圆形槽组成了圆孔，其为天线2的定位孔。前面板U上半部开有 固定LCD显示屏幕3的矩形孔；前面板11下半部开有对应于活动键 盘4的若干按键的若干

use. utility model The purpose of this utility model candy bar mobile phone aimed at resolving the existing technology exist to provide a novel and compact structure of an ultra-thin mobile phone.

This utility model to solve their technical problems which preclude the use of technology: one kind of ultra-thin candy bar mobile phone, it includes: chassis; antenna located at the top of the chassis; installed on the chassis front panel LCD display screen as well as the activities of the **keyboard**; **battery** installed in the rear of the chassis; and chassis, **circuit boards**, as described in the **circuit board** split **keyboard** staggered **board** and **motherboard**, **keyboard** corresponding **board** located in the active **keyboard**, Main **Board** and **keyboard** connected to the flexible **circuit board** or slot connector. referred to the **motherboard** and **keyboard** plate is located in different planes **keyboard** plate more than the **motherboard** close to the chassis front panel. described in LCD display screen with the activities of the **keyboard** are located in the chassis front panel of the upper part and the lower half. described in the **motherboard** is located in the upper part of the mobile phone cases. described in the **battery** installed in the rear of the **keyboard** plate placed parallel to the **battery** and the **motherboard**. described in the **battery** outside the back of the key **board** area to place the electronic components. described electronic components, including inter-**board** connectors and 1/0 connector.

In addition to the inter-**board** connection and 1/0 connector

described electronic components are concentrated at the back of the **motherboard**.

This utility model the structure of the candy bar mobile phone **circuit board** and the installation location made changes, no longer a single **circuit board** structure, but the **keyboard** plate separated from the **circuit board**, independent as a **circuit board**, so the mobile phone space is compact, the thickness is substantially thinned to meet people's demand for miniaturization, novel and fashionable mobile phone products. Staggered arrangement of the **keypad board** and **motherboard**, not in the same plane on the Main **Board** and **keyboard**, the **keyboard** plate located on the **motherboard**, the **battery** and the **motherboard** is placed parallel to the chassis lower part of the installation even if the **battery** will not be back bulge greatly reduce the thickness of the mobile phone, the product easy to carry and use, more stylish, more competitive. **Keyboard circuit board** split into staggered **board** and **motherboard**, novel compact structure design, installation location and thickness have a lot of flexibility, the **keyboard** plate can be thinner and placed

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000323

通孔。机壳1内设置有固定LCD显示屏幕3、 活动键盘4、电池5以及电路主板6的结构。

键盘板61和主板62交错布置，因此不在同一平面上，键盘板 61对应设置于活动键盘4后，主板62位于键盘板61后上部，既主 板62位于机壳1上半部分。

电池5安装于键盘板61后部，电池5与主板62平行放置，因此 机壳的下部即使安装上电池也不会向后凸起，移动电话厚度大大降 低，产品便于携带、使用，更时尚，更具有竞争力。

电池5以外的按键板61背面区域放置有小的电子元器件，如板 间连接器611和1/0连接器612。移动电话的除板间连接器611和1/0 连接器612外的电子元器件7如射频、基带电路、电源和人机界面电 路LCD显示电路、键盘电路等都集中设置于主板62背面。

二、实施例二 如图4所示，本实施例与实施例一不同之处在于：主板62与键 盘板61通过插槽式连接器8 '相连。

以上所述，仅为本实用新型较佳实施例而已，故不能以此限定本 实用新型实施的范围，即依本实用新型申请专利范围及说明书内容所 作之等效变化与修饰，皆应仍属本实用新型专利涵盖之范围内。

closer to the location of the chassis front panel, so would leave more space for rear **battery**. **Keyboard** plate can be placed on the back there are a number of electronic components, compact structure. The back of the **keyboard** plate placed on the **board** connector and 1/0 connector will enable mobile phone structure minimized. At present the majority of electronic components highly integrated **circuit** chip connection and 1/0 connector from outside the electronic components, such as the addition to the cubicle can be focused on the **motherboard** rear. photos combine photos below for specific instructions on the new structure, characteristics and effectiveness.

Figure 1 is a schematic diagram of the body shape and internal structure of the side of the existing candy bar mobile phone.

Figure 2 is a side schematic of the present invention the implementation of the cases of a candy bar mobile phone, the structure of its internal structure.

Figure 3 Schematic diagram of the present invention embodiments, a candy bar mobile phone **batteries** and key **board** combination.

Figure 4 is a schematic of the side of the utility model embodiment, the second straight plate composition and internal structure of the mobile phone. specific embodiment, the implementation of example an ultra-thin candy bar mobile phone, as shown in Figure 2,3, which includes: chassis 1; the chassis 1 on the top of the antenna; to install the chassis a front panel 11 LCD display screen 3 and the active **keyboard**; **battery** installed at a rear of the chassis; and chassis 1 **circuit board** 6, as described in **circuit board** 6 split into staggered layout of the **keyboard board** 61 and **motherboard** 62 **keyboard** plate 61 corresponds to set the active **keyboard**, **motherboard** 62 **keyboard** plate 61 through the flexible **circuit board** connected. chassis fixed, linked together by the concave front panel 11 and the concave rear panel of 12 demolition. The front panel 11, on top of the rear panel 12 in the corresponding position of the opening semi-circular groove, two semi-circular groove to form a hole, the positioning holes of the antenna 2. The upper half of front panel U has opened a fixed LCD display screen three rectangular holes; 11 the lower half of the front panel to open a number of through-hole corresponding to the number of active **keyboard** button. Chassis a set fixed LCD display screen 3, the structure of the active **keyboard**, the **battery** 5 and the **circuit board** 6.

The **keyboard** plate of the

61 and **motherboard** 62 staggered, not in the same plane, the **keyboard** plate 61

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000324

corresponding settings in the active **keyboard** 4, the **motherboard** 62 at the **keyboard** plate 61 after the upper part, both the **motherboard** 62 is located in the chassis on a half. **battery** installed in the **keyboard** plate 61 rear, the **battery** is placed parallel with the **motherboard** 62, the casing lower part of the install on the **battery** will not be backward bulge greatly reduced the thickness of the mobile phone, portable, use, more stylish, more competitive.

outside

battery key **board** 61 on the back area to place a small electronic components, such as the connection device 611 and 1/0 connectors between the **board** 612. Mobile phones in addition to the cubicle connector 611 and 1/0 connector 612 from outside the electronic components such as RF, baseband **circuit**, power and man-machine interface **circuit** LCD display **circuit**, the **keyboard** **circuit** and so focus is set in 62 on the back of the **motherboard**.

, the implementation of the cases shown in Figure 4, this embodiment of the embodiment difference is: **motherboard** 62 **keyboard** plate 61 through the slot connector 8 'connected. above, only the present invention better embodiment only, it can not be used to limit the scope of the implementation of this utility model, that is made pursuant to these utility model patent application scope and contents of this manual is equivalent to change and modification are should still within the range covered by the utility model patent.

Date translated: 03 May 2012

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000325

Espacenet

Bibliographic data: CN1725783 (A) — 2006-01-25

Camera rotation device of mobile communication terminal

Inventor(s):	KIM TAEWAN [CN] ± (TAEWAN KIM, ; KIM TAEWAN)
Applicant(s):	LG ELECTRONICS CHINA RES & DEV [CN] ± (LG ELECTRONICS (CHINA) RESEARCH & DEVELOPMENT CENTER CO., LTD)
Classification:	**- international:** ***H04M1/02; H04M1/21*** **- cooperative:**
Application number:	CN2005101880 20050124
Priority number (s):	KR20040056561 20040720
Also published as:	CN100531244 (C) KR20060009101 (A) KR100619886 (B1)

Abstract not available for CN1725783 (A)

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000326

[19] 中华人民共和国国家知识产权局

[51] Int. Cl.
H04M 1/21 (2006.01)
H04M 1/02 (2006.01)

[12] 发明专利申请公开说明书

[21] 申请号 200510001880.5

[43] 公开日 2006 年 1 月 25 日

[11] 公开号 CN 1725783A

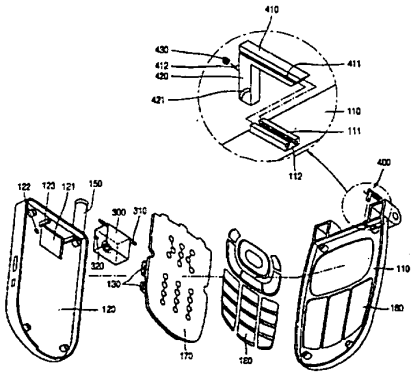
[22] 申请日 2005.1.24
[21] 申请号 200510001880.5
[30] 优先权
[32] 2004.7.20 [33] KR [31] 10-2004-0056561
[71] 申请人 乐金电子（中国）研究开发中心有限公司
地址 100102 北京市朝阳区望京利泽中园二区 203 号洛娃大厦 B 座
[72] 发明人 金泰完
[74] 专利代理机构 北京律诚同业知识产权代理有限公司
代理人 梁 挥 徐金国
权利要求书 1 页 说明书 5 页 附图 6 页

[54] 发明名称

移动通信终端的相机旋动装置

[57] 摘要

本发明公开了一种移动通信终端的相机旋动装置。 在现有技术中安装于移动通信终端的相机，固定安装于移动通信终端的机身部后面，使在用户开启移动通信终端的翻盖部，并利用相机拍摄物体时，由于拍摄方向和移动通信终端的翻盖部中形成的液晶画面形成的角处于所述液晶画面的可视角范围之外，从而无法通过所述液晶画面观察清晰的画面。 本发明中的移动通信终端的相机旋动装置安装在所述机身部，使相机随着所述翻盖部的开闭可旋动，在使用相机拍摄功能时，由于所述液晶画面和相机的拍摄方向所成的角保持直角，从而给用户提供清晰的画面，使移动通信终端的利用相机的拍摄操作更为容易。



Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000327

1. 一种移动通信终端的相机旋动装置，其特征在于，包含有如下几个部分：

机身部，其设置有一定的内部空间；

翻盖部，其一侧面设置有液晶画面，通过合叶结合方式结合于所述机身部而旋动并进行开闭动作；

相机，在所述机身部的内部空间一侧，以平行于所述翻盖部的旋动中心轴的轴为中心可旋动安装；

驱动构件，根据所述翻盖部的开闭动作而进行滑动，并使所述液晶画面的前面和相机的拍摄方向成直角状态。

2. 根据权利要求 1 所述的移动通信终端的相机旋动装置，其特征在于，所述相机的一侧形成有引导凸起，所述引导凸起结合于所述驱动构件，使可通过所述驱动构件的滑动操作而可进行滑动。

3. 根据权利要求 1 所述的移动通信终端的相机旋动装置，其特征在于，所述驱动构件包含有：通过所述翻盖部的开启操作，向前方进行滑动的滑动部；连接于所述滑动部，并形成有与所述引导凸起结合的凸轮槽的凸轮部。

4. 根据权利要求 3 所述的移动通信终端的相机旋动装置，其特征在于，所述凸轮槽成曲面形状。

5. 根据权利要求 1 所述的移动通信终端的相机旋动装置，其特征在于，所述驱动构件还包含有：凸出形成于所述凸轮部的一侧，使在所述翻盖部关闭后，所述驱动构件可自动恢复到原来状态的弹簧凸起；与所述弹簧凸起结合的弹性弹簧。

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000328

移动通信终端的相机旋动装置

技术领域

本发明涉及移动通信终端，更具体的涉及安装于移动通信终端的相机。

背景技术

最近，移动通信终端除了简单的语音接收发送功能外，不断开发出强调多媒体功能的终端。其中，最近开发出安装有将影像信息用多种颜色显示的彩色液晶屏，以及用于输入影像信息的相机模块的移动通信终端。

根据所述相机模块附加于所述移动通信终端的方法，可分为：与移动通信终端一体形成的内置型相机模块；附加安装于移动通信终端的外部的外置型相机模块。

并且，根据内置型相机模块的内置位置，可分为：插入于移动通信终端的中心部分，即合叶旁边的合叶内置型；相机模块内设于翻盖中的翻盖内置型；以及内设于机身的机身内置型移动通信终端。

同时，根据相机模块的可旋动与否，大体上可分为：相机模块可旋动的相机模块旋转型；相机模块固定的相机模块固定型移动通信终端。

本发明是基于相机模块固定于机身内部的机身内置型移动通信终端。图 1 是现有技术中的移动通信终端翻盖部开启状态的斜视图，图 2 是现有技术中的移动通信终端翻盖部开启状态的侧面图。

如图 1 及图 2 所示，现有技术中的移动通信终端，其包含有如下几个部分：通过前面外壳 110 和背面外壳 120 结合构成内部空间的机身部 100；通过合叶结合方式连接于所述机身部 100 的翻盖部 200；安装于所述机身部 100 的内部空间，其前面向外部露出的相机 300。

所述机身部 100 的内部空间中包含有：通过电信号进行控制作用的印刷电路板未图示；通过所述前面外壳 110 的键孔 160 向外部露出，并具有信号输入功能的键区 180。所述背面外壳 120 的侧面安装有侧键 130；背面包含有可拆装安装的电池 140；所述背面外壳 120 的上端部则设置有用于接收电波的天线

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000329

150。所述翻盖部200通过合叶结合方式可旋动连接于所述机身部前面外壳110的上部，并进行移动通信终端的开闭动作，所述翻盖部200的一侧面设置有用于输出输入信号和影像的液晶画面210。所述相机300固定结合于所述机身部100的内部空间一侧，并具有拍摄功能。

但是，在开启所述现有技术中的移动通信终端，并通过观察所述翻盖部200中形成的液晶画面210拍摄物体时，由于相机300的拍摄方向和所述液晶画面210的前面形成的角度超出直角范围，使用户无法从正面观察所述液晶画面210，从而不能提供给用户清晰的画面。

发明内容

为使解决所述现有技术中的问题，本发明的目的在于提供一种移动通信终端的相机装置，使其开放所述翻盖部，使在进行相机拍摄操作时，所述相机的拍摄方向和翻盖部中形成的液晶画面的前面形成的角度保持直角，从而使相机装置根据移动通信终端翻盖部的开闭操作而可旋动。

为使达到所述目的，本发明中的移动通信终端的相机旋动装置，其特征在于，包含有如下几个部分：机身部，其设置有一定的内部空间；翻盖部，其一侧面设置有液晶画面，通过合叶结合方式结合于所述机身部而旋动并进行开闭动作；相机，在所述机身部的内部空间一侧，以所述翻盖部的旋动中心轴平行的轴为中心可旋动安装；驱动构件，根据所述翻盖部的开闭动作而进行滑动，并使所述液晶画面的前面和相机的拍摄方向成直角状态。

在本发明中的移动通信终端的相机旋动装置，固定安装于机身部的相机结构变更为可旋动结构，使在用户使用移动通信终端的相机功能时，相机的拍摄方向和设置于翻盖部的液晶画面的前面形成的角度保持直角状态，从而提供更加清晰的画面，同时可在正面观察所述液晶画面并进行拍摄，从而给用户提供使用上的方便。

下面结合附图和实施例对本发明进行详细说明。

附图说明

图1是现有技术中的移动通信终端翻盖部开启状态的斜视图。

图2是现有技术中的移动通信终端翻盖部开启状态的侧面图。

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000330

图 3 是本发明中的移动通信终端机身部的分解示意图。

图 4 是本发明中的移动通信终端的背面示意图。

图 5 是本发明中的移动通信终端操作的动作图。

图 6 是本发明中的移动通信终端动作的概略图。

其中，附图标记：

100：机身部	110：前面外壳
111：滑动导轨	112：驱动构件插入槽
120：背面外壳	121：相机露出槽
122：弹簧放置槽	123：结合针卡槽
130：侧键	140：电池
150：天线	160：键孔
170：印刷电路板	180：键区
200：翻盖部	210：液晶画面
300：相机	310：结合针
320：引导凸起	400：驱动构件
410：滑动部	411：滑动槽
412：弹簧凸起	420：凸轮部
421：凸轮槽	430：弹性弹簧

具体实施方式

图 3 是本发明中的移动通信终端机身部的分解示意图，图 4 是本发明中的移动通信终端的背面示意图，图 5 是本发明中的移动通信终端操作的动作图，图 6 是本发明中的移动通信终端动作的概略图。

如图 3 及图 4 所示，本发明中的移动通信终端的相机旋动装置，其包含有：通过前面外壳 110 和背面外壳 120 结合构成一定内部空间的机身部 100；一侧面设置有液晶画面 210 的翻盖部 200；安装于所述内部空间的相机 300；根据所述翻盖部的开闭操作，使所述相机 300 进行旋动的驱动构件 400。

如图 3 及图 4 所示，所述内部空间中设置有印刷电路板 170 和键区 180，所述前面外壳 110 的一侧面安装有侧键 130，前面设置有键孔 160。放置有所述相机 300 的放置面的两侧形成有结合针卡槽 123，其中，所述结合针卡槽 123

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000331

中可旋动结合有结合针 310，其上端面一侧则设置有用于插入所述驱动构件 400 的驱动构件插入槽 112。所述驱动构件插入槽 112 的长度相比凸轮部 420 的横截面长度较长形成，使在所述驱动构件 400 插入时可进行前、后方滑动。在所述驱动构件插入槽 112 的长度方向的两侧端部上，结合有滑动部 410，并各形成有‘┌’‘┐’形状的滑动导轨 111，用于引导所述驱动构件 400 的前、后方滑动。

如图 4 所示，所述背面外壳 120 的上端设置有天线 150，其一侧形成有对应于所述相机 300 形状的相机露出槽 121，使所述相机 300 的前面向所述机身部 100 的外部露出；另一侧则凹陷形成有弹簧放置槽 122，用于放置弹性弹簧 430。

如图 3 所示，所述相机 300 的两侧面设置有结合针 310，使其可旋动安装于所述机身部 100 的内部空间；其一侧面则凸出形成有引导凸起 320，所述引导凸起 320 结合于凸轮槽 421，并用于引导所述相机 300 的旋动操作。

如图 3 所示，所述驱动构件 400 包含有：前、后方进行滑动的滑动部 410 和使所述相机 300 进行旋动的凸轮部 420。所述滑动部 410 的两侧面凹陷形成有滑动槽 411，所述滑动槽 411 结合于所述滑动导轨 111，用于引导所述驱动构件 400 的前、后方滑动。所述凸轮部 420 垂直于所述滑动部 410 的方向延长形成，其一侧面凹陷形成有凸轮槽 421，所述凸轮槽 421 结合于所述引导凸起 320，并用于引导所述相机 300 的旋动操作。与所述驱动构件 400 的前进方向成直角的所述凸轮部 420 的截面上，凸出形成有圆筒形的弹簧凸起 412，所述弹簧凸起 412 上安装有弹性弹簧 430，用于将所述驱动构件 400 恢复到原来状态。

下面说明如上所述的本发明中的移动通信终端的相机旋动装置。

如图 5 及图 6 所示，为使进行移动通信终端的相机 300 拍摄功能，当开启所述翻盖部 200 时，所述翻盖部 200 的下端一侧与向所述机身部 100 的外部露出的所述滑动部 410 的一侧接触，通过翻盖部 200 作用于所述机身部 100 的开启作用力，所述滑动部 410 将沿着所述滑动导轨 111 向前方进行滑动。为使所述滑动部 410 向前方充分滑动，所述翻盖部 200 的开启作用力最好比所述弹性弹簧 430 的压缩作用力更大。此时，放置于所述弹簧放置槽 122 的弹性弹簧 430 将被压缩，并使向所述滑动部 410 的直角方向延长形成的所述凸轮部 420

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000332

也同时移动。

在所述凸轮部 420 移动时，形成于所述凸轮部 420 的侧面，并结合于所述引导凸起 320 的凸轮槽 421 也随即移动。同时，接触于所述凸轮槽 421 的下部一侧面的所述引导凸起 320 将随着所述凸轮槽 421 移动，使所述引导凸起 320 和作为所述相机 300 的旋动中心的结合针 310 的距离 d，d'保持相同。当所述引导凸起 320 紧贴于所述凸轮槽 421 的上部一侧面时，所述相机 300 将停止旋动操作，并处于如图 5 和图 6 所示的点线状态。

用户通过所述操作，可在液晶画面 210 的正面观察清晰的画面并进行拍摄，当完成拍摄操作后关闭所述翻盖部 200 时，所述滑动部 410 的末端将与所述滑动部 410 的末端接触的所述翻盖部 200 的下端部分离，与此同时，通过所述压缩的弹性弹簧 430 的弹性能，所述滑动部 410 将向后方直线运动并恢复原来状态。通过所述滑动部 410 的后退操作，与所述滑动部 410 延长形成的凸轮部 420 将一同向后方移动。与此 同时，接触于所述凸轮槽 421 的上部一侧面的引导凸起 320，将接触于所述凸轮槽 421 的下部一侧面，使其与所述结合针 310 之间的距离保持相同，从而所述相机 300 将再进行旋动恢复到原来位置，并处于图 5 及图 6 所示的实线状态。

当然，本发明还可有其他多种实施例，在不背离本发明精神及其实质的情况下，熟悉本领域的技术人员当可根据本发明作出各种相应的改变和变形，但这些相应的改变和变形都应属于本发明所附的权利要求的保护范围。

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000333

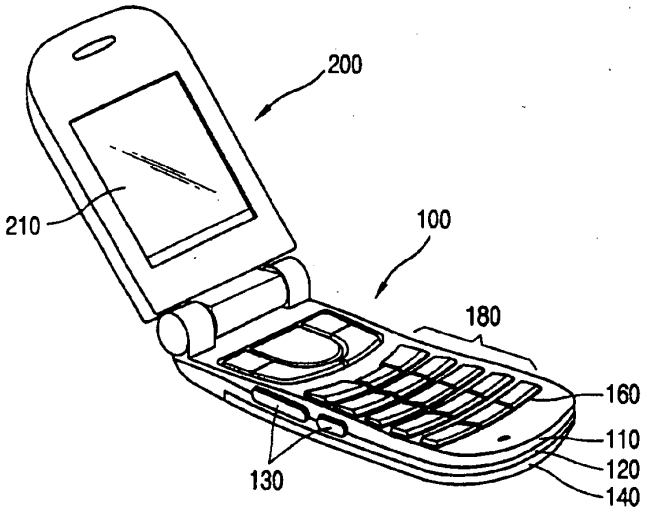


图 1

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000334

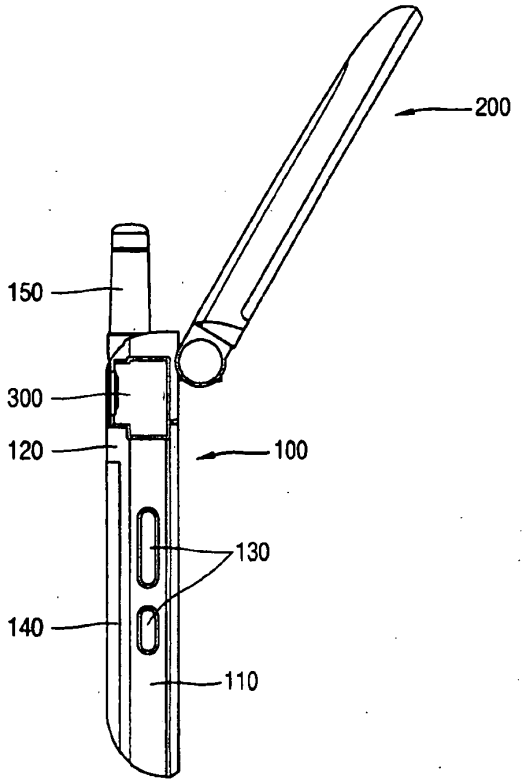


图 2

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000335

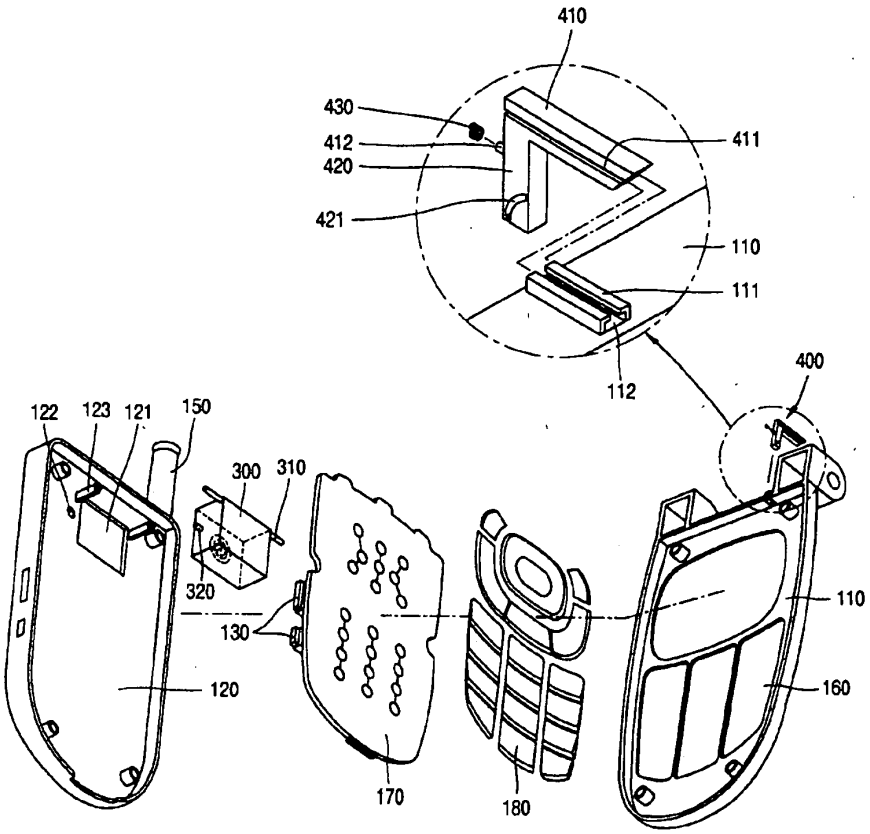


图 3

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000336

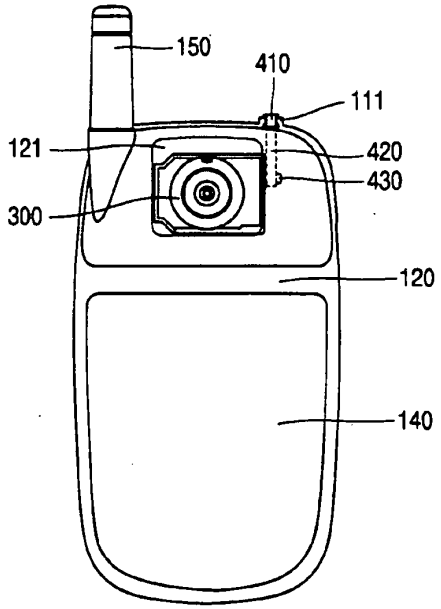


图 4

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000337

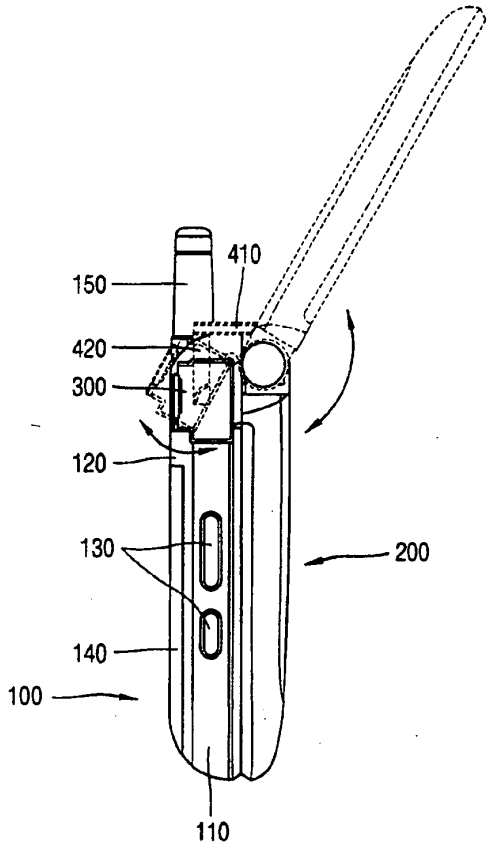


图 5

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000338

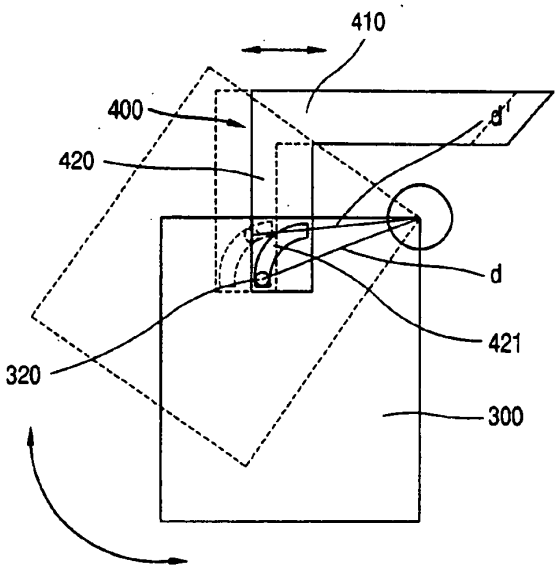


图 6

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000339

CN1725783 A

Title :
移动通信终端的相机旋动装置

The **camera** of the mobile communication terminal spin device

Abstract :
本发明公开了一种移动通信终端的相机旋动装置。在现有技术中安装于移动通信终端的相机，固定安装于移动通信终端的机身部后面，使在用户开启移动通信终端的翻盖部，并利用相机拍摄物体时，由于拍摄方向和移动通信终端的翻盖部中形成的液晶画面形成的角处于所述液晶画面的可视角范围之外，从而无法通过所述液晶画面观察清晰的画面。本发明中的移动通信终端的相机旋动装置安装在所述机身部，使相机随着所述翻盖部的开闭可旋动，在使用相机拍摄功能时，由于所述液晶画面和相机的拍摄方向所成的角保持直角，从而给用户提供清晰的画面，使移动通信终端的利用相机的拍摄操作更为容易。

This invention publicized one kind of mobile communication terminal **camera** to gyrate the installment. Installs in the existing technology in the mobile communication terminal **camera**, the fixed installment in behind the mobile communication terminal fuselage department, causes in the user opening mobile communication terminal renovates, when and using **camera** photography object, the angle which because the photography direction and the mobile communication terminal which renovates in to form the liquid crystal picture forms to be in states the liquid crystal picture to be possible outside the angle of view scope, thus is unable through to state the liquid crystal picture observation clear picture. In this invention mobile communication terminal **camera** gyrates the installment to install in states the fuselage department, causes the **camera** along with to state renovates a make and break to be possible to gyrate, when use **camera** photography function, because states the angle maintenance right angle which the liquid crystal picture and the **camera** photography direction becomes, thus provides the clear picture to the user, makes the mobile communication terminal the use **camera** photography operation to be easier.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000340

Claim(s):

1·一种移动通信终端的相机旋动装置，其特征在于，包含有如下几个部 分··5机身部，其设置有一定的内部空_ 翻盖部，其一侧面设置有液晶画面，通过合叶结合方式结合于所述机身部 而旋动并进行开闭动作；相机，在所述机身部的内部空间一侧，以平行于所述翻盖部的旋动中心轴 的轴为中心可旋动安装；10驱动构件，根据所述翻盖部的开闭动作而进行滑动，并便所述液晶画面的 前面和相机的拍摄万向成直角状态。

2·根据权利要求1所述的移动通信终端的相机旋动装置，其特征在于， 所述相机的一侧形成有引导凸起，所述引导凸起结合于所述驱动构件，使可通 过所述驱动构件的滑动操作而可进行滑动。

15 3·根据权利要求1所述的移动通信终端的相机旋动装置，其特征在于， 所述驱动构件包含有:通过所述翻盖部的开启操作，向前万进行滑动的滑动部；连接于所述滑动部，并形成有与所述引导凸起结合的凸轮糟的凸轮部。

4·根据权利要求3所述的移动通信终端的相机旋动装置，其特征在于， 所述凸轮槽成曲面形状。

20 51根据权利要求其所述的移动通信终端的相机旋动装置，其特征在于， 所述驱动构件还包含有:凸出形成于所述凸轮部的一侧，使在所述翻盖部关闭 后，所述驱动构件可自动恢复到原来状态的弹簧凸起;与所述弹簧凸起结合的 弹性弹簧。

1 · a mobile communication terminal of the **camera** rotating device, characterized in that contains the following child part fuselage Ministry set up a certain amount of internal empty _ flip Ministry, one of the side set with LCD screen, combined with the hinge combination rotating opening and closing movements and the Ministry of said body; **camera**, parallel to the side of the internal space of the body the Ministry of flip the Ministry of rotating central axis as described in the rotating axis as the center can be installed; 10 drive components, described clamshell opening and closing movements of the Ministry of the slide, and then in front of the LCD screen and **camera** shooting described universal right angles to the state.

2 according to claim 1 wherein the mobile communication terminal of the **camera** rotating device, characterized in that the **camera** side of the formation leading to bulge, as described in the guide convex combination of the drive components, as described in, so that sliding operation of the drive components sliding.

15 3 according to claim 1 wherein the mobile communication terminal, the **camera** rotating device, characterized in that said drive component includes: flip the Ministry referred to the open operation, forward sliding sliding section; connected to said sliding section, and formed as described in guide convex combination of bad cam cam Ministry.

4 according to claim 3 to the mobile communication terminal of the **camera** rotating device, characterized in that said cam slot into the shape of the surface.

20 51 according to the claims the description of the mobile communication terminal of the **camera** rotation device, characterized in that the drive components: bulge formed in the side of the cam Ministry, so that in the described flip Ministry shut down the drive components can be automatically restored to its original state, spring raised; convex combination of the elastic spring and said spring.

Description:

移动通信终端的相机旋动装置 5技术领域 本发明涉及移动通信终端，更具体的涉及安装于移动通信终端的相机。

背景技术 最近，移动通信终端除了简单的语音接收发送功能外，不断开发出强调多 10媒体功能的终端。其中，最近开发出安装有将影像信息用多种颜色显示的彩色 液晶屏，以及用于输入影像信息的相机模块的移动通信终端。

根据所述相机模块附加于所述移动通信终端的万法，可分为:与移动通信 终端一体形成的内置型相机模块;附加安装

Mobile communication terminal in

camera rotating device technology of the present invention relates to mobile communication terminal, and more specifically involved in the **camera** installed in the mobile communication terminal. background technology, mobile communication terminals, in addition to sending simple voice reception, and constantly developed stressed that more than 10 media-enabled terminal. Among them, the

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000341

于移动通信终端的外部的外置型相 机模块。

15并且，根据内置型相机模块的内置位置，可分为:插入于移动通信终端的 +心部分，即合叶旁边的合叶内置型;相机模块内设于翻盖中的翻盖内置型; 以及内设于机身的机身内置型移动通信终端。

同时，根据相机模块的可旋动与否，大体上可分为:相机模块可旋动的相 机模块旋转型;相机模块固定的相机模块固定型移动通信终端。

20本发明是基于相机模块固定于机身内部的机身内置型移动通信终端。图卫 是现有技术中的移动通信终端翻盖部开启状态的斜视图，图2是现有技术中的 移动通信终端翻盖部开启状态的侧面图。

如图1及图2所示，现有技术中的移动通信终端，其包含有如下几个部分: 通过前面外壳110和背面外壳120结合构成内部空间的机身部100^通过合叶 25结合方式连接于所述机身部100的翻盖部200;安装于所述机身部100的内部 空间，其前面向外部露出的相机300^ 所述机身部100的内部空间中包含有:通过电信号进行控制作用的印刷电 路板末图示;通过所述前面外壳110的键^L I^0向外部露出，并具有信号输入 功能的键区180。所述背面外壳120的侧面安装有侧键130;背面包含有可拆 30装安装的电池140;所述背面外壳120的上端部则设置有用于接收电波的天线 书 明 说 150。所述翻盖部200通过合叶结合万式可旋动连接于所述机身部前面外壳110 的上部，并进行移动通信终端的开闭动作，所述翻盖部200的一侧面设置有用 于输出输入信号和影像的液晶画面210。所述相机300固定结合于所述机身部 100的内部空间一侧，并具有拍摄功能。

5但是，在开启所述现有技术中的移动通信终端，并通过观察所述翻盖部 200中形成的液晶画面210拍摄物体时，由于相机300的拍摄万向和所述液晶 画面210的前面形成的角度超出直角范围，使用户无法从正面观察所述液晶画面210，从而不能提供给用户清晰的画面。

10发明内容 为使解决所述现有技术申的问题，木发明的目的在于提供一种移动通信终 端的相机装置，使其开放所述翻盖部，使在进行相机拍摄操作时，所述相机的 拍摄万向和翻盖部中形成的液晶画面的前面形成的角度保持直角，从而使相机 装置根据移动通信终端翻盖部的开闭操作而可旋动。

15为使达到所述目的，本发明中的移动通信终端的相机旋动装置，其特征在 于，包含有如下几个部分:机身部，其设置有一定的内部空间;翻盖部，其一 侧面设置有液晶画面，通过合叶结合方式结合于所述机身部而旋动并进行开闭 动作;相机，在所述机身部的内部空间一侧，以所述翻盖部的旋动中心轴平行 的轴为中心可旋动安装;驱动构件，根据所述翻盖部的开闭动作而进行滑动， 20并便所述液晶画面的前面和相机的拍摄万向成直角状态。

在本发明中的移动通信终端的相机旋动装置，固定安装于机身部的相机结 构变更为可旋动结构，使在用户使用移动通信终端的相机功能时，相机的拍摄 万向和设置于翻盖部的液晶面面的前而形成的角度保持直角状态，从而提供更加清晰的画面，同时可在正面观察所述液晶画面并进行拍摄，从而给用户提供 25使用上的方便。

recent development of installed color LCD screen will display the image information using a variety of colors, and the **camera** module of the **input** image information used for mobile communication terminals. according to the **camera** module attached to the method described in the mobile communication terminal can be divided into: the built-in **camera** module and mobile communication terminal one; additional external installation on the mobile communication terminal of the external **camera** module.

15 and, according to the built-in **camera** module built-in position, can be divided into: Insert heart part of the mobile communication terminal, hinge next to the hinges, built-in type; **camera** module equipped with flip flip set type; and the site in the body of the fuselage built-in mobile communication terminal. the same time, according to the **camera** module can be rotating or not, in general, can be divided into: the **camera** module can be rotating **camera** module rotation type; fixed **camera** module **camera** module fixed mobile communication terminal.

20 of the present invention is based on the mobile communication terminal built-in **camera** module fixed to the inside of the fuselage body. Wei is a open oblique flip Ministry of existing technologies in the mobile communication terminal, and Figure 2 is a side view of the flip Ministry of existing technologies in the mobile communication terminal to open. shown in Figure 1 and Figure 2 shows, the existing technology in the mobile communication terminal, which contains the following sections: through the front shell 110 and back shell 120 with the body part that constitute the internal space 100 by a leaf combination connected to the flip part of the described fuselage Ministry 100 200 25; installed on the 100 described fuselage Ministry of interior space, its front exposed to the external **camera** 300 as described in the internal space of the 100 fuselage Ministry includes: printed **circuit board** control the role of the late icon by the electrical signal; said front shell 110 key L I exposed to the external signal **input** function key 180. Described on the back side of **housing** 120 are installed side buttons 130; on the back contains a removable 30 mounted installed **battery** 140; described in the back of the shell 120 of the top of the Ministry set up for receiving electric waves on the antenna book say so 150. Said flip Ministry 200 combined hinge opening and closing movements, the mode of rotating connected to the upper part of the described in the fuselage, the front shell 110 and the mobile communication terminal described in the the flip Ministry 200 a side set for **input**-output signal and the image of the LCD screen 210. Described **camera** 300 of the fixed combination to said body side of the internal space of the

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000342

下面结合附图和实施例对本发明进行详细说明。

附图说明 图1是现有技术中的移动通信终端翻盖部开启状态的斜视图。

30图2是现有技术中的移动通信终端翻盖部开启状态的侧面图。

书 明 说 _ D 山 图3是本发明中的移动通信终端机身部的分解; 图4是本发明中的移动通信终端的背面示意图· 图5是本发明中的移动通信终端操作的动作图。

图6是本发明申的移动通信终端动作的概略图。

意图。

其申 ，附图标i己 100: 机身部 111 滑动导轨 120 背面外壳 122: 弹簧放置槽 130: 侧键 150: 天线 170: 印刷电路板 200: 翻盖部 300: 相机 320: 引导凸起 410: 滑动部 412: 弹簧凸起 421: 凸轮槽 具体实施方式 前面外壳 驱动构件插入槽 相机露出槽 结合针卡槽 电习'也 键孔 键区 液晶画面 结合针 驱动构件 滑动槽 凸轮部 弹性弹簧 图3是本发明中的移动通信终端机身部的分解示意图，图4是本发明中的 移动通信终端的背面示意图，图5是本发明中的移动通信终端操作的动作图， 图6是本发明中的移动通信终端动作的概略图。

如图3及图4所示，本发明中的移动通信终端的相机旋动装置，其包含有: 通过前面外壳110和背面外壳120结合构成一定内部空间的机身部100;一侧 面设置有液晶画面 210的翻盖部200;安装丁所述内部空间白肘目机300;根据 所述翻盖部的开闭操作，便所述相机300进行旋动的驱动构件400^o 如图3及图4所示，所述内部空间中设置有印刷电路板170和键区180, 所述前面外壳110的一侧面安装有侧键130，前面设置有键孔160。放置有所 述相机300的放置面的两侧形成有结合针卡槽123，其中，所述结合针卡槽123 书 明 说 中可旋动结合有结合针310，其上端面一侧则设置有用于插入所述驱动构件 400的驱动构件插入槽112。所述驱动构件插入槽112的长度相比凸轮部420 的横截面长度较长形成，使在所述驱动构#400插入时可进行前、后方滑动。

在所述驱动构件插入槽112的长度万向的两侧端部上，结合有滑动部410，并 5各形成有。「门，形状的滑动导轨^11，用于引导所述驱动构件400的前、后万 滑动。

如图4所示，所述背面外壳120的上端设置有天线150，其一侧形成有对 应于所述相机300形状的相机露出槽121，使所述相机300的前面向所述机身 部100的外部露出;另一侧则凹陷形成有弹簧放置槽122，朋于放置弹性弹簧 I0 430^ 如图3所示，所述相机300的两侧面设置有结合针310，使其可旋动安装 于所述机身部100的内部空间;其一侧面则凸出形成有引导凸起320，所述引 导凸起320结合于凸轮槽421，并用于引导所述相机300的旋动操作。

如图3所示，所述驱动构件400包含有:前、后方进行滑动的滑动部410 15和便所述相机300进行旋动的凸轮部420。所述滑动部410的两侧面凹陷形成 有滑动槽411，所述滑动槽411结合于所述滑动导轨^11，用于引导所述驱动 构件400的前、后方滑动。所述凸轮部420垂直于所述滑动部410的方向延长 形成，其一侧面凹陷形成有凸轮槽421，所述凸轮槽421结合于所述引导凸起 320，并用

Ministry of 100, and has a shooting function.

5 However, the LCD screen open as described in the existing technology in the mobile communication terminal, and described by observing the formation in flip Ministry 200 210 when shooting an object, universal and described in the LCD screen due to the shooting of the **camera** 300 210 in front of the angle formed beyond the right angle range, so that the user can not be described from the front LCD screen 210, and thus can not provide a clear picture to the user. contents of the invention to make the solution to the problem described in the existing technology application, wood invention aims to provide the **camera** of a mobile communication terminal device to open flip Ministry described, so that during **camera** operation, referred **camera** shooting universal and flip the Ministry of the formation of the LCD screen in front of the angle formed at right angles, so that the **camera** device according to the mobile communication terminal clamshell opening and closing operations of the Department of rotating.

15 In order to achieve the purposes described in the **camera** of the mobile communication terminal of the present invention rotating device, characterized in that contains the following sections: body Ministry set up a certain internal space; flip Ministry The first side is set with an LCD screen, rotating and opening and closing movements hinge combined with combined with the Ministry of said body; **camera** in the side of the interior space of the fuselage Ministry to flip the spin of the Ministry referred to action center axis parallel to the axis as the center rotating installation; drive components described clamshell opening and closing movements of the Ministry of the slide, 20 will be described in the front of the LCD screen and **camera** shooting universal right angles to the state. mobile communication terminal in the present invention, the **camera** rotating device fixed **camera** installed in the Ministry of the fuselage structure to change as the rotating structure, so that the user use the **camera** function of the mobile communication terminal, the **camera**'s shooting universal and the angle formed by the LCD set to flip the Ministry of all things to the former at right angles to state, thus providing a more clear picture of the LCD screen and shoot at the same time can be described positive observation, 25 use convenience to the user. the following combination of drawings and detailed description of embodiments of the present invention.

Description of the Drawings Figure 1 is a flip Ministry of existing technologies in the mobile communication terminal open oblique.

30 Figure 2 is a side view of the open state of existing technology in the mobile communication

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000343

于引导所述相机300的旋动操作。与所述驱动构件400的前进万向 20成直角的所述凸轮部420的截面上，凸出形成有圆筒形的弹簧凸起412，所述 弹簧凸起412L±安装有弹性弹簧430，用于将所述驱动构件400恢复到原来状态。

下面说明如上所述的本发明中的移动通信终端的相机旋动装置。

如图5及图6所示，为使进行移动通信终端的相机300拍摄功能，当开启 25所述翻盖部200时，所述翻盖部200的下端一侧与向所述机身部100的外部露 出的所述滑动部410的一侧接触，通过翻盖部200作用于所述机身部100的开 启作用力，所述滑动部410将沿看所述滑动导轨^11间前万进行滑动。为便所 述滑动部410向前方充分滑动，所述翻盖部200的开启作用力最好比所述弹性 弹簧430的压缩作用力更大。此时，放置于所述弹簧放置槽122的弹性弹簧 30 430将被压缩，并使向所述滑动部410的直角方向延长形成的所述凸轮部420 书 明 说 也同时移动。

在所述凸轮部420移动时，形成于所述凸轮部420的侧面，并结合于所述 引导凸起320的凸轮槽421也随即移动。同时，接触于所述凸轮槽421的下部 一侧面的所述引导凸起320将随着所述凸轮槽421移动，便所述引导凸起320 5和作为所述相机300的旋动中心的结合计310的距离d，d'保持相同。当所述 引导凸起320紧贴于所述凸轮槽421的上部一侧面时，所述相机300将停止旋 动操作，并处于如图5和图6所示的点线状态。

朋户通过所述操作，可在液晶画面210的正面观察清晰的画面并进行拍 摄，当完成拍摄操作后关闭所述翻盖部200时，所述滑动部410的末端将与所 10述滑动部410的末端接触的所述翻盖部200的下端部分离，与此同时，通过所 述压缩的弹性弹簧430的弹性能，所述滑动部410将向后方直线运动并恢复原 来状态。通过所述滑动部410的后退操作，与所述滑动部410延长形成的凸轮 部420将一同向后万移动。与此同时，接触于所述凸轮槽421的上部一侧面 的引导凸起320，将接触于所述凸轮槽421的下部一侧面，使其与所述结合针 15 310之间的距离保持相同，从而所述相机300将再进行旋动恢复到原来位置， 并处于图5及图6所示的实线状态。

肖然，本发明还可有其他多种实施例，在不背离本发明精神及其实质的情 况下，熟悉本领域的技术人员当可根据本发明作出各种相应的改变和变形，但 这些相应的改变和变形都应属于本发明所附的权利要求的保护范围。

说明书附

terminal flip Ministry. books say so _ D Hill Figure 3 is the decomposition of the Ministry of the body of the mobile communication terminal of the present invention; Figure 4 is the back of the schematic diagram of the present invention, the mobile communication terminal 5 is the operation of the mobile communication terminal of the present invention Action Figure.

Figure 6 is a rough diagram of the movement of the mobile communication terminal of the present invention apply. intentions. its application, attached to the icon i have 100: Ministry of the fuselage 111 slide rail 120 on the back shell 122: Spring to place slot 130: side buttons 150: antenna 170: printed **circuit board** 200: 300 flip Ministry: **Camera** 3.2: Convex guide from the 410: the sliding section 412: spring raised 421: cam slot specific implementation of the way to the front shell drive component insertion slot **camera** exposed and groove pin slot power learning 'keyhole **keypad** LCD screen combined with the needle driver components slide groove cam elastic spring Figure 3 is a schematic diagram of the mobile communication terminal body decomposition of the Ministry of the present invention, Figure 4 is the schematic diagram of the back of the mobile communication terminal of the present invention, Figure 5 is the action of the operation of the mobile communication terminal of the present invention, Figure 6 is rough diagram of the invention, the mobile communication terminal action. in Figure 3 and Figure 4 shows, the **camera** of the mobile communication terminal of the present invention rotating device, it contains there is: through the front shell 110 and back shell 120 combined with the body part of a certain internal space 100; one side set flip part of the LCD screen, 210 200; install the small interior space white elbow mesh machine 300 described; described flip the Department of closing and opening, they described the **camera** 300 for rotating the drive component 400 o as shown in Figure 3 and Figure 4 shows the internal space the printed **circuit board** 170 and **keypad** 180, as described in one side of the front shell 110 side buttons 130, set in front of the key hole 160. Place described **camera** 300 placed on the surface on both sides of the formation of binding pin slot 123, wherein the combination of the rotating pin slot 123 books say so combined with a binding pin 310 on the face side of the set for inserted as described in the drive components of the drive component 400 into the slot 112. Said drive components into compared to the length of slot 112 to cam Ministry 420 cross-sectional length of the longer form, and # 400 inserted in said drive structure can be front, rear sliding. insert length universal slot 112 on both sides of the end of said drive components, combined with a sliding section 410, and 5 formation. Sliding rail of the door, the shape of 11 for the boot drive components

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000344

described in 400 before after Wan sliding. shown in Figure 4, as described in the back of the shell 120 of the top set the antenna 150, the side of the formation corresponds to the shape described **camera** 300 **camera** exposing groove 121, so that the described **camera** 300 in front of the described machine The external body of the Ministry of 100 exposed; the other side of the depression to form the spring to place the slot 122, friends placed elastic spring I0 is 430 shown in Figure 3, as described in the sides of the **camera** 300 is set binding pin 310 so that it can spin automatically installed on the 100 described fuselage Ministry of interior space; one of the side protruding form guide raised 320 the guide raised 320 combination of the cam groove 421 and is used to guide the described **camera** 300 of the rotating operation. shown in Figure 3, as described in the drive component 400 includes: sliding, rear sliding section 41015 and will be described in the **camera** 300 Department of rotating the cam 420. Said sliding section 410 on both sides of the concavity in the formation of the sliding groove 411, as described in the sliding slot 411 binds to said sliding rail 11 for the guide described the drive component 400 of the anterior and posterior sliding. Covers the 420 vertical cam Ministry said sliding section 410 in the direction to extend the formation of one of the side of the depression formed have cam slot 421, as described in the cam slot 421 combination described guide raised 320, and used to guide the described **camera** 300 spin moving operation. And said drive component 400 advance universal cross-section of 20 at right angles to said cam 420, the protruding cylindrical spring raised 412, as described in the spring raised 412L plus or minus installed elastic spring 430, with The drive components will be described in 400 restored to its original state. the following description of the **camera** of the mobile communication terminal of the present invention as described above, rotating the device. shown in Figure 5 and Figure 6 shows, in order for **camera** of the mobile communication terminal 300 shooting when open 25 to flip the Ministry of 200, 200 of the bottom side of the flip Ministry referred to the described fuselage Ministry exposing said sliding section 410 of the 100 external side of the contact by the flip Ministry 200 role fuselage Ministry 100 open force referred to the sliding section 410 will be along to see the sliding rail, as described in 11 before Wan the sliding. Will be described in the sliding section 410 to the front full slide, flip the Ministry of 200 open force is best described in greater than the compression force of said elastic spring 430. At this point, the flexibility to be placed in slot 122 placed in the described spring spring 30430 will be compressed, and say so also at the same time move to extend to said sliding section 410 at right angles to the direction of the formation described cam department 420.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000345

said cam Ministry 420 mobile, the formation of the side of said cam Ministry 420, combined with the guide described the bulge 320 of the cam slot 421 then move. 320 at the same time, the contact said cam slot 421 of the lower part of one side as described in boot raised as the described in the cam groove 421 move, they guide raised to 3205 and as the **camera** as described in 300 rotating center combination meter as described in 310 distance d, d 'remain the same. Described in the boot raised 320 immediately when said cam slot 421 of the upper part of a side the **camera** 300 will stop rotating operation, and in Figure 5 and Figure 6 the dotted line state. the end of the sliding section 410 described above with the 10 **households** by

friends described operation, the front LCD screen, 210 observed a clear picture and shooting, after the shooting operation is complete, close the flip Ministry described 200 200 flip Ministry of the bottom part of the described contact by the end of the sliding section 410 from the same time, said compression elastic spring 430 elastic behind the linear motion of the sliding section 410 will be described and restore the original state. Described in the Department of sliding section 410 of the back operation, said sliding section 410 to extend the cam 420 will work together to backward million mobile. At the same time, the contact described in the guidance of the cam groove 421 of the upper side of the bulge 320, will be exposed in the lower part of said cam slot 421 a side, and described the distance between the needle 15310 remain the same, thus described in the **camera** 300 will have to proceed rotating back to its original position, and the solid line state in Figure 5 and Figure 6.

Xiao Ran, the present invention can have a variety of other embodiments, not to depart from the spirit and substance of the present invention, the technical staff are familiar with this area will be according to the present invention to make all appropriate changes and deformation, corresponding change and deformation should belong to the scope of protection of the present invention attached to the claims. instructions attached

---

Date translated: 16 May 2012

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000346

⑲日本国特許庁（JP）　⑪実用新案出願公開

⑫公開実用新案公報（U）　平2—6339

⑤Int.Cl.⁵	識別記号	庁内整理番号
G 06 F 7/50	V	7056—5B
11/22	330 G	7368—5B

⑬公開　平成2年(1990)1月17日

審査請求　未請求　請求項の数 1　（全　頁）

⑭考案の名称　加算回路

⑳実　願　昭63—83628
㉒出　願　昭63(1988)6月23日

⑫考案者　栗本　賢洋　東京都港区芝5丁目7番15号　日本電気アイシーマイコンシステム株式会社内
⑪出願人　日本電気アイシーマイコンシステム株式会社　東京都港区芝5丁目7番15号
⑭代理人　弁理士　内原　晋

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000347

明　細　書

考案の名称

加算回路

実用新案登録請求の範囲

第１，第２の２個のレジスタと全加算器とを有する加算回路において、試験用に用いられるカウンタと、前記第２のレジスタの出力信号と前記カウンタの出力信号とのいずれか一方を選択して前記全加算器の加算データ端子の一方に供給するセレクタとを備えることを特徴とする加算回路。

考案の詳細な説明

〔産業上の利用分野〕

本考案は加算回路に関し、特にその試験回路を含む加算回路に関する。

実開2-6339

480

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000348

〔従来の技術〕

一般に加算回路は第３図に示すように、２個のレジスタ１，２と次段に繋がる全加算器３とにより構成されており、２つの加算データをレジスタ１，２に入力することによって、全加算器３に加算データ信号が伝わり、その加算結果が全加算器３から出力される。この加算回路を試験する場合、レジスタ１を順に１６進数表示の“０”，“Ｆ”，“５”，“Ａ”の４つの状態に設定し、その各状態に対してレジスタ２を“０”～“Ｆ”の１６状態に変化させ、そのときの加算結果を検定することが行われる。このため、各レジスタに上記の状態を順次実現させるため、入力テストパターンをＬＳＩテスターで発生し、この入力テストパターンを加算回路へ入力信号として供給し、得られた出力信号をＬＳＩテスターで発生した正常動作時の出力期待値パターンと比較する。

〔考案が解決しようとする課題〕

上述した加算回路の試験を行うには入力テストパターンを人間が考えて作成しなければならず、

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000349

入力テストパターンが複雑な場合には、間違った入力テストパターンを作成する恐れがあり、試験が繁雑になるという欠点があった。特に、加算回路の前段に複雑な演算回路が接続されている場合には、レジスタを設定するための入力テストパターンが複雑で長くなるという問題点がある。

本考案の目的は、以上の欠点を解決し、試験を容易に行える加算回路を提供することにある。

〔課題を解決するための手段〕

本考案の加算回路は、第１，第２の２個のレジスタと全加算器とを有する加算回路において、試験用に用いられるカウンタと、前記第２のレジスタの出力信号と前記カウンタの出力信号とのいずれか一方を選択して前記全加算器の加算データ端子の一方に供給するセレクタとを備えて構成されている。

〔実施例〕

次に、本考案の実施例について図面を参照して説明する。

第１図は本考案の一実施例の回路図である。

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000350

本実施例の加算回路はレジスタ１，２、全加算器３、試験用に用いられるカウンタ４、第２のレジスタの出力信号と前記カウンタの出力信号とのいずれか一方を選択して前記全加算器の加算データ端子の一方に供給するセレクタ５とを有している。第１のレジスタ１の出力端子１Ｑは全加算器３の入力端子３Ａに接続され、第２のレジスタ２の出力端子２Ｑはセレクタ５の入力端子５Ａに接続されている。セレクタ５の他の入力端子５Ｂは、カウンタ４の出力端子４Ｑと接続しており、出力端子５Ｑは全加算器３の入力端子３Ｂに接続している。

次に、この図を使用して回路の試験方法に関して説明する。まず、カウンタ４の入力端子４Ｒにリセット信号を加え、カウンタ４を初期化する。次に、その出力信号が全加算器３の入力端子３Ｂに伝わるようにセレクタ５の設定端子５Ｃに設定信号を入力する。これによりセレクタ５の入力端子５Ａと出力端子５Ｑ間の接続が切れ、入力端子５Ｂと出力端子５Ｑ間が接続される。次に、

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000351

図面の簡単な説明

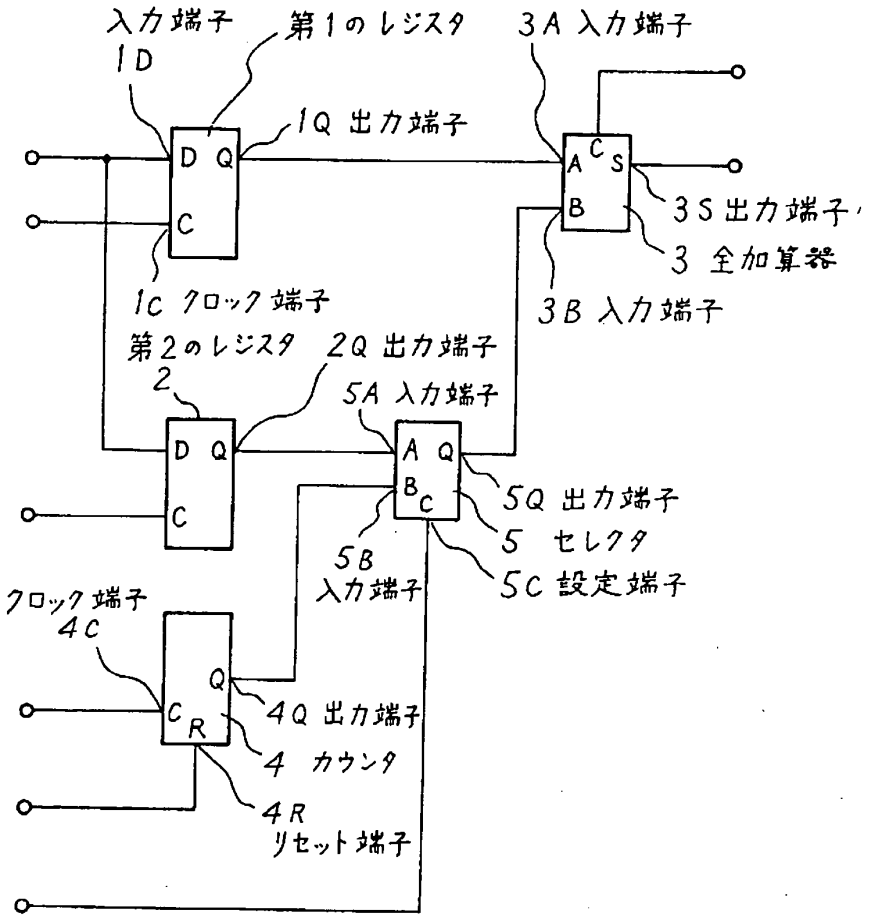
第１図は本考案の一実施例の回路図、第２図は従来の加算回路の回路図である。

１……第１のレジスタ、１Ｃ……クロック端子、１Ｄ……入力端子、１Ｑ……出力端子、２……第２のレジスタ、２Ｑ……出力端子、３……全加算器、３Ａ，３Ｂ……入力端子、３Ｓ……出力端子、４……カウンタ、４Ｃ……クロック端子、４Ｑ……出力端子、４Ｒ……リセット端子、５……セレクタ、５Ａ，５Ｂ……入力端子、５Ｃ……設定端子、５Ｑ……出力端子。

代理人　弁理士　　内　原　　晋

485

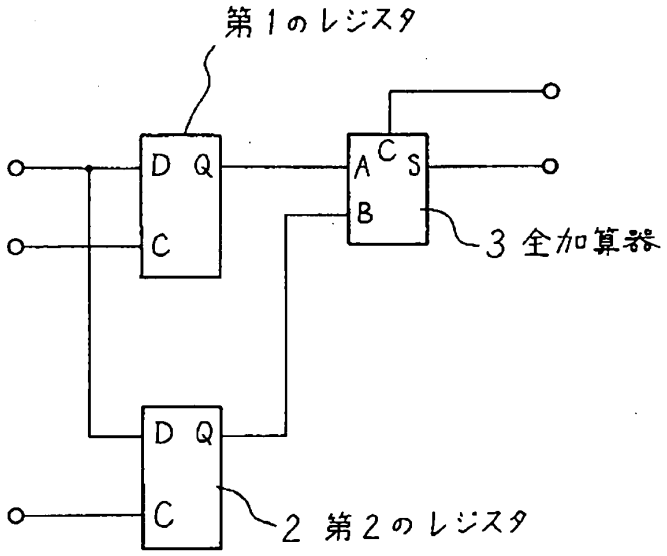
Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000352



第1図

代理人 弁理士 内原 晋

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000353



第 2 図

487

代理人 弁理士 内 原 晋

実開2-6339

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000354

Espacenet

Bibliographic data: JPH026339 (U) — 1990-01-17

No title available

Inventor(s):

Applicant(s):

Classification: **- international:** ***G06F11/22; G06F7/499; G06F7/50;*** (IPC1-7): G06F11/22; G06F7/50

- cooperative:

Application number: JP19880083628U 19880623

Priority number (s): JP19880083628U 19880623

Abstract not available for JPH026339 (U)

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000355

H06-026339U

BIBLIO: NOT AVAILABLE

CLAIMS

[Claims]

[Claim 1]Holding structure of an indicator providing an extension which both interposes that it is characterized by comprising the following between the aforementioned indicator and a substrate.

A push button slide hole which adjoined a display window drilled in a case surface, and this display window, and was drilled.

A push button slidably supported by this push button slide hole.

A rubber sheet which is arranged in a case and has a switch corresponding to an indicator corresponding to the aforementioned display window, and the aforementioned push button.

A substrate which has a current carrying part which is laminated on this rubber sheet and closed by the switch of a rubber sheet.

An engagement piece which it consists of a connector which is pinched by this substrate and the aforementioned indicator and conducts these both electrically, and a partition wall which divides the aforementioned push button slide hole into a case inner surface is set up, and engages with the aforementioned rubber sheet in four corners of this partition wall.

DETAILED DESCRIPTION

[Detailed explanation of the device]

[0001]

[Industrial Application]

This design is related with the holding structure of the indicator which provides to dress type telephone etc. and displays **** duration of call, a partner point telephone number, etc.

[0002]

[Description of the Prior Art]

Generally, a display window is drilled by the lower case which constitutes one side of a telephone set case, and the holding structure of this kind of indicator carries out fitting of the transparent lens member to this display window, and places the flat state indicator which becomes a lens member from LCD etc. from the lower case inside. The substrate which mounted the speaking circuit is mounted in a lower case, and the interconnector which electrically connects this substrate and the aforementioned indicator is arranged. This interconnector is, in order to suppress an indicator stably to a lens member. Couple preparation is carried out to the both ends of an indicator, and it interposes between an indicator and a substrate, and by attaching a substrate to a lower case, via an interconnector, as an indicator is pinched, it is held by the substrate and the lens member.

[0003]

[Problem(s) to be Solved by the Device]

Thus, in the holding structure of the conventional indicator, in order to couple need the interconnector for electrically connecting, while the number of parts increased, the interconnector fell during the assembly and there was a problem that an assembly became complicated. Then, in order to improve assembly operation, the method of considering it as one interconnector, instead interposing a spacer was also adopted, but the number of parts did not still become fewer, but there was a defect of being connected with cost increase.

[0004]

Therefore, this design is made in view of a conventional problem or defect which was described above, and an assembly is easy for the purpose, and there is in providing the holding structure of the indicator which reduced the number of parts.

[0005]

[Means for solving problem]

In order to achieve this object, the holding structure of the indicator concerning this design, The push button slide hole which adjoined the display window drilled in the case surface, and this display window, and was drilled, The push button slidably supported by this push button slide hole and the rubber sheet which is arranged in a case and has a switch corresponding to the indicator corresponding to the aforementioned display window, and the aforementioned push button, The

substrate which has a current carrying part which is laminated on this rubber sheet and closed by the switch of a rubber sheet, It consists of a connector which is pinched by this substrate and the aforementioned indicator and conducts these both electrically, and the partition wall which divides the aforementioned push button slide hole into a case inner surface is set up, and while providing the engagement piece which engages with the aforementioned rubber sheet in four corners of this partition wall, the extension which interposes between the aforementioned indicator and a substrate is provided.

[0006]

[Function]

While a rubber sheet is positioned to a partition wall by placing a rubber sheet on a partition wall and making four corners of a partition wall carry out engagement of the engagement piece according to this design, the extension of a rubber sheet interposes between an indicator and a substrate.

[0007]

[Working example]Hereinafter, one working example of this design is described based on the figures. The outline view of the cordless telephone which adopted the holding structure of the indicator which requires Fig.1 for this design, and Fig.2 are the same, an exploded perspective view and Fig.3 are the same, and it is an essential part sectional side elevation.

In these figures, the housing of the dress type cordless telephone shown with the code 1 comprises the lower case 2 and the upper case 50, the battery charger which is not illustrated is stored by the lower part of the back face of the upper case 50, the battery lid 51 is put on it, and the antenna 52 is implanted in the head.

[0008]

As the lower case 2 is shown in Fig.2, it is formed in saucerlike and engagement piece 2b projected up to the point is integrally formed. The ring part 3b with low height is set up by the tip side bottom section of the lower case 2 in the ring part 3a, the ring part 3a, and a concentric circular small diameter, and a plurality of stomata 3c are drilled in the bottom section in the ring part 3b. The three studs 4a, 4b, and 4c for attaching to the bottom section of the lower case 2 the telephone call substrate 35 mentioned below are set up. The display window 6 of approximately rectangular shape is drilled in the bottom section of the lower case 2 which adjoined the ring part 3a so that a bottom section may be crossed. The vertical wall 7 is set up by the end rim 6a on the ring part 3a side of the display window 6. The two slots 7a are provided by the vertical wall 7, and the rib 7b is integrally formed. A plurality of projections 8 are provided along with the longitudinal direction of the display window 6 by the end rim 6b of another side.

[0009]

From the display window 6, the plane view slot-like hole 9a, the circular hole 9b, and the hole 9c of

rectangular shape are arranged by lattice shape, and are made and drilled in the bottom section which goes to the rear end part of the lower case 2. The partition wall 10 which divides each of these holes 9a, 9b, and 9c is set up by lattice shape from the bottom section of the lower case 2. The ring part 11b with low height is set up by the back end side bottom section of the lower case 2 in the ring part 11a, the ring part 11a, and a concentric circular small diameter, and a plurality of stomata 11c are drilled in the bottom section in the ring part 11b. Four hooks 13 are set up by the opening end surface 2a of the lower case 2.

[0010]

15 is a tarpaulin which consists of an elastic member with the laminated whole, and the hole 16a of the aforementioned display window 6 and the shape of isomorphism is formed in the central part of the base 16. The three tongue-shaped pieces 17 bent vertically up are provided by one side part of the base 16.

The bend part 17a bent horizontally is formed at a tip.

The height which removed the thickness of the bend part 17a from height [of this bend part 17a] T is formed identically to the height from the end rim 6a of the aforementioned rib 7b. Between the tongue-shaped pieces 17, when the base 16 of the tarpaulin 15 is placed on the end rim 6a of the aforementioned display window 6, the slot 7a and the slot 18 where width and a position are the same are provided. The bend piece 19 bent vertically up is provided by side part of another side of the base 16.

Multiple cavities 19a which fit into the aforementioned projection 8 are formed in a folded part of the bend piece 19.

[0011]

21, the whole is formed identically [an outside diameter size] to the aforementioned display window 6 with the lens which consists of a transparent member. The flange 21a by which the outside diameter size was formed identically to the base 16 of the aforementioned tarpaulin 15 in the peripheral surface upper part of the lens 21 is provided. The step 21b which has the same level difference D as height T from the base 16 of the aforementioned bend part 17a is provided by the both sides part of the flange 21a. The projection 22 of the shape of an L character which engages with the slot 7a of the aforementioned vertical wall 7 is provided by one step 21b. The pair of projection 23 is provided by the up-and-down side part of the lens 21, respectively.

[0012]

25 is LCD as a liquid crystal display, and the step 25a by which the electrical continuity part was formed at the tip is provided. 26 is an interconnector which electrically connects LCD25 and the telephone call substrate 35 mentioned below. 28 and 29 are a dial button and an function button, respectively, they are fitted in the aforementioned hole 9b, and 9a and 9c, and a tip exposes them

from the lower case 2 to case outside. 30 is the rubber sheet in which the whole was formed with rubber, and the switch part 31 which has flexibility is arranged corresponding to the dial button 28 and the function button 29.

The current carrying part 31a is provided by the top end surface of the switch part 31.

The outside dimension of the rubber sheet 30 is formed in mist or size from the aforementioned whole partition wall 10 outside, and, as for the abbreviated L character-like engagement piece 33, the section which carried out formed protruding to lower end four corners engages with the four corners of the partition wall 10. The extension 34 which has the same outside as the portion except the step 25a of LCD25 is formed in the left side end of the rubber sheet 30.

[0013]

35 is mainly the substrate for speaking circuits which mounted speaking circuit parts.

An outside dimension is formed substantially identically to a bottom section of the lower case 2.

The three holes 38a, 38b, and 38c provided to the substrate 35 are mounting holes for screwing the substrate 35 to the studs 4a, 4b, and 4c of the aforementioned lower case 2. The receiver 40 is mounted in the lower surface tip side of the substrate 35, and the water seal 40a is stuck on the receiver's 40 lower surface.

It is fitted in in the aforementioned ring part 3a via the cushion 41.

The microphone 42 with which the water seal 42a was stuck on a lower surface is mounted in the lower surface back end side of the first substrate 35.

It is fitted in in the ring part 11a via the cushion 43.

[0014]

In the above composition, an assembly method is described next.

Fitting of the cavity 19a of the bend piece 19 of the tarpaulin 15 is carried out to the projection 8 of the end rim 6b of the display window 6, and it positions, and places the base 16 of the tarpaulin 15 on the end rims 6a and 6b of the display window 6 of the lower case 2. At this time, the bend part 17a of the tongue-shaped piece 17 of the tarpaulin 15 is placed on the rib 7b, and the hole 16a agrees in the display window 6, and is placed at the slot 18 fang furrow 7a. Next, fitting of the lens 21 is carried out to the display window 6 from the hole 16a of the tarpaulin 15. The flange 21a of the lens 21 which fitted in pinches the base 16 of the tarpaulin 15 with the end rims 6a and 6b. The projection 22 of the lens 21 fits into the slot 18 of the tarpaulin 15, and the slot 7a of the vertical wall 7, and the lens 21 and the tarpaulin 15 are attached to the lower case 2. At this time, the bend part 17a of the tarpaulin 15 is pinched by the step 21b and the rib 7b of the lens 21.

[0015]

LCD25 is placed on the upper surface of the base 21a of the lens 21. LCD25 placed is positioned by the lens 21 by the projections 22 and 23. The interconnector 26 is placed on the step 25a of LCD25.

The dial button 28 and the function button 29 are fitted in the holes 9a, 9b, and 9c of the lower case 2. The four corners of the partition wall 10 are made to carry out engagement of the engagement piece 33 of the rubber sheet 30, and the rubber sheet 30 is positioned and placed on the partition wall 10. At this time, the extension 34 of the rubber sheet 30 is placed on LCD25. The cushions 41 and 43 are placed on the ring parts 3b and 11b of the lower case 2, and as the receiver 40 and the loudspeaker 42 are made to insert in the ring part 3a and 4a, the first substrate 35 is placed on the rubber sheet 30. The screws 45a, 45b, and 45c are inserted in the mounting holes 38a, 38b, and 38c, and it binds tight to the studs 4a, 4b, and 4c of the lower case 2, and attaches the substrate 35 to the lower case 2.

[0016]

Since the engagement piece 33 which engages with the four corners of the partition wall 10 is provided to the rubber sheet 30, the rubber sheet 30 does not deviate to the partition wall 10, and positioning is performed reliably. Since the extension 34 integrally provided to the rubber sheet 30 is placed at the upper surface of LCD25 at this time, space between LCD25 and the substrate 35 is filled and LCD25 was pinched and held with the substrate 35 and the lens 21, Like before, the separate member for fixing is not provided, or one pair of interconnector is not provided to both ends, and, moreover, an assembly becomes easy. The radio unit etc. which are not illustrated are built into the lower case 2, and the lower case 2 and the upper case 50 are made to unite with it by making the engagement protrusion and the engaging groove which the upper case 50 does not illustrate carry out engagement of engagement piece 2b and the hook 13.

[0017]

[Effect of the Device]

The push button slide hole which according to this design adjoined the display window drilled in the case surface, and this display window, and was drilled as described above, The push button slidably supported by this push button slide hole and the rubber sheet which is arranged in a case and has a switch corresponding to the indicator corresponding to the aforementioned display window, and the aforementioned push button, The substrate which has a current carrying part which is laminated on this rubber sheet and closed by the switch of a rubber sheet, While providing the engagement piece which it consists of a connector which is pinched by this substrate and the aforementioned indicator and conducts these both electrically, and the partition wall which divides the aforementioned push button slide hole into a case inner surface is set up, and engages with the aforementioned rubber sheet in four corners of this partition wall, Since the extension which interposes between the aforementioned indicator and a substrate was provided, while a rubber sheet is positioned to a partition wall by placing a rubber sheet on a partition wall and making four corners of a partition wall carry out engagement of the engagement piece, Since an extension is pinched between a substrate and an indicator and it was made to carry out holding fixing by the

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000361

extension of a rubber sheet interposing between an indicator and a substrate, and attaching a substrate to a case, While an assembly is easy, and should just place a rubber sheet from the upper part of a partition wall and automation of an assembly is attained, Reduction of the number of parts can be aimed at.

(19)日本国特許庁（ＪＰ）　(12) **公開特許公報**（Ａ）　(11)特許出願公開番号
特開2000－156135
（P2000－156135A）
(43)公開日　平成12年６月６日(2000.6.6)

(51)Int.Cl.⁷	識別記号	ＦＩ		テーマコード（参考）
Ｈ０１Ｈ　13/70		Ｈ０１Ｈ　13/70	Ｃ	５Ｇ００６
3/12		3/12	Ｄ	
// Ｈ０１Ｈ　13/02		13/02	Ｂ	

審査請求　未請求　請求項の数７　ＯＬ　（全６頁）

(21)出願番号　特願平10－328671

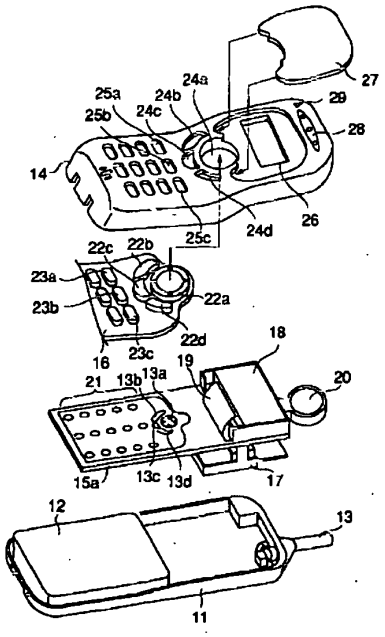
(22)出願日　平成10年11月18日(1998.11.18)

(71)出願人　000003595
株式会社ケンウッド
東京都渋谷区道玄坂１丁目14番６号
(72)発明者　樋口　俊洋
東京都渋谷区道玄坂１丁目14番６号　株式会社ケンウッド内
(74)代理人　100086368
弁理士　萩原　誠

Ｆターム(参考)　5G006 AZ01 CD03 DB07 JA01 LC02

(54)【発明の名称】　キートップ構造

(57)【要約】
【課題】　外部ケース部分への方向指標の印刷の不要化、製造コストの削減化、視覚的、触覚的指向の可能化、ブラインドタッチの容易化を期し、デザイン的に優れたキートップ構造を提供する。
【解決手段】　メインボード１５の上にパターン化された方向性機能用接点部１３ａを配置し、方向性機能用接点部１３ａに対向してパネルアッセンブリ１４に形成したキー貫通用孔２４ａにキートップ１６の上面に一体的に形成した方向キー２２ａを貫通して、パネルアッセンブリ１４の上面にわずかに突出させ、方向性機能用接点部１３ａに対応し、触覚的かつ、視覚的に方向を示すために、方向キー２２ａの上面からわずかに突出した三角形状の方向指標２２ａ２～２２ａ５を一体的に、方向キー２２ａの上面に上下左右方向に４箇所に配置する。



Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000363

【特許請求の範囲】
【請求項１】　電子機器の回路基板に方向性機能を呈するようにパターン化された方向性機能用接点部に対向して形成された貫通孔を有し、下部カバーとともに前記回路基板を収納するパネルアッセンブリと、
前記方向性機能用接点部に対応し、かつ前記貫通孔を貫通して前記パネルアッセンブリの上面に露出され、触覚的かつ視覚的に方向を示すための方向指標を一体的に形成してこの方向指標を押圧することにより、前記方向性機能用接点部と接触させる弾性と導電性を有する方向キーを備えて前記メインボードと前記パネルアッセンブリ間に配置されたキートップと、からなることを特徴とするキートップ構造。
【請求項２】　触覚的かつ視覚的に方向を示すための方向指標を多方向キーの上面から突出させて一体に形成したことを特徴とするキートップ構造。
【請求項３】　前記方向キーは、少なくとも１つあるいは上下左右の方向を個別に指示するように４個の方向指標あるいは多方向指標を有することを特徴とする請求項２に記載のキートップ構造。
【請求項４】　前記方向キーは、導電性ゴムで形成されることを特徴とする請求項２に記載のキートップ構造。
【請求項５】　前記方向指標は、前記方向キーの上面から突出して触覚的に方向示すために前記方向キーの上面から突出されることを特徴とする請求項１に記載のキートップ構造。
【請求項６】　前記方向指標は、三角形状であることを特徴とする請求項１又は請求項２に記載のキートップ構造。
【請求項７】　前記電子機器は、携帯電話機であることを特徴とする請求項１又は請求項２に記載のキートップ構造。
【発明の詳細な説明】
【０００１】
【発明の属する技術分野】本発明は、たとえば、携帯電話機などの電子機器の上部ケースとなるパネルアッセンブリに配置され、たとえば三角形状（△形状）、かつ突状のような視覚的および触覚的に方向を指示する形状を有し、パネルアッセンブリの表面から突出するようにした方向キーを備えたキートップ構造に関する。
【０００２】
【従来の技術】近時、電子機器の急速な普及と技術的進歩にともない、電子機器の小型化と多機能化が進み、その結果、電子機器の機能操作を行う操作部でも小型化されたスイッチなどの操作手段の小形と、スイッチそれ自体あるいは複数スイッチの組み合わせ操作により多機能化が行われている。このような電子機器の一例として、携帯電話機も新機種の出現ごとに小型軽量化と多機能化が施されている。この多機能化により、操作用のスイッチとして用いるボタンが配置されたパネルアッセンブリにおいて、ユーザが誤操作防止と操作の容易性のために、各ボタンの上面あるいはボタンの近接位置にスイッチ名や機能名が印刷されている。
【０００３】図５はＰＨＳに適用する従来の携帯電話機Ａの外観斜視図である。図５に示すように、携帯電話機Ａの下部カバー１と上部カバーとなるパネルアッセンブリ２との間には図示していないメインボード（回路基板）が収納されている。このパネルアッセンブリ２の上面には、ダイヤルボタン３ａや、電源／終了ボタン３ｂなどの他に所定のボタンが配置されているとともに、４方向キー３ｃなどが配置されている。これらのダイヤルボタン３ａや、電源／終了ボタン３ｂ、４方向キー３ｃなどは、弾性を有する透明な合成樹脂による通称キートップと称されるボード上に一体的に形成され、パネルアッセンブリ２に形成された貫通孔を通してパネルアッセンブリ２の上面に突出されている。
【０００４】このうち、４方向キー３ｃの部分は、図６に拡大斜視図として示されている。図６から明らかなように、４方向キー３ｃの周辺近傍に方向を表す三角形状の指標４ａ～４ｄがパネルアッセンブリ２の表面上に印刷されている。例えば、指標４ａは「選択（電話帳や選択の機能）」、指標４ｂは「ランキング（アップやランキング）」、指標４ｃは「Ｆ（機能やキーロック）」、指標４ｄは「ダウン（ダウンや着信履歴）」の操作をする際に用いられる。
【０００５】これらの指標４ａ～４ｄのうち、たとえば、指標４ａに対応する部位の４方向キー３ｃの上面を指で押圧することにより、携帯電話機Ａが電話帳／選択ボタンの機能を呈するようになる。また、たとえば、指標４ｄに対応する部位の４方向キー３ｃの上面を指で押圧すると、携帯電話機Ａがダウン／着信履歴の機能を呈することになる。
【０００６】また、図６から明らかなように、指標４ａ～４ｄに対応するように、４方向キー３ｃの上面に突起５ａ～５ｄを４方向キー３ｃと一体的に形成している。この突起５ａ～５ｄのうち、たとえば、図５の操作の場合と同様にして、指標４ａに対応する突起５ａを指で押圧操作すると、携帯電話機Ａが電話帳／選択ボタンの機能を呈するようになる。また、指標４ｄに対応する部位の４方向キー３ｃの上面を指で押圧すると、携帯電話機Ａがダウン／着信履歴の機能を呈することになる。
【０００７】
【発明が解決しようとする課題】しかしながら、このような従来のキートップ機構において、携帯電話機Ａ自体のサイズを小型化しようとすればするほど、このパネルアッセンブリ２の上面において４方向キー３ｃの周辺部に指標４ａ～４ｄを印刷することが難しく、印刷コストがかかることに加えて、形状の小さい４方向キー３ｃの使用頻度が多い時は、何度も４方向キー３ｃを使用しているうちに指が指標４ａ～４ｄに触れ、そのうちにこれ

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000364

らの指標４ａ～４ｄが磨耗あるいは剥離してしまう。したがって、視覚的に機能指示を行うこれらの指標４ａ～４ｄは指標機能が喪失されてしまうという課題がある。加えて、目の不自由な人が使用する場合に、指標４ａ～４ｄは単に印刷であることから指標としての機能を呈することができず、しかも突起５ａ～５ｄは方向性を示さない単なる突起であるから、突起５ａ～５ｄが何の機能をするのか判明し難いという課題もある。

【０００８】本発明は、上記従来の課題を解決するためになされたもので、パネルアッセンブリの印刷などが不要となり、製造コストの低減化が可能であるとともに、目の不自由な人が使用してもブラインドタッチの容易化による使いやすさを向上でき、かつデザイン上もすっきりとすることができるキートップ構造を提供することを目的とする。

【０００９】

【課題を解決するための手段】上記目的を達成するために、本発明のキートップ構造は、電子機器のメインボードに方向性機能を呈するようにパターン化された方向性機能用接点部に対向して形成された貫通孔を有し、下部カバーとともに上記メインボードを収納するパネルアッセンブリと、上記方向性機能用接点部に対応し、かつ上記貫通孔を貫通して上記パネルアッセンブリの上面に露出され、触覚的かつ視覚的に方向を示すための方向指標を一体的に形成してこの方向指標を押圧することにより上記方向性機能用接点部と接触させる弾性と導電性を有する方向キーを備えて上記メインボードと上記パネルアッセンブリ間に配置されたキートップと、からなることを特徴とする。

【００１０】

【発明の実施の形態】以下、本発明によるキートップ構造の実施の形態について図面に基づき説明する。図１は電子機器に適用する本発明のキートップ構造の第１の実施の形態を、携帯電話機に設けた場合を示す分解斜視図である。図１において、下部ケース１１の所定の位置には、電池１２が収納され、下部ケース１１の先端部には、アンテナ１３が下部ケース１１に固定されて取り付けられている。

【００１１】下部ケース１１と筐体あるいは上部ケースとなるパネルアッセンブリ１４との間に、メインボード（回路基板）１５上に重ねられてキートップ１６が収納されるようになっている。メインボード１５の下面側には、ＲＦモジュール１７が取り付けられている。ＲＦモジュールは携帯電話機の高周波部分となるもので、通信相手との通話を行うための電波の送受信処理を行う部分である。メインボード１５の上面側において、ＲＦモジュール１７に対応する部分には、ＬＣＤ（液晶）アッセンブリ１８が配置されている。ＬＣＤアッセンブリ１８は携帯電話機の各種情報の表示を行うディスプレイとなる。

【００１２】ＬＣＤアッセンブリ１８には、フレキシブルプリント基板１９の一端が電気的に接続され、このフレキシブル基板１９の他端側はＬＣＤアッセンブリ１８の裏面側に回り込み、図示しないコネクタに接続され、このコネクタを通して、図示しないＬＣＤドライバに接続されるようになっている。ＬＣＤアッセンブリ１８のフレキシブルプリント基板１９が接続されている側とは反対側にレシーバ用のスピーカ２０が取り付けられている。

【００１３】また、メインボード１５の上面には、方向性機能用接点部１３ａ、この方向性機能用接点部１３ａの周辺部位に配置された通話／キャッチボタン用接点部１３ｂ、Ｆ（機能）／キーロックボタン用接点部１３ｃ、パワー（電源）／終了ボタン用接点部１３ｄがそれぞれ配置されている。これらの方向性機能用接点部１３ａ、通話／キャッチボタン用接点１３ｂ、Ｆ（機能）／キーロックボタン用接点部１３ｃ、パワー（電源）／終了ボタン用接点部１３ｄはそれぞれの機能に対応するように、パターン化された配線が印刷されている。

【００１４】さらに、メインボード１５の上面には、ダイヤルボタン用などの複数の接点部２１が配置されている。接点部２１は「０」～「９」までのダイヤルボタン用の接点、「＊」、「＃」、「留守」、「カナ」「英ボタン」などの機能用の接点などが該当する。これらの接点部２１の各接点も、上記と同様の要領でそれぞれ機能を分担するための所定のパターン化された印刷配線が施されており、後述するボタンの押圧操作時にコード化された信号が発生するようになっている。

【００１５】上記メインボード１５の上面には、キートップ１６が重ねられるようになっている。このキートップ１６は弾性を有し、透明性の樹脂材などにより形成されている。キートップ１６の上面には、弾性と導電性を有し、上記方向性機能用接点部１３ａに対応する部位で、短円柱状の方向キー２２ａがこのキートップ１６と一体的に形成されている。方向キー２２ａに関しては後に詳述する。

【００１６】同様にして、キートップ１６の上面において、上記通話／キャッチボタン用接点部１３ｂに対応する部位に通話／キャッチボタン２２ｂが形成され、Ｆ（機能）／キーロックボタン用接点部１３ｃに対応する部位には、Ｆ（機能）／キーロックボタン２２ｃが形成され、さらに、パワー（電源）／終了ボタン用接点部１３ｄに対応する部位には、パワー（電源）／終了ボタン２２ｄがそれぞれ変形柱状に形成されている。また、上記接点部２１の各接点に対応して、短円柱状にダイヤルボタン２３ａ，２３ｂ，２３ｃ，…がキートップ１６の上面に一体的に形成されている。

【００１７】このようにトップキー１６の上面に一体的に形成された方向キー２２ａ、通話／キャッチボタン２２ｂ、Ｆ（機能）／キーロックボタン２２ｃ、パワー

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000365

（電源）／終了ボタン２２ｄ、ダイヤルボタン２３ａ，２３ｂ，２３ｃ，…がそれぞれパネルアッセンブリ１４に形成された貫通孔２４ａ～２４ｄ，２５ａ，２５ｂ，２５ｃ，…を貫通して、このパネルアッセンブリ１４の表面からわずかに突出されている。図２は、このようにして、パネルアッセンブリ１４の貫通孔２４ａ～２４ｄのそれぞれ方向キー２２ａ、通話／キャッチボタン２２ｂ、Ｆ（機能）／キーロックボタン２２ｃ、パワー（電源）／終了ボタン２２ｄが貫通されて、パネルアッセンブリ１４の表面から露出している状態を示す平面図である。

【００１８】なお、図１、図２に見られるパネルアッセンブリ１４において、上記貫通孔２４ａの近傍には、方形状の窓２６が形成されている。この窓２６に上記ＬＣＤアッセンブリ１８が嵌合されている。ＬＣＤアッセンブリ１８とその周辺を含む表面には、透明のフロントガラス２７がはめ込まれており、ＬＣＤアッセンブリ１８を外部ショックなどに対して保護している。また、パネルアッセンブリ１４の先端近傍には、複数の音孔２８が形成されている。この音孔２８の位置に対応して、上記スピーカ２０が配置されている。音孔２８に隣接して着信ランプ表示窓２９が取り付けられ、この表示窓２９に図示していない発光素子がメインボード１５上に取り付けられ、着信時に発光するようになっている。

【００１９】次に、第１の実施の形態の特徴をなす方向キー２２ａについてさらに詳細に説明する。図３はこの方向キー３を取り出して示す拡大斜視図，図４は拡大平面図である。図３、図４に示すように、方向キー２２ａの全体の形状は上述のように短円柱状に形成されている。この方向キー２２ａの上面において、周縁近傍はリング状にやや肉厚に形成した肉厚部２２ａ１を有し、この肉厚部２２ａ１上において、縦方向と横方向を「十字状」にクロスする４個所、すなわち、上下左右方向において、それぞれたとえば、三角形状（△状）の方向指標２２ａ２～２２ａ５が肉厚部２２ａ１の表面から突出するようにして肉厚部２２ａ１と一体的に形成されている。

【００２０】これにより、方向指標２２ａ２～２２ａ５は「△」形状により視覚的に方向を示すことに加えて、突出していることから、指先で触れた場合には、触覚的にも方向を示していることを感知することができる。方向指標２２ａ２は上方向を指示し、方向指標２２ａ３は左方向を指示し、方向指標２２ａ４は下方向を指示し、方向指標２２ａ５は右方向を指示している。したがって、目の不自由な人が使用して、指先を接触するだけで現在接触している指標がどの方向を指向しているか判断でき、その指向により機能も判断することができる。すなわちブラインドタッチを容易にすることができる。

【００２１】本発明の一実施の形態であるこれらの方向指標２２ａ２～２２ａ５のうち、方向指標２２ａ２に対応して、図４から明らかなように方向キー２２ａにはリダイヤルマーク２２ａ６が印刷され、方向指標２２ａ３に対応してＰメールマーク２２ａ７が方向キー２２ａに印刷され、方向指標２２ａ４に対応して着信履歴マーク２２ａ８が方向キー２２ａに印刷され、方向指標２２ａ５に対応して電話帳マーク２２ａ９が方向キー２２ａに印刷されている。

【００２２】方向指標２２ａ５を押すことにより電話帳メニューが選択され、検索する際に向指標２２ａ２や２２ａ５を利用して、電話帳のメニューを呼び出し、格納されている電話番号等の情報を検索することになる。さらに、方向指標２２ａ３を押すことにより、ｐメール（文字メッセージ送受信）の機能が選択されることになる。

【００２３】なお、送信時に所定のダイヤルボタン２３ａ～２３ｃ…を適宜選択してダイヤルして、通話／キャッチボタン２２ｂを押すことにより送信可能となり、通信相手からの着信時にも、この通話／キャッチボタン２２ｂを押せばよい。通話の終了時、あるいは、電源のオフ時には、パワー（電源）／終了用ボタン２２ｄを押す操作を行えばよい。

【００２４】次に、本発明による他の実施の形態について説明する。上記第１の実施の形態では、方向キー２２ａとして上下、左右の４方向に方向指標２２ａ２～２２ａ５が設けられている場合について例示したが、本発明では４方向に限定されるものではなく、任意の箇所に視覚的と触覚的に方向を示す１個の方向指標を設けてもよい。また、４個以下、あるいは４個以上でもよく、少なくとも１個以上の視覚的と触覚的に方向を示す方向指標を設けるようにすればよい。

【００２５】さらに、本発明によるキートップは携帯電話機に適用した場合について例示したが、適用例は携帯電話機に限定されるものではなく、方向性の機能を選択するような機能を備えた小型電子機器に広く適用可能であることは自明である。

【００２６】

【発明の効果】以上のように、本発明によれば、視覚的かつ触覚的に方向性を示す方向指標を少なくとも１個方向キーの上面に設けるようにしたので、従来のように小型化に伴う方向指標印刷の困難性を解消すると共に筐体など外部ケース部分に方向指標の印刷が不要となり、したがって、印刷コストの削減化に伴う製造コストの削減が可能になるとともに、印刷が不要なことからデザイン的にもすっきりとまとめることができる。また、方向指標が視覚的かつ触覚的に方向を示すようにしていることから、目の不自由な人の使用時でも、方向指標に対する機能の判断ができやすく、いわゆるブラインドタッチが容易になる。

【図面の簡単な説明】

【図１】本発明によるキートップ構造の第１の実施の形

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000366

態を適用した携帯電話機の構成を示す分解斜視図である。

【図２】図１に示す携帯電話機に適用した状態を示す本発明によるキートップ構造の第１の実施の形態の平面図である。

【図３】本発明によるキートップ構造の第１の実施の形態の拡大斜視図である。

【図４】本発明によるキートップ構造の第１の実施の形態の拡大平面図である。

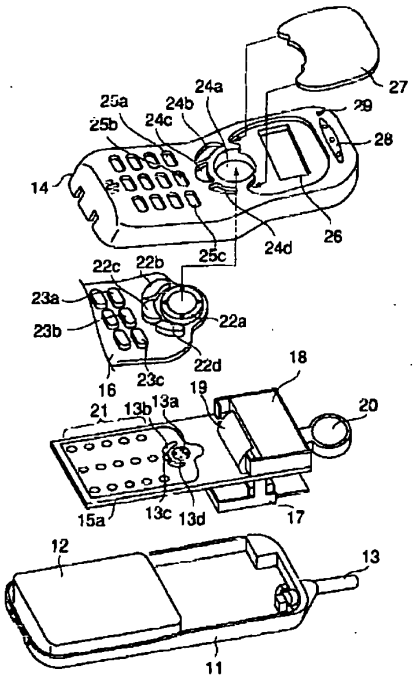
【図５】従来のキートップ構造を携帯電話機に適用した携帯電話機の斜視図である。

【図６】従来のキートップ構造の拡大斜視図である。

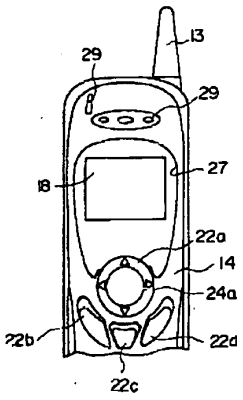
【符号の説明】

１１……下部ケース
１３ａ……方向性機能用接点部
１３ｂ……通話／キャッチボタン用接点部
１３ｃ……Ｆ（機能）／キーロックボタン用接点部
１３ｄ……パワー（電源）／終了ボタン用接点部
１４……パネルアッセンブリ
１５……メインボード
１６……キートップ
２１……接点部
２２ａ……方向キー
２２ａ１……肉厚部
２２ａ２～２２ａ５……方向指標
２２ａ６……アップマーク
２２ａ７……Ｐメールマーク
２２ａ８……ダウンマーク
２２ａ９……電話帳マーク
２２ｂ……通話／キャッチボタン
２２ｃ……Ｆ（機能）／キーロックボタン
２２ｄ……パワー（電源）／終了ボタン用キー
２３ａ～２３……ダイヤルボタン
２４ａ～２４ｄ，２５１，２５ｂ，２５ｃ……貫通孔

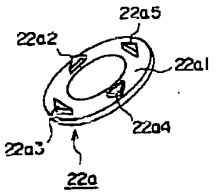
【図１】



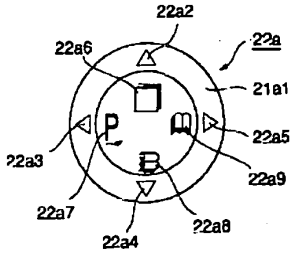
【図２】



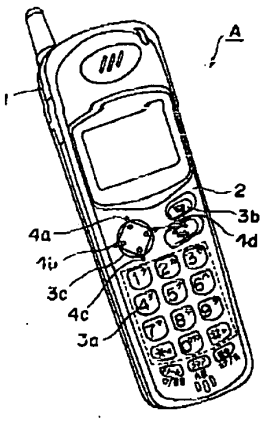
【図３】



【図４】

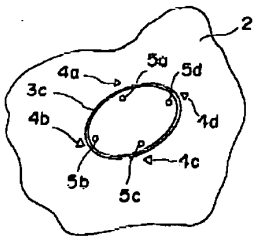


【図５】



Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000367

【図6】



Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000368

2000-156135

(11)Publication number 2000-156135
(43)Date of publication of application 06.06.2000
(51)Int.Cl.
H01H 13/70
H01H 3/12
// H01H 13/02

(21)Application number 10-328671
(22)Date of filing 18.11.1998
(71)Applicant KENWOOD CORP
(72)Inventor HIGUCHI TOSHIHIRO
(54)KEY TOP STRUCTURE
(57)Abstract
PROBLEM TO BE SOLVED: To provide a key top structure having superior design, while eliminating the printing of direction index in an external case part, reducing the manufacturing cost, enabling visual and tactile index, and facilitating blind touch.
SOLUTION: A directional function contact 13a formed into a pattern is arranged on a main board, and a direction key 22a integrally formed with a top surface of a key top 16 is made to pass through a key through-hole 24a formed in a panel assembly 14 facing opposite to the directional function contact 13a, and projected slightely from the top surface of the panel assembly 14. Triangle direction indexes (22a2-22a5) projected slightly from the top surface of the direction key 22a are arranged integrally on the top surface of the direction key 22a at four positions in the upper, lower, right and left directions corresponding to the directional function contact 13a so as to visually and tactilely show the direction.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000369

CLAIMS

[Claim(s)]

[Claim 1]Keytop structure comprising:

A panel assembly which has the through-hole which opposed to a contact surface for a directivity function patternized so that a directivity function might be presented to a circuit board of an electronic device, and was formed, and stores the aforementioned circuit board with a lower cover.

By corresponding to the aforementioned contact surface for a directivity function, and penetrating the aforementioned through-hole, being exposed to the upper surface of the aforementioned panel assembly, forming integrally direction indexes for a direction to be shown tactile and visually, and pressing these direction indexes, A keytop which was provided with an arrow key which has elasticity contacted to the aforementioned contact surface for a directivity function, and conductivity, and is arranged between the aforementioned mainboard and the aforementioned panel assembly.

[Claim 2]Keytop structure having made direction indexes for a direction to be shown tactile and visually project from the upper surface of a multiple-directions key, and forming them integrally.

[Claim 3]The keytop structure according to claim 2, wherein the aforementioned arrow key has four direction indexes or a multiple-directions index so that the direction of at least one or four directions may be instructed individually.

[Claim 4]The keytop structure according to claim 2, wherein the aforementioned arrow key is formed by conductive rubber.

[Claim 5]The keytop structure according to claim 1, wherein it projects the aforementioned direction indexes from the upper surface of the aforementioned arrow key and they are projected from the upper surface of the aforementioned arrow key tactile at a direction **** sake.

[Claim 6]The keytop structure according to claim 1 or 2, wherein the aforementioned direction indexes are triangular shape.

[Claim 7]The keytop structure according to claim 1 or 2, wherein the aforementioned electronic device is a cellular phone.

DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention]The present invention is arranged at the panel assembly used as the upper housing of electronic devices, such as a cellular phone, for example, For example, it has form like triangular shape (** form) and the shape of ** which instructs a direction visually and tactile, and is related with a keytop structure provided with the arrow key projected from the surface of a panel assembly.

[0002]

[Description of the Prior Art]The small size of operation means, such as a switch miniaturized also by the operating part which a miniaturization and multi-functionalization of an electronic device proceed in connection with rapid spread and technical progress of an electronic device recently, and, as a result, performs functional operation of an electronic device, Multi-functionalization is performed by combination operation of switch itself or two or more switches. As for the cellular phone, as an example of such an electronic device, size and weight reduction and multi-functionalization are given for every appearance of a new model. In the panel assembly by which the button used as a switch for operation is arranged, the switch identifier and the functional name are printed by this multi-functionalization in the upper surface of each button, or the adjacent place of the button for the ease of a user's prevention from an operation mistake and operation.

[0003]Fig.5 is an appearance perspective view of the conventional cellular phone A applied to PHS. As shown in Fig.5, the mainboard (circuit board) which is not illustrated is stored between the panel assemblies 2 used as the lower cover 1 of the cellular phone A, and a surface cover. While the predetermined button is arranged besides the dial button 3a, the power supply/end button 3b, etc., the 4 arrow key 3c etc. are arranged at the upper surface of this panel assembly 2. These dial buttons 3a, a power supply / end button 3b and the 4 arrow key 3c, etc. are projected by the upper surface of the panel assembly 2 through the through-hole which was integrally formed on the board called the common name keytop by the transparent synthetic resin which has elasticity, and was formed in the panel assembly 2.

[0004]Among these, the portion of the 4 arrow key 3c is shown in Fig.6 as an expansion perspective view. The indices 4a-4d of triangular shape of expressing a direction near the periphery of the 4 arrow key 3c are printed on the surface of the panel assembly 2 so that clearly from Fig.6. For example, the index 4a is used, when "selection (function of a telephone directory or selection)" and the index 4b carry out "ranking (a rise and ranking)", the index 4c carries out "F (a function and a keylock)" and the index 4d operates "a down (a down and a record of incoming calls)."

[0005]The cellular phone A comes to present the function of a telephone directory/selection button

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000371

by pressing the upper surface of the 4 arrow keys 3c of the part corresponding to the index 4a with a finger among these indices 4a-4d. For example, when the upper surface of the 4 arrow keys 3c of the part corresponding to the index 4d is pressed with a finger, the cellular phone A will present the function of a down/record of incoming calls.

[0006]The projections 5a-5d are integrally formed in the upper surface of the 4 arrow key 3c with the 4 arrow keys 3c so that it may correspond to the indices 4a-4d, so that clearly from Fig.6. Like the case of operation of Fig.5 among these projections 5a-5d, if pressing operation of the projection 5a corresponding to the index 4a is carried out with a finger, the cellular phone A will come to present the function of a telephone directory/selection button. When the upper surface of the 4 arrow keys 3c of the part corresponding to the index 4d is pressed with a finger, the cellular phone A will present the function of a down/record of incoming calls.

[0007]

[Problem to be solved by the invention]However, in such a conventional keytop mechanism, the more it is going to miniaturize the size of the cellular phone A itself, the more, It is difficult to print the indices 4a-4d to the periphery of the 4 arrow keys 3c in the upper surface of this panel assembly 2, printing cost starts -- in addition, when there is much frequency in use of the 4 arrow keys 3c with small form, while using the 4 arrow keys 3c repeatedly, a finger touches the indices 4a-4d, it will be alike before long, and these indices 4a-4d will wear out or exfoliate. Therefore, these indices 4a-4d that perform function instruction visually have the problem that it will be lost by the index function. In addition, when a visually handicapped person uses it, since the indices 4a-4d are only printings, they cannot present the function as an index, but since the projections 5a-5d are mere projections which do not show directivity, moreover, the problem that it is hard to become clear about what function is carried out also has the projections 5a-5d.

[0008]The the object of this invention is as follows.

It was made in order to solve the above-mentioned conventional problem, and printing of a panel assembly, etc. become unnecessary, and reduction of a manufacturing cost be possible.

Even if a visually handicapped person uses it, provide keytop structure where it can improve and a design top can also feel facility by facilitating of blind touch refreshed.

[0009]

[Means for solving problem]To achieve the above objects, the keytop structure of the present invention, The panel assembly which has the through-hole which opposed to the contact surface for a directivity function patternized so that a directivity function might be presented to the mainboard of an electronic device, and was formed, and stores the above-mentioned mainboard with a lower cover, Correspond to the above-mentioned contact surface for a directivity function, and penetrate the above-mentioned through-hole, and it is exposed to the upper surface of the

above-mentioned panel assembly, The keytop which was provided with the arrow key which has the elasticity contacted to the above-mentioned contact surface for a directivity function by forming integrally direction indexes for a direction to be shown tactile and visually, and pressing these direction indexes, and conductivity, and is arranged between the above-mentioned mainboard and the above-mentioned panel assembly, ** and others -- it is characterized by things.

[0010]

[Mode for carrying out the invention]Hereinafter, based on Drawings, it describes about the embodiment of the keytop structure by the present invention. Fig.1 is an exploded perspective view showing the case where the first embodiment of the keytop structure of the present invention applied to an electronic device is provided to a cellular phone. In Fig.1, the cell 12 is stored, and the antenna 13 is fixed to the lower casing 11 by the position of the lower casing 11, and is attached to it at the point of the lower casing 11.

[0011]Between the panel assemblies 14 used as the lower casing 11, a housing, or upper housing, it piles up on the mainboard (circuit board) 15, and the keytop 16 is stored. RF module 17 is attached to the lower surface side of the mainboard 15. An RF module is a portion which performs transmitting and receiving processing of the electric wave for becoming a high frequency portion of a cellular phone and performing the telephone call with a communications partner. In the upper surface side of the mainboard 15, the LCD (liquid crystal) assembly 18 is arranged at the portion corresponding to RF module 17. The LCD assembly 18 serves as a display which displays the variety of information of a cellular phone.

[0012]The end of the flexible printed circuit board 19 is electrically connected to the LCD assembly 18, It is connected to a surroundings lump and the connector which is not illustrated at the back surface side of the LCD assembly 18, and the other end side of this flexible base 19 is connected to the LCD driver which does not let pass and illustrate this connector. The loudspeaker 20 for receivers is attached to the opposite side with the side to which the flexible printed circuit board 19 of the LCD assembly 18 is connected.

[0013]The telephone call / contact surface 13b for catch buttons arranged at the upper surface of the mainboard 15 to the periphery part of the contact surface 13a for a directivity function, and this contact surface 13a for a directivity function, F (function) / contact surface 13c for keylock buttons, and power (power supply) / contact surface for end buttons 13d are arranged, respectively. The patternized wiring is printed so that these contact surfaces 13a for a directivity function, a telephone call / contact for catch buttons 13b, F (function) / contact surface for keylock buttons 13c, and power (power supply) / contact surface for end buttons 13d may correspond to each function.

[0014]A plurality of contact surfaces 21 for dial buttons etc. are arranged at the upper surface of the mainboard 15. The contact for a function of the contact for the dial buttons to "0" - "9" in the contact surface 21, "*", "#", "absence", "kana", an "English button", etc., etc. correspond.

Patternized printed wiring predetermined for the same point as the above to share a function, respectively is given, and the signal coded at the time of the pressing operation of the button mentioned below also generates each contact of these contact surfaces 21.

[0015]The keytop 16 puts on the upper surface of the above-mentioned mainboard 15. This keytop 16 has elasticity and is formed by the resin material of transparency, etc. It has elasticity and conductivity on the upper surface of the keytop 16, and the short cylinder-like arrow key 22a is formed in it as integrally as this keytop 16 by the part corresponding to the above-mentioned contact surface 13a for a directivity function. The arrow key 22a is explained in full detail behind.

[0016]Similarly in the upper surface of the keytop 16, a telephone call / catch button 22b is formed in the part corresponding to above-mentioned telephone call / contact surface 13b for catch buttons, F (function) / keylock button 22c is formed in the part corresponding to F (function) / contact surface 13c for keylock buttons, and power (power supply) / end button 22d is further formed in the part corresponding to power (power supply) / contact surface 13d for end buttons in the shape of a deformation pillar, respectively. Corresponding to each contact of the above-mentioned contact surface 21, the dial buttons 23a, 23b, and 23c and -- are integrally formed in the upper surface of the keytop 16 in the shape of a short cylinder.

[0017]Thus, the arrow key 22a integrally formed in the upper surface of the top key 16, A telephone call / catch button 22b, the F (function) / keylock button 22c, Power (power supply) / end button 22d, the dial buttons 23a, 23b, and 23c, and -- penetrate the through-holes 24a-24d and 25a, 25b, and 25c and -- which were formed in the panel assembly 14, respectively, and are slightly projected from the surface of this panel assembly 14. Fig.2 is carried out in this way and it is its through-holes [of the panel assembly 14 / 24a-24d] ****** arrow key 22a. It is a plan view showing the state where the telephone call / catch button 22b, the F (function) / keylock button 22c, and the power (power supply)/end button 22d penetrated, and it has exposed from the surface of the panel assembly 14.

[0018]In the panel assembly 14 looked at by Fig.1 and Fig.2, the window 26 of rectangular shape is formed near the above-mentioned through-hole 24a. Fitting of the above-mentioned LCD assembly 18 is carried out to this window 26. The transparent windshield 27 is inserted in the surface including the LCD assembly 18 and its periphery, and the LCD assembly 18 is protected against an external shock etc. A plurality of sound holes 28 are formed in the nearly tip of the panel assembly 14. The above-mentioned loudspeaker 20 is arranged corresponding to the position of this sound hole 28. The sound hole 28 is adjoined, the incoming lamp display window 29 is attached, and the light emitting device which is not illustrated to this display window 29 is attached on the mainboard 15, and emits light at the time of mail arrival.

[0019]Next, it describes still in detail about the arrow key 22a which makes the characteristics of a first embodiment. Fig.3 is an expansion perspective view taking out and showing this arrow key 3,

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000374

and Fig.4 is an enlarged plan view. As shown in Fig.3 and Fig.4, the form of the whole arrow key 22a is formed in the shape of a short cylinder as mentioned above. In [in the upper surface of this arrow key 22a the neighborhood of a periphery has the thick part 22a1 formed in ring shape a little thickly, and] this thick part 22a1 top, In four of four directions which cross a longitudinal direction and a transverse direction at "cross shape", i.e., the direction, as the direction indexes 22a2 to 22a5 of triangular shape (the shape of **) project from the surface of the thick part 22a1, they are formed as integrally as the thick part 22a1, respectively.

[0020]Thereby, since the direction indexes 22a2 to 22a5 are projected in addition to a direction being visually shown with "**" form, when a fingertip describes, they can detect that the direction is shown also tactile. The direction indexes 22a2 instruct above, the direction indexes 22a3 instruct the left, the direction indexes 22a4 instruct down, and the direction indexes 22a5 are instructing the right. Therefore, a visually handicapped person can use it, it can be judged to which direction the index which touches now points only by contacting a fingertip, and a function can also be judged by the inclination. That is, it can blind touch easily.

[0021]It corresponds to the direction indexes 22a2 among these direction indexes 22a2 to 22a5 that are the 1 embodiments of the present invention, The redial mark 22a6 is printed at the arrow key 22a so that clearly from Fig.4, Corresponding to the direction indexes 22a3, P mail mark 22a7 is printed at the arrow key 22a, the record-of-incoming-calls mark 22a8 is printed at the arrow key 22a corresponding to the direction indexes 22a4, and the telephone directory mark 22a9 is printed at the arrow key 22a corresponding to the direction indexes 22a5.

[0022]When a telephone directory menu is selected and it searches by pushing the direction indexes 22a5, using ****** 22a2 or 22a5, the menu of a telephone directory will be called and information, including the telephone number etc. which are stored, will be retrieved. The function of p mail (character message transmission and reception) will be chosen by pushing the direction indexes 22a3.

[0023]At the time of transmission, the predetermined dial button 23a - 23c-- are chosen suitably, and are dialed, and by pushing a telephone call / catch button 22b, it may become ability ready for sending and may push this telephone call / catch button 22b also at the time of the arrival from a communications partner. At the time of the end of a telephone call, or OFF of a power supply, operation of pushing power (power supply) / button 22d for an end may be performed.

[0024]Next, it describes about other embodiments by the present invention. Although illustrated in a 1st embodiment of the above about the case where the direction indexes 22a2 to 22a5 are provided in the upper and lower sides and the four right and left directions as the arrow key 22a, in the present invention, it is not limited in the four directions and one direction indexes which indicate tactile that a direction is visual to any part may be provided. Four or less pieces or four pieces or more may be sufficient, and it may provide at least one or more direction indexes which

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000375

indicate tactile that a direction is visual.

[0025]As for the example of application, although the keytop by the present invention illustrated about the case where it applies to a cellular phone, it is obvious for it to be able to apply to sized electronic equipment provided with a function which is not limited to a cellular phone and chooses the function of directivity widely.

[0026]

[Effect of the Invention]As mentioned above, since the direction indexes which show directivity visually and tactile were provided on the upper surface of an at least one-piece arrow key according to the present invention, While the difficulty of direction-indexes printing accompanying a miniaturization is eliminated like before, and printing of direction indexes becomes unnecessary at an external case portion, such as a housing, therefore reduction of the manufacturing cost accompanying the reduction of printing cost is attained, It can collect shapely also in design from printing being unnecessary. Since he is trying for direction indexes to show a direction visually and tactile, also in the time of a visually handicapped person's use, it can be tended to perform judgment of the function to direction indexes, and what is called blind touch becomes easy.

(19)日本国特許庁（ＪＰ）　(12)公開特許公報（Ａ）　(11)特許出願公開番号
特開2002－125031
（P2002－125031A）
(43)公開日　平成14年４月26日(2002.4.26)

(51)Int.Cl.⁷		識別記号	FI		テーマコード(参考)	
Ｈ０４Ｍ	1/21		Ｈ０４Ｍ	1/21	Ｍ	５Ｂ０４７
Ｇ０６Ｔ	1/00	４２０	Ｇ０６Ｔ	1/00	４２０Ｃ	５Ｃ０２２
Ｈ０４Ｑ	7/32		Ｈ０４Ｍ	1/00	Ｕ	５Ｃ０６４
Ｈ０４Ｍ	1/00			1/02	Ｃ	５Ｋ０２３
	1/02		Ｈ０４Ｎ	5/225	Ｄ	５Ｋ０２７

審査請求　未請求　請求項の数10　ＯＬ　（全 10 頁）　最終頁に続く

(21)出願番号　特願2000－317960(P2000－317960)

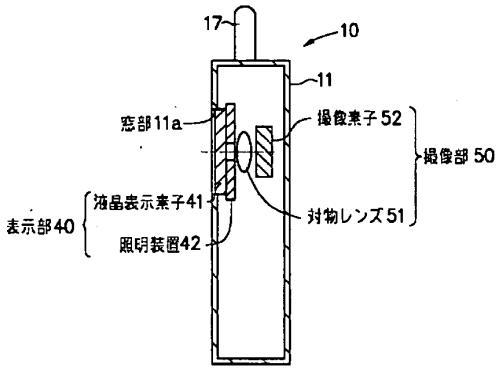
(22)出願日　平成12年10月18日(2000.10.18)

(71)出願人　000002185
ソニー株式会社
東京都品川区北品川６丁目７番35号
(72)発明者　山本　弘
東京都品川区北品川６丁目７番35号　ソニー株式会社内
(74)代理人　100096806
弁理士　岡▲崎▼　信太郎　（外１名）

最終頁に続く

(54)【発明の名称】　撮像手段を備えた情報端末装置

(57)【要約】
【課題】　表示時及び撮像時の使用者の視線を一致させることができ、コンパクトに構成することができるようにした、撮像手段付き情報端末装置を提供すること。
【解決手段】　本体１１の表面に表示手段４０を備えた情報端末装置１０であって、上記表示手段４０が、透光性を備えており、上記表示手段の表示面の裏側にて、その受光面５２ａが表示手段の表側に向くように配設された撮像手段５１を備える。



Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000377

【特許請求の範囲】
【請求項１】　本体の表面に表示手段を備えた情報端末装置であって、
上記表示手段が、透光性を備えており、
上記表示手段の表示面の裏側にて、受光面が上記表示手段の表側に向くように配設された撮像手段を備えていることを特徴とする、撮像手段付き情報端末装置。
【請求項２】　上記撮像手段が対物レンズを備えており、
この対物レンズが、上記撮像手段と表示手段との間及び／または上記表示手段の表側に配設されていることを特徴とする、請求項１に記載の撮像手段付き情報端末装置。
【請求項３】　上記撮像手段が対物レンズと一体に構成されていることを特徴とする、請求項２に記載の撮像手段付き情報端末装置。
【請求項４】　上記撮像手段と対物レンズとが、一体に回動可能に支持されていることを特徴とする、請求項３に記載の撮像手段付き情報端末装置。
【請求項５】　上記表示手段の裏側に、バック照明用の照明手段を備えており、
上記照明手段が、この照明手段から撮像手段の受光面に光が入射しないように、遮光部を備えていることを特徴とする、請求項１に記載の撮像手段付き情報端末装置。
【請求項６】　上記遮光部が、照明手段に設けられた切欠部であることを特徴とする、請求項５に記載の撮像手段付き情報端末装置。
【請求項７】　上記切欠部が、撮像手段の動作中のみ、作動することを特徴とする、請求項６に記載の撮像手段付き情報端末装置。
【請求項８】　上記表示手段が、撮像手段の動作中、撮像手段の受光面に対向する領域にて、表示を行なわないことを特徴とする、請求項１に記載の撮像手段付き情報端末装置。
【請求項９】　上記表示手段が、撮像手段の動作中、撮像手段の受光面に対向する領域にて、任意の情報の表示を行なうことを特徴とする、請求項１に記載の撮像手段付き情報端末装置。
【請求項１０】　上記照明手段が、撮像手段の被写体を照明することを特徴とする、請求項１に記載の撮像手段付き情報端末装置。
【発明の詳細な説明】
【０００１】
【発明の属する技術分野】本発明は、携帯電話やノートブック型パーソナルコンピュータ等の情報端末装置に関し、特に撮像部を備えた情報端末装置に関するものである。
【０００２】
【従来の技術】従来、カメラ付きのノートブック型パーソナルコンピュータは、例えば図１０に示すように、構成されている。図１０において、ノートブック型パーソナルコンピュータ１は、内部にＣＰＵを搭載したマザーボード等が取り付けられ、表面のキーボード２ａを備えた筐体２と、筐体２の表面に対して開閉可能に支持され、内面に液晶表示部３ａを備えた蓋体３と、から構成されており、図示の場合、開放状態における蓋体３の内面の液晶表示部３ａの上部に、撮像部としての小型のＣＣＤカメラ４が備えられている。
【０００３】このような構成のノートブック型パーソナルコンピュータ１によれば、ＣＣＤカメラ４により、ノートブック型パーソナルコンピュータ１の前に位置する使用者自身や、ＣＣＤカメラ４を取り外し、あるいはノートブック型パーソナルコンピュータ１を持ち上げて、ＣＣＤカメラ４を被写体に向けることにより、風景等の所望の被写体の撮像を行なうことができる。
【０００４】しかしながら、このような構成のカメラ付きノートブック型パーソナルコンピュータ１においては、使用者自身の撮像を行なう場合、使用者がＣＣＤカメラ４により撮像された画像を見ようとして、液晶表示部３ａを見ると、視線が液晶表示部３ａに向くことから、撮像画面においては伏し目がちの画像になってしまうと共に、正面を向いた画面を撮像しようとすると、液晶表示部３ａに表示される撮像画面を確認することができなくなってしまう。これは、液晶表示部３ａの外側にＣＣＤカメラ４が配置されていると共に、ＣＣＤカメラ４から被写体である使用者自身の顔までの距離が短いことから、生ずるものである。
【０００５】また、カメラ付き携帯電話は、例えば特開２０００－１５６８１２号に示すように構成されている。このようなカメラ付き携帯電話５は、図１１に示すように、細長い筐体６に対して、受話部６ａ，送話部６ｂ，表示部６ｃ，テンキー６ｄ及び機能キー６ｅを備えると共に、筐体６の上端付近に、カメラ部７を備えている。カメラ部７は、ＣＣＤカメラ７ａと、撮影開始ボタン７ｂと、を含んでいる。
【０００６】このような構成のカメラ付き携帯電話５によれば、テンキー６ｄ及び機能キー６ｅを操作すると共に、送話部６ｂに対して発声し、また受話部６ａからの音声を聴くことにより、双方向の送受話を行なうことができると共に、筐体６を手で持って、カメラ部４のＣＣＤカメラ７ａを被写体に向けて、撮影開始ボタン７ｂを操作することにより、カメラ部７により被写体の撮像を行なうことができるようになっている。
【０００７】しかしながら、このような構成のカメラ付き携帯電話５においては、前述のカメラ付きノートブック型パーソナルコンピュータの場合と同様に、表示部６ｃとカメラ部７のＣＣＤカメラ７ａとが離れていることから、視線のずれの問題が発生すると共に、さらに小型の筐体６に対して、カメラ部７が追加されていることから、カメラ部７の取付スペースが必要になり、筐体６を

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000378

大きくしたり、あるいは表示部６ｃやテンキー６ｄ，操作キー６ｅを小型にする必要がある。筐体６を大きくすることは、携帯電話５のより一層の小型化の要請に反することになると共に、表示部６ｃやテンキー６ｄ，操作キー６ｅの小型化は、操作性を損なうことになってしまう。

【０００８】

【発明が解決しようとする課題】これに対して、例えば特開２０００－５６２２６号には、自然な視線での撮像を可能にする表示・撮像装置が開示されている。この表示・撮像装置８は、図１２に示すように、液晶表示部８ａの表示画面を、光分離手段８ｂ及び反射ミラー８ｃで反射させて、使用者の目に向かって導くと共に、撮像素子８ｄには、使用者の顔から、反射ミラー８ｃで反射され、光分離手段８ｂを透過した光を導くようにしている。これにより、液晶表示部８ａの表示中心と撮像素子８ｄの撮像中心を一致させることにより、使用者の液晶表示部８ａを見るときの視点Ｉと撮像時の視線を一致させるようにしている。

【０００９】しかしながら、このような表示・撮像装置８は、光分離手段８ｂ及び反射ミラー８ｃから成る光学系が必要であることから、ある程度の奥行きが必要となる。従って、このような表示・撮像装置８を筐体の大きさが限られるノートブック型パーソナルコンピュータや携帯電話に利用することは困難であった。

【００１０】本発明は、以上の点に鑑み、表示時及び撮像時の使用者の視線を一致させることができ、コンパクトに構成することができるようにした、撮像手段付き情報端末装置を提供することを目的としている。

【００１１】

【課題を解決するための手段】上記目的は、請求項１の発明によれば、本体の表面に表示手段を備えた情報端末装置であって、上記表示手段が、透光性を備えており、上記表示手段の表示面の裏側にて、その受光面が表示手段の表側に向くように配設された撮像手段を備えている、撮像手段付き情報端末装置により、達成される。

【００１２】請求項１の構成によれば、使用者が、従来の情報端末装置の場合と同様にして、情報端末装置の表示手段における画面表示を見ながら、各種操作を行なうと共に、撮像手段により使用者自身の撮像を行なう場合には、使用者自身からの光が、透光性の表示手段を透過して撮像手段の受光面に入射することにより、使用者自身の撮像が行なわれる。その際、撮像された使用者自身の画像は、情報端末装置の機能に基づいて、表示手段の表示面に表示される。これにより、使用者自身は、自分の画像を表示手段の表示面で確認することができる。このとき、使用者の視線は、表示手段の表示面に向けられるが、撮像手段の受光面が表示手段の表示面の裏側に配設されていることから、撮像中心と表示中心がほぼ一致することになり、使用者自身の視線は、表示手段の表示面を見ているときに、撮像手段の受光面を向いていることになる。

【００１３】従って、従来の撮像手段付き情報端末装置のように、使用者が視線を表示手段に向けたとき、視線が撮像手段の受光面から外れてしまうようなことがないので、自然な視線での撮像が可能になる。この場合、撮像手段は、表示手段の表示面の裏側に配設されることになるので、小型の撮像手段を使用することにより、撮像手段の奥行きは少なくて済む。従って、小型の情報端末装置に撮像手段を容易に組み込むことが可能となり、撮像手段付きの情報端末装置が小型に構成される。

【００１４】請求項２の発明は、請求項１の構成において、上記撮像手段が対物レンズを備えており、この対物レンズが、上記撮像手段と表示手段との間及び／または上記表示手段の表側に配設されていることを特徴とする。請求項２の構成によれば、撮像手段の受光面に被写体の画像を結像させるための対物レンズが、上記撮像手段と表示手段との間及び／または上記表示手段の表側に配設されることにより、小型の情報端末装置内に容易に組み込まれることになる。

【００１５】請求項３の発明は、請求項２の構成において、上記撮像手段が対物レンズと一体に構成されていることを特徴とする。請求項３の構成によれば、撮像手段と対物レンズが一体に構成されることにより、部品点数が少なくて済み、部品コスト及び組立コストが低減される。

【００１６】請求項４の発明は、請求項３の構成において、上記撮像手段及び対物レンズが、一体に回動可能に支持されていることを特徴とする。請求項４の構成によれば、撮像手段及び対物レンズが一体に回転されることにより、撮像手段の受光面を、表示手段と反対側に向けて、所望の被写体を撮像することができる。これにより、撮像可能範囲が大幅に広がるので、各種被写体の撮像が容易に行われる。

【００１７】請求項５の発明は、請求項１の構成において、上記表示手段の裏側に、バック照明用の照明手段を備えており、上記照明手段が、上記照明手段から撮像手段の受光面に光が入射しないように、遮光部を備えていることを特徴とする。請求項５の構成によれば、表示手段の表示面に表示された画面が、照明手段によってバック照明されると共に、照明手段から撮像手段の受光面に入射しようとする光が上記遮光部によって遮断されることにより、撮像手段による撮像画面が照明手段からの光により影響を受けることがない。

【００１８】請求項６の発明は、請求項５の構成において、上記遮光部が、照明手段に設けられた切欠部であることを特徴とする。請求項６の構成によれば、照明手段に切欠部を設けることにより、上記遮光部が容易に且つ低コストで構成されることになる。

【００１９】請求項７の発明は、請求項６の構成におい

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000379

て、上記切欠部が、撮像手段の動作中のみ、作動することを特徴とする。請求項７の構成によれば、撮像手段の非動作中は、切欠部が作動しないことにより、表示手段の表示面に表示された画面が、その全面に亘って照明手段によりバック照明されることになる。

【００２０】請求項８の発明は、請求項１の構成において、上記表示手段が、撮像手段の動作中、撮像手段の受光面に対向する領域にて、表示を行なわないことを特徴とする。請求項８の構成によれば、撮像手段の動作中は、被写体から撮像手段の受光面に向かう光が、表示手段を透過する際に、表示手段の表示面に表示された画面によって乱されるようなことがない。

【００２１】請求項９の発明は、請求項１の構成において、上記表示手段が、撮像手段の動作中、撮像手段の受光面に対向する領域にて、任意の情報の表示を行なうことを特徴とする。請求項９の構成によれば、撮像手段の動作中は、被写体から撮像手段の受光面に向かう光が、表示手段を透過する際に、表示手段の表示面の撮像手段の受光面に対向する領域に表示された任意の情報の表示によって、特殊効果を付与されることになる。

【００２２】請求項１０の発明は、請求項１の構成において、上記照明手段が、撮像手段の被写体を照明することを特徴とする。請求項１０の構成によれば、照明手段からの光が、表示手段を透過して、外部に出射することにより、撮像手段の被写体に向かって進み、当該被写体を照明することにより、夜間や屋内等の暗い場所であっても、被写体を確実に撮像することができる。この場合、表示手段の表示面をバック照明するための照明手段を利用するので、特に被写体を照明するための照明手段を設ける必要がなく、コストが低減されることになる。

【００２３】

【発明の実施の形態】以下、この発明の好適な実施形態を図１乃至図９を参照しながら、詳細に説明する。尚、以下に述べる実施形態は、本発明の好適な具体例であるから、技術的に好ましい種々の限定が付されているが、本発明の範囲は、以下の説明において特に本発明を限定する旨の記載がない限り、これらの態様に限られるものではない。

【００２４】図１乃至図４は、本発明を適用したカメラ付き携帯電話の第一の実施形態を示している。図１において、カメラ付き携帯電話１０は、例えば、細長い筐体１１に、受話部としてのスピーカ１２，送話部としてのマイク１３，電話番号等を入力するダイヤルボタン１４，動作状況を設定するためのモード切り替えボタン１５，通信を開始・終了するオンフックボタン１６ａ及びオフフックボタン１６ｂ，アンテナ１７と、撮像開始ボタン１８及び表示・撮像部１９が設けられている。

【００２５】図２は、上記カメラ付き携帯電話１０の電気的構成を示している。図２において、カメラ付き携帯電話１０は、基本的には、一般的な構成の所謂ＰＤＡと呼ばれるデジタル方式の携帯電話として構成されていると共に、撮像手段を組み込んだものである。カメラ付き携帯電話１０は、受信部として、ＬＮＡ（Ｌｏｗ Ｎｏｉｓｅ Ａｍｐｌｉｆｉｅｒ）（低雑音増幅器）２０，二つのミキサ回路１２，２２，ローカル発振器２３，ＩＦアンプ２４及びモデム２５を、また送信部として、ＩＦ－ＭＯＤ（Ｉｎｔｅｒ－Ｆｒｅｑｕｅｎｃｙ－Ｍｏｄｕｌａｔｏｒ）（中間周波数変調器）２６，ローカル発振器２７，ミキサ回路２８，ＲＦドライバ２９を、備えており、さらに受信及び送信の切換えのためのアンテナ切換器３０と、ミキサ回路２１，２８の周波数を高速で切換えるためのＶＣＯ（Ｖｏｌｔａｇｅ Ｃｏｎｔｒｏｌｌｅｄ Ｏｓｃｉｌｌａｔｏｒ）（電圧制御発振器）３１，ＶＣＯ３１を制御するためのＣＰＵ３２を備えている。

【００２６】受信の場合には、アンテナ１７からアンテナ切換器３０を介して、ＬＮＡ２０，ＶＣＯ３１からの発振周波数により切換えられるミキサ回路２１，ローカル発振器２３からの発振周波数により切換えられるミキサ回路２２，ＩＦアンプ２４により、ＣＰＵ３２で決定された周波数によりＶＣＯ３１を発振させることにより、所謂ヘテロダイン方式で特定の周波数の電波が検波される。そして、取り出された検波信号は、モデム２５により制御信号とデータ信号（音声及び画像等の信号）に復調される。

【００２７】これに対して、送信の場合には、制御信号及びデータ信号を、モデム２５により変調し、さらにＩＦ－ＭＯＤ２６によりＱＰＳＫ変調して、ＣＰＵ３２で決定された周波数により前記ＶＣＯ３１を発振させて搬送周波数として、ミキサ回路２８で合成し、ＲＦドライバ２９で増幅して、アンテナ切換器３０を介して、アンテナ１７から電波として送信するようになっている。尚、上記アンテナ切換器３０は、受信及び送信にてアンテナ２０を共用するために設けられており、デジタル方式の通信手段としてのスペクトラム拡散による広帯域・低電力の通信を行なうために、前記ＣＰＵ３２により、ＩＦ－ＭＯＤ２９及びＶＣＯ２６の周波数を高速で切換えて、所謂ＴＤＭＡ（時分割多重通信）方式やＣＤＭＡ（符号分割多重通信）方式を実現するようにしている。

【００２８】さらに、前述した受信時に復調される制御信号及びデータ信号の処理部は、以下のように構成されている。カメラ付き携帯電話１０は、処理部として、チャンネルＣＯＤＥＣ（ＣＯｄｅｒＤＥＣｏｄｅｒ）３３，音声ＣＯＤＥＣ３４，ビデオＣＯＤＥＣ３５，ビデオＲＡＭ３６と、前記ＣＰＵ３２に接続されたＲＡＭ／ＲＯＭ３７，Ｉ／Ｏデバイス３８を備えている。

【００２９】上記チャンネルＣＯＤＥＣ３３は、通信データと通信基地からの端末の制御信号とを合成／分離するものであり、制御信号は、ＣＰＵ３２が受信部及び送信部を制御するための制御データを含んでいる。また、

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000380

通信データは、情報端末装置としての携帯電話１０の使用者が最終的に音声の授受や画像の授受を行なうデジタルデータであって、音声データに関しては、音声ＣＯＤＥＣ３４により、音声データの復変調を行なうことにより、復調した音声信号に基づいてスピーカ１２を鳴らしたり、マイク１３から音声を取り込んで、変調する。上記ビデオＣＯＤＥＣ３５は、ビデオＲＡＭ３８を使用して画像データの圧縮／伸長を行なうものであり、伸長して復元した画像信号を表示・撮像部１９の表示部（後述）に表示させたり、表示・撮像部１９の撮像部（後述）により取り込んだ画像信号を圧縮する。

【００３０】さらに、ＲＡＭ／ＲＯＭ３７には、自己の電話の識別記号が記録してあると共に、Ｉ／Ｏデバイス３８即ちダイヤルボタン（テンキー）１４やモード切換えボタン１５，オンフックボタン１６ａ，オフフックボタン１６ｂ等の操作によってＣＰＵ３２により携帯電話１０の動作を指示したり、通信状況やＲＡＭ／ＲＯＭ３７に記録されている電話番号等を表示・撮像部１９の表示部に表示することができるようになっている。

【００３１】図３及び図４において、上記表示・撮像部１９は、携帯電話１０の筐体１１の表面に配設された表示部４０と、表示部４０の後方に配設された撮像部５０と、から構成されている。上記表示部４０は、筐体１１の表面に設けられた窓部１１ａから外部に露出するように配置された透光性の表示部としての透過型の液晶表示素子４１と、液晶表示素子４１の裏面に接触するように配置された照明装置４２とを有している。

【００３２】上記液晶表示素子４１は、例えばドットマトリックス状に配設された多数の画素から構成されており、個々の画素が、取出し電極４１ａを介して印加される駆動電圧の制御により、光を透過させ、あるいは光を遮断するように動作することにより、全体として文字，記号や画像を表示することができるようになっている。尚、透光性の表示部としては、透過型の液晶表示素子に限らず、ＥＬ等の他の構成の透光性の表示手段，すなわち、発光により画像等を表示する手段を使用することも可能である。

【００３３】上記照明装置４２は、図４に示すように、液晶表示素子４１の裏面のほぼ全面に対応するように配設されており、表側から順に拡散板４２ａ，ライトガイド４２ｂと、その少なくとも一側（図示の場合、両側）にて、ライトガイド４２ｂの側端面に対向して配設された例えばＬＥＤ，ＣＦＤ等の光源４２ｃと、から構成されている。これにより、光源４２ｃからライトガイド４２ｂの側面に入射した光が、ライトガイド４２ｂの表面から直接にまたは反射された後に出射して、拡散板４２ａにより拡散されて、液晶表示素子４１の裏面から全面に亘ってほぼ均一にバック照明を行なうようになっている。ここで、上記拡散板４２ａ，ライトガイド４２ｂは、そのほぼ中心に切欠部として貫通孔４２ａ１，４２ｂ１を有している。これにより、これらの貫通孔４２ａ１，４２ｂ１を通って、外部の被写体からの光が、裏側もしくは奥側の撮像部５０に達するようになっている。

【００３４】上記撮像部５０は、前述した表示部４０の後方にて、その中心が表示部４０の中心とほぼ一致するように配設されており、表示部４０の照明装置４２のライトガイド４２ｃの裏側に配設された、映像の集束手段としての対物レンズ５１と、対物レンズ５１の後方に配設された撮像素子５２と、から構成されている。上記対物レンズ５１は、凸レンズから構成されており、外部の被写体から表示部４０の液晶表示素子４１を透過し、さらに照明装置４２の拡散板４２ａ，ライトガイド４２ｂに設けられた貫通孔４２ａ１，４２ｂ１を通って入射する光を、撮像素子５２の受光面５２ａに集束させるようになっている。上記撮像素子５２は、例えばＣＣＤ（電荷結合素子）等の撮像素子から構成されており、その受光面５２ａが表側、即ち対物レンズ５１そして表示部４０を向くように配設されている。

【００３５】本実施形態によるカメラ付き携帯電話１０は、以上のように構成されており、発呼時には、従来の携帯電話と同様にして、ダイヤルボタン１４により相手先の電話番号を入力し、オフフックボタン１６ｂを操作することにより、発呼を行ない、マイク１３に向かって話すと共に、スピーカ１２から相手の音声を聴くことにより、通話を行なう。

【００３６】さらに、表示・撮像部１９の撮像部５０により撮像を行なう場合には、モード切換えボタン１５により静止画または動画の選択を行なった後、筐体１１の側面に設けられた撮像開始ボタン５３を操作することにより、撮像が行なわれる。この場合、撮像は、外部の被写体即ち使用者の顔からの光が、表示・撮像部１９の表示部４０に入射し、透過型の液晶表示素子４１を透過して、さらに照明装置４２の貫通孔４２ａ１，４２ｂ１を通って、対物レンズ５１により集束され、撮像素子５２の受光面５２ａに結像する。これにより、撮像素子５２により画像取り込みが行なわれ、取り込まれた画像信号が、ビデオＣＯＤＥＣ３５により圧縮されて、表示部４１の液晶表示素子４１の画面に画像表示され、あるいはチャンネルＣＯＤＥＣ３３から送信部を介して通話相手に電波として送信される。

【００３７】ここで、撮像部５０の撮像素子５２が、表示・撮像部１９の表示部４０の裏側に配設されていることから、使用者が、撮像部５０により撮像されて表示部４０の液晶表示素子４１に画面表示される自分の画像を確認する場合、使用者の視線は表示部４０に向いていることから、撮像部５０にも向いていることになる。従って、使用者が表示部４０を見て自分の画像を確認していても、その視線は、撮像部５０からずれることがないので、自然な視線の画像を撮像することができる。さらに、撮像部５０が表示部４０の裏側に配設されているこ

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000381

とから、カメラ付き携帯電話１０の筐体１１の表面には、表示部４０の別に、撮像部５０のためのスペースを必要としない。従って、同じ大きさの筐体１１の場合には、表示部４０等のスペースを大きく取ることができ、あるいは携帯電話１０等の情報端末装置全体を小型に構成することができる。また、照明装置４２の貫通孔４２ａ１，４２ｂ１が切欠部として作用することにより、光源４２ｃからの光が貫通孔４２ａ１，４２ｂ１を介して撮像部５０に入射しない。これにより、撮像部５０による撮像画面が、照明装置４２からの漏光により、画質低下することはない。

【００３８】ここで、表示部４０の液晶表示素子４１として、カラー液晶表示素子を使用する場合、液晶表示素子４１を構成する両面の偏光板によっての光の透過率が４％とかなり低い。これに対して、撮像素子５２の最低被写体感度は、２１ｘであり、液晶表示素子４１を透過する前では５０１ｘ相当であることから、屋外だけでなく、屋内であっても、照明により１００１ｘ以上の明るさがあれば、十分に撮像を行なうことが可能である。さらに、明るさが不足する場合には、照明装置４２からのバック照明を利用して、光源４２ｃの照度を高くすることにより、被写体である使用者の顔を照明するようにすればよい。

【００３９】また、撮像部５０の動作中は、外部の被写体からの光は、表示部４０の液晶表示素子４１を透過し、照明装置４２の貫通孔４２ａ１，４２ｂ１を通って、撮像部５０に達するが、液晶表示素子４１の表示内容によっては、表示部分によって被写体からの光が遮断されてしまい、撮像部５０の撮像素子５２の受光面５２ａに入射する光が減少することがある。このような場合には、照明装置４２の貫通孔４２ａ１，４２ｂ１に対応する液晶表示素子４１の表示領域にて、各画素を適宜に駆動制御することにより、表示内容を変更して、表示を行なわない等により、白色光を透過し得るようにすればよい。あるいは、白色光を透過させる代わりに、単色表示を行なうようにすれば、色フィルタとして作用することにより、撮像部５０による撮像画面に特殊効果を与えることも可能であると共に、例えば対物レンズ５１のレンズ位置を示す表示を行なうようにすれば、使用者がこの表示を見つめることにより、その視線を確実に撮像部５０に向けることができる。

【００４０】図５は、本発明を適用したカメラ付き携帯電話の第二の実施形態を示している。図５において、カメラ付き携帯電話６０は、図１乃至図４に示したカメラ付き携帯電話１０とほぼ同様の構成であり、以下に示す点でのみ異なる構成になっている。従って、カメラ付き携帯電話６０において、図１乃至図４に示したカメラ付き携帯電話１０と同じ構成要素には同じ符号を付して、その説明は省略する。図５において、カメラ付き携帯電話６０は、図３及び図４に示したカメラ付き携帯電話１０における撮像部５０の対物レンズ５１の代わりに、筐体１１の表面に、対物レンズ６１が配設されている。この対物レンズ６１は、筐体１１の表面に取り付けられており、表示部４０全体を覆うように形成されている。

【００４１】このような構成のカメラ付き携帯電話６０によれば、図１乃至図４に示したカメラ付き携帯電話１０と同様に作用すると共に、対物レンズ６１が筐体１１の表面に配設されているので、この対物レンズ６１と撮像部５０の撮像素子５１との距離が長い。従って、対物レンズ６１の焦点距離を長くすることができるので、表示部４０全体を覆うように形成されていることと相まって、収差の少ない対物レンズ６１の中心部付近を使用して、撮像を行なうことができるので、撮像部５０により撮像される撮像画面の画質が向上する。また、表示部４０全体が対物レンズ６１により覆われているので、使用者は表示部４０を拡大して観察することができるので、大きく見易い表示となる。

【００４２】図６は、本発明を適用したカメラ付き携帯電話の第三の実施形態を示している。図６において、カメラ付き携帯電話７０は、図１乃至図４に示したカメラ付き携帯電話１０とほぼ同様の構成であり、以下に示す点でのみ異なる構成になっている。従って、カメラ付き携帯電話７０において、図１乃至図４に示したカメラ付き携帯電話１０と同じ構成要素には同じ符号を付して、その説明は省略する。図６において、カメラ付き携帯電話７０は、図３及び図４に示したカメラ付き携帯電話１０における撮像部５０の対物レンズ５１の代わりに、筐体１１の表面に配設された固定レンズ７１ａと、照明装置４２と撮像素子５２の間に配設された可動レンズ７１ｂとから成る対物レンズ７１を備えている。この対物レンズ７１は、固定レンズ７１ａが筐体１１の表面に取り付けられており、表示部４０全体を覆うように形成されていると共に、可動レンズ７１ｂが、光軸方向に関して移動調整可能に指示されている。

【００４３】このような構成のカメラ付き携帯電話７０によれば、図１乃至図４に示したカメラ付き携帯電話１０と同様に作用すると共に、対物レンズ７１が所謂ズームレンズとして構成されているので、可動レンズ７１ｂを光軸方向に移動調整することによって、対物レンズ７１の焦点距離を調整することができる。従って、対物レンズ７１の焦点距離の調整により、適宜の倍率の撮像を行なうことができるので、撮像部５０により撮像される撮像画面の撮像範囲角を変更することができる。また、表示部４０全体が対物レンズ７１の固定レンズ７１ａにより覆われているので、使用者は表示部４０を固定レンズ７１ａにより拡大して観察することができるので、大きく見易い表示となる。尚、可動レンズ７１ｂの代わりに、異なる焦点距離のレンズが着脱可能に構成されてもよい。この場合、可動レンズ７１ｂの代わりに、種々の焦点距離のレンズが着脱されることにより、種々の撮像

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000382

範囲角に変更することができる。

【００４４】図７は、本発明を適用したカメラ付き携帯電話の第四の実施形態を示している。図７において、カメラ付き携帯電話８０は、図１乃至図４に示したカメラ付き携帯電話１０とほぼ同様の構成であり、以下に示す点でのみ異なる構成になっている。従って、カメラ付き携帯電話８０において、図１乃至図４に示したカメラ付き携帯電話１０と同じ構成要素には同じ符号を付して、その説明は省略する。図７において、カメラ付き携帯電話８０は、図３及び図４に示したカメラ付き携帯電話１０における表示部４０の照明装置４２の拡散板４２ａ及びライトガイド４２ｂの一部が、移動可能に構成されている。拡散板４２ａ及びライトガイド４２ｂは、図示の場合、ほぼ中心付近から上方の部分４２ａ２，４２ｂ２が、上方に向かって摺動可能に形成されている。

【００４５】このような構成のカメラ付き携帯電話８０によれば、図１乃至図４に示したカメラ付き携帯電話１０と同様に通話が行なわれると共に、撮像時には、拡散板４２ａ及びライトガイド４２ｂの部分４２ａ２，４２ｂ２が、図７に示すように上方に移動することにより、拡散板４２ａ，ライトガイド４２ｂのほぼ中心付近に、切欠部として貫通孔４２ａ１，４２ｂ１を画成することになり、図３及び図４に示したカメラ付き携帯電話１０と同様に撮像が行なわれる。これに対して、非撮像時には、拡散板４２ａ及びライトガイド４２ｂの部分４２ａ２，４２ｂ２が下方に移動され、切欠部としての貫通孔４２ａ１，４２ｂ１を閉じる。これにより、表示部４０の液晶表示素子４１は、上記貫通孔４２ａ１，４２ｂ１が切欠部として作動せず、その全面に亘って照明装置４２により均一にバック照明されることになり、上記のようなオン，オフ可能な遮光部としての開閉可能な切欠部を備えることにより、全体に見易い表示が行なわれることになる。

【００４６】尚、上記拡散板４２ａ及びライトガイド４２ｂの部分４２ａ２，４２ｂ２の移動は、撮像開始ボタン５３の操作と連動して自動的に行なわれるようにしておけば、特に部分４２ａ２，４２ｂ２の移動を意識して操作する必要がない。さらに、上記拡散板４２ａ及びライトガイド４２ｂの部分４２ａ２，４２ｂ２の移動に連動して、液晶表示素子４１を構成する偏光板の一部を移動させて、撮像素子５２への光路から退避させるようにすると、撮像素子５２への入射光量を大幅に増大させることができる。

【００４７】図８は、本発明を適用したカメラ付き携帯電話の第五の実施形態を示している。図８において、カメラ付き携帯電話９０は、図１乃至図４に示したカメラ付き携帯電話１０とほぼ同様の構成であり、以下に示す点でのみ異なる構成になっている。従って、カメラ付き携帯電話９０において、図１乃至図４に示したカメラ付き携帯電話１０と同じ構成要素には同じ符号を付して、その説明は省略する。図５において、カメラ付き携帯電話９０は、図３及び図４に示したカメラ付き携帯電話１０における撮像部５０の固定配置された対物レンズ５１及び撮像素子５２の代わりに、撮像ユニット９１が配設されている。この撮像ユニット９１は、撮像部５０を構成する対物レンズ５１及び撮像素子５２を一体に固定保持すると共に、垂直な回転軸９１ａの周りに回動可能に構成されている。そして、この撮像ユニット９１の背面側にて、携帯電話１０の筐体１１には、窓部１１ｂが備えられている。

【００４８】このような構成のカメラ付き携帯電話６０によれば、図８に示すように、撮像ユニット９１により支持される対物レンズ５１が前側に位置するときには、図１乃至図４に示したカメラ付き携帯電話１０と同様に作用すると共に、撮像ユニット９１により支持される撮像部５０には、前側から被写体からの光が表示部４０を介して入射することにより、携帯電話１０の前側に居る使用者の顔等の撮像が行なわれる。

【００４９】これに対して、図９に示すように、撮像ユニット９１が回転軸９１ａの周りに回動されて、撮像ユニット９１により支持される対物レンズ５１が後側に位置するときには、筐体１１の後方の被写体からの光が、筐体１１の窓部１１ｂから撮像ユニット９１により支持される撮像部５０の対物レンズ５１を介して撮像素子５２の受光面５２ａに入射することにより、後方の被写体の撮像が行なわれる。これにより、例えば風景を撮像したい場合には、撮像ユニット９１を回動させて、図９に示すように撮像素子５２の受光面５２ａを後方に向けることによって、使用者は、表示部４０に画面表示される風景等の画像を見て確認することができる。

【００５０】尚、上記筐体１１の窓部１１ｂは、不使用時には図示しないシャッタにより閉じておくようにしてもよい。また、撮像ユニット９１は、回転可能に支持されているが、これに限らず、着脱可能に且つ前後反転して取り付けることができるように構成してもよい。

【００５１】上述した実施形態においては、本発明を情報端末機器としての携帯電話に組み込んだ場合について説明したが、これに限らず、ノートブック型パーソナルコンピュータや所謂ＰＤＡ等の携帯情報端末機器等、表示部及び撮像部を備えた各種情報端末装置に本発明を適用し得ることは明らかである。

【００５２】

【発明の効果】以上述べたように、本発明によれば、表示時及び撮像時の使用者の視線を一致させることができ、コンパクトに構成することができるようにした、撮像手段付き情報端末装置を提供することができる。

【図面の簡単な説明】

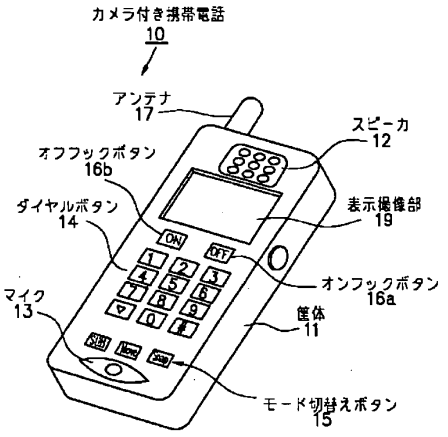
【図１】本発明によるカメラ付き携帯電話の第一の実施形態の外観を示す概略斜視図である。

【図２】図１のカメラ付き携帯電話の電気的構成例を示

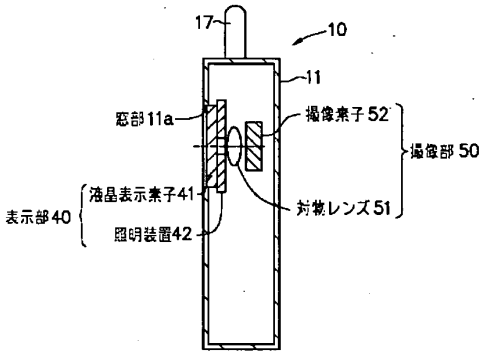
Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000383

すブロック図である。
【図３】図１のカメラ付き携帯電話の表示・撮像部を示す概略断面図である。
【図４】図１のカメラ付き携帯電話の表示・撮像部を示す分解斜視図である。
【図５】本発明によるカメラ付き携帯電話の第二の実施形態の表示・撮像部を示す概略断面図である。
【図６】本発明によるカメラ付き携帯電話の第三の実施形態の表示・撮像部を示す概略断面図である。
【図７】本発明によるカメラ付き携帯電話の第四の実施形態の表示・撮像部を示す分解斜視図である。
【図８】本発明によるカメラ付き携帯電話の第五の実施形態の表示・撮像部を示す概略断面図である。
【図９】図８のカメラ付き携帯電話の風景撮像時の状態示す概略断面図である。
【図１０】従来のカメラ付きノートブック型パーソナルコンピュータの構成例を示す概略斜視図である。
【図１１】従来のカメラ付き携帯電話の構成例を示す概略斜視図である。
【図１２】従来の表示・撮像装置の構成例を示す概略図である。
【符号の説明】
１０，６０，７０，８０，９０・・・カメラ付き携帯電話、１１・・・筐体、１１ａ，１１ｂ・・・窓部、１９・・・表示・撮像部、４０・・・表示部、４１・・・液晶表示素子、４２・・・照明装置、４２ａ・・・拡散板、４２ａ１，４２ｂ１・・・貫通孔、４２ａ２，４２ｂ２・・・摺動部分、４２ｂ・・・ライトガイド、４２ｃ・・・光源、５０・・・撮像部、５１，６１，７１・・・対物レンズ、５２・・・撮像素子、５２ａ・・・受光面、７１ａ・・・固定レンズ、７１ｂ・・・可動レンズ、９１・・・撮像ユニット

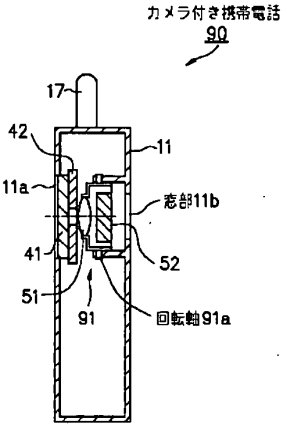
【図１】



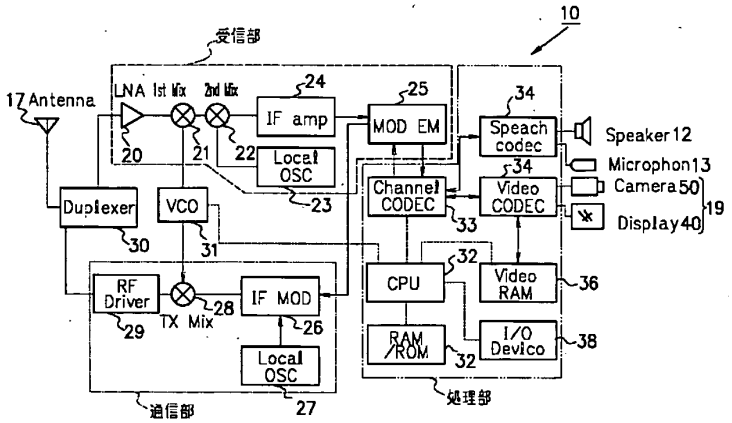
【図３】



【図８】

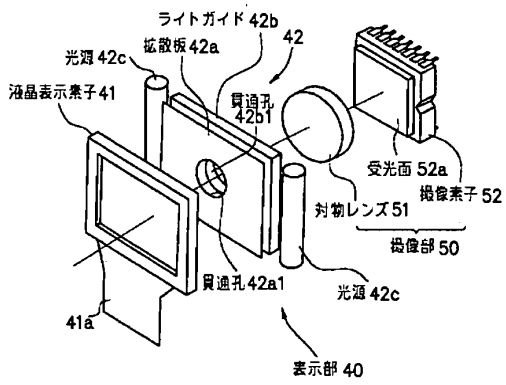


【図２】

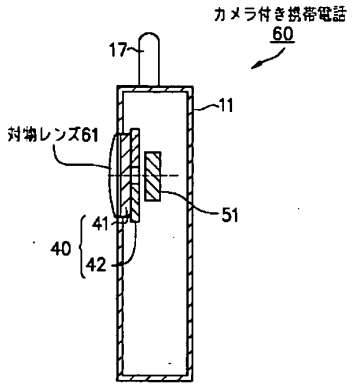


Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000384

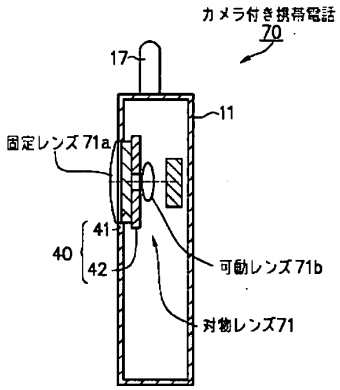
【図4】



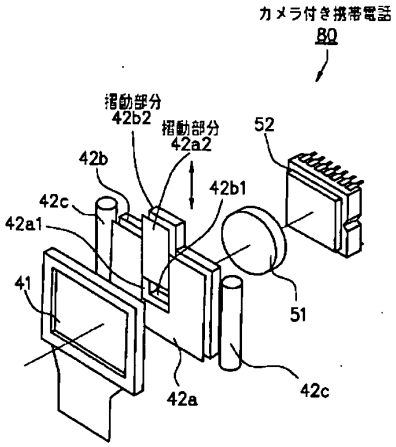
【図5】



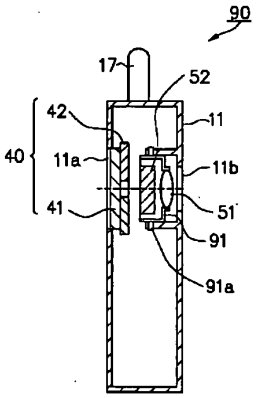
【図6】



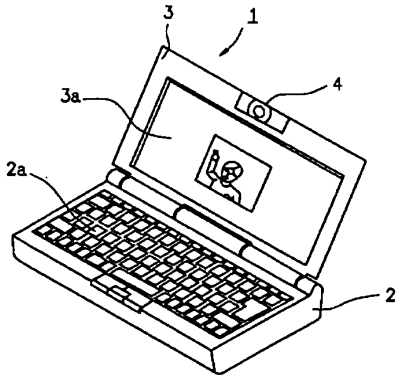
【図7】



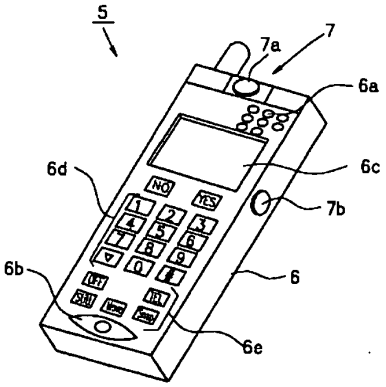
【図9】



【図10】

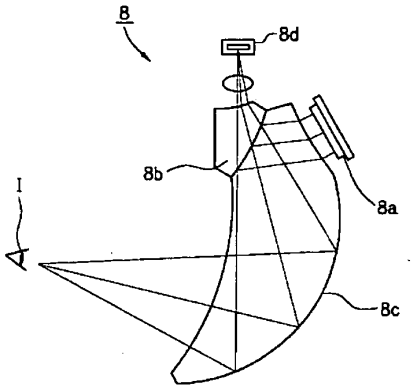


【図11】



Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000385

【図12】



フロントページの続き

(51)Int.Cl.[7]	識別記号	FI		テーマコード(参考)
H04N	5/225	H04N	5/225	B 5K067
			7/14	
	7/14	H04B	7/26	V

Fターム(参考) 5B047 AA11 AB02 AB04 BA02 BB04
BC01 BC05 BC16 BC23
5C022 AA12 AC03 AC32 AC42 AC54
AC72
5C064 AA01 AC04 AC06 AC12 AC16
AC22 AD02 AD08
5K023 AA07 BB11 DD06 MM00 MM25
5K027 AA11 BB02 HH26
5K067 AA34 BB04 EE02 KK17

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000386

2002-125031

(11)Publication number 2002-125031
(43)Date of publication of application 26.04.2002
(51)Int.Cl.
H04M 1/21
G06T 1/00
H04Q 7/32
H04M 1/00
H04M 1/02
H04N 5/225
H04N 7/14

(21)Application number 2000-317960
(22)Date of filing 18.10.2000
(71)Applicant SONY CORP
(72)Inventor YAMAMOTO HIROSHI
(54)INFORMATION TERMINAL INCLUDING IMAGE PICK UP MEANS

(57)Abstract
PROBLEM TO BE SOLVED: To provide an information terminal including an image pick up means which may be structured in compact design by matching the looks of user during the display and image pick up operations.
SOLUTION: This information terminal 10 is provided with a display means 40 at the front surface of the body 11. The display means 40 has the transparency and the rear side of the front surface of the display means is provided with the image pick up means 51 with the light receiving surface 52a is directed toward the front surface of the display means.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000387

CLAIMS

[Claim(s)]

[Claim 1]Information terminal equipment with an imaging means being the information terminal equipment provided with a displaying means on the surface of a main part, providing the above-mentioned displaying means with translucency, and having an imaging means arranged so that a light receiving surface might turn to a side front of the above-mentioned displaying means on the back side of a display surface of the above-mentioned displaying means.

[Claim 2]The information terminal equipment with an imaging means according to claim 1 which the above-mentioned imaging means is provided with an object lens, and is characterized by this object lens being arranged by between the above-mentioned imaging means and displaying means and/or side front of the above-mentioned displaying means.

[Claim 3]The information terminal equipment with an imaging means according to claim 2, wherein the above-mentioned imaging means is integrally constituted with an object lens.

[Claim 4]The information terminal equipment with an imaging means according to claim 3, wherein the above-mentioned imaging means and an object lens are supported rotatable integrally.

[Claim 5]The information terminal equipment with an imaging means according to claim 1, wherein it equips the back side of the above-mentioned displaying means with an illumination method for back illuminations, and the above-mentioned illumination method is provided with a shade part so that light may not enter into a light receiving surface of an imaging means from this illumination method.

[Claim 6]The information terminal equipment with an imaging means according to claim 5, wherein the above-mentioned shade part is a notch provided by illumination method.

[Claim 7]The information terminal equipment with an imaging means according to claim 6 with which the above-mentioned notch is characterized by a working chisel of an imaging means, and operating.

[Claim 8]The information terminal equipment with an imaging means according to claim 1, wherein the above-mentioned displaying means does not display in a region which opposes to working [of an imaging means], and a light receiving surface of an imaging means.

[Claim 9]The information terminal equipment with an imaging means according to claim 1, wherein the above-mentioned displaying means displays any information in a region which opposes to working [of an imaging means], and a light receiving surface of an imaging means.

[Claim 10]The information terminal equipment with an imaging means according to claim 1, wherein the above-mentioned illumination method illuminates an object of an imaging means.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000388

DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention]The present invention relates to information terminal equipment, such as a mobile phone and a notebook type personal computer, and relates to information terminal equipment provided with especially the imaging part.

[0002]

[Description of the Prior Art]Conventionally, the notebook type personal computer with a camera is constituted as shown, for example in Fig.10. In Fig.10, a mother board etc. which mounted CPU on an inside are attached, and the notebook type personal computer 1 comprises the housing 2 provided with the surface keyboard 2a, and the lid 3 which were supported to the surface of the housing 2 so that opening and closing were possible, and equipped an inner surface with the liquid crystal display section 3a.

In an illustrated case, the upper part of the liquid crystal display section 3a of an inner surface of the lid 3 in a release position is equipped with small CCD camera 4 as an imaging part.

[0003]According to the notebook type personal computer 1 of such composition. The user itself who is placed in front of the notebook type personal computer 1 with CCD camera 4. The object of a request of scenery etc. can be imaged by removing CCD camera 4, or lifting the notebook type personal computer 1, and turning CCD camera 4 to an object.

[0004]However, in the notebook type personal computer 1 with a camera of such composition, Noting that a user will look at the image imaged by CCD camera 4, when imaging the user itself, If downcast eyes will be the images of ** in an imaging screen since a look turns to the liquid crystal display section 3a if the liquid crystal display section 3a is seen, and it is going to image the screen which turned to the transverse plane, it will become impossible to check the imaging screen displayed on the liquid crystal display section 3a. CCD camera 4 is arranged at the outside of the liquid crystal display section 3a, and the distance from CCD camera 4 to a user's own face who is an object produces this from a short thing.

[0005]The camera cell phone is constituted as shown, for example in JP,2000-156812,A. Such a camera cell phone 5 is provided with the reception part 6a, the transmission section 6b, the display part 6c, the numeric keypad 6d, and the functional key 6e to the long and slender housing 6, as shown in Fig.11, and it is provided with the camera unit 7 near the upper end of the housing 6. The camera unit 7 contains CCD camera 7a and the photographing start button 7b.

[0006]According to the camera cell phone 5 of such composition, operate the numeric keypad 6d

and the functional key 6e, and. Can perform the bidirectional transmission-and-reception talk by uttering to the transmission section 6b, and hearing the sound from the reception part 6a, and. An object can be imaged now by the camera unit 7 by having the housing 6 by hand, turning CCD camera 7a of the camera unit 4 to an object, and operating the photographing start button 7b.

[0007]However, in the camera cell phone 5 of such composition, Like the case of the above-mentioned notebook type personal computer with a camera, since CCD camera 7a of the display part 6c and the camera unit 7 is separated, the problem of a gap of a look occurs, and. Since the camera unit 7 is added to the still smaller housing 6, the mounting space of the camera unit 7 is needed, and it is necessary to enlarge the housing 6 or to make small the display part 6c, and the numeric keypad 6d and the operation key 6e. It will be contrary to the request of much more miniaturization of the mobile phone 5 to enlarge the housing 6, and the miniaturization of the display part 6c, or the numeric keypad 6d and the operation key 6e will impair operability.

[0008]

[Problem to be solved by the invention]On the other hand, JP,2000-56226,A has disclosed the display and imaging device which enables imaging with a natural look. As shown in Fig.12, make it reflect by the light separating means 8b and the reflection mirror 8c, draw the display screen of the liquid crystal display section 8a toward a user's eyes, and this display and imaging device 8. It is reflected by the reflection mirror 8c by the image sensor 8d, and he is trying to lead the light which transmitted the light separating means 8b to it from a user's face. He is trying to make the viewpoint I when seeing a user's liquid crystal display section 8a, and the look at the time of imaging by this correspond by making the display center of the liquid crystal display section 8a, and the imaging center of the image sensor 8d correspond.

[0009]However, a certain amount of depth is needed from the optical system which comprises the light separating means 8b and the reflection mirror 8c being required for such a display and an imaging device 8. Therefore, it was difficult to use such a display and an imaging device 8 for the notebook type personal computer with which it is restricted to the size of a housing, or a mobile phone.

[0010]An object of the present invention is to provide the information terminal equipment with an imaging means can make the look of the user at the time of a display and imaging correspond, and it enabled it to constitute compactly in view of the above point.

[0011]

[Means for solving problem]According to invention of Claim 1, the above-mentioned object is the information terminal equipment provided with the displaying means on the surface of the main part, It is attained by the information terminal equipment with an imaging means which the above-mentioned displaying means is provided with translucency, and is provided with the imaging means arranged so that the light receiving surface might turn to the side front of a displaying

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000390

means on the back side of the display surface of the above-mentioned displaying means.

[0012]According to the composition of Claim 1, a user performs various operations like the case of conventional information terminal equipment, looking at a screen display in the displaying means of information terminal equipment, and. When imaging the user itself by an imaging means, the light from the user itself transmits the displaying means of translucency, and a user's own imaging is carried out to the light receiving surface of an imaging means by the incident thing. In that case, a user's imaged own image is displayed on the display surface of a displaying means based on the function of information terminal equipment. Thereby, the user itself can check his image by the display surface of a displaying means. Although a user's look is turned to the display surface of a displaying means at this time, Since the light receiving surface of the imaging means is arranged by the back side of the display surface of a displaying means, an imaging center and a display center will correspond substantially, and a user's own look will have turned to the light receiving surface of the imaging means, while seeing the display surface of the displaying means.

[0013]Therefore, since a look does not separate from the light receiving surface of an imaging means like conventional information terminal equipment with an imaging means when a user turns a look to a displaying means, imaging with a natural look is attained. In this case, since an imaging means will be arranged by the back side of the display surface of a displaying means, by using a small imaging means, there is little depth of an imaging means and it ends. Therefore, it becomes possible to include an imaging means in small information terminal equipment easily, and information terminal equipment with an imaging means is constituted small.

[0014]In the composition of Claim 1, the above-mentioned imaging means is provided with the object lens, and, as for invention of Claim 2, this object lens is arranged by between the above-mentioned imaging means and displaying means and/or the side front of the above-mentioned displaying means. According to the composition of Claim 2, the object lens for making the light receiving surface of an imaging means image the image of an object will be easily incorporated in small information terminal equipment, when between the above-mentioned imaging means and displaying means and/or the side front of the above-mentioned displaying means arrange.

[0015]As for invention of Claim 3, in the composition of Claim 2, the above-mentioned imaging means is integrally constituted with the object lens. According to the composition of Claim 3, by constituting an imaging means and an object lens integrally, there is little number of parts, and it ends and component cost and assembly cost are reduced.

[0016]As for invention of Claim 4, in the composition of Claim 3, the above-mentioned imaging means and the object lens are supported rotatable integrally. According to the composition of Claim 4, when an imaging means and an object lens rotate integrally, the light receiving surface of an imaging means can be turned to a displaying means and an opposite side, and a desired object can

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000391

be imaged. Thereby, since the range which can be imaged spreads substantially, imaging of various objects is performed easily.

[0017]Invention of Claim 5 equips the back side of the above-mentioned displaying means with the illumination method for back illuminations in the composition of Claim 1, and the above-mentioned illumination method is provided with the shade part so that light may not enter into the light receiving surface of an imaging means from the above-mentioned illumination method. According to the composition of Claim 5, back illumination of the screen displayed on the display surface of the displaying means is carried out by the illumination method, and. When the light which is going to enter into the light receiving surface of an imaging means from an illumination method is intercepted by the above-mentioned shade part, the imaging screen by an imaging means is not affected by the light from an illumination method.

[0018]Invention of Claim 6 is the notch by which the above-mentioned shade part was provided by the illumination method in the composition of Claim 5. According to the composition of Claim 6, the above-mentioned shade part will be constituted easily and at low lost by providing a notch to an illumination method.

[0019]As for invention of Claim 7, in the composition of Claim 6, the above-mentioned notch is characterized by the working chisel of an imaging means, and operating. According to the composition of Claim 7, during un-operating of an imaging means, when the notch does not operate, the screen displayed on the display surface of the displaying means will continue all over the, and back illumination will be carried out by the illumination method.

[0020]Invention of Claim 8 does not display in the composition of Claim 1 in the region in which the above-mentioned displaying means opposes to working [of an imaging means], and the light receiving surface of an imaging means. According to the composition of Claim 8, during operation of an imaging means, when the light which goes to the light receiving surface of an imaging means from an object transmits a displaying means, it is not disturbed by the screen displayed on the display surface of the displaying means.

[0021]Invention of Claim 9 displays any information in the composition of Claim 1 in the region in which the above-mentioned displaying means opposes to working [of an imaging means], and the light receiving surface of an imaging means. According to the composition of Claim 9, during operation of an imaging means, when the light which goes to the light receiving surface of an imaging means from an object transmits a displaying means, special effects will be given by presenting of any information displayed on the region which opposes to the light receiving surface of the imaging means of the display surface of a displaying means.

[0022]In invention of Claim 10, in the composition of Claim 1, the above-mentioned illumination method illuminates the object of an imaging means. According to the composition of Claim 10, even if it is dark places, such as night and indoor, by proceeding toward the object of an imaging

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000392

means and illuminating the object concerned, when the light from an illumination method transmits a displaying means and is emitted outside, an object can be imaged reliably. In this case, since the illumination method for carrying out back illumination of the display surface of a displaying means is used, it is not necessary to provide the illumination method for illuminating especially an object, and cost will be reduced.

[0023]

[Mode for carrying out the invention]Hereinafter, the suitable embodiment of this invention is described in detail, referring to Fig.1 thru/or Fig.9. since the embodiment described below is a suitable example of the present invention, preferable various limitation is attached technically, but the range in particular of the present invention is not restricted to these modes, as long as there is no description of the purport that the present invention is limited in the following descriptions.

[0024]Fig.1 thru/or Fig.4 show the first embodiment of the camera cell phone to which the present invention is applied. In Fig.1, the camera cell phone 10 to the long and slender housing 11, for example, The mode switching button 15 for setting up the dial button 14 which inputs the loudspeaker 12 as a reception part, the microphone 13 as a transmission section, a telephone number, etc., and an operation situation, the button 16a on hook which starts and ends communication, the off-hook button 16b, and the antenna 17, The imaging start button 18 and display / imaging part 19 are provided.

[0025]Fig.2 shows the electric constitution of the above-mentioned camera cell phone 10. In Fig.2, fundamentally, the camera cell phone 10 is constituted as a mobile phone of the digital system called what is called PDA of general composition, and it incorporates an imaging means. The camera cell phone 10 as a receive section the mixer circuits 12 and 22 of 20 or 2 LNA(s) (Low Noise Amplifier) (low noise amplifier), the local oscillator 23, IF amplifier 24, and the modem 25, As a transmission section, IF-MOD(Inter-Frequency-Modulator) (intermediate frequency modulator) 26, the local oscillator 27, the mixer circuits 28, and the RF driver 29, Have and further The antenna changer 30 for the change of reception and transmission, It has CPU32 for controlling VCO(Voltage Controlled Oscillator) (voltage controlled oscillator) 31 for switching the frequency of the mixer circuits 21 and 28 at high speed, and VCO31.

[0026]In reception, with the mixer circuits 21 switched via the antenna changer 30 by LNA20 and the oscillating frequency from VCO31 from the antenna 17, the mixer circuits 22 switched by the oscillating frequency from the local oscillator 23, and IF amplifier 24, By oscillating VCO31 with the frequency determined by CPU32, the electric wave of specific frequency is detected with what is called a heterodyne system. And it restores to the taken-out detection signal to a control signal and a data signal (signals, such as a sound and an image) with the modem 25.

[0027]On the other hand, in transmission, modulate with the modem 25 and it carries out QPSK modulation of a control signal and the data signal by IF-MOD26 further, The aforementioned VCO31

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000393

is oscillated with the frequency determined by CPU32, and as a carrier frequency, it synthesizes in the mixer circuits 28, it amplifies with the RF driver 29, and transmits as an electric wave from the antenna 17 via the antenna changer 30. In order to provide in order that the above-mentioned antenna changer 30 may share the antenna 20 by reception and transmission, and to communicate the broadband and low electric power by the spectrum spread as a means of communication of a digital system, The frequency of IF-MOD29 and VCO26 is switched at high speed, and it is made to realize what is called a TDMA (time-division multiplex communication) system and a CDMA (code-division-multiplexing communication) system by the aforementioned CPU32.

[0028]The processing part of the control signal and data signal to which it restores at the time of the reception mentioned above is constituted as follows. The camera cell phone 10 is provided with channel CODEC(COderDECoder) 33, voice CODEC34, video CODEC35, the video RAM 36, and RAM/ROM37 and I/O device 38 that were connected to the aforementioned CPU32 as a processing part.

[0029]The above-mentioned channel CODEC33 synthesizes / separates commo data and the control signal of the terminal from a communication base, and the control signal contains the control data for CPU32 to control a receive section and a transmission section. Commo data is digital data in which the user of the mobile phone 10 as information terminal equipment performs audio transfer and transfer of an image eventually, and about voice data, By voice CODEC34, by performing the demodulation and modulation of voice data, the loudspeaker 12 is sounded based on the audio signal to which it restored, or a sound is incorporated from the microphone 13 and it modulates. The above-mentioned video CODEC35 performs compression/extension of image data using the video RAM 38, displays on the display part (after-mentioned) of display / imaging part 19 the picture signal elongated and restored, or compresses the picture signal incorporated by the imaging part (after-mentioned) of display / imaging part 19.

[0030]Have recorded the identification mark of the self telephone on RAM/ROM37, and. By operation of I/O device 38, i.e., the dial button (numeric keypad) 14 and the mode change button 15, the button 16a on hook, the off-hook button 16b, etc., instruct operation of the mobile phone 10 by CPU32, or, The telephone number etc. which are recorded on a communication state or RAM/ROM37 can be displayed now on the display part of display / imaging part 19.

[0031]In Fig.3 and Fig.4, the above-mentioned display / imaging part 19 comprises the display part 40 arranged by the surface of the housing 11 of the mobile phone 10, and the imaging part 50 arranged behind the display part 40. The above-mentioned display part 40 is provided with the following.

The transmission type liquid crystal display element 41 as a display part of translucency arranged so that it may expose outside from the window part 11a provided by the surface of the housing 11.

The lighting system 42 arranged so that a back surface of the liquid crystal display element 41 may

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000394

be contacted.

[0032]The above-mentioned liquid crystal display element 41 comprises a many pixel arranged, for example in the shape of a dot matrix, and each pixel by control of the drive voltage applied via the drawing electrode 41a, A character, a sign, and an image can be displayed now as a whole by operating so that light may be made to transmit or light may be intercepted. As a display part of translucency, it is possible not only a transmission type liquid crystal display element but to use the displaying means of the translucency of other composition, such as EL, i.e., a means to display an image etc. by luminescence.

[0033]As shown in Fig.4, the above-mentioned lighting system 42 is arranged so that it may correspond all over substantially [of the back surface of the liquid crystal display element 41], and sequentially from a side front The diffusion board 42a and the light guide 42b, For example, it opposed to the side edge of the light guide 42b and arranged in the it at least 1 side (in the illustrated case both sides), it comprises the light sources 42c, such as LED and CFD. Thereby, it is emitted after being directly reflected from the surface of the light guide 42b, and it diffuses with the diffusion board 42a, and the light which entered into the side surface of the light guide 42b from the light source 42c continues the whole surface from the back surface of the liquid crystal display element 41, and performs back illumination substantially uniformly. here -- the above-mentioned diffusion board 42a and the light guide 42b -- the -- it has the through-hole 42a1 and 42b1 as a notch at the center substantially. Thereby, it passes along these through-holes 42a1 and 42b1, and the light from an external object reaches the imaging part 50 on the back side or back side.

[0034]The above-mentioned imaging part 50 is arranged so that the center may correspond substantially with the center of the display part 40 behind the display part 40 mentioned above, It comprises the object lens 51 as a focusing means of an image arranged by the back side of the light guide 42c of the lighting system 42 of the display part 40, and the image sensor 52 arranged behind the object lens 51. The above-mentioned object lens 51 comprises a convex lens, and transmits the liquid crystal display element 41 of the display part 40 from an external object, Furthermore, an incident light is converged on the light receiving surface 52a of the image sensor 52 through the diffusion board 42a of the lighting system 42, the through-hole 42a1 provided by the light guide 42b, and 42b1. The above-mentioned image sensor 52 comprises image sensors, such as CCD (charge coupled device), for example, and it is arranged so that the light receiving surface 52a may turn to a side front, i.e., the object lens 51, and the display part 40.

[0035]The camera cell phone 10 by this embodiment, By being constituted as mentioned above, inputting the telephone number of the partner point with the dial button 14 like the conventional mobile phone at the time of call origination, and operating the off-hook button 16b, Perform call

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000395

origination, and it talks toward the microphone 13, and talks over the telephone by hearing a partner's sound from the loudspeaker 12.

[0036]When imaging by the imaging part 50 of display / imaging part 19, after the mode change button 15 performs selection of a still picture or an animation, imaging is performed by operating the imaging start button 53 provided by the side surface of the housing 11. In this case, the light from an external object, i.e., a user's face, enters into the display part 40 of display / imaging part 19, and imaging transmits the transmission type liquid crystal display element 41, Furthermore it passes along the through-hole 42a1 of the lighting system 42, and 42b1, converges with the object lens 51, and images to the light receiving surface 52a of the image sensor 52. Thereby, image taking is performed by the image sensor 52, the incorporated picture signal is compressed by video CODEC35, and image display is carried out to the screen of the liquid crystal display element 41 of the display part 41, or it is transmitted to a call partner as an electric wave via a transmission section from channel CODEC33.

[0037]The image sensor 52 of the imaging part 50 here from the back side of the display part 40 of display / imaging part 19 arranging, When a user checks his image by which is imaged by the imaging part 50 and a screen display is carried out to the liquid crystal display element 41 of the display part 40, since the user's look has turned to the display part 40, it will also have turned to the imaging part 50. Therefore, even if the user is checking his image, seeing the display part 40, since the look does not deviate from the imaging part 50, it can image the image of a natural look. Since the imaging part 50 is arranged by the back side of the display part 40, space for the imaging part 50 is not needed for the surface of the housing 11 of the camera cell phone 10 according to the display part 40. Therefore, in the case of the same housing 11 of a size, space, such as the display part 40, can be taken largely, or the whole information terminal equipment, such as the mobile phone 10, can be constituted small in it. When the through-hole 42a1 of the lighting system 42 and 42b1 act as a notch, the light from the light source 42c does not enter into the imaging part 50 via the through-hole 42a1 and 42b1. Thereby, the imaging screen by the imaging part 50 does not carry out image quality degradation according to the light leak from the lighting system 42.

[0038]Here, as the liquid crystal display element 41 of the display part 40, when using a color liquid crystal display device, the transmissivity of the light by the polarizing plate of both sides which constitute the liquid crystal display element 41 is quite as low as 4%. On the other hand, the minimum object sensitivity of the image sensor 52 is 2lx, and since it is an equivalent for 50lx before transmitting the liquid crystal display element 41, if there is a luminosity of 100 or more lx with lighting even if it is indoor, it not only the outdoors but can be imaged sufficiently. When a luminosity runs short, the face of the user who is an object may be illuminated by making the illumination of the light source 42c high using the back illumination from the lighting system 42.

[0039]Although the light from an external object transmits the liquid crystal display element 41 of

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000396

the display part 40 during operation of the imaging part 50, it passes along the through-hole 42a1 of the lighting system 42, and 42b1 and the imaging part 50 is reached, The light from an object will be intercepted by the display portion depending on the display content of the liquid crystal display element 41, and an incident light may decrease to the light receiving surface 52a of the image sensor 52 of the imaging part 50. In such a case, a display content is changed, and white light may be transmitted by not displaying etc. and it may be made to obtain by carrying out drive controlling of each pixel suitably in the display area of the through-hole 42a1 of the lighting system 42, and the liquid crystal display element 41 corresponding to 42b1. Or instead of making white light transmit, if it is made to perform monochromatic specification, it is also possible to give special effects to the imaging screen by the imaging part 50 by acting as a colored filter, and. For example, if it is made to perform the display which shows the lens position of the object lens 51, when a user gazes at this display, that look can be reliably turned to the imaging part 50.

[0040]Fig.5 shows the second embodiment of the camera cell phone to which the present invention is applied. In Fig.5, the camera cell phone 60 is the substantially same composition as the camera cell phone 10 shown in Fig.1 thru/or Fig.4, and has different composition in that it is shown below. Therefore, in the camera cell phone 60, the same code is given to the same component as the camera cell phone 10 shown in Fig.1 thru/or Fig.4, and the description is omitted. In Fig.5, the object lens 61 is arranged by the surface of the housing 11 instead of the object lens 51 of the imaging part 50 in the camera cell phone 10 which showed the camera cell phone 60 to Fig.3 and Fig.4. This object lens 61 is attached to the surface of the housing 11, and it is formed so that the display part 40 whole may be covered.

[0041]Since it acts like the camera cell phone 10 shown in Fig.1 thru/or Fig.4 according to the camera cell phone 60 of such composition and the object lens 61 is arranged by the surface of the housing 11, the distance of this object lens 61 and the image sensor 51 of the imaging part 50 is long. Therefore, since it can image by using near the central part of the object lens 61 with little aberration conjointly with being formed so that the display part 40 whole may be covered since the focal distance of the object lens 61 can be lengthened, the image quality of the imaging screen imaged by the imaging part 50 improves. Since the display part 40 whole is covered with the object lens 61, since the user can expand and observe the display part 40, he becomes a largely legible display.

[0042]Fig.6 shows the third embodiment of the camera cell phone to which the present invention is applied. In Fig.6, the camera cell phone 70 is the substantially same composition as the camera cell phone 10 shown in Fig.1 thru/or Fig.4, and has different composition in that it is shown below. Therefore, in the camera cell phone 70, the same code is given to the same component as the camera cell phone 10 shown in Fig.1 thru/or Fig.4, and the description is omitted. The fixing lens 71a arranged by the surface of the housing 11 in Fig.6 instead of the object lens 51 of the imaging

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000397

part 50 in the camera cell phone 10 which showed the camera cell phone 70 to Fig.3 and Fig.4, It has the object lens 71 which comprises the lighting system 42 and the moving lens 71b arranged between the image sensors 52. The fixing lens 71a is attached to the surface of the housing 11, this object lens 71 is formed so that the display part 40 whole may be covered, and about optical axis direction, the moving lens 71b is instructed so that moving regulation is possible.

[0043]According to the camera cell phone 70 of such composition, act like the camera cell phone 10 shown in Fig.1 thru/or Fig.4, and. Since the object lens 71 is constituted as what is called a zoom lens, the focal distance of the object lens 71 can be adjusted by movably adjusting the moving lens 71b to optical axis direction. Therefore, since proper magnification can be imaged by adjustment of the focal distance of the object lens 71, the imaging range angle of the imaging screen imaged by the imaging part 50 can be changed. Since the display part 40 whole is covered with the fixing lens 71a of the object lens 71, since the user can expand the display part 40 with the fixing lens 71a and can observe it, he becomes a largely legible display. The lens of a different focal distance may be removably constituted instead of the moving lens 71b. In this case, it can change into various imaging range angles by detaching and attaching the lens of various focal distances instead of the moving lens 71b.

[0044]Fig.7 shows the fourth embodiment of the camera cell phone to which the present invention is applied. In Fig.7, the camera cell phone 80 is the substantially same composition as the camera cell phone 10 shown in Fig.1 thru/or Fig.4, and has different composition in that it is shown below. Therefore, in the camera cell phone 80, the same code is given to the same component as the camera cell phone 10 shown in Fig.1 thru/or Fig.4, and the description is omitted. In Fig.7, the diffusion board 42a of the lighting system 42 of the display part 40 in the camera cell phone 10 which showed the camera cell phone 80 to Fig.3 and Fig.4, and a part of light guide 42b are constituted movable. As for the diffusion board 42a and the light guide 42b, in the illustrated case, the upper portion 42a2 and 42b2 are substantially formed slidably toward the upper part from near a center.

[0045]According to the camera cell phone 80 of such composition, a telephone call is performed like the camera cell phone 10 shown in Fig.1 thru/or Fig.4, and at the time of imaging, As the diffusion board 42a, the portion 42a2 of the light guide 42b, and 42b2 are shown in Fig.7, when moving up, Imaging is performed like the diffusion board 42a and the camera cell phone 10 of the light guide 42b which will form the through-hole 42a1 and 42b1 as a notch near a center, and was substantially shown in Fig.3 and Fig.4. On the other hand, at the time of un-imaging, it is moved caudad and the diffusion board 42a, the portion 42a2 of the light guide 42b, and 42b2 close the through-hole 42a1 as a notch, and 42b1. By this the liquid crystal display element 41 of the display part 40, When it does not operate as a notch, but the above-mentioned through-hole 42a1 and 42b1 will continue all over the, and back illumination will be uniformly carried out by the lighting

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000398

system 42 and they are provided with the above ON and the notch in which the opening and closing as a shade part which can be turned off are possible, a legible display will be performed to the whole.

[0046]If the above-mentioned diffusion board 42a, the portion 42a2 of the light guide 42b, and movement of 42b2 are made to be performed automatically in conjunction with operation of the imaging start button 53, it is not necessary to operate it especially being conscious of the portion 42a2 and movement of 42b2. The above-mentioned diffusion board 42a, the portion 42a2 of the light guide 42b, and movement of 42b2 are interlocked with, some polarizing plates which constitute the liquid crystal display element 41 are moved, and if it is made to make it evacuate from the optical path to the image sensor 52, the incident light quantity to the image sensor 52 can be increased substantially.

[0047]Fig.8 shows the fifth embodiment of the camera cell phone to which the present invention is applied. In Fig.8, the camera cell phone 90 is the substantially same composition as the camera cell phone 10 shown in Fig.1 thru/or Fig.4, and has different composition in that it is shown below. Therefore, in the camera cell phone 90, the same code is given to the same component as the camera cell phone 10 shown in Fig.1 thru/or Fig.4, and the description is omitted. In Fig.5, the imaging unit 91 is arranged instead of the object lens 51 in which the imaging part 50 in the camera cell phone 10 which showed the camera cell phone 90 to Fig.3 and Fig.4 has been placed in a fixed position, and the image sensor 52. This imaging unit 91 carries out fixed holding of the object lens 51 and the image sensor 52 which constitute the imaging part 50 integrally, and it is constituted rotatable around the vertical axis of rotation 91a. And the housing 11 of the mobile phone 10 is equipped with the window part 11b in the back side of this imaging unit 91.

[0048]As shown in Fig.8 according to the camera cell phone 60 of such composition, when the object lens 51 supported with the imaging unit 91 is placed at a front side, It acts like the camera cell phone 10 shown in Fig.1 thru/or Fig.4, and imaging of the face of the user whose light from [from a front side] an object is in the front side of the mobile phone 10 by an incident thing via the display part 40, etc. is performed in the imaging part 50 supported with the imaging unit 91.

[0049]On the other hand, as shown in Fig.9, when the object lens 51 which the imaging unit 91 rotates around the axis of rotation 91a, and is supported with the imaging unit 91 is placed at a rear side. Imaging of a back object is carried out to the light receiving surface 52a of the image sensor 52 by the incident thing via the object lens 51 of the imaging part 50 by which the light from the object behind the housing 11 is supported with the imaging unit 91 from the window part 11b of the housing 11. The user can see and check images, such as scenery by which a screen display is carried out to the display part 40, by rotating the imaging unit 91, and turning the light receiving surface 52a of the image sensor 52 back by this, to image scenery, for example, as shown in Fig.9.

[0050]The window part 11b of the above-mentioned housing 11 may be closed with the shutter

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000399

which is not illustrated at the time of non-use. Although supported pivotable, the imaging unit 91 may be constituted so that it may be reversed approximately and can attach not only this but removably.

[0051]Although it described in the embodiment mentioned above about the case where the present invention is included in the mobile phone as information terminal equipment, Portable information terminal device machines of apply [to the variety-of-information terminal unit provided with the display part and the imaging part / the present invention], such as not only this but a notebook type personal computer and what is called PDA, are clear.

[0052]

[Effect of the Invention]As stated above, according to the present invention, the information terminal equipment with an imaging means can make the look of the user at the time of a display and imaging correspond, and it enabled it to constitute compactly can be provided.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000400

(19)日本国特許庁（ＪＰ）　(12) **公開特許公報**（Ａ）　(11)特許出願公開番号
特開2002－271664
（P2002－271664A）
(43)公開日　平成14年９月20日(2002.9.20)

(51)Int.Cl.⁷	識別記号	ＦＩ	ﾃｰﾏｺｰﾄﾞ(参考)
Ｈ０４Ｎ　5/225		Ｈ０４Ｎ　5/225	Ｅ　５Ｃ０２２
// Ｈ０４Ｎ 101:00		101:00	

審査請求　未請求　請求項の数４　ＯＬ　（全 ７ 頁）

(21)出願番号　特願2001－68576(P2001－68576)

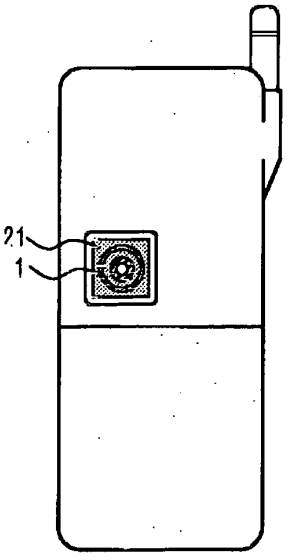
(22)出願日　平成13年３月12日(2001.3.12)

(71)出願人　000001889
三洋電機株式会社
大阪府守口市京阪本通２丁目５番５号
(72)発明者　数井　一弘
大阪府守口市京阪本通２丁目５番５号　三洋電機株式会社内
(74)代理人　100111383
弁理士　芝野　正雅

Ｆターム(参考)　5C022 AA12 AA13 AB14 AC42 AC54 AC63 AC77 AC78

(54)【発明の名称】　携帯電話機

(57)【要約】
【課題】　カメラ機能付き携帯電話機において、カメラモードでの動作時以外では、レンズを視覚的に遮蔽する。
【解決手段】　カメラ機能付き携帯電話機において、その背面には、カメラ孔２が穿孔され、カメラ孔２に対応する内部に光学機構４と固体撮像素子３からなるカメラユニット１が配置される。そのカメラユニット１の光学機構４を被うように、液晶パネル２１を配置する。そして、携帯電話機をカメラモードで動作させるときは、液晶パネルを駆動させて透過率を上げて、レンズを視覚的に開放し、それ以外のときには、液晶パネルを駆動させずに透過率を下げて、レンズを視覚的に遮蔽する。



Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000401

【特許請求の範囲】
【請求項１】　通話信号を無線送受信する通信機能を有すると共に、被写体を撮影するカメラ機能を有する携帯電話機において、
筐体の背面に配置され、被写体の光学像を結像する光学機構と、
上記光学機構を通して入射される画像を光電変換して画像情報を得る固体撮像素子と、
上記光学機構の被写体側に配置される液晶パネルと、を備え、
上記液晶パネルは電圧の印加に応答して上記光学機構を視覚的に遮蔽することを特徴とする携帯電話機。
【請求項２】　上記液晶パネルは、駆動電圧の印加が停止されたときに、上記光学機構を視覚的に遮蔽することを特徴とする請求項１記載の携帯電話機。
【請求項３】　上記液晶パネルは、少なくとも電話モード或いはカメラモードに応答して動作し、カメラ機能が有効なとき以外に上記光学機構を視覚的に遮蔽することを特徴とする請求項１又は請求項２に記載の携帯電話機。
【請求項４】　上記液晶パネルは、対向配置される一対の基板の少なくとも一方が単独駆動可能な複数の透明電極を備え、
上記複数の透明電極の何れかを選択的に駆動することにより、透過率を段階的に変化させることを特徴とする請求項１から請求項３の何れかに記載の携帯電話機。
【発明の詳細な説明】
【０００１】
【発明の属する技術分野】本発明は、デジタルスチルカメラ機能を有する携帯電話機に関するものである。
【０００２】
【従来の技術】近年、小型カメラを搭載し、携行先でデジタルスチルカメラとしても使用可能な携帯電話が現れてきた。このような携帯電話では、携帯電話機本体の小型化が要望されるのに伴って、搭載されるデジタルスチルカメラも小型なものが望まれる。
【０００３】図９は、カメラ機能付き携帯電話機（以下、携帯電話機と略記する）を示す模式図であり、図１０はカメラユニットの概略を示す断面図である。また、図９（ａ）は、携帯電話機の背面を示し、図９（ｂ）は、前面を示すものである。
【０００４】携帯電話機の背面には、図１０に示すように、カメラ孔２が設けられ、カメラ孔２に対応する内部には光学機構４及び固体撮像素子３からなるカメラユニット１が配置される。カメラユニット１の被写体側には、光学機構４を保護する透明のレンズカバー５が配置される。
【０００５】携帯電話機の表面には、表示部６、シャッタボタン７、モード切替ボタン８及び操作部９が配置され、表示部６は、例えば、液晶表示パネルよりなり、携帯電話機の使用に応じた種々の情報を表示する。この表示部６には、携帯電話機をカメラモードで使用するとき、カメラユニット１を介して撮影された画像が表示され、電話モードで使用するとき、ユーザーが入力した電話番号や携帯電話機に内蔵されるメモリに記憶される相手方の電話番号等の各種情報が表示される。
【０００６】シャッタボタン７は、携帯電話機をカメラモードでの使用の際のシャッタとして使用する。ユーザーが気に入った被写体があったとき、レンズを被写体の方に向け、このシャッタボタン７を押して被写体画像の画像データを、携帯電話機に内蔵されるメモリに記録する。モード切替ボタン８は、携帯電話機の電話モード及びカメラモードの選択に加え、その他、付属されるメール機能やインターネット機能等の種々の機能を選択するものである。それぞれの機能に対応するモードを選択すると、その機能の使用が可能となる。操作部９は、電話番号を入力するための０から９までのテンキーと、発信や終了等の機能ボタンからなる。
【０００７】モード切替ボタン８を使用して、カメラモードを選択した場合、レンズを被写体の方に向けると、被写体画像が固体撮像素子に結像され、光電変換によって得られた画像情報が信号処理されて、表示部６に映し出される。ユーザーは、表示部６に映し出される画像を見ながら、気に入った画像があればシャッタボタン７を押して、携帯電話機に内蔵されるメモリに画像データを記録する。これにより、記録した画像を相手方にメールで転送したり、プリンタを携帯電話機に接続して、画像をプリントアウトすることができる。
【０００８】一方、電話モードで使用する場合は、モード切替ボタン８を使用して、カメラモードをオフにする。カメラモードをオフにすると、自動的に電話モードが選択され、待ち受け状態となる。電話をかけるときには、テンキーを操作して相手方の電話番号を入力し、表示部６に表示される電話番号を確認した後、通話ボタンを押して相手と通話する。また、待ち受け状態時に相手方からの着信があったときには、通話ボタンを押して、その着信に応答する。尚、カメラモードで動作中に、着信があった場合には、優先的に電話モードに切り換えられ、通話が可能となる。
【０００９】
【発明が解決しようとする課題】上述したカメラ機能付き携帯電話機（以下、携帯電話機と略記する）は、携帯電話機の背面にカメラが向いていて、撮影時にレンズを被写体の方に向けて撮影する構成となっている。このような携帯電話機を電話モードで使用している場合、又は、単に携行している場合において、不用意にレンズが不特定の第三者に向けられることがある。このため、レンズが向けられた人に、不快感を抱かせる恐れがある。
【００１０】そこで、本発明は、かかる携帯電話機を電話モードで使用するときにレンズを隠す役目を果たすレ

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000402

ンズカバーを備える携帯電話機の提供を目的とする。

【0011】

【課題を解決するための手段】本発明は、上述の課題を解決するために成されたもので、その特徴とするところは、通話信号を無線送受信する通信機能を有すると共に、被写体を撮影するカメラ機能を有する携帯電話機において、筐体の背面に配置され、被写体の光学像を結像する光学機構と、上記光学機構を通して入射される画像を光電変換して画像情報を得る固体撮像素子と、上記光学機構の被写体側に配置される液晶パネルと、を備え、上記液晶パネルは電圧の印加に応答して上記光学機構を視覚的に遮蔽することにある。

【0012】これにより、上記液晶パネルへの駆動電圧の印加を制御することで、上記携帯電話機をカメラモードで動作しないときには、上記光学機構を視覚的に遮蔽することができる。

【0013】

【発明の実施の形態】図1は、本発明の実施形態を示す模式図であり、図2は、カメラユニットの概略を示す断面図である。カメラ機能付き携帯電話機（以下、携帯電話機と略記する）の背面には、カメラユニット1及びレンズカバー21が配置される。また、携帯電話機の前面に配置される表示部6、シャッタボタン7、モード切替ボタン8及び操作部9は、図9（b）に示すものと同様であるため、省略する。

【0014】本発明の特徴とするところは、液晶パネルをレンズカバー21として、カメラユニット1の被写体側に、レンズを被うように設け、液晶パネルのオン／オフに応じて、レンズを視覚的に遮蔽することにある。

【0015】携帯電話機本体の背面には、図2に示すように、カメラ孔2が穿孔され、カメラ孔2に対応する内部に、光学機構4と固体撮像素子3からなるカメラユニット1が配置される。

【0016】レンズカバー21は、携帯電話機本体の背面に、レンズカバー21の外形に対応して設けられたカバー孔に合致して配置される。このレンズカバー21は、カメラユニット1の被写体側に配置され、光学機構4を被う。更に、このレンズカバー21は、透過率を変更する液晶パネルより構成され、内側に透明電極を備える2枚の透明ガラス基板と、その2枚の基板間に封入される液晶よりなり、一対の透明電極間に駆動電圧を印加する。それぞれのガラス基板に装着される透明電極は、単一の平坦面形状のもので良く、印可される駆動電圧に応じて、光の透過率を変更する。この液晶パネル21は、電極間に駆動電圧が印加されたとき、光を透過し、駆動電圧が印加されないとき、光を遮光する所謂ノーマリホワイト型である。

【0017】図3は、カメラユニット1の構成を示すブロック図である。カメラユニット1は、レンズカバー21（液晶パネル）、固体撮像素子3、タイミング発生回路41、CCD駆動回路42、信号処理回路43、A／D変換回路44及びパネル駆動回路45で構成される。

【0018】タイミング発生回路41は、入力される基準クロックCKに基づいて、垂直走査信号VD及び水平走査信号HDを生成する。このタイミング発生回路41は、カメラ選択信号CSに応じて動作するもので、カメラ選択信号CSがHレベルの間、垂直走査信号VD及び水平走査信号HDをCCD駆動回路42へ出力する。

【0019】CCD駆動回路42は、垂直走査信号VD及び水平走査信号HDに応答して、CCD駆動クロックCTを生成し、固体撮像素子3に供給する。固体撮像素子3は、光学機構4を通して入射された画像を光電変換し、CCD駆動クロックCTにより駆動されて、画像信号$Y_{(t)}$を1画素単位で出力する。信号処理回路43は、固体撮像素子3から入力される画像信号$Y_{(t)}$に対して、サンプルホールド、シェーディング補正、ガンマ補正等の各種信号処理を施す。A／D変換回路44は、信号処理回路43から入力された画像信号$Y_{(t)}$をデジタルデータに変換し、画像データ$YD_{(n)}$を出力する。この画像データ$Y_{(t)}$は、ディスプレイドライバ、メモリ等に供給される。

【0020】パネル駆動回路45は、カメラ選択信号CSに応答して、液晶パネル21の駆動する駆動信号LTを生成する。この駆動信号LTは、カメラ選択信号CSに対応して生成され、カメラ選択信号CSがHレベルのとき、Hレベルに立ち上げられる。

【0021】この構成において、図4に従い、その動作を説明する。タイミングt_0において、携帯電話機の電源を投入すると、携帯電話機は、電話の待ち受け状態となる。このとき、Lレベルのカメラ選択信号CSがパネル駆動回路45に入力され、駆動信号LTがLレベルとなる。これにより、液晶パネル21が遮光状態となって、レンズを視覚的に遮蔽する。タイミングt_1において、カメラモードを選択すると、カメラ選択信号CSがHレベルとなる。これに応じて、パネル駆動回路45から液晶パネル21へ供給されていた駆動信号LTがHレベルとなり、液晶パネル21が透過状態となる。これにより、レンズが視覚的に開放される。

【0022】タイミングt_2において、カメラモードで動作中に、相手方から電話の着信が入ると、着信信号TSが立ち上がり、これに応答して、カメラ選択信号CSがLレベルとなる。これにより、カメラモードでの動作が一旦遮断され、自動的に電話モードに切り換えられる。そして、液晶パネル21に供給されていた駆動信号LTがLレベルとなって、液晶パネル21が遮光状態となり、レンズを視覚的に遮蔽する。タイミングt_3において通話が終了すると、通話の終了に応答する信号が立ち上がり（図示せず）、その信号に応じて、カメラ選択信号CSがHレベルとなる。これにより、再びカメラモードが選択され、駆動信号LTがHレベルとなる。そし

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000403

て、液晶パネル２１が透過状態となって、再びレンズが視覚的に開放される。タイミングt_4において、カメラの使用が終了し、カメラモードを非選択とすると、カメラ選択信号ＣＳがＬレベルとなる。これに応答して、駆動信号ＬＴがＬレベルとなり、レンズを視覚的に遮蔽する。

【００２３】このように、カメラ選択信号ＣＳに応答して、液晶パネル２１を駆動することにより、カメラモードでの動作中以外は、レンズを視覚的に遮蔽することができる。これにより、第３者にレンズを意識させるのを防ぎ、不快感を与えるのを防止する。尚、通話が終了した後、カメラモードに切り換えられ、液晶パネル２１を透過状態としているが、通話が終了した時点で、待ち受け状態となって、レンズを視覚的に遮蔽しても良い。

【００２４】ところで、携帯電話機に搭載されるデジタルスチルカメラに、例えば、フレームトランスファ方式の固体撮像素子３を用いる場合、上述の液晶パネル２１を垂直スミアを除去するためのシャッタ機構として用いることも可能である。図５は、フレームトランスファ方式の固体撮像素子の構成を示す平面図である。

【００２５】固体撮像素子３は、受光部１１、蓄積部１２及び水平転送部１３で構成される。受光部１１は、光学機構４を通して入射される画像を各受光画素に受け、光電変換されて発生した情報電荷を各受光画素に蓄積する。この蓄積した１画面分の情報電荷を読み出しクロックϕ_Sに応答して、蓄積部１２に高速で垂直転送する。蓄積部１２は、受光部１１より転送された情報電荷を一時的に蓄え、転送クロックϕ_Hに応答して、水平転送部１３へ１行ずつ垂直転送していく。水平転送部１３は、蓄積部１２より転送された情報電荷を、水平転送クロックϕ_hに応答して、水平方向へ１画素単位で転送する。出力部１４は、水平転送部１３から転送された情報電荷を順次取り込み、各情報電荷の電荷量に応じて電圧値に変換し、画像信号$Y_{(t)}$として出力する。

【００２６】このような固体撮像素子３では、受光部１１の受光面に強い光が照射された部分があると、その部分を通過する情報電荷に、その強い光によって発生する電荷が重畳されて垂直スミアを発生させる。このような垂直スミアは、画面上に白い帯状となって現れ、画質の低下を招く。しかしながら、この垂直スミアは、受光部１１から蓄積部１２への電荷の垂直転送期間内に入射される光を遮光することで除去することができる。

【００２７】そこで、垂直転送動作に同期して、液晶パネル２１を遮光状態とすることで、その間に受光部１１に入射される光を遮断する。このような構成は、パネル駆動回路４５を垂直走査信号ＶＤに同期して動作させ、図６に示すように駆動信号ＬＴを生成すれば良い。

【００２８】図６は、液晶パネル２１のシャッタ動作を示すタイミング図である。駆動信号ＬＴは、垂直走査信号ＶＤのブランキング期間内に設定される垂直転送期間ｔ（読み出しクロックϕｓ）に同期するように生成され、固体撮像素子３の垂直転送期間ｔの間、Ｌレベルとなる。これにより、垂直転送期間ｔの間、固体撮像素子３の垂直転送動作に同期して、液晶パネル２１を遮光状態とする。

【００２９】ところで、この液晶パネル２１に使用される透明電極を選択駆動可能な複数の透明電極に分割し、駆動する電極を選択的に制御しても良い。図７は、液晶パネル５１のガラス基板に装着される透明電極の電極パターンの一例を示す模式図である。

【００３０】液晶パネル５１のガラス基板に設けられる複数の透明電極５２Ａ～５２Ｄは、例えば、同心円状に配列され、それぞれがスイッチ機構を有し、選択的に駆動することができる。この液晶パネル５１は、駆動電圧が印加されたとき、光を透過し、駆動電圧が印加されないとき、光を遮光する所謂ノーマリホワイト型である。つまり、液晶パネル５１は、駆動信号ＬＴがＨレベルのとき、透過状態となり、Ｌレベルのとき、遮光状態となる。従って、それぞれの透明電極５２Ａ～５２Ｄに選択的にＨレベルの駆動信号ＬＴを供給すると、供給された電極の領域は、光を透過し得る状態となり、Ｌレベルの駆動信号ＬＴを供給した領域では光を遮光する状態となる。透明電極５２Ａ～５２Ｄの駆動を制御することによって、液晶パネル５１の透過率を段階的に調節することができ、液晶パネル５１を調光機構として使用することが可能となる。

【００３１】図８は、液晶パネル５１を調光機構として用いる場合のカメラユニットの構成を示すブロック図である。このカメラユニットは、図３の構成に加え、積分回路６１、露光制御回路６２を設けたものである。

【００３２】固体撮像素子３は、被写体画像に対応する画像信号$Y_{(t)}$をＡ／Ｄ変換回路４４に出力すると共に、積分回路６１に出力する。積分回路６１は、画像信号$Y_{(t)}$を垂直走査期間単位で積分し、露光量信号Ｌとして露光制御回路６２に出力する。露光制御回路６２には、固体撮像素子３の適正露光量の範囲が設定されており、入力された露光量信号Ｌが適正露光量の範囲内であるか否かに応じて、透明電極の駆動を決定する制御信号$L_{(s)}$を生成する。適正露光量レベルを越えるような光が固体撮像素子３に入射されると、その光量を反映した画像信号$Y_{(t)}$が出力され、その画像信号Y(t)のレベルに応じて、露光量を抑えるように制御する。即ち、制御信号$L_{(s)}$が駆動する透明電極の数を減らすように生成され、パネル駆動回路４５を通して液晶パネル５１に供給されて、光を透過する領域が縮小される。これいより、固体撮像素子３に入射される光量を適当なレベルとするように減光する。一方、入射される光量が、適正露光量レベルに達してないときは、駆動する透明電極の数を増やすように制御し、光を透過する領域を拡大して、入射される光量が適当なレベルとなるように調光する。

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000404

【００３３】このように、駆動する透明電極を選択することで、自由に調光パターンを選択することができる。これにより、液晶パネル５１の透過率を段階的に変更することが可能となり、固体撮像素子３の対応できる照度範囲（ダイナミックレンジ）を広くすることができる。

【００３４】尚、露光制御においては、例えば、室内で使用するときと屋外で使用するときの調光パターンを予め設定しておいても良い。つまり、携帯電話機に室内使用、屋外使用を選択する選択スイッチを設けて、カメラモードを使用するときの状況に対応して選択するようにしても良い。

【００３５】

【発明の効果】本発明によれば、カメラ機能付き携帯電話機をカメラモードで使用しないときに、撮像レンズが外部から見えないように隠すことができる。これにより、無意識に撮像レンズが不特定の第３者に向いてしまっていても、第３者に不快感を与えるのを防止する。更に、カメラモードを使用しないときは、液晶パネルを駆動しないので、消費電力を抑えることができ、携帯電話としての待ち受け時間に与える影響を少なくすることができる。

【００３６】また、レンズカバーとなる液晶パネルに形成される透明電極を、選択的に駆動可能な複数の透明電極に分割することで、透過率を段階的に変更することができる。これにより、固体撮像素子の照度範囲（ダイナミックレンジ）を広げることができ、晴天時の屋外のような入射光の強い場所での撮影を可能とする。

【図面の簡単な説明】

【図１】本発明の実施形態を示す模式図である。

【図２】カメラユニットの概略を示す断面図である。

【図３】本発明の実施形態の構成を示すブロック図である。

【図４】図３の動作を示すタイミング図である。

【図５】フレームトランスファ方式の固体撮像素子の構成を示す模式図である。

【図６】シャッタ機構として使用するときの動作を示すタイミング図である。

【図７】液晶パネルの電極パターンの一例を示す模式図である。

【図８】調光機構として使用するときの構成を示すブロック図である。

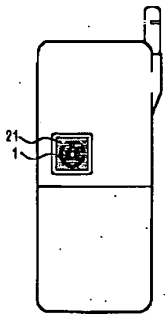
【図９】従来のカメラ機能付き携帯電話機を示す模式図である。

【図１０】カメラユニットの概略を示す断面図である。

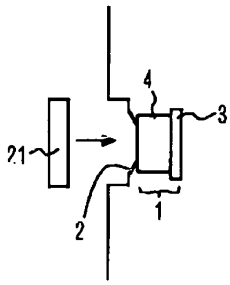
【符号の説明】

１：カメラユニット
２：カメラ孔
３：固体撮像素子
４：カメラヘッド
５：レンズカバー
６：表示部
７：シャッタボタン
８：モード切替ボタン
９：操作部
１１：受光部
１２：蓄積部
１３：水平転送部
１４：出力部
２１、５１：液晶パネル
４１：タイミング発生回路
４２：ＣＣＤ駆動回路
４３：信号処理回路
４４：Ａ／Ｄ変換回路
４５：パネル駆動回路
６１：積分回路
６２：露光制御回路

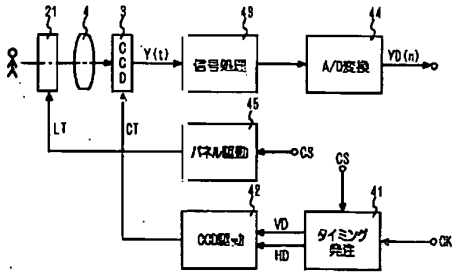
【図１】



【図２】

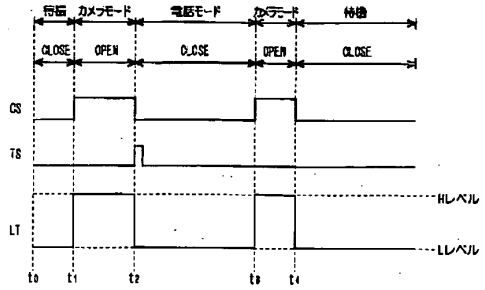


【図３】

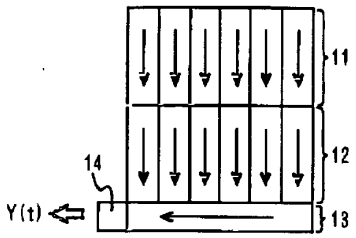


Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000405

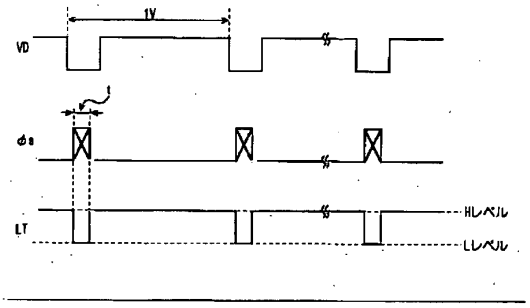
【図4】



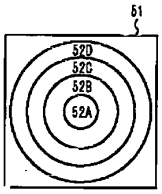
【図5】



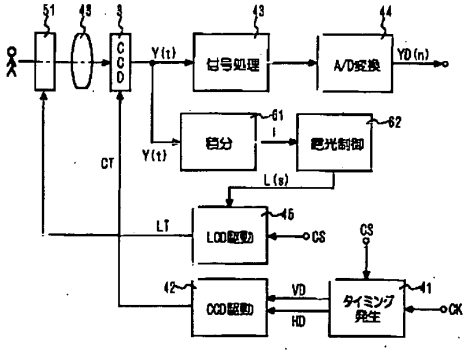
【図6】



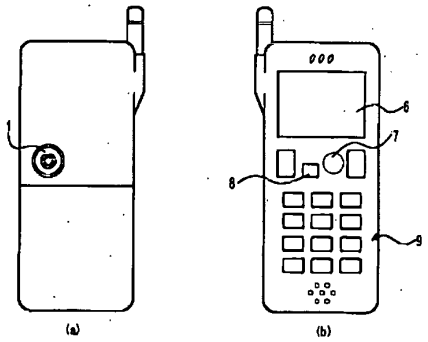
【図7】



【図8】

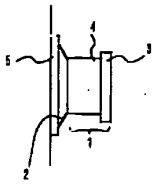


【図9】



Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000406

【図10】



Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000407

2002-271664

(11)Publication number 2002-271664
(43)Date of publication of application 20.09.2002
(51)Int.Cl.
H04N 5/225
// H04N101:00

(21)Application number 2001-068576
(22)Date of filing 12.03.2001
(71)Applicant SANYO ELECTRIC CO LTD
(72)Inventor KAZUI KAZUHIRO
(54)MOBILE PHONE
(57)Abstract
PROBLEM TO BE SOLVED: To provide a mobile phone, having camera functions in which the lens is visually shielded in modes other than the camera mode.
SOLUTION: A camera hole 2 is formed on the rear side of the mobile phone, with camera functions, and a camera unit 1 comprising an optical mechanism 4 and a solid-state imaging device 3 is placed in the inside, corresponding to the camera hole 2. A liquid crystal display panel 21 is placed to cover the optical mechanism 4 of the camera unit 1. When the mobile phone is operated in the camera mode, the liquid crystal display panel is driven to increase the transmittance and to visually open the lens, and in other modes, the liquid crystal display panel is not driven, to decrease the transmittance, thereby visually shielding the lens.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000408

CLAIMS

[Claim(s)]

[Claim 1]In a cellular phone which it has a wireles transmitting and receiving communication function to carry out for call signals, and has a camera function which photos an object, A solid state image pickup device which is arranged at a back face of a housing, carries out photoelectric conversion of the image which enters through an optical mechanism which images an optical image of an object, and the above-mentioned optical mechanism, and obtains picture information, A cellular phone having a liquid crystal panel arranged at the object side of the above-mentioned optical mechanism, and the above-mentioned liquid crystal panel's responding to an application of voltage, and shielding the above-mentioned optical mechanism visually.

[Claim 2]The cellular phone according to claim 1 when the above-mentioned liquid crystal panel is stopped [an application of a drive voltage], wherein it shields the above-mentioned optical mechanism visually.

[Claim 3]The cellular phone according to claim 1 or 2 when the above-mentioned liquid crystal panel responds to telephone mode or a camera mode at least, and operates, and a camera function is effective, wherein it shields [except] the above-mentioned optical mechanism visually.

[Claim 4]The cellular phone according to any one of claims 1 to 3, wherein the above-mentioned liquid crystal panel changes transmissivity gradually by providing at least 1 side of a pair of substrate arranged oppositely with a plurality of transparent electrodes which can be driven independent, and driving selectively any of a plurality of above-mentioned transparent electrodes they are.

DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention]The present invention relates to the cellular phone which has a digital still camera function.

[0002]

[Description of the Prior Art]A miniature camera is mounted in recent years and the mobile phone usable also as a digital still camera has appeared at the carrying place. In such a mobile phone, in connection with the miniaturization of a portable telephone body being demanded, what also has a small digital still camera mounted is desired.

[0003]Fig.9 is a mimetic diagram showing a cellular phone with a camera function (it is hereafter written as a cellular phone).

Fig.10 is a cross sectional view showing an outline of a camera unit.

Fig.9 (a) shows the back face of a cellular phone, and Fig.9 (b) shows a front face.

[0004]As shown in Fig.10 at the back face of a cellular phone, the camera hole 2 is provided and the optical mechanism 4 and the camera unit 1 which consists of the solid state image pickup device 3 are arranged at the inside corresponding to the camera hole 2. The transparent lens cover 5 which protects the optical mechanism 4 is arranged at the object side of the camera unit 1.

[0005]On the surface of a cellular phone, the display part 6, the shutter button 7, the mode switching button 8, and the operating part 9 are arranged, and the display part 6 consists of liquid crystal display panels, and displays various information according to use of the cellular phone, for example. When the image photoed via the camera unit 1 when using a cellular phone by a camera mode is displayed and it is used by telephone mode, varieties of information, such as the other party's telephone number memorized by the memory built in the telephone number which the user input, or a cellular phone, are displayed on this display part 6.

[0006]The shutter button 7 is used as a shutter in the case of use by a camera mode of a cellular phone. When there is an object with which a user is pleased, a lens is turned to the direction of an object and it records on the memory in which this shutter button 7 is pushed on and the image data of an object image is contained by the cellular phone. In addition to selection of the telephone mode of a cellular phone, and a camera mode, the mode switching button 8 chooses various functions, such as an attached mail function and an Internet function. If the mode corresponding to each function is chosen, it will become usable [the function]. The operating part 9 serves as numeric keypads from 0 to 9 for inputting a telephone number from feature buttons, such as dispatch and an end.

[0007]If a lens is turned to the direction of an object when the mode switching button 8 is used and a camera mode is chosen, an object image is imaged by the solid state image pickup device, signal

processing of the picture information obtained by photoelectric conversion will be carried out, and it will project on the display part 6. Looking at the image projected on the display part 6, if a user has a pleasing image, he will push the shutter button 7, and he records image data on the memory built in a cellular phone. The recorded image can be transmitted to the other party by e-mail by this, or a printer can be connected to a cellular phone, and an image can be printed out.

[0008]On the other hand, when using it by telephone mode, the mode switching button 8 is used and a camera mode is turned OFF. If a camera mode is turned OFF, telephone mode is chosen automatically, and it awaits and will be in a state. When telephoning, a numeric keypad is operated and the other party's telephone number is input, and after checking the telephone number displayed on the display part 6, a telephone call button is pushed and it telephones to a partner. When it awaits and there is arrival from the other party in a state, a telephone call button is pushed and it responds to the arrival. Working at a camera mode, when there is mail arrival, it is preferentially switched to telephone mode and a telephone call becomes possible.

[0009]

[Problem to be solved by the invention]The camera has turned to the cellular phone with a camera function (it is hereafter written as a cellular phone) mentioned above to the back face of the cellular phone, and it has composition which turns a lens to the direction of an object and photos it at the time of photographing. When such a cellular phone is being used by telephone mode, or when only carrying, a lens may be carelessly turned to an unspecified third party. For this reason, there is a possibility of making the person by whom the lens was turned bearing displeasure.

[0010]Then, the present invention aims at offer of a cellular phone provided with the lens cover which performs the task which hides a lens, when using this cellular phone by telephone mode.

[0011]

[Means for solving problem]The place by which was accomplished in order that the present invention might solve above-mentioned problem, and it is characterized [the], In the cellular phone which it has a wireles transmitting and receiving communication function to carry out for call signals, and has a camera function which photos an object, The solid state image pickup device which is arranged at the back face of a housing, carries out photoelectric conversion of the image which enters through the optical mechanism which images the optical image of an object, and the above-mentioned optical mechanism, and obtains picture information, It is in having a liquid crystal panel arranged at the object side of the above-mentioned optical mechanism, and the above-mentioned liquid crystal panel responding to the application of voltage, and shielding the above-mentioned optical mechanism visually.

[0012]Thereby, by controlling the application of the drive voltage to the above-mentioned liquid crystal panel, when not operating the above-mentioned cellular phone by a camera mode, the above-mentioned optical mechanism can be shielded visually.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000411

[0013]

[Mode for carrying out the invention]Fig.1 is a mimetic diagram showing the embodiment of the present invention, and Fig.2 is a cross sectional view showing the outline of a camera unit. The camera unit 1 and the lens cover 21 are arranged at the back face of a cellular phone with a camera function (it is hereafter written as a cellular phone). Since it is the same as that of what is shown in Fig.9 (b), the display part 6, the shutter button 7, the mode switching button 8, and the operating part 9 which are arranged at the front face of a cellular phone are omitted.

[0014]By making a liquid crystal panel into the lens cover 21, the place by which it is characterized [of the present invention] is provided so that a lens may be covered to the object side of the camera unit 1, and there is in shielding a lens visually according to ON/OFF of a liquid crystal panel.

[0015]As shown in Fig.2 at the back face of a portable telephone body, the camera hole 2 is punched and the camera unit 1 which consists of the optical mechanism 4 and the solid state image pickup device 3 is arranged at the inside corresponding to the camera hole 2.

[0016]The lens cover 21 agrees in the covering hole provided by the back face of the portable telephone body corresponding to the outside of the lens cover 21, and is arranged at it. This lens cover 21 is arranged at the object side of the camera unit 1, and covers the optical mechanism 4. It comprises a liquid crystal panel which changes transmissivity, and this lens cover 21 consists of a liquid crystal enclosed between the clear glass substrate which has a transparent electrode inside and the substrate of two sheets of two sheets, and applies a drive voltage between pair of transparent electrodes. The thing of single flat face shape may be sufficient as the transparent electrode with which each glass substrate is equipped, and it changes the transmissivity of light according to the drive voltage by which a seal of approval is carried out. This liquid crystal panel 21 is what is called a normally white type that shades light, when light is transmitted when a drive voltage is applied between electrodes, and a drive voltage is not applied.

[0017]Fig.3 is a block diagram showing the composition of the camera unit 1. The camera unit 1 comprises the lens cover 21 (liquid crystal panel), the solid state image pickup device 3, the timing generating circuit 41, CCD drive circuit 42, the digital disposal circuit 43, the A/D conversion circuit 44, and the panel driving circuit 45.

[0018]The timing generating circuit 41 generates the vertical scanning signals VD and horizontal scanning signal HD based on reference clock CK input. This timing generating circuit 41 operates according to camera selection signal CS, and camera selection signal CS outputs the vertical scanning signals VD and horizontal scanning signal HD to CCD drive circuit 42 between H levels.

[0019]CCD drive circuit 42 responds to the vertical scanning signals VD and horizontal scanning signal HD, generates CCD drive clock CT, and supplies it to the solid state image pickup device 3. Photoelectric conversion of the image which entered through the optical mechanism 4 is carried out, it drives by CCD drive clock CT, and the solid state image pickup device 3 outputs picture signal

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000412

Y(t) by one pixel unit. The digital disposal circuit 43 performs various signal processing, such as sample hold, a shading compensation, and a gamma correction, to picture signal Y(t) input from the solid state image pickup device 3. The A/D conversion circuit 44 converts picture signal Y(t) input from the digital disposal circuit 43 to digital data, and outputs image data YD(n) . This image data Y(t) is supplied to a display driver, a memory, etc.

[0020]The panel driving circuit 45 responds to camera selection signal CS, and generates driving signal LT which the liquid crystal panel 21 drives. This driving signal LT is generated corresponding to camera selection signal CS, and when camera selection signal CS is H level, it is started by H level.

[0021]In this composition, that operation is described according to Fig.4. In timing t0, if the power supply of a cellular phone is switched on, a telephone awaits a cellular phone and it will be in a state. At this time, camera selection signal CS of L level is input into the panel driving circuit 45, and driving signal LT serves as L level. Thereby, the liquid crystal panel 21 will be in a shaded state, and shields a lens visually. In timing t1, if a camera mode is chosen, camera selection signal CS will serve as H level. According to this, driving signal LT currently supplied to the liquid crystal panel 21 will serve as H level from the panel driving circuit 45, and the liquid crystal panel 21 will be in a transmission state. Thereby, a lens is opened wide visually.

[0022]In timing t2, if the arrival of a telephone enters from the other party working by a camera mode, terminating signal TS will rise, it will respond to this, and camera selection signal CS will serve as L level. Thereby, operation by a camera mode is once intercepted and is automatically switched to telephone mode. And driving signal LT currently supplied to the liquid crystal panel 21 serves as L level, and the liquid crystal panel 21 will be in a shaded state, and shields a lens visually. After a telephone call is completed in timing t3, the signal which responds to the end of a telephone call rises (not shown), and camera selection signal CS serves as H level according to the signal. Thereby, a camera mode is chosen again and driving signal LT serves as H level. And the liquid crystal panel 21 will be in a transmission state, and a lens is opened wide visually again. In timing t4, if use of a camera is completed and a camera mode is made into non selection, camera selection signal CS will serve as L level. It responds to this, and driving signal LT serves as L level, and shields a lens visually.

[0023]Thus, a lens can be visually shielded except [in a camera mode] working by responding to camera selection signal CS and driving the liquid crystal panel 21. This prevents making the 3rd person conscious of a lens, and it prevents giving displeasure. After a telephone call is completed, it is switched to a camera mode and the liquid crystal panel 21 is made into the transmission state, but when a telephone call is completed, it may await, it may be in a state and may shield a lens visually.

[0024]By the way, it is also possible to use the above-mentioned liquid crystal panel 21 for it as a shutter mechanism for removing a vertical smear, for example, when using the solid state image

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000413

pickup device 3 of a frame transfer system for the digital still camera mounted on a cellular phone. Fig.5 is a plan view showing the composition of the solid state image pickup device of a frame transfer system.

[0025]The solid state image pickup device 3 comprises the light-receiving part 11, the accumulating part 12, and the horizontal transfer part 13. The light-receiving part 11 accumulates the information electric charge which received the image which enters through the optical mechanism 4 in each light-receiving pixel, and photoelectric conversion was carried out and occurred in each light-receiving pixel. It responds to read clock phiS and carries out vertical transfer of the information electric charge for this one accumulated screen to the accumulating part 12 at high speed. The accumulating part 12 stores temporarily the information electric charge transmitted from the light-receiving part 11, responds to transfer clock phiH, and it carries out vertical transfer one line at a time to the horizontal transfer part 13. The horizontal transfer part 13 responds to horizontal transfer clock phih, and transmits horizontally the information electric charge transmitted from the accumulating part 12 by one pixel unit. The outputting part 14 incorporates sequentially the information electric charge transmitted from the horizontal transfer part 13, and converts it to a pressure value according to the charge quantity of each information electric charge, and it outputs it as picture signal Y(t) .

[0026]In such a solid state image pickup device 3, if there is a portion to which a light strong against the light receiving surface of the light-receiving part 11 was irradiated, it will be superimposed on the electric charge which occurs by the strong light in the information electric charge which passes the portion, and a vertical smear will be generated. On a screen, such a vertical smear serves as band-like [white], appears, and causes deterioration of image quality. However, this vertical smear is removable by shading the light which enters within the vertical transfer period of the electric charge from the light-receiving part 11 to the accumulating part 12.

[0027]Then, synchronizing with vertical transfer operation, the light which enters into the light-receiving part 11 between them is intercepted by making the liquid crystal panel 21 into a shaded state. Such composition operates the panel driving circuit 45 synchronizing with the vertical scanning signals VD, and as shown in Fig.6, it should just generate driving signal LT.

[0028]Fig.6 is a timing diagram showing the shutter operation of the liquid crystal panel 21. It is generated so that it may synchronize with t (read clock phis) during the vertical transfer set up within the blanking period of the vertical scanning signals VD, and driving signal LT serves as L level between t during the vertical transfer of the solid state image pickup device 3. Thereby, synchronizing with vertical transfer operation of the solid state image pickup device 3, the liquid crystal panel 21 is made into a shaded state between t during the vertical transfer.

[0029]By the way, the transparent electrode used for this liquid crystal panel 21 may be divided into a plurality of transparent electrodes in which selection driving is possible, and the electrode to drive

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000414

may be controlled selectively. Fig.7 is a mimetic diagram showing an example of the electrode pattern of the transparent electrode with which the glass substrate of the liquid crystal panel 51 is equipped.

[0030]For example, it is arranged concentrically, each has a switch mechanism, and a plurality of transparent electrodes 52A-52D provided by the glass substrate of the liquid crystal panel 51 can drive it selectively. This liquid crystal panel 51 is what is called a normally white type that shades light, when light is transmitted when a drive voltage is applied, and a drive voltage is not applied. That is, when driving signal LT is H level, the liquid crystal panel 51 will be in a transmission state, and will be in a shaded state at the time of L level. Therefore, if driving signal LT of H level is selectively supplied to each transparent electrode 52A-52D, the region of the supplied electrode will be in the state where light may be transmitted, and will be in the state of shading light, in the region which supplied driving signal LT of L level. By controlling the drive of the transparent electrodes 52A-52D, the transmissivity of the liquid crystal panel 51 can be adjusted gradually, and it becomes possible to use the liquid crystal panel 51 as a dimmer style.

[0031]Fig.8 is a block diagram showing the composition of the camera unit in the case of using the liquid crystal panel 51 as a dimmer style. In addition to the composition of Fig.3, this camera unit provides the integration circuit 61 and the exposure control circuit 62.

[0032]The solid state image pickup device 3 outputs picture signal Y(t) corresponding to an object image to the A/D conversion circuit 44, and it outputs it to the integration circuit 61. The integration circuit 61 integrates with picture signal Y(t) per vertical scanning period, and outputs it to the exposure control circuit 62 as the light exposure signal L. The range of the amount of appropriate exposure of the solid state image pickup device 3 is set to the exposure control circuit 62, and control signal L(s) which determines the drive of a transparent electrode is generated according to whether the input light exposure signal L is within the limits of the amount of appropriate exposure. If light which exceeds the amount level of appropriate exposure enters into the solid state image pickup device 3, picture signal Y(t) reflecting the light volume will be outputted, and it will control according to the level of picture signal Y (t) to stop a light exposure. That is, it is generated so that the number of the transparent electrodes which control signal L(s) drives may be reduced, and the liquid crystal panel 51 is supplied through the panel driving circuit 45, and the region which transmits light is reduced. It can come and is, and it dims so that light volume which enters into the solid state image pickup device 3 may be used more as a suitable level. It controls to, increase the number of the transparent electrodes to drive on the other hand, when the entering light volume has not reached the amount level of appropriate exposure, and the light is modulated so that the region which transmits light may be expanded and the entering light volume may serve as a suitable level.

[0033]Thus, a modulated light pattern can be freely chosen by choosing the transparent electrode

to drive. This becomes possible to change the transmissivity of the liquid crystal panel 51 gradually, and it can make wide the illumination range (dynamic range) to which the solid state image pickup device 3 can respond.

[0034]In exposure control, a modulated light pattern when using it for example, on the time of using it indoors and the outdoors may be set up preliminarily. That is, the selecting switch which uses [indoor] it for a cellular phone and chooses an outdoor use is provided, and it may be made to choose corresponding to a situation when using a camera mode.

[0035]

[Effect of the Invention]According to the present invention, when not using a cellular phone with a camera function by a camera mode, it can hide so that an imaging lens may not appear from the outside. Thereby, even if the imaging lens is unconsciously suitable for the 3rd unspecified person, it prevents giving the 3rd person displeasure. Since a liquid crystal panel is not driven when not using a camera mode, power consumption can be stopped and influence which it has on the standby time as a mobile phone can be lessened.

[0036]Transmissivity can be gradually changed by dividing selectively the transparent electrode formed in the liquid crystal panel used as a lens cover into a plurality of transparent electrodes which can be driven. Thereby, the illumination range of a solid state image pickup device (dynamic range) can be extended, and photographing at the strong place of incident light like the outdoors at the time of fine weather is enabled.

(19)日本国特許庁（ＪＰ）　(12) **公開特許公報**（Ａ）　(11)特許出願公開番号
特開2003－274234
（P2003－274234A）
(43)公開日　平成15年９月26日(2003.9.26)

(51)Int.Cl.⁷	識別記号	ＦＩ		テーマコード（参考）
Ｈ０４Ｎ　5/225		Ｈ０４Ｎ　5/225	Ｅ	2Ｈ０８３
			Ｚ	2Ｈ１００
Ｇ０３Ｂ　11/04		Ｇ０３Ｂ　11/04	Ｂ	2Ｈ１０１
15/00		15/00	Ｄ	2Ｈ１０２
17/02		17/02		5Ｃ０２２

審査請求 未請求　請求項の数７　ＯＬ　（全９頁）　最終頁に続く

(21)出願番号　特願2002－72074(P2002－72074)

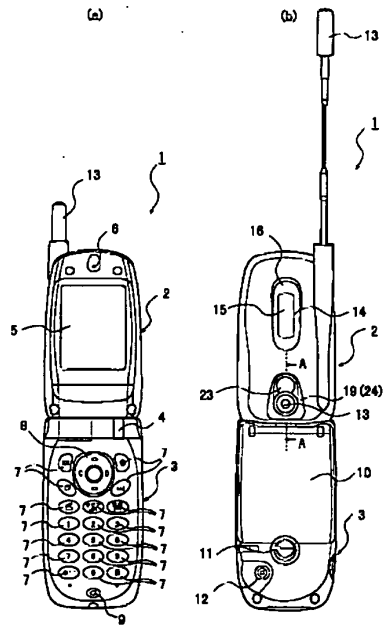
(22)出願日　平成14年３月15日(2002.3.15)

(71)出願人　000001443
カシオ計算機株式会社
東京都渋谷区本町１丁目６番２号
(72)発明者　井戸　透記
東京都渋谷区神宮前３丁目25番15号ダ・ヴィンチ原宿ビル　カシオ計算機株式会社内
(72)発明者　奈良　勝弘
東京都渋谷区神宮前３丁目25番15号ダ・ヴィンチ原宿ビル　カシオ計算機株式会社内
(74)代理人　100090033
弁理士　荒船　博司　（外１名）

最終頁に続く

(54)【発明の名称】　撮像機器

(57)【要約】
【課題】　本発明は、鏡面を傷つけず且つ美観を損ねることの無い撮像機器を提供することを課題とする。
【解決手段】　カメラ機能付き携帯電話機１は、上筐体２及び下筐体３を互いに開閉できるような折り畳式である。上筐体２の背面に第一開口部１３が設けられており、上筐体２に内蔵された撮像モジュール１８が第一開口部１３に臨んでいる。そして、第一開口部１３のすぐ近傍に、鏡面２３が設けられている。この鏡面２３は凸面鏡である。そして、透光性を有する透明部材２４が、第一開口部１３及び鏡面２３を一体的に被覆している。



Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000417

【特許請求の範囲】
【請求項１】筐体の内部に撮像部が設けられ、
前記撮像部の光軸とほぼ直交する方向に開口した開口部が前記筐体に設けられ、
鏡面が前記開口部の周辺に設けられ、
透光性部材が前記鏡面及び前記開口部を一体的に被覆するように前記筐体に取り付けられていることを特徴とする撮像機器。
【請求項２】前記鏡面は前記開口部周辺を装飾する装飾部材の一部として一体的に形成されており、
前記透光性部材は前記装飾部材を被覆することを特徴とする請求項１記載の撮像機器。
【請求項３】前記撮像部の光軸の方向に凹んだ曲面が前記筐体と向き合った前記透光性部材の裏面に設けられ、前記曲面に金属が蒸着されることで前記鏡面が形成されていることを特徴とする請求項１記載の撮像機器。
【請求項４】前記開口部に表示部が設けられていることを特徴とする請求項１から３の何れかに記載の撮像機器。
【請求項５】自発光する発光部が前記開口部に設けられていることを特徴とする請求項１から４の何れかに記載の撮像機器。
【請求項６】前記撮像部の光軸が前記開口部を通っていることを特徴とする請求項１から３の何れかに記載の撮像機器。
【請求項７】前記鏡面は前記撮像部の光軸方向に凸となるような曲面となる凸面鏡であることを特徴とする請求項１から６の何れかに記載の撮像機器。
【発明の詳細な説明】
【０００１】
【発明の属する技術分野】本発明は、携帯性を備えた撮像機器に関する。
【０００２】
【従来の技術】近年、持ち運びに優れ、取扱いが簡単な小型のデジタルカメラが普及しており、中には、撮像モジュールが小型化に伴って携帯電話機やその他電子機器に組み込まれ、所謂カメラ機能付き電子機器が普及している。一方、このような携帯性に優れ、取扱いも簡単なことから、例えば携帯電話機に撮像モジュールを組み込んだ場合、風景に限らず、撮影者自身を撮影し、セルフポートレート（自画像）を電子メール等で相手先に送信するといった利用方法も広まりつつある。セルフポートレートを撮影する場合、撮影者自身の写り映えを事前に確認する手段として、凸面鏡を携帯電話機の筐体に設置することがある。
【０００３】
【発明が解決しようとする課題】しかしながら、携帯電話機の筐体に凸面鏡を設置すると、凸面鏡に傷を付けたり、凸面鏡の周囲に埃がたまりやすく、携帯電話機の使い勝手だけでなく携帯電話機の美観も損ねてしまうといったことがあった。
【０００４】本発明はこのような問題点に鑑みてなされたものであり、セルフポートレート撮影用の凸面鏡といった鏡面を筐体に具備しても、鏡面を傷つけず且つ美観を損ねることの無い撮像機器を提供することを目的とする。
【０００５】
【課題を解決するための手段】以上の課題を解決するために、例えば図１～図８に示すように、請求項１記載の発明に係る撮像機器（例えば、携帯電話機１、１００又は２００）は、筐体（例えば、上筐体２）の内部に撮像部（例えば、撮像モジュール１８）が設けられ、前記撮像部の光軸とほぼ直交する方向に開口した開口部（例えば、第一開口部１３、第二開口部１１４、第一開口部２１３又は第二開口部２１４）が前記筐体に設けられ、鏡面（例えば、鏡面２３、１２３又は２２３）が前記開口部の周辺に設けられ、透光性部材（例えば、透明部材２４，１２４又は２２４）が前記鏡面及び前記開口部を一体的に被覆するように前記筐体に取り付けられていることを特徴とする。
【０００６】請求項１記載の発明では、鏡面が透光性部材に被覆されているため、鏡面が傷つかない上、被写体の光学像が鏡面に映し出される。また、鏡面及び開口部が一体的に透光性部材に被覆されているため、見た目が非常に良い。従って、筐体に鏡面が設けられたとしても、撮像機器の美観性が損なわれない。
【０００７】請求項２記載の発明は、例えば図３に示すように、請求項１記載の撮像機器において、前記鏡面は前記開口部周辺を装飾する装飾部材（例えば、枠部材１９）の一部として一体的に形成されており、前記透光性部材は前記装飾部材を被覆することを特徴とする。
【０００８】請求項２記載の発明では、装飾部材と一体となって鏡面が形成されているため、鏡面及び開口部周辺の装飾性が向上する。その上、装飾部材が透光性部材に被覆されているから、装飾部材の装飾性が際立つ。
【０００９】請求項３記載の発明は、例えば図７に示すように、請求項１記載の撮像機器において、前記撮像部の光軸の方向に凹んだ曲面（例えば、凹部１２５の面）が前記筐体と向き合った前記透光性部材の裏面に設けられ、前記曲面に金属が蒸着されることで前記鏡面が形成されていることを特徴とする。
【００１０】請求項４記載の発明は、例えば図５、図８に示すように、請求項１から３の何れかに記載の撮像機器において、前記開口部に表示部（例えば、サブディスプレイ１５）が設けられていることを特徴とする。
【００１１】請求項４記載の発明では、透光性部材に被覆された開口部に表示部が設けられているため、表示部が透光性部材によって保護される。
【００１２】請求項５記載の発明は、例えば図５、図８に示すように、請求項１から４の何れかに記載の撮像機

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000418

器において、自発光する発光部（例えば、サブディスプレイ１５）が前記開口部に設けられていることを特徴とする。

【００１３】請求項５記載の発明では、透光性部材に被覆された開口部に発光部が設けられているため、発光部が発光することにより発光部の発光色が透光性部材に反映される。従って、美観を感じさせるような撮像機器が提供される。

【００１４】請求項６記載の発明は、請求項１から３の何れかに記載の撮像機器において、前記撮像部の光軸が前記開口部を通っていることを特徴とする。

【００１５】請求項６記載の発明では、撮像部の光軸が開口部を通っているため、開口部を通じて撮像部が撮像することができ、更に、開口部に透光性部材が被覆されているため、撮像部が透光性部材によって保護される。

【００１６】請求項７記載の発明は、請求項１から６の何れかに記載の撮像機器において、前記鏡面は前記撮像部の光軸方向に凸となるような曲面となる凸面鏡であることを特徴とする。

【００１７】

【発明の実施の形態】以下に、図面を用いて本発明の具体的な態様を説明する。ただし、発明の範囲を図示例に限定するものではない。

【００１８】〔第一の実施の形態〕図１及び図２には、本発明が適用された折り畳み式のカメラ機能付き携帯電話機（以下、「携帯電話機」という。）１が示されている。図１及び図２に示すように、携帯電話機１は、上筐体２と、下筐体３と、ヒンジ部４等とを具備している。上筐体２がヒンジ部４で下筐体３に連結している。下筐体３に対して上筐体２がヒンジ部４を中心にして回動自在となっており、上筐体２及び下筐体３を互いに開閉できるようになっている。

【００１９】図１（ａ）に示すように、下筐体３の閉じる側の面（正面）には、数値入力、文字入力、決定又はキャンセル等といった操作用のプッシュボタン７，７，…と、カーソル移動或いは画面スクロールといった操作用の入力キー８等とが設けられている。マイクが下筐体３内に内蔵されており、下筐体３の閉じる側の面の下部に設けられたマイク口９から通話人等の音声を入力するようになっている。

【００２０】上筐体２の上端には伸縮自在なアンテナ１３が設けられている。上筐体２の閉じる側の面（正面）には、種々の画像、文字、数字等を表示する液晶表示部５が設けられており、液晶表示部５は例えばアクティブマトリクス方式で表示するＴＦＴ型液晶ディスプレイ等から構成されている。通話の際に音声等を発生するスピーカが上筐体２内に内蔵されており、液晶表示部５の上方において上筐体２に設けられたスピーカ口６からスピーカの音声等が出力される。

【００２１】上筐体２と下筐体３を互いに閉じると、上筐体２の閉じる側の面と下筐体３の閉じる側の面が互いに対向して、プッシュボタン７，７，…及び入力キー８が液晶表示部５に向き合うように携帯電話機１を折り畳めることができる。

【００２２】図１（ｂ）に示すように、下筐体３の開く側の面（背面）には、充電用電池を内蔵した電池蓋１０が配設されている。電池蓋１０は下筐体３に対して着脱自在となっており、下筐体３に装着された電池蓋１０はロック部１１によって下筐体３に固定される。

【００２３】電池蓋１０の下方においてスピーカ１２が下筐体３内に設けられており、着信時の報知音、プッシュボタン７，７，…の操作時の操作音、入力キー８の操作時の操作音等がスピーカ１２から出力される。

【００２４】上筐体２の開く側の面（背面）には、第一開口部１３及び第二開口部１４が形成されている。第二開口部１４は、上筐体２の開く側の面を内外に貫通しており、上下に長尺な略矩形状の形状をしている。第二開口部１４は、上筐体２の幅方向（図１（ｂ）の左右方向）のほぼ中央部に形成されている。上筐体２内にはモノクロのサブディスプレイ１５が設けられており、サブディスプレイ１５は第二開口部１４に対峙しており、第二開口部１４に臨んでいる。

【００２５】サブディスプレイ１５はセグメント表示型の液晶ディスプレイであり、日付、時間、曜日、電波の状態、バッテリー残量等がサブディスプレイ１５に表示される。また、サブディスプレイ１５には多色発光ＬＥＤがバックライトとして設けられており、ＬＥＤの発光色が互いに異なることで、サブディスプレイ１５が複数色に発光することができるようになっている。サブディスプレイ１５が発光するタイミングとしては、例えば、着信時、プッシュボタン７，７，…の操作時、入力キー８の操作時等である。なお、サブディスプレイ１５は、マトリクス表示型の液晶ディスプレイであっても良い。

【００２６】第二開口部１４の周囲において上筐体２が凹んでおり、アクリル樹脂といった可視光に対して透過性を有する材料からなるカバー１６がこの凹んだ部分にはめ込まれている。このカバー１６によって第二開口部１４が覆われているが、カバー１６が透光性を有するため第二開口部１４を通じてサブディスプレイ１５を見ることができる。

【００２７】次に、第一開口部１３及び第一開口部１３の周囲の構造について、図３及び図４を用いて詳細に説明する。図３は、第一開口部１３及びその周囲を示した平面図であり、図４は、図３における破断線Ａ－Ａで破断して示した断面図である。図２及び図３に示すように、第一開口部１３は、上筐体２の開く側の面を内外に貫通しており、略円形の形状をしている。なお、図１に示すように、第一開口部１３は、上筐体２の幅方向のほぼ中央部に形成されており、第二開口部１４よりヒンジ部４の近くに形成されている。

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000419

【００２８】図３及び図４に示すように、上筐体２内部において、撮像光学系光軸上にレンズ２２を具備したＣＣＤ（ＣＣＤイメージセンサ）又はＣＭＯＳ（ＣＭＯＳイメージセンサ）からなる撮像モジュール１８が回路基板２７上に配置されている。そして、第一開口部１３が上筐体２の内外を通じるように貫通しており、第一開口部１３は光軸とほぼ直交する方向となるように開口しており、撮像モジュール１８の撮像光学系の光軸は第一開口部１３を通っている。なお、図４において、撮像モジュール１８及び回路基板２７は破断されていない状態で示されている。

【００２９】そして、図３の図示方向に見て略台形状をした枠部材１９は、その開口部裏側が第一開口部１３の周囲に形成される凸部２１にはめ込まれることで、上筐体２に固定される。

【００３０】なお枠部材１９には、撮像モジュール１８の光軸とほぼ直交する方向となるよに開口した貫通孔２０が形成されており、撮像モジュール１８の光軸は貫通孔２０を通っている。図３の図示方向に見て、貫通孔２０は、第一開口部１３に重なっている。従って、撮像モジュール１８は、第一開口部１３及び貫通孔２０を通じて被写体の光学像を取得して、被写体を撮像することができる。

【００３１】枠部材１９の表面には、装飾用の塗装が施されている。塗装の色としては銀色、金色、プラチナ色、赤色、黄色等があるが、これらの色に限らず、望ましくは上筐体２の色と異なっているのが良い。枠部材１９に装飾用の塗装が施されていることで、枠部材１９によって第一開口部１３の周囲が装飾されている。

【００３２】更に、枠部材１９の表面には略円形状の鏡面２３が形成されており、鏡面２３は第一開口部１３及び貫通孔２０に近接している。枠部材１９の表面にポリッシュ加工が施されることで、鏡面２３が枠部材１９の一部として一体的に形成されている。図４に示すように、鏡面２３は撮像モジュール１８の光軸方向に凸となるように湾曲しており、従い、鏡面２３は凸面鏡となっている。被写体からの光学像が鏡面２３にて反射して、反射した光学像が被写体に向かうようになっている。なお、図１に示すように、鏡面２３は、第一開口部１３と第二開口部１４との間に配されており、上筐体２の幅方向のほぼ中央部に配されている。

【００３３】以上の枠部材１９に透明部材２４が被覆されている。透明部材２４は、可視光に対し透過性を有する部材である。図３（ａ）に示すように、透明部材２４の外周形状が枠部材１９の外周形状とほぼ同じであり、透明部材２４は枠部材１９全体を被覆して、上筐体２に取り付けられている。従って、透明部材２４は鏡面２３及び第一開口部１３を一体的に被覆している。なお、図３（ａ）は、透明部材２４が枠部材１９を被覆している状態を示し、図３（ｂ）は、透明部材２４がはずされた状態を示す。

【００３４】透明部材２４の表面及び裏面において、第一開口部１３に臨む部分２５，２６は平坦になっており、互いにほぼ平行となっている。従って、被写体の光学像が透明部材２４を透過して撮像モジュール１８に至っても、光学像が透明部材２４により歪むことはない。

【００３５】以上のように構成される携帯電話機１は、鏡面２３を備えることによりセルフポートレート撮影に適している。つまり、撮影者が鏡面２３を自分自身に向けると、撮影者は自分自身を見ながら撮像モジュール１８で自分自身を撮像することができる。

【００３６】また、鏡面２３は透明部材２４により被覆されているので、鏡面２３が透明部材２４によって保護され、傷つくことがない。また、透明部材２４で鏡面２３及び第一開口部１３を一体的に被覆しているため、撮像のための穴である第一開口部１３が目立たなくなり、携帯電話機１全体としての美観が向上する。

【００３７】また、装飾用に着色した枠部材１９が第一開口部１３を囲むように配設されているため、第一開口部１３の周囲が美しく見える。そして、このような枠部材１９が透光性を有する透明部材２４に被覆されているから、枠部材１９の色が際立ち、第一開口部１３の周囲が美しく見えて、更に、第一開口部１３が目立たなくなる。逆に、鏡面２３が透明部材２４に被覆されることにより鏡面２３が目立ち、第一開口部１３の周囲に鏡面２３が形成されることにより鏡面２３が第一開口部１３より目立つ。従って、撮影者が自分自身の自画像を撮像する際に、撮影者は鏡面２３により注目するようになる。つまり、この携帯電話機１は、セルフポートレートの撮影に非常に適している。

【００３８】〔第二の実施の形態〕図５及び図６には、本発明が適用された別例の携帯電話機１００が示されている。携帯電話機１００については、携帯電話機１と同様の構成要素に同様の符号を付してその詳細な説明を省略し、携帯電話機１と異なる部分について主に説明する。

【００３９】上筐体２の開く側の面には、第一開口部１１３及び第二開口部１１４が形成されている。第一開口部１１３は、上筐体２の開く側の面を内外に貫通しており、略円形の形状をしており、上筐体２の幅方向（図５（ｂ）の左右方向）のほぼ中央部に配されている。そして、上筐体２内には、撮像モジュール１８が内蔵されているが、撮像モジュール１８は第一開口部１１３に臨んでいる。そして、透光性を有するカバー１１６が第一開口部１１３を塞ぐように上筐体２に取り付けられている。カバー１１６が透光性を有するため、撮像モジュール１８は第一開口部１１３及びカバー１１６を通じて被写体の光学像を取得して被写体を撮像することができる。

【００４０】第二開口部１１４は、上筐体２の内外に通

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000420

じており、撮像モジュール１８の光軸とほぼ直交する方向となるように開口している。また、第二開口部１１４は上筐体２の幅方向のほぼ中央部に形成されている。上筐体２内にはモノクロのサブディスプレイ１５が設けられており、サブディスプレイ１５は第二開口部１１４に対峙しており、第二開口部１１４に臨んでいる。サブディスプレイ１５は、第一実施形態の携帯電話機１の場合と同様に、日付、時間、曜日、電波の状態、バッテリー残量等を表示するようになっているとともに、複数色に発光するようになっている。

【００４１】図７に示すように、第二開口部１１４の周囲において上筐体２が凹んでおり、凹んだ部分の底面に装飾用のシール材１３０が設けられている。シール材１３０の色は、銀色、金色又はプラチナ色等であるが、上筐体２の色と異なっているのが良い。図５の図示方向に見て、第二開口部１１４の周囲において凹んだ部分は、略長方形の形状をしている。

【００４２】図７に示すように、第二開口部１１４の周囲において凹んだ部分に、透明部材１２４がはめ込まれる。透明部材１２４は、シール材１３０を被覆しており、上筐体２に取り付けられている。透明部材１２４の裏面（上筐体２と向き合った面）には、撮像モジュール１８の光軸方向に凹となるようにR形状に湾曲された凹部１２５が形成されている。凹部１２５にアルミ等の金属が蒸着されることで、凹部１２５に鏡面１２３が形成されている。

【００４３】予め鏡面１２３の形成された透明部材１２４を上筐体２にはめ込むことで、第二開口部１１４が透明部材１２４に被覆される。透明部材１２４の表面から見ると、鏡面１２３が凸面鏡となっているとともに、鏡面１２３が透明部材１２４によって被覆されている。従って、透明部材１２４は鏡面１２３及び第二開口部１１４を一体的に被覆している。また、図５の図示方向に見て、凹部１２５が略円形状に形成されているため、鏡面１２３も円形状となっている。

【００４４】図５に示すように、鏡面１２３は、第二開口部１１４の周辺において第一開口部１１３と第二開口部１１４との間に配されており、上筐体２の幅方向のほぼ中央部に配されている。被写体からの光学像が透明部材１２４の表面に入射して更に鏡面１２３にて反射して、反射した光学像が被写体に向かうようになっている。

【００４５】以上の携帯電話機１００を用いて、撮影者が鏡面１２３を自分自身に向けると、撮影者は自分自身を見ながら撮像モジュール１８で自分自身を撮像することができる。

【００４６】以上のように構成される携帯電話機１００では、鏡面１２３が透明部材１２４に被覆されているので、鏡面１２３が透明部材１２４によって保護されて傷つかないうえ、携帯電話機１００全体的な美観を損ねることもない。また、装飾用のシール材１３０が第二開口部１１４を囲むように配設されているため、第二開口部１１４の周囲が美しく見える。そして、このようなシール材１３０が透光性を有する透明部材１２４に被覆されているから、シール材１３０の色が際だち、第二開口部１１４の周囲が美しく見える。更に、鏡面１２３が透明部材１２４に被覆されているから鏡面１２３が目立つようになる。従って、撮影者が自分自身の自画像を撮像する際に、撮影者は鏡面１２３により注目するようになる。つまり、この携帯電話機１００は、セルフポートレートの撮影に非常に適している。

【００４７】なお、鏡面１２３は透明部材１２４の凹部１２５に金属蒸着することにより形成されているが、凹部１２５にはめ込めるような凸部をシール材１３０に形成して、その凸部に金属蒸着することによって鏡面を形成しても良い。この場合、鏡面は、装飾用のシール材１３０の一部として一体的に形成されていることになる。

【００４８】〔第三の実施の形態〕図８には、本発明が適用された別例の携帯電話機２００が示されている。携帯電話機２００については、携帯電話機１と同様の構成要素に同様の符号を付してその詳細な説明を省略し、携帯電話機１と異なる部分について主に説明する。

【００４９】上筐体２の開く側の面には、第一開口部２１３及び第二開口部２１４が形成されている。第一開口部２１３は、上筐体２の開く側の面を内外に貫通しており、略円形の形状をしており、上筐体２の幅方向（図８の左右方向）のほぼ中央部に配されている。そして、上筐体２内には撮像モジュール１８が内蔵されているが、撮像モジュール１８は第一開口部２１３に臨んでいる。第一開口部２１３は、上筐体２の内外に通じており、撮像モジュール１８の光軸とほぼ直交する方向となるように開口している。また、撮像モジュール１８の光軸は第一開口部２１３を通っている。従い、撮像モジュール１８は第一開口部１１３を通じて被写体の光学像を取得して被写体を撮像することができる。

【００５０】第二開口部２１４は、上筐体２の内外に通じており、撮像モジュール１８の光軸とほぼ直交する方向となるように開口している。また、第二開口部２１４は、上筐体２の幅方向のほぼ中央部に形成されている。上筐体２内にはモノクロのサブディスプレイ１５が設けられており、サブディスプレイ１５は第二開口部２１４に対峙しており、第二開口部２１４に臨んでいる。サブディスプレイ１５は、第一実施形態の携帯電話機１の場合と同様に、日付、時間、曜日、電波の状態、バッテリー残量等を表示するようになっており、複数色に発光するようになっている。

【００５１】第一開口部２１３及び第二開口部２１４の周囲に鏡面２２３が設けられており、鏡面２２３は第一開口部２１３と第二開口部２１４の間に配されている。また、図８の図示方向に見て、鏡面２２３は略円形の形

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000421

状をしている。また、鏡面２２３は、撮像モジュール１８の光軸方向に凸となるように湾曲した凸面鏡である。鏡面２２３は、金属蒸着により形成されていても良いし、ポリッシュ加工により形成されていても良い。

【００５２】第一開口部２１３、第二開口部２１４及び鏡面２２３の周囲において上筐体２が凹んでおり、凹んだ部分の底面に装飾用の部材が設けられている。この装飾用の部材は着色されており、上筐体２と異なる色で着色されているのが良い。この装飾用の部材に一体となって鏡面２２３が形成されていても良いし、上筐体２に鏡面２２３が形成されていても良い。

【００５３】第一開口部２１３、第二開口部２１４及び鏡面２２３の周囲において凹んだ部分に、透明部材２２４がはめ込まれることで、透明部材２２４が上筐体２に取り付けられている。透明部材２２４によって第一開口部２１３、第二開口部２１４及び鏡面２２３は一体的に被覆されている。透明部材２２４は可視光に対して透光性を有し、被写体からの光学像が透明部材２２４の表面に入射して更に鏡面２２３にて反射して、反射した光学像が被写体に向かうようになっている。

【００５４】なお、本発明は、上記各実施の形態に限定されることなく、本発明の趣旨を逸脱しない範囲において、種々の改良並びに設計の変更を行っても良い。例えば、上記第一実施形態において、鏡面２３は枠部材１９に形成されていたが、上筐体２に鏡面が形成されていても良い。この場合、上筐体２に凸部がモールド形成され、この凸部にポリッシュ加工を施すことで鏡面が形成され、更に、この鏡面は第一開口部１３の周辺に配されて、透明部材２４に被覆されている。また本発明は、各実施の形態において、折り畳み式のカメラ機能付き携帯電話機について詳述したが、撮像モジュールを備えた電子機器であればこれに限定されることはなく、デジタルカメラやカメラ付きＰＤＡ、ボイスレコーダ等のハイブリッドな機能を有する電子機器や、リストウオッチタイプの小型の電子機器でも適用可能である。

【００５５】

【発明の効果】以上のように、本発明によれば、鏡面が透光性部材に被覆されているため、鏡面が傷つかない上、被写体の光学像が鏡面に映し出される。また、鏡面及び開口部が一体的に透光性部材に被覆されているため、見た目が非常に良い。

【図面の簡単な説明】

【図１】図１（ａ）は、第一の実施の形態のカメラ機能付き携帯電話機の正面図であり、図１（ｂ）は、このカメラ機能付き携帯電話機の背面図である。

【図２】図２は、第一の実施の形態のカメラ機能付き携帯電話機の側面図である。

【図３】図３は、第一の実施の形態のカメラ機能付き携帯電話機の撮像部及びその周辺を示した平面図である。

【図４】図４は、図３における破断線Ａ－Ａで破断して示した断面図である。

【図５】図５（ａ）は、第二の実施の形態のカメラ機能付き携帯電話機の正面図であり、図５（ｂ）は、このカメラ機能付き携帯電話機の背面図である。

【図６】図６は、第二の実施の形態のカメラ機能付き携帯電話機の側面図である。

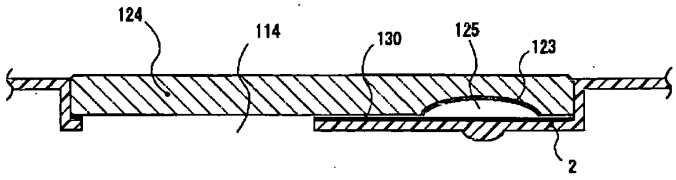
【図７】図７は、図５における破断線Ｂ－Ｂで破断して示した断面図である。

【図８】図８は、第三の実施の形態のカメラ機能付き携帯電話機の背面図である。

【符号の説明】

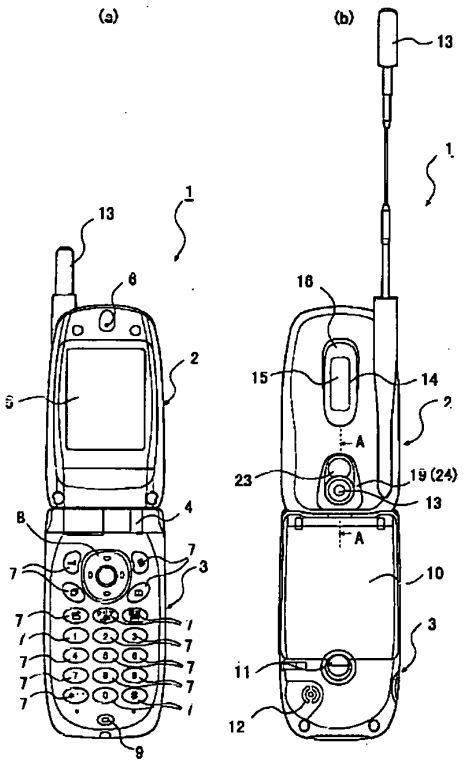
１、１００、２００　カメラ機能付き携帯電話機（撮像機器）
２　上筐体（筐体）
１３　第一開口部（開口部）
１５　サブディスプレイ（発光部、表示部）
１８　撮像モジュール（撮像部）
１９　枠部材（装飾部材）
２３　鏡面
２４、１２４、２２４　透明部材（透光性部材）
１１４　第二開口部（開口部）
１３０　シール材（装飾部材）
２１３　第一開口部（開口部）
２１４　第二開口部（開口部）

【図７】

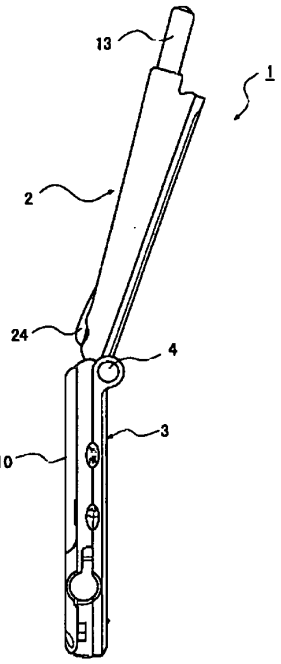


Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000422

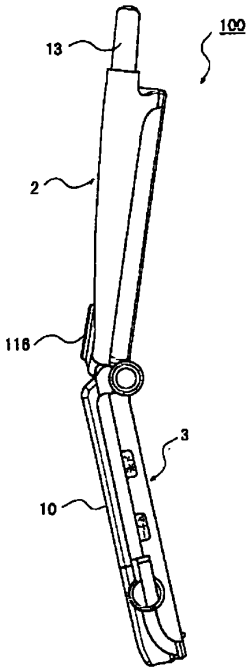
【図1】



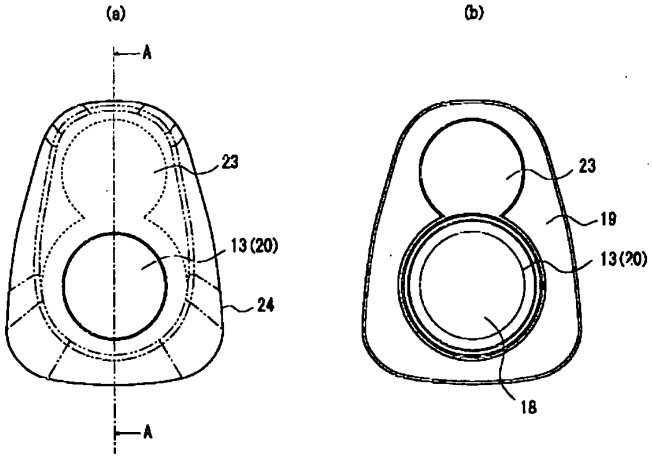
【図2】



【図6】

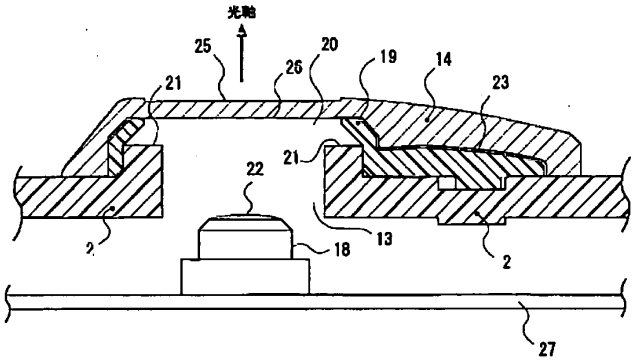


【図3】

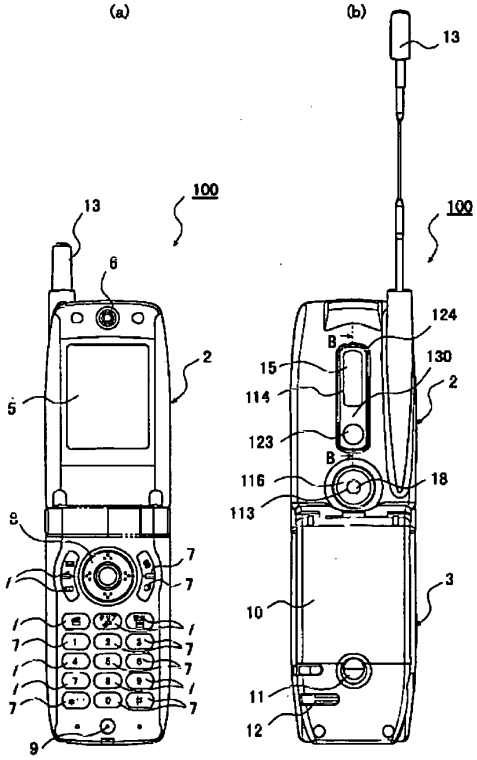


Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000423

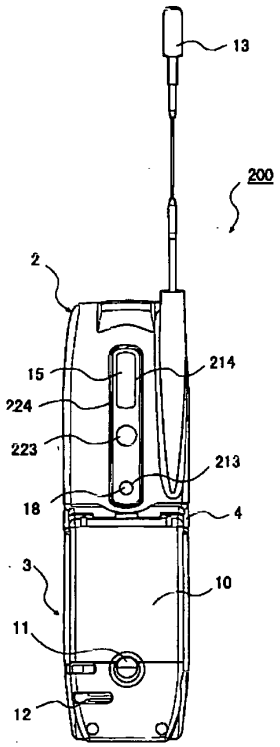
【図4】



【図5】



【図8】



フロントページの続き

(51)Int.Cl.[7]	識別記号	FI	(参考)
G03B 17/04		G03B 17/04	5K023
17/18		17/18	C 5K067

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000424

H04M	1/02	H04M	1/02
H04Q	7/32	H04B	7/26

Z
C
V

(72)発明者　松田　孝雄
東京都渋谷区神宮前３丁目25番15号ダ・ヴィンチ原宿ビル　カシオ計算機株式会社内

Fターム(参考)　2H083 CC02 CC05 CC12 CC15
2H100 AA11 AA32 AA33 AA41 BB05
BB06 CC01 CC07 EE06
2H101 BB00 BB01 BB04 FF01
2H102 AA41 AA71 AB02 AB23 BB01
CA01 CA02
5C022 AA12 AC03 AC22 AC32 AC42
AC63 AC71 AC72 AC73
5K023 AA07 BB11 BB26 DD08 MM00
MM25
5K067 AA34 BB04 EE02 KK17

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000425

(11)Publication number 2003-274234
(43)Date of publication of application 26.09.2003
(51)Int.Cl.
H04N 5/225
G03B 11/04
G03B 15/00
G03B 17/02
G03B 17/04
G03B 17/18
H04M 1/02
H04Q 7/32

(21)Application number 2002-072074
(22)Date of filing 15.03.2002
(71)Applicant CASIO COMPUT CO LTD
(72)Inventor IDO YUKINORI
NARA KATSUHIRO
MATSUDA TAKAO
(54)IMAGING DEVICE
(57)Abstract
PROBLEM TO BE SOLVED: To provide an imaging device which does not damage a mirror or disfigure the device.
SOLUTION: A cellular phone with a camera function 1 is of a folding type and its upper case 2 and lower case 3 can be opened and closed mutually. A first opening 13 is formed on the back of the upper case 2 and a built-in imaging module 18 in the upper case 2 is located facing the first opening 13. A mirror 23 is disposed adjacent to the first opening 13. This mirror is a convex mirror. A transparent material 24 covers the first opening 13 and the mirror 23 integrally.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000426

CLAIMS

[Claim(s)]

[Claim 1]Imaging equipment attaching to the aforementioned housing so that an imaging part may be provided inside a housing, an opening which carried out the opening in the direction which intersects perpendicularly with an optic axis of the aforementioned imaging part substantially may be provided by the aforementioned housing, a mirror plane may be provided around the aforementioned opening and a translucent member may cover the aforementioned mirror plane and the aforementioned opening integrally.

[Claim 2]The imaging equipment according to claim 1, wherein the aforementioned mirror plane is integrally formed as a part of decoration member which ornaments the aforementioned opening periphery and the aforementioned translucent member covers the aforementioned decoration member.

[Claim 3]The imaging equipment according to claim 1, wherein a back surface of the aforementioned translucent member in which a recessed curved surface faced in the direction of an optic axis of the aforementioned imaging part each other with the aforementioned housing provides and the aforementioned mirror plane is formed in the aforementioned curved surface by metal being vapor-deposited.

[Claim 4]The imaging equipment according to any one of claims 1 to 3, wherein a display part is provided by the aforementioned opening.

[Claim 5]The imaging equipment according to any one of claims 1 to 4, wherein a light-emitting part which carries out spontaneous light is provided by the aforementioned opening.

[Claim 6]The imaging equipment according to any one of claims 1 to 3, wherein an optic axis of the aforementioned imaging part passes along the aforementioned opening.

[Claim 7]The imaging equipment according to any one of claims 1 to 6 being a convex mirror used as a curved surface which becomes convex [the aforementioned mirror plane] to optical axis direction of the aforementioned imaging part.

DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention]The present invention relates to imaging equipment provided with portability.

[0002]

[Description of the Prior Art]In recent years, it excelled in carrying and the small digital camera with easy handling has spread, an imaging module is built into a cellular phone or other electronic devices with a miniaturization, and what is called an electronic device with a camera function has spread through inside. When it excels in such portability on the other hand and an imaging module is built into a cellular phone from handling being easy, for example, not only scenery but the photographer itself is photoed, and the utilizing method of transmitting a self portrait (self-portrait) to the partner point by E-mail etc. is also being circulated. When photoing a self portrait, a convex mirror may be installed in the housing of a cellular phone as a means to check a photographer's own projection **** a priori.

[0003]

[Problem to be solved by the invention]However, when the convex mirror was installed in the housing of a cellular phone, it had been said that a crack will be attached to a convex mirror or a dust ball, and not only the usability of a cellular phone but the fine sight of a cellular phone which become empty will also be spoiled around a convex mirror.

[0004]The present invention is made in view of such a problem.

Even if the object possesses a mirror plane of a convex mirror for self portrait photographing in a housing, it is providing imaging equipment which does not damage a mirror plane and does not spoil a fine sight.

[0005]

[Means for solving problem]In order to solve the above problem, as shown, for example in Fig.1 - Fig.8, the imaging equipment (for example, the cellular phones 1 and 100 or 200) concerning the invention according to claim 1, An imaging part (for example, imaging module 18) is provided inside a housing (for example, upper casing 2), The opening (for example, the first opening 13, the second opening 114, the first opening 213, or the second opening 214) which carried out the opening in the direction which intersects perpendicularly with the optic axis of the aforementioned imaging part substantially is provided by the aforementioned housing, A mirror plane (for example, the mirror planes 23 and 123 or 223) is provided around the aforementioned opening, and it is attached to the aforementioned housing so that a translucent member (for example, the transparent member 24,124 or 224) may cover the aforementioned mirror plane and the

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000428

aforementioned opening integrally.

[0006]In the invention according to claim 1, since the mirror plane is covered by the translucent member, a mirror plane does not get damaged, and also the optical image of an object projects on a mirror plane. Since the mirror plane and the opening are integrally covered by the translucent member, appearance is dramatically good. Therefore, even if a mirror plane is provided by the housing, the fine sight nature of imaging equipment is not impaired.

[0007]As the invention according to claim 2 is shown, for example in Fig.3, in the imaging equipment according to claim 1, the aforementioned mirror plane is integrally formed as a part of decoration member (for example, frame member 19) which ornaments the aforementioned opening periphery, and the aforementioned translucent member covers the aforementioned decoration member.

[0008]Since the mirror plane is formed united with the decoration member, the invention according to claim 2 improves the fanciness of a mirror plane and opening periphery. Since the decoration member is moreover covered by the translucent member, the fanciness of a decoration member is conspicuous.

[0009]In [as the invention according to claim 3 is shown, for example in Fig.7] the imaging equipment according to claim 1, The back surface of the aforementioned translucent member in which the recessed curved surface (for example, surface of the concave part 125) faced in the direction of the optic axis of the aforementioned imaging part each other with the aforementioned housing provides, and the aforementioned mirror plane is formed in the aforementioned curved surface by metal being vapor-deposited.

[0010]As the invention according to claim 4 is shown, for example in Fig.5 and Fig.8, in the imaging equipment according to any one of claims 1 to 3, the display part (for example, sub display 15) is provided by the aforementioned opening.

[0011]In the invention according to claim 4, since the display part is provided by the opening covered by the translucent member, a display part is protected by the translucent member.

[0012]As the invention according to claim 5 is shown, for example in Fig.5 and Fig.8, in the imaging equipment according to any one of claims 1 to 4, the light-emitting part (for example, sub display 15) which carries out spontaneous light is provided by the aforementioned opening.

[0013]In the invention according to claim 5, since the light-emitting part is provided by the opening covered by the translucent member, when a light-emitting part emits light, the luminescent color of a light-emitting part is reflected in a translucent member. Therefore, imaging equipment in which a fine sight is impressed is provided.

[0014]In the invention according to claim 6, the optic axis of the aforementioned imaging part passes along the aforementioned opening in the imaging equipment according to any one of claims 1 to 3.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000429

[0015]In the invention according to claim 6, since the optic axis of the imaging part passes along the opening, an imaging part can be imaged through an opening, and further, since the translucent member is covered by the opening, an imaging part is protected by the translucent member.

[0016]The invention according to claim 7 is a convex mirror used as a curved surface which becomes convex [the aforementioned mirror plane] to the optical axis direction of the aforementioned imaging part in the imaging equipment according to any one of claims 1 to 6.

[0017]

[Mode for carrying out the invention]Below, below Drawings are used and the specific mode of the present invention is described. However, the scope of invention is not limited to an illustrated example.

[0018][First embodiment] The foldaway cellular phone 1 with a camera function (henceforth a "cellular phone") with which the present invention was applied is shown in Fig.1 and Fig.2. As shown in Fig.1 and Fig.2, the cellular phone 1 is provided with the following.

Upper casing 2.

Lower casing 3.

Hinge region 4 etc.

The upper casing 2 has connected with the lower casing 3 by the hinge region 4. Rotation of the upper casing 2 is attained focusing on the hinge region 4 to the lower casing 3, and the upper casing 2 and the lower casing 3 of each other can be opened and closed now.

[0019]As shown in Fig.1 (a), the push buttons 7 and 7 for operation, such as a numerical input, a character input, determination, or cancellation, --, the input keys 8 for operation, such as a cursor advance or a screen scrolling, etc. are provided by the surface (transverse plane) of the side which the lower casing 3 closes. The microphone is built in in the lower casing 3 and inputs sounds, such as telephone call people, from the microphone mouth 9 provided by the lower part of the surface of the side which the lower casing 3 closes.

[0020]The elastic antenna 13 is provided by the upper end of the upper casing 2. The liquid crystal display section 5 which displays various images, a character, a number, etc. is provided by the surface (transverse plane) of the side which the upper casing 2 closes, and the liquid crystal display section 5 comprises a TFT type liquid crystal display etc. which are displayed with an active matrix. The loudspeaker which generates a sound etc. in the case of a telephone call is built in in the upper casing 2, and the sound of a loudspeaker, etc. are outputted from the loudspeaker mouth 6 provided by the upper casing 2 [above the liquid crystal display section 5].

[0021]If the upper casing 2 and the lower casing 3 of each other are closed, the surface of the side which the upper casing 2 closes, and the surface of the side which the lower casing 3 closes oppose mutually, and the cellular phone 1 can be folded up so that the push buttons 7 and 7, --, the input key 8 may face the liquid crystal display section 5.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000430

[0022]As shown in Fig.1 (b), the battery lid 10 having the cell for charge is arranged by the near surface (back face) which the lower casing 3 opens. The battery lid 10 has become freely attachable/detachable to the lower casing 3, and the battery lid 10 with which the lower casing 3 was equipped is fixed to the lower casing 3 by the lock part 11.

[0023]The battery lid 10 sets caudad, the loudspeaker 12 is provided in the lower casing 3, and the informing sound at the time of mail arrival, the push buttons 7 and 7, the operation sound at the time of operation of the operation sound at the time of operation and the input key 8 of --, etc. are outputted from the loudspeaker 12.

[0024]The first opening 13 and the second opening 14 are formed in the near surface (back face) which the upper casing 2 opens. The second opening 14 has penetrated the near surface which the upper casing 2 opens in and abroad, and is carrying out form of long approximately rectangular shape up and down. the second opening 14 -- the cross direction (right and left directions of Fig.1 (b)) of the upper casing 2 -- it is substantially formed in the central part. The sub display 15 of monochrome is provided in the upper casing 2, and the sub display 15 stands face to face against the second opening 14, and has attended the second opening 14.

[0025]The sub display 15 is a segment display type liquid crystal display, and the date, time, a day of the week, the state of an electric wave, battery residual quantity, etc. are displayed on the sub display 15. Multicolor luminescence LED is provided by the sub display 15 as a backlight, and the sub display 15 can emit light now to multiple color because the luminescent color of LED differs mutually. As timing to which the sub display 15 emits light, it is the operation time of the input key 8, etc. at the time of operation of the push buttons 7 and 7 and -- at the time of mail arrival, for example. The sub display 15 may be a matrix display type liquid crystal display.

[0026]The upper casing 2 is dented in the circumference of the second opening 14, and the covering 16 which consists of the material which has permeability to visible light called an acrylic resin is inserted in this recessed portion. Although the second opening 14 is covered with this covering 16, since the covering 16 has translucency, the sub display 15 can be seen through the second opening 14.

[0027]Next, it describes in detail about the structure around the first opening 13 and the first opening 13 using Fig.3 and Fig.4. Fig.3 is a plan view showing the first opening 13 and its circumference, and Fig.4 is the cross sectional view fractured and shown by break line A-A in Fig.3. As shown in Fig.2 and Fig.3, the first opening 13 has penetrated the near surface which the upper casing 2 opens in and abroad, and is carrying out form of approximate circular form. it is shown in Fig.1 -- as -- the first opening 13 -- the cross direction of the upper casing 2 -- it is substantially formed in the central part and is formed near the hinge region 4 from the second opening 14.

[0028]As shown in Fig.3 and Fig.4, in upper casing 2 inside, CCD (CCD series) which possesses the lens 22 on an imaging optical system optic axis, or the imaging module 18 which consists of CMOS

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000431

(CMOS image sensor) is arranged on the circuit board 27. And it has penetrated so that the first opening 13 may lead the inside and outside of the upper casing 2, the opening of the first opening 13 is carried out so that it may become a direction which intersects perpendicularly with an optic axis substantially, and the optic axis of the imaging optical system of the imaging module 18 passes along the first opening 13. In Fig.4, the imaging module 18 and the circuit board 27 are shown in the state where it is not fractured.

[0029]And the frame member 19 which saw in the graphic display direction of Fig.3 and carried out the approximately trapezoidal shape is that the opening back side is inserted in the protruding part 21 formed in the circumference of the first opening 13, and is fixed to the upper casing 2.

[0030]In the frame member 19, the through-hole 20 which carried out the opening is formed in ** used as the direction which intersects perpendicularly with the optic axis of the imaging module 18 substantially, and the optic axis of the imaging module 18 passes along the through-hole 20. It saw in the graphic display direction of Fig.3, and the through-hole 20 has lapped with the first opening 13. Therefore, the imaging module 18 can acquire the optical image of an object through the first opening 13 and the through-hole 20, and can image an object.

[0031]Coating for an ornament is performed to the surface of the frame member 19. Although there are silver, gold, a platina color, red, yellow, etc. as a color of coating, it is good to differ from the color of the upper casing 2 not only in these colors but desirably. The circumference of the first opening 13 is ornamented with coating for an ornament being performed to the frame member 19 by the frame member 19.

[0032]The approximate circular form-like mirror plane 23 is formed in the surface of the frame member 19, and the mirror plane 23 is close to the first opening 13 and the through-hole 20. By polish processing being performed, the mirror plane 23 is integrally formed in the surface of the frame member 19 as a part of frame member 19. As shown in Fig.4, it is curving so that it may become convex [the mirror plane 23] to the optical axis direction of the imaging module 18, and it follows, and the mirror plane 23 serves as a convex mirror. The optical image from an object reflects in the mirror plane 23, and the reflected optical image faces to an object. in addition -- as shown in Fig.1, the mirror plane 23 is arranged between the first opening 13 and the second opening 14 -- the cross direction of the upper casing 2 -- it is substantially arranged at the central part.

[0033]The transparent member 24 is covered by the above frame member 19. The transparent member 24 is a component which has permeability to visible light. As shown in Fig.3 (a), the peripheral shape of the transparent member 24 is substantially the same as that of the frame member 19, and the transparent member 24 covers the frame member 19 whole, and is attached to the upper casing 2. Therefore, the transparent member 24 has covered integrally the mirror plane 23 and the first opening 13. Fig.3 (a) shows the state where the transparent member 24 has covered the frame member 19, and Fig.3 (b) shows the state where the transparent member 24

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000432

was removed.

[0034]In the surface and the back surface of the transparent member 24, the portions 25 and 26 which attend the first opening 13 are flat, and mutual substantially parallel. Therefore, even if the optical image of an object transmits the transparent member 24 and it results in the imaging module 18, an optical image is not distorted by the transparent member 24.

[0035]The cellular phone 1 constituted as mentioned above fits self portrait photographing by having the mirror plane 23. That is, if a photographer turns the mirror plane 23 to itself, the photographer can image itselves by the imaging module 18, looking at itself.

[0036]Since the mirror plane 23 is covered with the transparent member 24, the mirror plane 23 is protected by the transparent member 24, and does not get damaged. Since the mirror plane 23 and the first opening 13 are integrally covered with the transparent member 24, the first opening 13 that is a hole for imaging stops being conspicuous, and the fine sight as the cellular phone 1 whole improves.

[0037]Since it arranges so that the frame member 19 colored the ornament may surround the first opening 13, the circumference of the first opening 13 looks beautiful. Since such a frame member 19 is covered by the transparent member 24 which has translucency, the color of the frame member 19 is conspicuous, the circumference of the first opening 13 looks beautiful, and the first opening 13 stops and being conspicuous further. On the contrary, when the mirror plane 23 is covered by the transparent member 24, the mirror plane 23 is conspicuous from the first opening 13 by forming the mirror plane 23 in conspicuousness and the circumference of the first opening 13 for the mirror plane 23. Therefore, when a photographer images its own self-portrait, it comes to observe a photographer according to the mirror plane 23. That is, this cellular phone 1 fits photographing of the self portrait dramatically.

[0038][Second embodiment] The cellular phone 100 of example of another with which the present invention was applied is shown in Fig.5 and Fig.6. The code same about the cellular phone 100 as the same component as the cellular phone 1 is attached, the detailed description is omitted, and it mainly describes about a different portion from the cellular phone 1.

[0039]The first opening 113 and the second opening 114 are formed in the near surface which the upper casing 2 opens. the first opening 113 has penetrated the near surface which the upper casing 2 opens in and abroad, and is carrying out form of approximate circular form -- the cross direction (right and left directions of Fig.5 (b)) of the upper casing 2 -- it is substantially arranged at the central part. And although the imaging module 18 is built in in the upper casing 2, the imaging module 18 has attended the first opening 113. And it is attached to the upper casing 2 so that the covering 116 which has translucency may plug up the first opening 113. Since the covering 116 has translucency, the imaging module 18 can acquire the optical image of an object through the first opening 113 and the covering 116, and can image an object.

[0040]The second opening 114 leads within and without the upper casing 2, and the opening is carried out so that it may become a direction which intersects perpendicularly with the optic axis of the imaging module 18 substantially. the second opening 114 -- the cross direction of the upper casing 2 -- it is substantially formed in the central part. The sub display 15 of monochrome is provided in the upper casing 2, and the sub display 15 stands face to face against the second opening 114, and has attended the second opening 114. Like the case of the cellular phone 1 of a first embodiment, the sub display 15 emits light to multiple color while displaying the date, time, a day of the week, the state of an electric wave, battery residual quantity, etc.

[0041]As shown in Fig.7, the upper casing 2 is dented in the circumference of the second opening 114, and the sealing material 130 for an ornament is provided by the bottom surface of the recessed portion. Although the color of the sealing material 130 is silver, gold, or a platina color, it is good to differ from the color of the upper casing 2. Seeing in the graphic display direction of Fig.5, in the circumference of the second opening 114, the recessed portion is carrying out form of the approximately rectangle.

[0042]As shown in Fig.7, the transparent member 124 is inserted in a recessed portion in the circumference of the second opening 114. The transparent member 124 has covered the sealing material 130, and is attached to the upper casing 2. The concave part 125 which curved in R form so that it might become concave to the optical axis direction of the imaging module 18 is formed in the back surface (surface which faced the upper casing 2) of the transparent member 124. The mirror plane 123 is formed in the concave part 125 by metal, such as aluminum, being vapor-deposited by the concave part 125.

[0043]The second opening 114 is covered with inserting in the upper casing 2 the transparent member 124 in which the mirror plane 123 was formed preliminarily by the transparent member 124. If it sees from the surface of the transparent member 124, while the mirror plane 123 serves as a convex mirror, the mirror plane 123 is covered with the transparent member 124. Therefore, the transparent member 124 has covered integrally the mirror plane 123 and the second opening 114. Since it sees in the graphic display direction of Fig.5 and the concave part 125 is formed in the shape of approximate circular form, the mirror plane 123 also serves as a circle configuration.

[0044]as shown in Fig.5, the mirror plane 123 is arranged between the first opening 113 and the second opening 114 in the periphery of the second opening 114 -- the cross direction of the upper casing 2 -- it is substantially arranged at the central part. The optical image from an object enters into the surface of the transparent member 124, it reflects further in the mirror plane 123, and the reflected optical image faces to an object.

[0045]If a photographer turns the mirror plane 123 to itself using the above cellular phone 100, the photographer can image itself by the imaging module 18, looking at itself.

[0046]the cellular phone [since the mirror plane 123 is covered with the cellular phone 100

constituted as mentioned above by the transparent member 124, the mirror plane 123 is protected by the transparent member 124, and does not get damaged, and also] 100 -- an overall fine sight is not spoiled.Since it arranges so that the sealing material 130 for an ornament may surround the second opening 114, the circumference of the second opening 114 looks beautiful. And since such a sealing material 130 is covered by the transparent member 124 which has translucency, the color of the sealing material 130 is conspicuous and the circumference of the second opening 114 looks beautiful. Since the mirror plane 123 is covered by the transparent member 124, the mirror plane 123 comes to be conspicuous. Therefore, when a photographer images its own self-portrait, it comes to observe a photographer according to the mirror plane 123. That is, this cellular phone 100 fits photographing of the self portrait dramatically.

[0047]Although the mirror plane 123 is formed in the concave part 125 of the transparent member 124 by carrying out metal deposition, the protruding part which can be inserted in the concave part 125 may be formed in the sealing material 130, and a mirror plane may be formed by carrying out metal deposition to the protruding part. In this case, the mirror plane will be integrally formed as some sealing materials 130 for an ornament.

[0048][Third embodiment] The cellular phone 200 of example of another with which the present invention was applied is shown in Fig.8. The code same about the cellular phone 200 as the same component as the cellular phone 1 is attached, the detailed description is omitted, and it mainly describes about a different portion from the cellular phone 1.

[0049]The first opening 213 and the second opening 214 are formed in the near surface which the upper casing 2 opens. the first opening 213 has penetrated the near surface which the upper casing 2 opens in and abroad, and is carrying out form of approximate circular form -- the cross direction (right and left directions of Fig.8) of the upper casing 2 -- it is substantially arranged at the central part. And although the imaging module 18 is built in in the upper casing 2, the imaging module 18 has attended the first opening 213. The first opening 213 leads within and without the upper casing 2, and the opening is carried out so that it may become a direction which intersects perpendicularly with the optic axis of the imaging module 18 substantially. The optic axis of the imaging module 18 passes along the first opening 213. It follows, and the imaging module 18 can acquire the optical image of an object through the first opening 113, and can image an object.

[0050]The second opening 214 leads within and without the upper casing 2, and the opening is carried out so that it may become a direction which intersects perpendicularly with the optic axis of the imaging module 18 substantially. the second opening 214 -- the cross direction of the upper casing 2 -- it is substantially formed in the central part. The sub display 15 of monochrome is provided in the upper casing 2, and the sub display 15 stands face to face against the second opening 214, and has attended the second opening 214. Like the case of the cellular phone 1 of a first embodiment, the sub display 15 displays the date, time, a day of the week, the state of an

electric wave, battery residual quantity, etc., and emits light to multiple color.

[0051]The mirror plane 223 is provided around the first opening 213 and the second opening 214, and the mirror plane 223 is arranged between the first opening 213 and the second opening 214. Seeing in the graphic display direction of Fig.8, the mirror plane 223 is carrying out form of approximate circular form. The mirror plane 223 is the convex mirror which curved so that it might become convex to the optical axis direction of the imaging module 18. The mirror plane 223 may be formed by metal deposition and may be formed by polish processing.

[0052]The upper casing 2 is dented in the circumference of the first opening 213, the second opening 214, and the mirror plane 223, and the component for an ornament is provided by the bottom surface of the recessed portion. The component for this ornament is good to be colored and to be colored by a different color from the upper casing 2. It is united in the component for this ornament, the mirror plane 223 may be formed, and the mirror plane 223 may be formed in the upper casing 2.

[0053]The transparent member 224 is attached to the upper casing 2 by the transparent member 224 being inserted in a recessed portion in the circumference of the first opening 213, the second opening 214, and the mirror plane 223. The first opening 213, the second opening 214, and the mirror plane 223 are integrally covered with the transparent member 224. It has translucency to visible light, the optical image from an object enters into the surface of the transparent member 224, the transparent member 224 is reflected further in the mirror plane 223, and the reflected optical image faces to an object.

[0054]Without being limited to each above-mentioned embodiment, in the range which does not deviate from the meaning of the present invention, various improvement is performed and the present invention may make a change of a design. For example, in a first embodiment of the above, although the mirror plane 23 was formed in the frame member 19, the mirror plane may be formed in the upper casing 2. In this case, mold formation of the protruding part is carried out at the upper casing 2, a mirror plane is formed by performing polish processing to this protruding part, and further, this mirror plane is arranged around the first opening 13, and is covered by the transparent member 24. In each embodiment, although the foldaway cellular phone with a camera function was explained in full detail, the present invention, If it is the electronic device provided with the imaging module, it will not be limited to this, and it can apply also by the electronic device which has a hybrid [a digital camera, / PDA with a camera and a voice recorder] function, and a small list OTCHI type electronic device.

[0055]

[Effect of the Invention]As mentioned above, according to the present invention, since the mirror plane is covered by the translucent member, a mirror plane does not get damaged, and also the optical image of an object projects on a mirror plane. Since the mirror plane and the opening are

integrally covered by the translucent member, appearance is dramatically good.

(19)日本国特許庁（ＪＰ）　(12)**公開特許公報**（Ａ）　(11)特許出願公開番号
特開2003－289358
（P2003－289358A）
(43)公開日　平成15年10月10日(2003.10.10)

(51)Int.Cl.⁷		識別記号	Ｆ Ｉ		テーマコード（参考）
Ｈ０４Ｍ	1/02		Ｈ０４Ｍ	1/02	Ｃ　４Ｅ３６０
					Ａ　５Ｋ０２３
	1/21			1/21	Ｍ
Ｈ０５Ｋ	5/03		Ｈ０５Ｋ	5/03	Ｂ

審査請求　未請求　請求項の数15　ＯＬ　（全 10 頁）

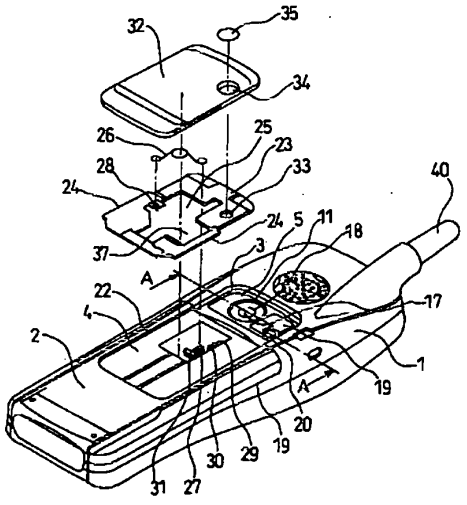
(21)出願番号　特願2002－91649(P2002－91649)
(22)出願日　平成14年３月28日(2002.3.28)

(71)出願人　000005821
松下電器産業株式会社
大阪府門真市大字門真1006番地
(72)発明者　田畑　太一
神奈川県横浜市港北区綱島東四丁目３番１号　松下通信工業株式会社内
(72)発明者　大平　明典
神奈川県横浜市港北区綱島東四丁目３番１号　松下通信工業株式会社内
(74)代理人　100105647
弁理士　小栗　昌平　（外４名）

最終頁に続く

(54)【発明の名称】　カメラ付き携帯電話機器

(57)【要約】
【課題】　カメラ付きの携帯電話機において、カメラの使用状態を外部から明確に判別できるようにし、プライバシー侵害予防に役立てる。
【解決手段】　第１、第２の筐体１、２に第１、第２の凹部３、４を形成し、第１の凹部３側に、この凹部３に対向して筐体１内にカメラ７及び発光体８を取付ける。第１の凹部３には、更に鏡を設け、第２の凹部４には、摺動可能な蓋体３２を取付ける。そして、蓋体３２を第１の凹部３側に摺動したとき、蓋体３２がカメラ、発光体８、鏡のそれぞれの前面を覆い、蓋体３２を第２の凹部４側に摺動したとき、それらを開放するようにする。発光体８は、着信時に発光するように構成し、蓋体３２が第１の凹部３側に摺動したときでも、蓋体３２に形成した透孔３４を通して発光体８からの光を確認できるようにする。



Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000438

【特許請求の範囲】
【請求項１】　筐体を第１、第２の筐体で構成し、
前記第２の筐体を前記第１の筐体に形成した切欠部に着脱自在に装着すると共に、前記第１、第２の筐体にそれぞれ両者に跨がって一体となる第１、第２の凹部を形成し、
前記第１の凹部に対向する位置にカメラを取付け、
前記第２の凹部にガイドを形成し、
このガイドに沿って前記第１、第２の凹部に跨って移行可能な蓋体を取付け、
前記蓋体を前記第１の凹部側に移行させたとき、前記カメラの前面が前記蓋体で覆われるように構成したカメラ付き携帯電話機器。
【請求項２】　前記第２の筐体は電池収納用の筐体であることを特徴とする請求項１記載のカメラ付き携帯電話機器。
【請求項３】　前記ガイドを前記第２の凹部に形成したガイド溝で構成し、
このガイド溝に前記蓋体に装着されるガイド板の両側部を挿入して前記ガイド板を前記ガイド溝に対して摺動自在に取付け、
前記蓋体を前記第１、第２の凹部に跨って移行可能なように構成したことを特徴とする請求項１又は２記載のカメラ付き携帯電話機器。
【請求項４】　前記ガイド板にコイルばねを配置し、
その両端をそれぞれ前記ガイド板、前記第２の凹部に形成したそれぞれの係合部に係合させ、
前記ガイド板が前記第１、第２の凹部側にそれぞれ摺動するように構成したことを特徴とする請求項３記載のカメラ付き携帯電話機器。
【請求項５】　前記ガイド板の中央部に透孔を形成し、
この透孔に前記コイルばねを配置したことを特徴とする請求項４記載のカメラ付き携帯電話機器。
【請求項６】　前記カメラに近接する位置に、被写体を映し出す鏡を配置し、前記蓋体を前記第２の凹部側に移行させたとき、前記カメラと共に前記鏡が前記蓋体で覆われるように構成したことを特徴とする請求項１又は２記載のカメラ付き携帯電話機器。
【請求項７】　前記カメラに近接する位置に発光体を取付け、
この発光体が前記カメラと共に前記蓋体によって覆われるように構成すると共に、
前記蓋体を前記第１の凹部側に移行したとき、前記蓋体の前記発光体に対向する位置に前記発光体からの光を外部に導く透光部を形成したことを特徴とする請求項１又は２記載のカメラ付き携帯電話機器。
【請求項８】　前記発光体を着信時に発光するように構成したことを特徴とする請求項７記載のカメラ付き携帯電話機器。
【請求項９】　前記発光体を前記蓋体が前記第２の凹部側に移行されたカメラ撮影時において発光するように構成したことを特徴とする請求項７記載のカメラ付き携帯電話機器。
【請求項１０】　前記発光体の光を外部に導く部分を乳白色にしたことを特徴とする請求項７記載のカメラ付き携帯電話機器。
【請求項１１】　前記カメラに近接する位置に発光体を取付け、
前記第１の凹部を構成する底面板の前記カメラに対向する位置に前記発光体からの光を遮光する筒状の突堤を形成すると共に、
この突堤で囲まれた部分に前記カメラへの光を入射させる透明板を配置したことを特徴とする請求項１又は２記載のカメラ付き携帯電話機器。
【請求項１２】　前記第１の凹部の底面部を透明材料よりなる平板で形成し、
前記平板に対向する位置にカメラを取付け、
前記平板の前記カメラに近接する位置に、背面に反射率のよい材料よりなる反射層を形成した球面を形成し、
この球面によって前記カメラで撮影される被写体を映し出す鏡を構成したことを特徴とする請求項１又は２記載のカメラ付き携帯電話機器。
【請求項１３】　筐体に凹部を形成し、
この凹部の一端部に対向する位置にそれぞれカメラ及び発光体を取付け、
前記凹部に前記凹部の一端から他端に摺動可能な蓋体を取付け、
前記蓋体を前記凹部の一端側に摺動させたとき、前記カメラの前面が前記蓋体で覆われ、前記発光体が前記蓋体に形成した透光部に対向するように構成したカメラ付き携帯電話機器。
【請求項１４】　前記カメラに近接する位置に前記カメラで撮影される被写体を映し出す鏡を配置し、前記蓋体を前記凹部の一端側に摺動させたとき、前記鏡を前記カメラ及び発光体と共に前記蓋体で覆われるように構成したことを特徴とする請求項１３記載のカメラ付き携帯電話機器。
【請求項１５】　筐体に摺動可能な蓋体を取付け、
前記蓋体を一方に摺動したとき前記蓋体で覆われ、他方に摺動したとき開放される前記筐体の一部に対向する位置にそれぞれカメラ及び前記カメラによって撮影される被写体を映し出す鏡並びに着信時に発光する発光体を配置し、
前記蓋体を一方に摺動したとき、前記カメラ、前記鏡、前記発光体がそれぞれ共に前記蓋体で覆われ、前記発光体が前記蓋体に形成した透光部に対向するように構成したカメラ付き携帯電話機器。
【発明の詳細な説明】
【０００１】
【発明の属する技術分野】本発明は、カメラを有し、こ

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000439

のカメラの前面を非使用時に蓋体で覆うことが可能なカメラ付き携帯電話機器に関する。

【0002】

【従来の技術】一般に、カメラ付きの携帯電話機は公知であるが、これらのものは、いずれも、筐体の背面にカメラの前面が露出するようにカメラを取付け、筐体の背面に設けた鏡、あるいは、正面に設けた液晶表示器などで、撮影しようとする映像を見ながら撮影できるように構成したものである。従って、これらのものでも、希望する被写体を鏡、あるいは、液晶表示器などに映し出して正確に撮影することができ、必要に応じて無線電話回線を通して希望する相手に容易に伝送することができる。

【0003】

【発明が解決しようとする課題】しかしながら、これらのカメラ付き携帯電話機では、カメラが常時露出しており、また、携帯電話機自体も多機能化されているため、他人から見ると、メールやゲームを楽しんでいるのか、カメラで何かを撮影しているのか、容易に判別できない。従って、近くにいる者にとっては、知らない間に自分が撮影されているのではないかという危惧を常に感じることになり、プライバシー保護の面で非常に大きな問題があった。

【0004】そこで、本発明は、このような問題を解決するものであり、簡単な構成で、カメラの使用状態を容易に判別できるカメラ付き携帯電話機器を提供することを目的とするものである。

【0005】

【課題を解決するための手段】本発明のカメラ付き携帯電話機器は、筐体を第1、第2の筐体で構成し、第2の筐体を第1の筐体に形成した切欠部に着脱自在に装着すると共に、第1、第2の筐体にそれぞれ両者に跨がって一体となる第1、第2の凹部を形成し、第1の凹部に対向する位置にカメラを取付け、第2の凹部に、第2の凹部に形成したガイドに沿って第1、第2の凹部に跨って移行可能な蓋体を取付け、蓋体を前記第1の凹部側に移行させたとき、カメラの前面が蓋体で覆われるように構成した。

【0006】この構成により、蓋体を第2の筐体に取付け、その後、第2の筐体を第1の筐体に装着することが可能となり、その組立が容易であると共に、蓋体を第1の凹部側に移行させたとき、カメラの前面が蓋体で覆われる。このため、カメラの非使用時にはカメラの前面が蓋体で保護され、カメラの使用状態も蓋体の摺動状態で第三者でも容易に判別でき、プライバシー保護の面でも充分その役割を果たすことができる。

【0007】また、本発明のカメラ付き携帯電話機器は、第2の筐体を電池収納用の筐体で構成した。この構成により、第2の筐体が電池収納用の筐体を兼用することになり、別個に第2の筐体を設けることなく、カメラの前面を開閉する蓋体を容易に取付けることができ、全体として小型化が可能である。

【0008】また、本発明のカメラ付き携帯電話機器は、ガイドを第2の凹部に形成したガイド溝で構成し、このガイド溝に蓋体に装着されるガイド板の両側部を挿入し、ガイド板をガイド溝に対して摺動自在に取付け、蓋体を第1、第2の凹部に跨って移行可能なように構成した。この構成により、まず、ガイド板を第2の凹部に形成したガイド溝に摺動自在に取付け、その後、ガイド板に蓋体を取付けることが可能になり、蓋体の取付けが容易になると共に、蓋体そのものがガイド溝に挿入されないため、蓋体の両側部が傷つくこともなく、常に奇麗な状態を保持することができる。

【0009】また、本発明のカメラ付き携帯電話機器は、ガイド板にコイルばねを配置してその両端をそれぞれガイド板、第2の凹部に形成したそれぞれの係合部に係合させ、ガイド板が前記第1、第2の凹部側にそれぞれ節度をもって摺動するように構成した。この構成により、蓋体がコイルばねの働きによって節度をもって第1の凹部側、第2の凹部側にそれぞれ確実に摺動することになり、その動作が安定する。

【0010】また、本発明のカメラ付き携帯電話機器は、ガイド板の中央部に透孔を形成し、この透孔にコイルばねを配置するように構成した。この構成により、コイルばねを有するにも関わらず、それが透孔の中に配置されているため、全体として肉薄にすることができ、しかも、ガイド板を第2の凹部側に摺動自在に装着した状態で容易に取付けることができる。

【0011】また、本発明のカメラ付き携帯電話機器は、カメラに近接する位置に、被写体を映し出す鏡を取付け、蓋体を第1の凹部側に移行させたとき、カメラに加えて鏡をも蓋体で覆われるように構成した。この構成により、蓋体を第2の凹部側に移行させ、カメラを使用可能な状態にすれば、この状態で鏡も露出することになり、カメラで撮影する被写体を鏡で正確に写し出すことができるようになる。そして、蓋体を第1の凹部側に移行させた場合には、カメラと共に鏡も一緒に蓋体で覆われることになり、鏡に塵や埃が付着するのを容易に防止することができる。

【0012】また、本発明のカメラ付き携帯電話機器は、カメラに近接する位置に発光体を取付け、この発光体がカメラと共に蓋体によって覆われるように構成すると共に、蓋体を第2の凹部側に移行したとき、蓋体の発光体に対向する位置に発光体からの光を外部に放出する透光部を形成する構成とした。この構成により、蓋体を第1の凹部側に移行させた状態でも、発光体からの光が発光すれば、それを透光部を通して容易に確認することができる。

【0013】また、本発明のカメラ付き携帯電話機器は、発光体を着信時に発光するように構成した。この構

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000440

成により、蓋体を第１の凹部側に移行させた状態でも、発光体の発光によって着信を容易に確認することができる。

【００１４】また、本発明のカメラ付き携帯電話機器は、発光体を蓋体が第２の凹部側に移行されたカメラ撮影の状態において発光するように構成した。この構成により、蓋体を第２の凹部側に移行させたカメラ撮影の状態において発光体が発光し、暗いところでも容易にカメラ撮影することができる。

【００１５】また、本発明のカメラ付き携帯電話機は、発光体の光を外部に導く部分を乳白色になるように構成した。この構成により、発光体からの光を乳白色部分で拡散し、外部に導くことができ、斜め横からも発光体の発光を見ることができ、見栄えも良くすることができる。

【００１６】また、本発明のカメラ付き携帯電話機器は、第１の凹部の底面部を透明材料よりなる平板で形成し、その平板に対向する位置にカメラを取付け、平板のカメラに近接する位置に、背面に反射率のよい材料よりなる反射層を形成した球面を形成し、この球面によってカメラで撮影される被写体を映し出す鏡を構成した。この構成により、透明材料よりなる平板を用いてカメラの前面を保護する保護板を構成し、平板の背面に形成した反射層で鏡を構成することができ、全体として、その構成が簡単であり、平板の表面は蓋体の摺動に支障がないように面一にすることも可能である。

【００１７】また、本発明のカメラ付き携帯電話機器は、第１の凹部の底面部を透明材料よりなる平板で形成し、平板に対向する位置にカメラを取付け、平板のカメラに近接する位置に、背面に反射率のよい材料よりなる反射層を形成した球面を形成し、この球面をカメラで撮影される被写体を映し出す鏡とする構成とした。この構成により、鏡を平板に一体に形成でき、その形成が容易であると共に、その鏡を通してカメラで撮影される被写体を正確に映し出すことができ、被写体を正確に撮影することができる。

【００１８】また、本発明のカメラ付き携帯電話機器は、筐体に凹部を形成し、この凹部の一端部に対向する位置にそれぞれカメラ及び発光体を取付け、凹部に凹部の一端から他端に摺動可能な蓋体を取付け、蓋体を凹部の一端側に摺動させたとき、カメラの前面が蓋体で覆われ、発光体が蓋体に形成した透光部に対向するように構成した。この構成により、蓋体の摺動状態でカメラの使用状態を容易に確認することができ、第三者に対するプライバシーの保護を確保することができ、着信があった場合には、蓋体に形成した透光部を通して発光体からの光を容易に確認することができる。

【００１９】また、本発明のカメラ付き携帯電話機器は、カメラに近接する位置にカメラで撮影される被写体を映し出す鏡を配置し、蓋体を凹部の一端側に摺動させたとき、鏡をカメラ及び発光体と共に蓋体で覆われる構成とした。この構成により、蓋体を凹部の他端側に摺動させたとき、鏡がカメラと共に露出することになり、カメラで撮影される被写体が鏡で正確に映し出されることになり、正確な撮影が可能になり、また、蓋体を凹部の一端側に摺動させた場合には、カメラ及び鏡、発光体が共に蓋体によって覆われることになり、これらに塵や埃が付着するのを効果的に阻止することができる。

【００２０】また、本発明のカメラ付き携帯電話機器は、筐体に摺動可能な蓋体を取付け、蓋体を一方に摺動したとき蓋体で覆われ、他方に摺動したとき開放される筐体の一部に対向する位置にそれぞれカメラ及びカメラによって撮影される被写体を映し出す鏡並びに着信時に発光する発光体を配置し、蓋体を一方に摺動したとき、カメラ及び鏡、発光体がそれぞれ共に蓋体で覆われ、発光体が蓋体に形成した透光部に対向するように構成した。この構成により、カメラの非使用時には、カメラ及び鏡、発光体を共に蓋体によって保護することができ、しかも、その状態で着信があった場合は、蓋体に形成した透光部を通して着信時に発光する発光体からの光を容易に確認することができ、カメラの使用時には、鏡も同時に露出し、カメラで撮影する被写体を鏡に映し出して正確に撮影することができる。

【００２１】

【発明の実施の形態】以下、本発明の実施の形態について添付図面を用いて説明する。図１は、本発明の一実施の形態におけるカメラ付き携帯電話機の分解斜視図、図２は、同携帯電話機のＡ－Ａ断側面図、図３は、同携帯電話機の蓋体を閉じた状態の背面図、図４は同携帯電話機の蓋体を開いた状態の背面図、図５、図６は、同携帯電話機の動作を説明する背面図である。

【００２２】図１において、本発明の一実施の形態におけるカメラ付き携帯電話機は、大略構成として、第１の筐体１と、この第１の筐体１の背面側に着脱自在に装着される第２の筐体２と、これら第１の筐体１及び第２の筐体２で形成される第１の凹部３及び第２の凹部４と、この第２の凹部４に摺動可能に取付いたガイド板２３と、このガイド板２３に一体に固定される蓋体３２とを備えている。

【００２３】第１の筐体１には、図１に示すようにアンテナ４０が取付けられており、図示していないが、内部に無線回路、通話回路、その他の回路を構成する各種回路基板、各種電気部品が内装されている。そして、筐体１の正面側には、キーボード、液晶表示器等が実装され、送話用、受話用のそれぞれの音孔が形成されている。更に、筐体１の背面側には、背面から側面に至る比較的大きな切欠１ａが形成され、この切欠１ａに第２の筐体２が着脱自在に装着されている。

【００２４】そして、第２の筐体２には、図示していないが、内面に偏平な充電電池が一体に装着されており、

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000441

第２の筐体は、いわゆる、電池収納用の筐体を構成している。

【００２５】第１、第２の筐体１、２のそれぞれの背面には、両者に跨って一体となる第１、第２の凹部３、４が形成され、第１の凹部３にはアクリル等の透明材料よりなる平板５が取付けられている。

【００２６】すなわち、第１の凹部３は、図２に示すように、第１の凹部３の中央部に、更に窪んだ凹部３ａを有し、この凹部３ａの底面に両面接着テープ６等を用いて前記透明材料よりなる平板５を接着することにより、前記第１の凹部３の表面が前記平板５と共に面一になるように構成されている。

【００２７】そして、図２に示すように、第１の凹部３の底部を構成する底面板３ｂには、後述するカメラ７及び発光体８にそれぞれ対向する透孔９、１０が形成されており、カメラ７に対向する透孔９の周囲には、発光体８からの光を遮光するために、表面側に突出する円筒状の突堤１１が一体に形成されている。また、第１の凹部３の底部を構成する底面板３ｂの内側で、カメラ７と発光体８との間に位置する部分には、図示していないが、別に設けられるシールド板の位置決めを行うための突堤１２が一体に形成されている。なお、底面板３ｂの内側に一体に形成した突リブ１５は、先に説明した突堤１２と共に、先に説明したシールド板の位置決めを行うためのものである。

【００２８】透明材料よりなる平板５には、図２において、カメラ７に対向する部分に透孔１６が形成され、この透孔１６が円筒状の突堤１１に嵌合され、前記平板５の背面が両面接着テープ６等で凹部３の底面部３ｂに接着されている。そして、底面部３ｂの円筒状の突堤１１で囲まれた部分には、内面外周部にのみ遮光層１８を形成した歪みの少ない、例えば、アクリル製で両面を切削、研磨した透明板１７が両面接着テープ６等で接着固定されている。また、平板５のカメラ７に近接する位置（円筒状突堤１１の外側）には、中央部が窪むように球面が形成され、この球面の内側に反射率のよいアルミニウム等の金属を蒸着して反射層１９が形成されている。すなわち、この反射層１９によってカメラ７で撮影される被写体を映し出す鏡を構成している。一方、平板５の発光体８に対向する部分には、表面に窪み２０を形成し、内面に乳白色の半透明層２１を形成することによって、発光体８からの光が、より拡散されて見やすくなるようにしている。

【００２９】次に、図１において、第２の凹部４には、その両側面にそれぞれガイド溝２２が形成され、このガイド溝２２にはガイド板２３の両側部に形成したガイド用突堤部２４が摺動自在に挿入されている。

【００３０】また、第２の凹部４には、ガイド板２３の挿入方向にテーパ２９を有しガイド板２３の挿入を容易にする突堤３０と、ガイド板２３を挿入した状態でそのガイド板２３の抜けを防止する係止用の突堤３１とがそれぞれ第２の凹部４と一体に形成されている。

【００３１】ガイド板２３には、図１に示すように、中央部に透孔２５が形成され、この透孔２５にはコイルばね２６が配置されている。そして、コイルばね２６の両端部は、コイルばね２６を互いに圧縮した状態で、第２の凹部４及びガイド板２３にそれぞれ形成した係合部２７、２８に係合されており、ガイド板２３は、このコイルばね２６の弾性力によって第１の凹部３側、第２の凹部４側にそれぞれ節度をもって摺動するように構成されている。また、ガイド板２３には、蓋体３２が嵌合固定され、必要に応じて両者は両面接着テープ等で接着固定されている。そして、ガイド板２３と蓋体３２をそれぞれ第１の凹部３側に摺動、移行させたとき、そのガイド板２３と蓋体３２の発光体８に対向するそれぞれの位置には、それぞれ発光体８からの光を外部に放出する透孔３３、３４が形成され、一方の透孔３４には保護用の透明板３５が装着されている。尚、ガイド板２３には、コイルばね２６を挿入する透孔２５に近接して磁石３６を装着するための切欠３７が形成されている。そして、この切欠３７に装着された磁石３６（図６参照）と筐体１、２内に設けられたホール素子、電磁接点などで蓋体３２を第１、第２の凹部３、４側に移行したとき、それぞれ第１、第２の動作を実行するスイッチが構成されている。

【００３２】蓋体３２は、図３、図４に示すように、その幅が第１、第２の凹部３、４にほぼ合致し、長さがそれぞれ第１、第２の凹部３、４側に移行したときそれぞれ第１の凹部３側を覆ったり、開放したりする大きさに形成されている。そして、蓋体３２は、ガイド板２３に装着されており、ガイド板２３と一体に移行するように構成されているため、ガイド板２３がガイド溝２２に沿って摺動することにより、蓋体３２もガイド溝２３に沿って同様に移行し、図３、図４に示すように、第１の凹部３側、第２の凹部４側にそれぞれ確実に節度をもって移行することができる。

【００３３】カメラ７及び発光体８は、図２に示すように、第１の凹部３に対向して第１の筐体１内に実装されたプリント基板１３の透孔９、１０に対向する部分にそれぞれ取付けられている。すなわち、カメラ７は、レンズ部分７ａとＣＣＤモジュール部分７ｂとで構成されており、レンズ部分７ａが透孔９に対向するように、ＣＣＤモジュール部分７ｂがプリント基板１３に取付けられたＣＣＤソケット７ｃに着脱自在に取付けられている。そして、透孔９の外周に位置する底面板３ｂの内側には筒形のクッション部材１４が装着され、このクッション部材１４がカメラ７のレンズ部分７ａを囲むようにカメラ７のＣＣＤモジュール部分７ｂと底面板３ｂとの間に介在されている。したがって、このクッション部材１４は、カメラ７に加わる衝撃を緩衝する働きと、カメラ７

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000442

に塵や埃が侵入するのを阻止する防塵部材の働きを兼ね備えている。

【００３４】そして、カメラ7は、先に説明したスイッチの動作を基に、蓋体３２を第２の凹部４側に移行したとき、動作可能なように構成されており、この状態で、更に発光体7が、例えば、連続発光するように構成されている。したがって、この連続発光された光によってカメラモードであることを第三者に知らしめることができ、また、暗い場所では、その光を用いて被写体を撮影することもできる。尚、発光体8は、図示していないが、更に、カメラのシャッターを切ったとき、より明るく発光するように構成することも可能である。

【００３５】また、本実施の形態では、蓋体３２が第１の凹部３側に移行しようと、第２の凹部４側に移行しようと、いずれの場合であっても、着信があれば、その着信に対して応答できるように構成され、発光体8は、これらの着信に応じて間欠的に発光するように構成されている。

【００３６】次に、本実施の形態について、その動作を説明する。すなわち、本実施の形態によれば、ガイド板２３と第２の凹部４との間にコイルばね２６を装着している。このため、蓋体３２にそれぞれ第１の凹部３側、第２の凹部４側に移行させる方向の力を加えれば、この力がガイド板２３及びコイルばね２６にも同様に加わり、コイルばね２６が一旦圧縮されデッドポイントを越えると再び伸長するように作用する。その結果、ガイド板２３及び蓋体３２がそれぞれ第１の凹部３側、第２の凹部側４に節度をもって正確に移行することになる。

【００３７】図5、図6はこの移行状態を示したものであり、図5は、ガイド板２３及び蓋体３２が第１の凹部３側に移行した状態、図6は、ガイド板２３及び蓋体３２が第２の凹部４側に移行した状態を示している。いずれの状態でも、コイルばね２６は適度に圧縮された状態にあり、第１の凹部３側、第２の凹部４側にあるそれぞれのガイド板２３に、それぞれ第１の凹部３側、第２の凹部４側に移行する方向の弾性力を作用させている。

【００３８】このように、本実施の形態によれば、蓋体３２を第１の凹部３側、あるいは、第２の凹部４側にそれぞれ移行し、第１の凹部３側に設けたカメラ7、発光体8などをそれぞれ覆ったり、開放したりすることができ、覆った場合には、これらを外部から保護することができ、開放した場合には、これらを有効に利用して必要な被写体を撮影することができ、カメラの使用状態が第三者でも容易に確認でき、プライバシーなどの問題が生じるのを極力少なくすることができる。

【００３９】そして、本実施の形態によれば、蓋体３２を閉じたとき（図5の状態）蓋体３２の発光体8に対向する位置に透孔３４を形成し、この透孔３４を通して発光体8からの光を外部に放出できるように構成している。このため、発光体8が第１の凹部３に対向して設けられているにも関わらず、発光体8が発光した場合、発光体8からの光を蓋体３２に設けた透孔３４より容易に確認することができ、着信があった場合も、それを容易に確実に確認することができる。そして、この場合、発光体8からの光を乳白色の半透明層２１で拡散するようにしているため、横からでもよく見え、見栄えがよいという効果を有する。

【００４０】また、本実施の形態によれば、図1に示すように、第２の筐体２に形成した第２の凹部４の両側部にガイド溝２２を設け、このガイド溝２２にガイド板２３を挿入して、ガイド板２３をガイド溝２２に沿って摺動自在に取付けるようにしている。従って、ガイド板２３の取付けに際しては、第１の筐体１、第１の凹部３に関係なく、第２の筐体２に形成した第２の凹部４に直接取付けることができ、その取付けが非常に簡単であるという作用を有する。すなわち、本実施の形態によれば、ガイド溝２２を第２の筐体４の端部において開放された形のものとして形成している。従って、このガイド溝２２にガイド板２３を挿入する場合には、前記開放された端部から容易に挿入することができる。また、このガイド板２３を挿入した後で、第２の筐体２を第１の筐体１に装着すれば、ガイド溝２２の開放された部分が第１の筐体１の端部（第２の筐体２に突き合わされる部分）で塞がれる。このため、前記ガイド溝２２の開放された部分から前記ガイド溝２２に挿入されたガイド板２３が抜け出るようなことは一切なく、逆に、第１の筐体１の端部（第２の筐体２に突き合わされる部分）をガイド板２２の第１の凹部３側への移行範囲を規制するストッパーとして動作させることができるという作用を有する。

【００４１】また、本実施の形態によれば、第２の凹部４にガイド板２３の挿入方向にテーパ２９を有する突堤３０と、ガイド板２３を挿入した状態でそのガイド板２３の抜けを防止する係止用の突堤３１を形成している。このため、図7に示すように、ガイド板２３をガイド溝２２に挿入して矢印の方向に移行させた場合、

（１）ガイド板２３の突堤３０、３１に対向する部分が突堤３０のテーパ２９に沿って上方に押し上げられ、その状態で矢印の方向に移行されることになる。（２）その結果、図8に示すように、ガイド板２３の突堤３０、３１に対向する部分が突堤３０、３１を容易に越えることになる。

（３）そして、ガイド板２３の突堤３０、３１に対向する部分が突堤３０、３１を越えると、ガイド板２３の突堤３０、３１に対向する部分が元の状態に復帰するため、ガイド板２３に形成した透孔２５が突堤３０、３１及び係止部２７にそれぞれ嵌合されることになる。

（４）従って、この状態では、図8に示すように、ガイド板２３をガイド溝２２に沿って抜け出る方向に移行させても、それだけでは、ガイド板２３が突堤３１によって係止され、ガイド溝２２より抜け出ないようになって

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000443

いる。

【００４２】このように、ガイド板２３は、突堤３０、３１の働きでガイド溝２２に容易に挿入でき、しかも、一旦挿入すると、自然には抜け出ないように構成されている。したがって、この状態で、図９に示すように、コイルばね２６の両端をそれぞれ第２の凹部４、ガイド板２３に形成した係合部２７、２８に係合させることにより、ガイド板２３を節度をもって第１の凹部３側、第２の凹部４側にそれぞれ摺動可能に容易に装着することができる。なお、補修、その他で、ガイド板２３をガイド溝２２より抜き取りたい場合には、その前に、先ず、コイルばね２６を取り除き、その状態で、ドライバー、その他の器具を用いて、外部からガイド板２３の突堤３０、３１に対向する部分を上方に持ち上げ、ガイド板２３をガイド溝２２より抜き取る方向に移行させればよい。このようにすれば、ガイド板２３の突堤３０、３１に対向する部分と突堤３１との係止が解け、ガイド板２３をガイド溝２２より容易に抜き取ることができる。

【００４３】また、本実施の形態によれば、図１に示すように、ガイド板２３に透孔２５を形成し、この透孔２５にコイルばね２６を挿入するように構成しているため、全体の厚さをガイド板２３の厚さだけ薄くすることができる。しかも、コイルばね２６の両端部は、それぞれ透孔２５を通して係止部２７、２８に係止させるようにしている。したがって、コイルばね２６を係止部２７、２８に係止させる場合でも、ガイド板２３をガイド溝２２に挿入した状態でコイルばね２６に適度な圧縮力を作用させ容易に係止させることができるという作用を有する。

【００４４】また、本実施の形態によれば、図２に示すように、第１の凹部３に透明材料よりなる平板５を取付け、この平板５に対向する位置にそれぞれカメラ７及び発光体８を取付けている。また、この平板５には、カメラ７に隣接する位置に背面に反射率のよい材料よりなる反射層１９が形成された球面を形成し、この球面によってカメラ７で撮影される被写体を映し出すための鏡を構成している。このため、平板５の前面に手などを触れても反射層１９に傷等がつくこと恐れが全くなく、常に鏡として良好な状態を維持することができる。そして、カメラ７、発光体８に加えて、鏡も蓋体３２を第１の凹部３側に移行したとき、共に蓋体３２で覆うように構成しており、カメラ７を使用しない場合には、これらが共に蓋体３２で覆われるため、これらに塵や埃が付着するのを極力少なくすることができる。

【００４５】また、本実施の形態によれば、図２に示すように、平板５に透孔１６を形成するとともに、この透孔１６を凹部３の底面板３ｂに形成した円筒状突堤１１に嵌合し、かつ、円筒状突堤１１に歪みの少ない透明板１７を取付けており、この透明板１７がカメラ７に対向するように構成している。したがって、カメラ７への入射光は、透明板１７を通して歪み少なく入射され、また、発光体８からの光は、平板５を通して横方向に拡散拡散されたとしても、透明板１７に対しては円筒状突堤１１で完全に遮光され、カメラ７の撮影に何ら影響しないという作用を有する。

【００４６】以上、要するに、本実施の形態によれば、全体の構成を簡単に、しかも、蓋体の摺動によってカメラの使用状態を容易に確認でき、また、着信があった場合には蓋体の如何に関わらずそれを容易に確認でき、ユーザにとって使用し易い実用的な携帯電話機を提供することができる。尚、本実施の形態では、筐体を第１、第２の筐体１、２で構成し、これらの筐体１、２に跨るように第１、第２の凹部３、４を形成し、第２の凹部４に蓋体３２を摺動可能に装着しているが、筐体は必ずしも第１、第２の筐体１、２で構成しなくても良く、また、凹部３、４もこれらに跨って形成しなくても良いことは言うまでもないことである。

【００４７】また、本実施の形態では、第２の筐体２が電池収納用の筐体を兼ねているが、これは単なる筐体であっても良い。また、本実施の形態では、発光体８からの光を外部に放出するために、蓋体３２に透孔３４を形成しているが、この透孔３４は、必ずしも孔でなくても良く、要は、光を通す透光部であれば充分である。例えば、蓋体３２を透明材料で構成し、その表面又は裏面に適度に遮光膜を設け、残りの部分全体を透光部として、この透光部より発光体８からの光を外部に放出するように構成することも可能である。

【００４８】

【発明の効果】以上説明したように、本発明によれば、筐体に摺動可能な蓋体を取付け、蓋体を一方に摺動したとき蓋体で覆われ、他方に摺動したとき開放される筐体の一部に対向する位置にそれぞれカメラ及びカメラによって撮影される被写体を映し出す鏡並びに着信時に発光する発光体を配置し、蓋体を一方に摺動したとき、カメラ及び鏡、発光体がそれぞれ共に蓋体で覆われ、発光体が蓋体に形成した透光部に対向するように構成したものであり、カメラの非使用時には、カメラ及び鏡、発光体を共に蓋体によって保護することができる。

【００４９】しかも、本発明によれば、その状態で着信があった場合には、蓋体に形成した透光部を通して着信時に発光する発光体からの光を容易に確認することができ、カメラの使用時には、鏡も同時に露出し、カメラで撮影する被写体を鏡に映し出して正確に撮影することができるという効果を有する。

【図面の簡単な説明】

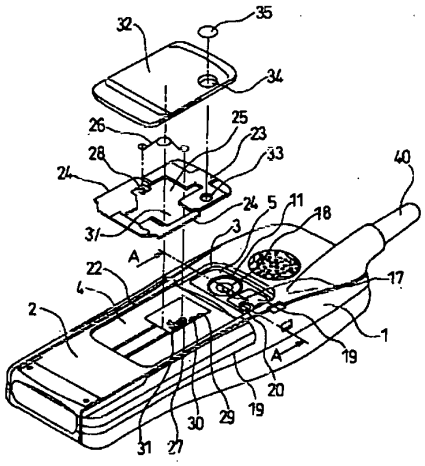
【図１】本発明の一実施の形態におけるカメラ付き携帯電話機を示す分解斜視図である。

【図２】本発明の一実施の形態におけるカメラ付き携帯電話機を示すものであって、図１のＡ－Ａ断側面図である。

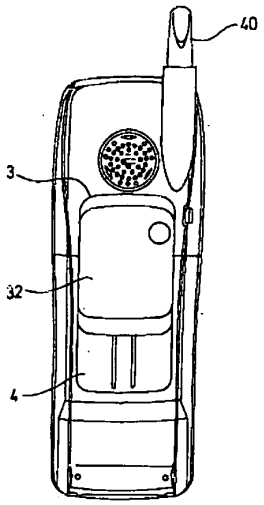
Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000444

【図３】本発明の一実施の形態におけるカメラ付き携帯電話機の蓋体を閉じた状態を示す背面図である。
【図４】本発明の一実施の形態におけるカメラ付き携帯電話機の蓋体を開いた状態を示す背面図である。
【図５】本発明の一実施の形態におけるカメラ付き携帯電話機の蓋体を閉じた状態で蓋体を省略した背面図である。
【図６】本発明の一実施の形態におけるカメラ付き携帯電話機の蓋体を開いた状態の蓋体を省略した背面図である。
【図７】本発明の一実施の形態におけるカメラ付き携帯電話機の要部の組立工程（第１工程）を説明する斜視図である。
【図８】本発明の一実施の形態におけるカメラ付き携帯電話機の要部の組立工程（第２工程）を説明する斜視図である。
【図９】本発明の一実施の形態におけるカメラ付き携帯電話機の要部の組立工程（第３工程）を説明する斜視図である。
【符号の説明】
１　第１の筐体
２　第２の筐体
３　第１の凹部
４　第２の凹部
５　平板
６　両面接着テープ
７　カメラ
７ａ　レンズ部分
７ｂ　ＣＣＤモジュール部分
７ｃ　ソケット
８　発光体
９　透孔
１０　透孔
１１　円筒状突堤
１２　遮光用突堤
１３　プリント基板
１４　クッション部材
１５　突リブ
１６　透孔
１７　透明版
１８　遮光層
１９　反射層
２０　窪み
２１　半透明層
２２　ガイド溝
２３　ガイド板
２４　ガイド用突堤部
２５　透孔
２６　コイルばね
２７　係合部
２８　係合部
２９　テーパ
３０　突堤
３１　係止用突堤
３２　蓋体
３３　透孔
３４　透孔
３５　保護用透明板
３６　磁石
３７　切欠

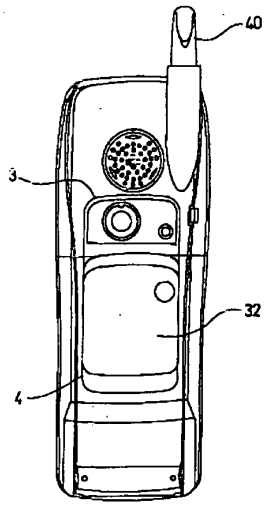
【図１】



【図３】

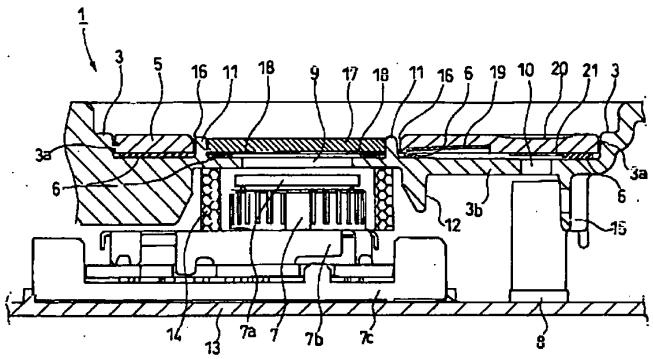


【図４】

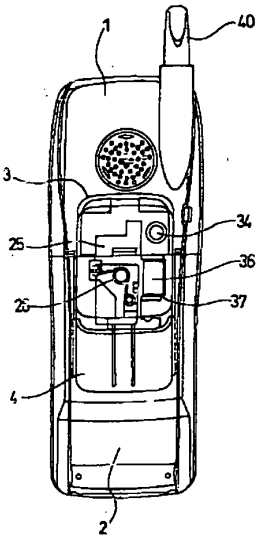


Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000445

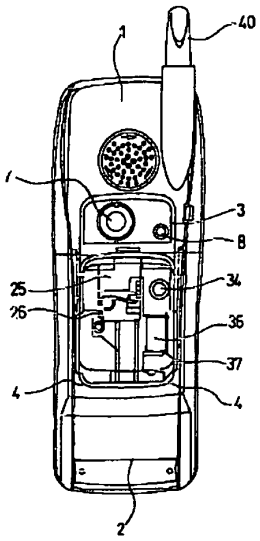
【図2】



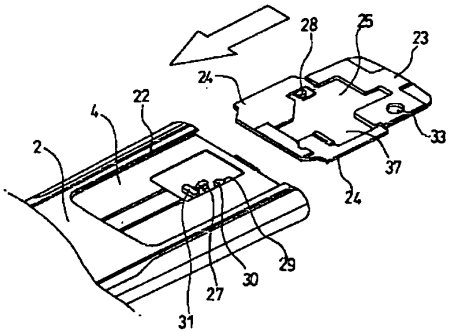
【図5】



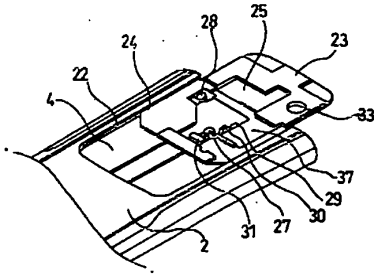
【図6】



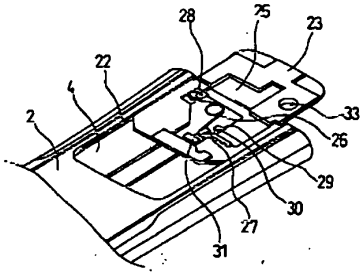
【図7】



【図8】



【図9】



Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000446

フロントページの続き

(72)発明者 条 信吾
神奈川県横浜市港北区綱島東四丁目３番１号 松下通信工業株式会社内
(72)発明者 関根 武史
神奈川県横浜市港北区綱島東四丁目３番１号 松下通信工業株式会社内

Fターム(参考) 4E360 AA02 AB03 AB12 AB23 AB24 AB42 BA04 BA08 BA12 BA15 BB04 BB20 BB23 BC05 BD03 BD05 EA18 EC13 ED03 ED23 ED27 FA08 GA03 GA22 GA46 GB01 GB26
5K023 AA07 BB25 HH04 HH08 MM00 MM03 MM25

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000447

2003-289358

(11)Publication number 2003-289358
(43)Date of publication of application 10.10.2003
(51)Int.Cl.
H04M 1/02
H04M 1/21
H05K 5/03

(21)Application number 2002-091649
(22)Date of filing 28.03.2002
(71)Applicant MATSUSHITA ELECTRIC IND CO LTD
(72)Inventor TABATA TAICHI
OHIRA AKINORI
KUME SHINGO
SEKINE TAKESHI
(54)MOBILE TELEPHONE EQUIPMENT WITH CAMERA
(57)Abstract
PROBLEM TO BE SOLVED: To clearly discriminate the use status of a camera effectively for preventing the violation of privacy in a mobile telephone set with the camera.
SOLUTION: First and second casings 1 and 2 are formed with first and second recesses 3 and 4 and on the side of the first recess 3, a camera 7 and a light emitting body 8 are mounted within the casing 1 while being opposed to the recess 3. Further, the first recess 3 is equipped with a mirror, and a lid body 32 capable of sliding is mounted in the second recess 4. When the lid body 32 is slid to the side of the first recess 3, the lid body 32 covers the respective front faces of the camera, the light emitting body 8 and the mirror and when the lid body 32 is slid to the side of the second recess 4, they are released. The light emitting body is configured to function when a call is incoming, and even when the lid body 32 is slid to the side of the first recess 3, light from the light emitting body 8 is visible through a hole 34 formed on the lid body 32.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000448

CLAIMS

[Claim(s)]

[Claim 1]Equip a notch which constituted a housing from the 1st and a second housing, and formed said second housing in said first housing freely attachable/detachable, and. Said 1st [the], the 1st which are united ranging over both, respectively in a second housing, and a second concave part are formed, When a camera was attached to a position which opposes to said first concave part, a guide is formed in said second concave part, a lid which can shift is attached ranging over said 1st [the] and a second concave part along with this guide and the aforementioned lid is made to shift to said first concave part side, Camera cell phone apparatus constituted so that a front face of the aforementioned camera might be covered by the aforementioned lid.

[Claim 2]The camera cell phone apparatus according to claim 1, wherein said second housing is a housing for cell storage.

[Claim 3]Constitute from a guide groove in which the aforementioned guide was formed to said second concave part, insert a side part of a guide plate with which the aforementioned lid is equipped in this guide groove, and it attaches the aforementioned guide plate slidably to the aforementioned guide groove, The camera cell phone apparatus according to claim 1 or 2 constituting the aforementioned lid so that it can shift ranging over said 1st [the] and a second concave part.

[Claim 4]The camera cell phone apparatus according to claim 3 constituting so that a coil spring may be arranged to the aforementioned guide plate, engagement may be carried out to each engagement part which formed the both ends in the aforementioned guide plate and said second concave part, respectively and the aforementioned guide plate may slide on the second said 1st and concave part side, respectively.

[Claim 5]The camera cell phone apparatus according to claim 4 having formed a bore in a central part of the aforementioned guide plate, and having arranged the aforementioned coil spring to this bore.

[Claim 6]The camera cell phone apparatus according to claim 1 or 2 constituting so that the aforementioned mirror may be covered by the aforementioned lid with the aforementioned camera when a mirror which projects an object on a position close to the aforementioned camera is arranged and the aforementioned lid is made to shift to said second concave part side.

[Claim 7]Constitute so that a photogen may be attached to a position close to the aforementioned camera and this photogen may be covered with the aforementioned lid with the aforementioned camera, and. The camera cell phone apparatus according to claim 1 or 2 forming a translucent part which draws light from the aforementioned photogen outside in a position which opposes to the aforementioned photogen of the aforementioned lid when the aforementioned lid is shifted to said first concave part side.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000449

[Claim 8]The camera cell phone apparatus according to claim 7 constituting the aforementioned photogen so that light may be emitted at the time of mail arrival.

[Claim 9]The camera cell phone apparatus according to claim 7 constituting the aforementioned photogen so that light may be emitted at the time of camera photographing to which the aforementioned lid shifted at said second concave part side.

[Claim 10]The camera cell phone apparatus according to claim 7 making into opalescence a portion which leads light of the aforementioned photogen outside.

[Claim 11]Form a cylindrical pier which shades light from the aforementioned photogen in a position which opposes to the aforementioned camera of a bottom plate which attaches a photogen to a position close to the aforementioned camera, and constitutes said first concave part, and. The camera cell phone apparatus according to claim 1 or 2 having arranged a transparent sheet which enters light to the aforementioned camera in a portion surrounded on this pier.

[Claim 12]A camera is attached to a position which consists a bottom section of said first concave part of transparent materials and which is monotonous, forms and opposes to said plate, The camera cell phone apparatus according to claim 1 or 2 constituting a mirror which projects an object which forms a surface of a sphere in which a reflecting layer which becomes a back face from material with sufficient reflectance was formed in a position close to the aforementioned camera of said plate, and is photoed by this surface of a sphere with the aforementioned camera.

[Claim 13]When form a concave part in a housing, a camera and a photogen are attached to a position which opposes to a one end part of this concave part, respectively, a lid slidable to the other end is attached to the aforementioned concave part from one end of the aforementioned concave part and the aforementioned lid is slid on the one end side of the aforementioned concave part, Camera cell phone apparatus constituted so that it might oppose to a translucent part which a front face of the aforementioned camera was covered by the aforementioned lid, and the aforementioned photogen formed in the aforementioned lid.

[Claim 14]The camera cell phone apparatus according to claim 13 constituting the aforementioned mirror so that it may be covered by the aforementioned lid with the aforementioned camera and a photogen when having arranged a mirror which projects an object photoed with the aforementioned camera by position close to the aforementioned camera and sliding the aforementioned lid on the one end side of the aforementioned concave part.

[Claim 15]When a slidable lid is attached to a housing and it slides on the aforementioned lid at one side, it is covered by the aforementioned lid, When a photogen which emits light at the time of a mirror which projects an object photoed with a camera and the aforementioned camera by position which opposes to some aforementioned housings opened wide when it slides on another side, respectively, and arrival is arranged and it slides on the aforementioned lid at one side, Camera cell phone apparatus constituted so that it might oppose to a translucent part which the

aforementioned camera, the aforementioned mirror, and the aforementioned photogen were covered by the aforementioned lid, respectively [both], and the aforementioned photogen formed in the aforementioned lid.

DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention]The present invention has a camera and relates to the camera cell phone apparatus which can cover the front face of this camera by a lid at the time of disuse.

[0002]

[Description of the Prior Art]Generally, although the cellular phone with a camera is publicly known, Each of these things attaches a camera so that the front face of a camera may be exposed to the back face of a housing, and they is the mirror provided at the back face of the housing, or the liquid crystal display provided at the front, and they constitutes it so that a photograph can be taken, while looking at the image which it is going to photo. Therefore, the object to wish to have can be projected on a mirror or a liquid crystal display also by these things, a photograph can be taken correctly, and it can transmit to the partner who wishs through a radio telephone network if needed easily.

[0003]

[Problem to be solved by the invention]However, in these camera cell phone machines, if it sees from others since the camera is always exposed and the cellular phone itself is multi-functionalized, it cannot be distinguished easily whether something is photoed for whether e-mail and a game are enjoyed with the camera. Therefore, a fear of saying whether for those who are close, while not knowing, he is photoed will always be sensed, and there was a very big problem in the surface of privacy protection.

[0004]Then, the present invention solves such a problem, it is easy composition and an object of the present invention is to provide the camera cell phone apparatus which can distinguish the busy condition of a camera easily.

[0005]

[Means for solving problem]Equip with the camera cell phone apparatus of the present invention the notch which constituted the housing from the 1st and a second housing, and formed the second housing in the first housing freely attachable/detachable, and. The 1st, the 1st which are united ranging over both, respectively in a second housing, and a second concave part are formed, When a camera was attached to the position which opposes to a first concave part, the lid which can shift was attached to a second concave part ranging over the 1st and a second concave part along with the guide formed in the second concave part and a lid was made to shift to the first above-mentioned concave part side, it constituted so that the front face of a camera might be covered by a lid.

[0006]It becomes possible to attach a lid to a second housing and to equip a first housing with a second housing after that by this composition, and when that assembly is easy and a lid is made to

shift to the first concave part side, the front face of a camera is covered by a lid. For this reason, at the time of the disuse of a camera, the front face of a camera is protected by a lid, a third party can also distinguish the busy condition of a camera easily by the sliding states of a lid, and it can perform that role enough also in the surface of privacy protection.

[0007]The camera cell phone apparatus of the present invention constituted the second housing from a housing for cell storage. Without a second housing's making the housing for cell storage serve a double purpose, and providing a second housing separately by this composition, the lid which opens and closes the front face of a camera can be attached easily, and it can miniaturize as a whole.

[0008]The camera cell phone apparatus of the present invention was constituted from a guide groove in which the guide was formed to the second concave part, and it inserted the side part of the guide plate with which a lid is equipped in this guide groove, attached the guide plate slidably to the guide groove, and it constituted the lid so that it could shift ranging over the 1st and a second concave part. Become possible to attach a guide plate to the guide groove formed in the second concave part slidably first, and to attach a lid to a guide plate after that by this composition, and attachment of a lid becomes easy, and. An always beautiful state can be held without the side part of a lid getting damaged since the lid itself is not inserted in a guide groove.

[0009]Engagement of the camera cell phone apparatus of the present invention was carried out to each engagement part which has arranged the coil spring to the guide plate and formed the both ends in the guide plate and the second concave part, respectively, and it was constituted so that a guide plate might slide on the second above-mentioned 1st and concave part side with moderation, respectively. By this composition, a lid will have moderation by work of a coil spring, it will slide on the second first concave part and concave part side reliably, respectively, and that operation is stabilized.

[0010]The camera cell phone apparatus of the present invention formed the bore in the central part of the guide plate, and it constituted it so that a coil spring might be arranged to this bore. Since it is arranged in the bore by this composition in spite of having a coil spring, it can be made closing in as a whole, and where the second concave part side is slidably equipped with a guide plate, moreover, it can attach easily.

[0011]When the mirror which projects an object was attached to the position close to a camera and a lid was made to shift to the first concave part side, in addition to the camera, the camera cell phone apparatus of the present invention also constituted the mirror so that it might be covered by a lid. If a lid is made to shift to the second concave part side and a camera is changed into an usable state by this composition, the object which will also expose a mirror in this state and it photos with a camera can be correctly copied out in a mirror. And when a lid is made to shift to the first concave part side, a mirror will also be covered by a lid together with a camera, and dust and dust can be

easily prevented from adhering to a mirror.

[0012]Constitute the camera cell phone apparatus of the present invention so that a photogen may be attached to the position close to a camera and this photogen may be covered with a lid with a camera, and. When a lid was shifted to the second concave part side, it had composition which forms the translucent part which emits the light from a photogen outside in the position which opposes to the photogen of a lid. By this composition, also in the state where the lid was made to shift to the first concave part side, if the light from a photogen emits light, it can be easily checked through a translucent part.

[0013]The camera cell phone apparatus of the present invention constituted the photogen so that light might be emitted at the time of mail arrival. Mail arrival can be easily checked by luminescence of a photogen also in the state where the lid was made to shift to the first concave part side by this composition.

[0014]The camera cell phone apparatus of the present invention constituted the photogen so that a lid might emit light in the state of the camera photographing which shifted to the second concave part side. By this composition, in the state of the camera photographing made to shift to the second concave part side, a photogen emits light, and even place [dark], camera photographing of the lid can be carried out easily.

[0015]The camera cell phone machine of the present invention constituted the portion which leads the light of a photogen outside so that it might become opalescence. By this composition, it can diffuse in an opalescence portion, the light from a photogen can be drawn outside, luminescence of a photogen can be seen also from slanting width, and appearance can also be improved.

[0016]The camera cell phone apparatus of the present invention forms the bottom section of a first concave part with the plate consisting of a transparent material, The camera was attached to the position which opposes to that plate, the surface of a sphere in which the reflecting layer which becomes a back face from material with sufficient reflectance was formed in the position close to the camera of a plate was formed, and the mirror which projects the object photoed by this surface of a sphere with a camera was constituted. The guard plate which protects the front face of a camera by this composition using the plate consisting of a transparent material can be constituted, a mirror can be constituted from a reflecting layer formed in the back face of a plate, and as a whole, that composition is easy, and the surface of a plate can also be made flat-tapped so that there may be no trouble in the slide of a lid.

[0017]The camera cell phone apparatus of the present invention forms the bottom section of a first concave part with the plate consisting of a transparent material, The camera was attached to the position which opposes to a plate, the surface of a sphere in which the reflecting layer which becomes a back face from material with sufficient reflectance was formed in the position close to the camera of a plate was formed, and it had composition used as the mirror which projects the

object photoed with a camera in this surface of a sphere. By this composition, a mirror can be integrally formed in a plate, that formation is easy, and the object photoed with a camera through that mirror can be projected correctly, and an object can be photoed correctly.

[0018]The camera cell phone apparatus of the present invention forms a concave part in a housing, and it attaches a camera and a photogen to the position which opposes to the one end part of this concave part, respectively, When attaching a lid slidable to the other end to a concave part from one end of a concave part and sliding a lid on the one end side of a concave part, the front face of the camera was covered by the lid, and it constituted so that it might oppose to the translucent part which the photogen formed in the lid. By this composition, the busy condition of a camera can be easily checked by the sliding states of a lid, and when protection of the privacy to a third party can be secured and there is mail arrival, the light from a photogen can be easily checked through the translucent part formed in the lid.

[0019]The camera cell phone apparatus of the present invention considered the mirror as the composition covered by a lid with a camera and a photogen, when having arranged the mirror which projects the object photoed with a camera by the position close to a camera and sliding a lid on the one end side of a concave part. When sliding a lid on the other end side of a concave part by this composition, a mirror will be exposed with a camera, When [both] the object photoed with a camera will project correctly in a mirror, and exact photographing is attained and a lid is slid on the one end side of a concave part, a camera, a mirror, and a photogen will be covered with a lid and it can prevent effectively that dust and dust adhere to these.

[0020]The camera cell phone apparatus of the present invention attaches a slidable lid to a housing, When it slides on a lid at one side, are covered by a lid, and the photogen which emits light at the time of the mirror which projects the object photoed with a camera and a camera by the position which opposes to some housings opened wide when it slides on another side, respectively, and arrival is arranged, When it slid on a lid at one side, the camera, the mirror, and the photogen were covered by the lid, respectively [both], and it constituted so that it might oppose to the translucent part which the photogen formed in the lid. By this composition, when a camera, a mirror, and a photogen can be protected by a lid and there is moreover mail arrival in that state at both the times of the disuse of a camera, The light from the photogen which emits light through the translucent part formed in the lid at the time of mail arrival can be checked easily, and at the time of use of a camera, a mirror can also be exposed simultaneously, and the object photoed with a camera can be projected on a mirror, and can be photoed correctly.

[0021]

[Mode for carrying out the invention]Hereinafter, it describes using an accompanying drawing about an embodiment of the invention. The exploded perspective view of the camera cell phone machine in the 1 embodiment of the present invention and Fig.2 Fig.1, The rear elevation in the

state where the A-A cross-sectional side view of the cellular phone and Fig.3 closed the lid of the cellular phone, the rear elevation in the state where Fig.4 opened the lid of the cellular phone, Fig.5, and Fig.6 are rear elevations which describe operation of the cellular phone.

[0022]In Fig.1, a camera cell phone machine in a 1 embodiment of the present invention is provided with the following.

As profile composition, it is the first housing 1.

The second housing 2 with which a back side of this first housing 1 is equipped freely attachable/detachable.

The first concave part 3 formed with these 1st housings 1 and the second housing 2, and the second concave part 4.

The lid 32 integrally fixed to the guide plate 23 which clung to this second concave part 4 slidably, and this guide plate 23.

[0023]Although the antenna 40 is attached to the first housing 1 as shown in Fig.1, and not illustrated, the inner package of the various circuit boards and several kinds of electrical part which constitute a wireless circuit, a speaking circuit, and other circuits is carried out to the inside. And a keyboard, a liquid crystal display, etc. are mounted and the object for transmission and each sound hole for receivers are formed in the transverse-plane side of the housing 1. The comparatively big notching 1a from a back face to a side surface is formed in the back side of the housing 1, and this notching 1a is equipped with the second housing 2 freely attachable/detachable.

[0024]And although not illustrated to the second housing 2, the inner surface is integrally equipped with the flat charging battery, and the second housing constitutes the housing for what is called cell storage.

[0025]The 1st which is united ranging over both, and the second concave parts 3 and 4 are formed in each back face of the 1st and the second housings 1 and 2, and the plate 5 consisting of transparent materials, such as an acrylic, is attached to the first concave part 3.

[0026]The first concave part 3 namely, by adhering the plate 5 which has the recessed concave part 3a further, uses the double faced adhesive tape 6 etc. for the bottom surface of this concave part 3a, and consists of the aforementioned transparent material to the central part of the first concave part 3, as shown in Fig.2, It is constituted so that the surface of the above-mentioned first concave part 3 may become flat-tapped with the above-mentioned plate 5.

[0027]And as shown in Fig.2, to the bottom plate 3b which constitutes the bottom part of the first concave part 3, The bores 9 and 10 which oppose to the camera 7 and the photogen 8 which are mentioned below, respectively are formed, and in order to shade the light from the photogen 8, the cylindrical pier 11 projected to the surface side is integrally formed in the circumference of the bore 9 which opposes to the camera 7. Although not illustrated into the portion which is placed between

the camera 7 and the photogen 8 by the inside of the bottom plate 3b which constitutes the bottom part of the first concave part 3, the pier 12 for positioning the shield plate provided independently is formed integrally. The ** rib 15 integrally formed inside the bottom plate 3b is for positioning the shield plate previously described with the pier 12 described previously.

[0028]In Fig.2, the bore 16 is formed in the portion which opposes to the camera 7, fitting of this bore 16 is carried out to the cylindrical pier 11, and the back face of the above-mentioned plate 5 is adhered to the plate 5 consisting of a transparent material by the bottom section 3b of the concave part 3 by the double faced adhesive tape 6 etc. And only an inner surface outer peripheral part has little distortion in which the light shielding layer 18 was formed, for example, adhesion fixing of the transparent sheet 17 which cut both sides and was ground by the product made from an acrylic is carried out to the portion surrounded on the cylindrical pier 11 of the bottom section 3b by the double faced adhesive tape 6 etc. A surface of a sphere is formed so that a central part may become depressed, metal, such as aluminum with sufficient reflectance, is vapor-deposited inside this surface of a sphere, and the reflecting layer 19 is formed in the position (outside of the cylindrical pier 11) close to the camera 7 of the plate 5. That is, the mirror which projects the object photoed by this reflecting layer 19 with the camera 7 is constituted. The portion which opposes to the photogen 8 of the plate 5 diffuses more, and he is trying for the light from the photogen 8 to become legible on the other hand at it by forming the dent 20 in the surface and forming the milky translucent layer 21 in an inner surface.

[0029]Next, in Fig.1, the guide groove 22 is formed in those both side surfaces, respectively, and the pier part 24 for a guide formed in the side part of the guide plate 23 is slidably inserted in this guide groove 22 in the second concave part 4.

[0030]The pier 30 which has the taper 29 in the path of insertion of the guide plate 23, and makes insertion of the guide plate 23 easy, and the pier 31 for locking which prevents the omission of the guide plate 23 where the guide plate 23 is inserted are integrally formed in the second concave part 4 with the second concave part 4, respectively.

[0031]As shown in the guide plate 23 at Fig.1, the bore 25 is formed in a central part and the coil spring 26 is arranged at this bore 25. And the both ends of the coil spring 26 are in the state which compressed the coil spring 26 of each other, Engagement is carried out to the engagement parts 27 and 28 formed in the second concave part 4 and the guide plate 23, respectively, and the guide plate 23 is constituted so that it may have moderation in the second first concave part 3 and concave part 4 side, respectively and may slide according to the elastic force of this coil spring 26. Fit fixing of the lid 32 is carried out to the guide plate 23, and adhesion fixing of both is carried out to it by the double faced adhesive tape etc. if needed. And when it slides on the guide plate 23 and the lid 32 and they are made to shift to the first concave part 3 side, respectively, in each position which opposes to the guide plate 23 and photogen 8 of the lid 32, The bores 33 and 34 which emit

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000457

the light from the photogen 8 outside, respectively are formed, and one bore 34 is equipped with the transparent sheet 35 for protection. The notching 37 for approaching the bore 25 which inserts the coil spring 26, and equipping the guide plate 23 with the magnet 36 is formed. And when the lid 32 is shifted to the second 1st and concave part 3 and 4 side at the magnet 36 (refer to Fig.6) with which this notching 37 was equipped, the Hall device provided in the housing 1 and 2, electromagnetic contact, etc., the switch which performs the 1st and second operation, respectively is constituted.

[0032]The lid 32 is formed in the size which covers the first concave part 3 side, respectively, or it opens wide, when the width agrees substantially in the 1st and the second concave parts 3 and 4 and length shifts to the second 1st and concave part 3 and 4 side, respectively, as shown in Fig.3 and Fig.4. And since it is constituted so that the guide plate 23 may be equipped and it may shift integrally with the guide plate 23, the lid 32 is. When the guide plate 23 slides along the guide groove 22, the lid 32 can shift similarly along the guide groove 23, and as shown in Fig.3 and Fig.4, it can shift to the second first concave part 3 and concave part 4 side with moderation reliably, respectively.

[0033]The camera 7 and the photogen 8 are attached to the portion which opposes to the bores 9 and 10 of the printed circuit board 13 which opposed to the first concave part 3 and was mounted in the first housing 1, respectively, as shown in Fig.2. That is, the camera 7 comprises the lens part 7a and the CCD module portion 7b, and it is attached to the CCD socket 7c with which the CCD module portion 7b was attached to the printed circuit board 13 freely attachable/detachable so that the lens part 7a may oppose to the bore 9. And it is equipped with the cushion member 14 of a cartridge inside the bottom plate 3b which is placed at the periphery of the bore 9, and it interposes between the CCD module portion 7b of the camera 7, and the bottom plate 3b so that this cushion member 14 may surround the lens part 7a of the camera 7. Therefore, this cushion member 14 combines the work which buffers the shock added to the camera 7, and work of the dustproof member which prevents that dust and dust enter into the camera 7.

[0034]And when the lid 32 is shifted to the second concave part 4 side based on operation of the switch described previously, the camera 7 is constituted so that it can operate, and it is in this state, and also it is constituted so that the photogen 7 may carry out continuation luminescence, for example. Therefore, a third party can be made to be able to know that it is a camera mode by this light by which continuation luminescence was carried out, and an object can also be photoed at a dark place using that light. Although the photogen 8 is not illustrated, when the shutter of a camera is pressed, constituting so that light may be emitted more brightly is also still more possible.

[0035]At this embodiment, if there is mail arrival even if it is which case to shift to the second concave part 4 side in order that the lid 32 may shift to the first concave part 3 side, it is constituted so that it can answer to the arrival, and the photogen 8 is constituted so that light may be

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000458

intermittently emitted according to these arrival.

[0036]Next, the operation is described about this embodiment. That is, according to this embodiment, it has equipped with the coil spring 26 between the guide plate 23 and the second concave part 4. For this reason, if the power of the direction made to shift to the second first concave part 3 and concave part 4 side, respectively is applied to the lid 32, this power is added also like the guide plate 23 and the coil spring 26, and if the coil spring 26 is once compressed and exceeds a dead point, it will act so that it may elongate again. As a result, in the first concave part 3 side, the guide plate 23 and the lid 32 will shift to second concave part side 4 correctly with moderation, respectively.

[0037]Fig.5 and Fig.6 show this shift state and the state and Fig.6 in which, as for Fig.5, the guide plate 23 and the lid 32 shifted to the first concave part 3 side show the state where the guide plate 23 and the lid 32 shifted to the second concave part 4 side. The elastic force of the direction which shifts to the second first concave part 3 and concave part 4 side, respectively is made to act on each guide plate 23 which has the coil spring 26 in the state where it was compressed appropriately, and is in the second first concave part 3 and concave part 4 side also in the state of any.

[0038]According to this embodiment, the lid 32 Thus, the first concave part 3 side, Or when it shifted to the second concave part 4 side, respectively, and the camera 7, the photogen 8, etc. which were provided to the first concave part 3 side can be covered, respectively, or can be opened wide and it covers. When these can be protected from outside and opened wide, a required object can be photoed using these effectively, the busy condition of a camera can also check a third party easily, and it can lessen that problems, such as privacy, arise as much as possible.

[0039]And according to this embodiment, when the lid 32 is closed (state of Fig.5), the bore 34 is formed in the position which opposes to the photogen 8 of the lid 32, and it constitutes so that the light from the photogen 8 can be emitted outside through this bore 34. For this reason, in spite of the photogen 8 opposing to the first concave part 3 and providing it, also when it can check easily and there is mail arrival from the bore 34 which provided the light from the photogen 8 to the lid 32 when the photogen 8 emitted light, it can be checked reliably easily. And since the light from the photogen 8 is made to diffuse by the milky translucent layer 21 in this case, it can be clearly seen even from width and has the effect that it is good-looking.

[0040]The guide groove 22 is provided to the side part of the second concave part 4 formed in the second housing 2, and he inserts the guide plate 23 in this guide groove 22, and is trying according to this embodiment, to attach the guide plate 23 slidably along the guide groove 22, as shown in Fig.1. Therefore, on the occasion of attachment of the guide plate 23, it can attach to the second concave part 4 formed in the second housing 2 directly regardless of the first housing 1 and the first concave part 3, and has the operation that the attachment is very easy. That is, according to this embodiment, the guide groove 22 is formed as a thing of the form opened wide in the end of the

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000459

second housing 4. Therefore, when inserting the guide plate 23 in this guide groove 22, it can insert easily from the end opened [aforementioned]. If the first housing 1 is equipped with the second housing 2 after inserting this guide plate 23, the portion in which the guide groove 22 was opened wide will be closed by the end (portion compared by the second housing 2) of the first housing 1. For this reason, what the guide plate 23 inserted in the aforementioned guide groove 22 falls out from the portion in which the aforementioned guide groove 22 was opened wide, and comes out of it absolutely none, On the contrary, it has the operation that the end (portion compared by the second housing 2) of the first housing 1 can be operated as a stopper which restricts the shift range on the first concave part 3 side of the guide plate 22.

[0041]According to this embodiment, the pier 30 which has the taper 29 in the path of insertion of the guide plate 23, and the pier 31 for locking which prevents the omission of the guide plate 23 where the guide plate 23 is inserted are formed in the second concave part 4. For this reason, when the guide plate 23 is inserted in the guide groove 22 and it is made to shift in the direction of an arrow as shown in Fig.7, the portion which opposes to the piers 30 and 31 of the (1) guide plate 23 will be pushed up up along with the taper 29 of the pier 30, and will shift in the direction of an arrow in that state. (2) As a result, as shown in Fig.8, the portion which opposes to the piers 30 and 31 of the guide plate 23 will exceed the piers 30 and 31 easily.

(3) And since the portion which opposes to the piers 30 and 31 of the guide plate 23 will return to the original state if the portion which opposes to the piers 30 and 31 of the guide plate 23 exceeds the piers 30 and 31, fitting of the bore 25 formed in the guide plate 23 will be carried out to the piers 30 and 31 and the locking part 27, respectively.

(4) Therefore, in this state, even if it makes it shift in the direction which escapes from the guide plate 23 along the guide groove 22, and comes out as shown in Fig.8, only by it, the pier 31 locks, and the guide plate 23 escapes from the guide groove 22, and comes out.

[0042]Thus, automatically, once it can insert in the guide groove 22 easily and moreover inserts in it by work of the piers 30 and 31, the guide plate 23 is constituted so that there may be no omission appearance. Therefore, by carrying out engagement of the both ends of the coil spring 26 to the second concave part 4 and the engagement parts 27 and 28 formed in the guide plate 23 in this state, respectively, as shown in Fig.9, The second first concave part 3 and concave part 4 side can be easily equipped with the guide plate 23 respectively slidably with moderation. By repair and others to sample the guide plate 23 from the guide groove 22. The coil spring 26 may be removed, the portion which opposes to the piers 30 and 31 of the guide plate 23 from outside in the state using a driver and other instruments may be raised up, and it may be made to shift in the direction in which it extracts the guide plate 23 from the guide groove 22 first before that. If it does in this way, locking with the portion and the pier 31 which oppose to the piers 30 and 31 of the guide plate 23 solves, and it can extract easily the guide plate 23 from the guide groove 22.

[0043]According to this embodiment, as shown in Fig.1, the bore 25 is formed in the guide plate 23, and since it constitutes so that the coil spring 26 may be inserted in this bore 25, only the thickness of the guide plate 23 can make the whole thickness thin. And he is trying to make the both ends of the coil spring 26 lock to the locking parts 27 and 28 through the bore 25, respectively. Therefore, even when making the coil spring 26 lock to the locking parts 27 and 28, it has the operation of the ability to make appropriate compressive force able to act on the coil spring 26, and make it lock to it easily, where the guide plate 23 is inserted in the guide groove 22.

[0044]According to this embodiment, as shown in Fig.2, the plate 5 consisting of a transparent material was attached to the first concave part 3, and the camera 7 and the photogen 8 are attached to the position which opposes to this plate 5, respectively. The surface of a sphere by which the reflecting layer 19 which becomes a back face from material with sufficient reflectance was formed in the position contiguous to the camera 7 is formed in this plate 5, and the mirror for projecting the object photoed by this surface of a sphere with the camera 7 is constituted on it. For this reason, even if it touches the front face of the plate 5 with a hand etc., there is no attaching [a crack etc.]-to reflecting layer 19 fear, and a state always good as a mirror can be maintained. And since these are covered by the lid 32 when [both] a mirror also shifts the lid 32 to the first concave part 3 side in addition to the camera 7 and the photogen 8, and it constitutes so that it may cover by both the lids 32 and does not use the camera 7, it can lessen that dust and dust adhere to these as much as possible.

[0045]As shown in Fig.2 according to this embodiment, while forming the bore 16 in the plate 5, It fitted into the cylindrical pier 11 which formed this bore 16 in the bottom plate 3b of the concave part 3, and few transparent sheets 17 at the cylindrical pier 11 are attached, and it constitutes so that this transparent sheet 17 may oppose to the camera 7. Therefore, the incident light to the camera 7 is distorted through the transparent sheet 17, and enters few, and to the transparent sheet 17, it is completely shaded on the cylindrical pier 11, and the light from the photogen 8 has the operation of not influencing photographing of the camera 7 at all, even if diffusion diffusion is carried out in a transverse direction through the plate 5.

[0046]As mentioned above, in short, according to this embodiment, simply the whole composition moreover, When the busy condition of a camera can be easily checked by the slide of a lid and there is mail arrival, regardless of a lid, it can be checked easily and the practical cellular phone which is easy to use it for a user can be provided. Although the housing was constituted from the 1st and the second housings 1 and 2, the 1st and the second concave parts 3 and 4 were formed so that these housings 1 and 2 might be straddled, and the second concave part 4 is slidably equipped with the lid 32 in this embodiment, It is needless to say that it is not necessary to necessarily constitute the housing from the 1st and the second housings 1 and 2, and to also form the concave parts 3 and 4 ranging over these.

[0047]In this embodiment, although the second housing 2 serves as the housing for cell storage, this may be a mere housing. In order to emit the light from the photogen 8 outside, the bore 34 is formed in the lid 32, but this bore 34 may not necessarily be a hole, and this embodiment is sufficient as it if it is a translucent part which lets light pass in short. For example, it is also possible to constitute the lid 32 from a transparent material, and to provide a light-shielding film appropriately at that surface or back surface, and to constitute by using the remaining whole portion as a translucent part, so that the light from the photogen 8 may be emitted outside from this translucent part.

[0048]

[Effect of the Invention]According to the present invention, a slidable lid is attached to a housing as described above, When it slides on a lid at one side, are covered by a lid, and the photogen which emits light at the time of the mirror which projects the object photoed with a camera and a camera by the position which opposes to some housings opened wide when it slides on another side, respectively, and arrival is arranged, When it slides on a lid at one side, a camera, a mirror, and a photogen can be covered by a lid, respectively [both], and it can constitute so that it may oppose to the translucent part which the photogen formed in the lid, and can protect a camera, a mirror, and a photogen by a lid at both the times of the disuse of a camera.

[0049]And when there is mail arrival in the state according to the present invention. The light from the photogen which emits light through the translucent part formed in the lid at the time of mail arrival can be checked easily, and it has the effect that a mirror can also be exposed simultaneously, the object photoed with a camera can be projected on a mirror, and a photograph can be taken correctly, at the time of use of a camera.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000462

(19)日本国特許庁（ＪＰ）　(12) **公開特許公報**（Ａ）　(11)特許出願公開番号

特開平7－273685

(43)公開日　平成７年(1995)10月20日

(51)Int.Cl.[6]		識別記号	庁内整理番号	ＦＩ	技術表示箇所
Ｈ０４Ｂ	1/38				
Ｈ０１Ｑ	1/24		Ｚ		
Ｈ０４Ｑ	7/32				
Ｈ０４Ｍ	1/02		Ｃ		
				Ｈ０４Ｂ　7/ 26	Ｖ

審査請求　未請求　請求項の数４　ＯＬ　（全 ４ 頁）　最終頁に続く

(21)出願番号　特願平6－60666

(22)出願日　平成６年(1994) ３月30日

(71)出願人　000001007
キヤノン株式会社
東京都大田区下丸子３丁目30番２号

(72)発明者　岡本　英明
東京都大田区下丸子３丁目30番２号　キヤノン株式会社内

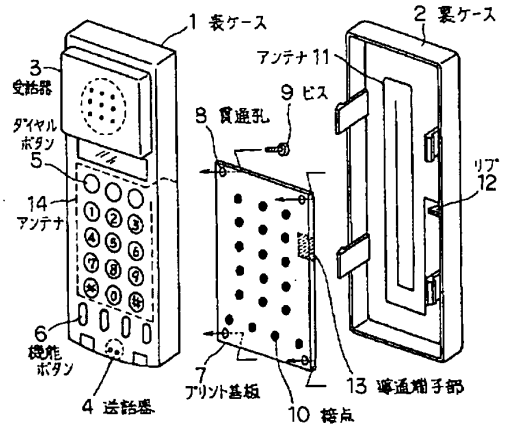
(74)代理人　弁理士　若林　忠

(54)【発明の名称】　無線装置の筐体

(57)【要約】

【目的】　無線装置の筐体を組立性のよい構造とする。

【構成】　絶縁性部材の樹脂を成形して、受話器３、送話器４、ダイヤルボタン５、機能ボタン６などが取付けられた表ケース１と、アンテナとして必要な長さ、形状の金属線である導電性部材１１が射出成形時に金型にセットして絶縁性部材の樹脂とともに成形された裏ケース２とからなる。裏面の電気回路がプリント、またははんだ付けされたプリント基板７は、ビス９により貫通孔８を通して表ケース１のボスに固定される。プリント基板７上の接点１０は、シリコン製のゴムスイッチを介してダイヤル、機能の各ボタン５，６に接続される。アンテナ１１は、筐体が組み立てられたとき、裏ケース２のリブ１２上でプリント基板７の導通端子部１３と接触し、基板７の電気回路が送受信する電波を発射または受信する。



Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000463

【特許請求の範囲】
【請求項1】　アンテナを有する無線装置において、前記無線装置の筐体を構成する絶縁性部材と前記アンテナを構成する線状の導電性部材とが一体として、かつ、前記導電性部材の一方の端部を含めて少なくともその一部を前記絶縁性部材の表面に露出するように配置して同時成形されてなる構造を有することを特徴とする無線装置の筐体。
【請求項2】　絶縁性部材の表面に露出する導電性部材の端部は、装着される基板の1つの導通端子部と接触して導通可能に配置される請求項1に記載の無線装置の筐体。
【請求項3】　絶縁性部材の表面に露出する導電性部材の端部の周辺部分と、前記端部に接する基板の導通端子部との少なくとも一方が、両者の接触を維持できる程度の可撓性を有する請求項1又は2に記載の無線装置の筐体。
【請求項4】　導電性部材は、所定の形状に仮成形された金属線が、その一方の端部を除く大部分を絶縁性材料の内部に埋め込んで成形される請求項1ないし3のいずれか1項に記載の無線装置の筐体。
【発明の詳細な説明】
【0001】
【産業上の利用分野】本発明は、無線装置の筐体に関し、特にコードレス電話機、携帯用無線送受信機等のアンテナ付きの無線装置の筐体の構造に関する。
【0002】
【従来の技術】従来の同種の無線装置は、図6に示すように、各種の電気回路や部品が実装されたプリント基板7とともに、表面を塩化ビニル樹脂等で被覆された金属線やフェライトコアなどの棒状ないし線状の導電性部材19をアンテナとして筐体内に収容している。導電性部材19の取付けは、アンテナ位置決め部20の開口部を通して筐体内に引き込み、その根本部22をプリント基板7とともにビス21により筐体の裏ケース2に固定することによって行なわれる。導電性部材19のアンテナで受信した電波は、その根本部22から接触しているプリント基板7の1つの端子である導電部13を介して内部の電気回路に伝えられる。
【0003】
【発明が解決しようとする課題】上述のように、従来はアンテナ19をアンテナ位置決め部20を通して基板7とともに位置決めをしてから、ビス21で裏ケース2に固定して組み立てていたので、組立性がよくなかった。特に、長い線状のアナテナを筐体内に内蔵する小型の無線装置の組み立てには、アンテナ自体の剛性が低いために取付け作業がやりにくいという欠点があった。
【0004】本発明の目的は、上述の欠点を解消し、組立性のよい構造の無線装置の筐体を提供することにある。
【0005】
【課題を解決するための手段】本発明の無線装置の筐体は、筐体を構成する絶縁性部材とアンテナを構成する線状の導電性部材とが一体として、しかも、導電性部材の一方の端部を含めて少なくともその一部を絶縁性部材の表面に露出して同時成形されてなる構造を有する。
【0006】また、絶縁性部材の表面に露出する導電性部材の端部は、装着される基板の1つの導通端子部と接触して導通可能に配置される。
【0007】さらに、絶縁性部材の表面に露出する導電性部材の端部の周辺部分と、この端部に接する基板の導通端子部との少なくとも一方が可撓性を有する。
【0008】
【作用】アンテナを構成する導電性部材が筐体とともに一体に成形されているので、無線装置の組み立て時に、アンテナを筐体に固定するための取付け部品および取付け作業が不要となる。
【0009】
【実施例】次に、本発明の実施例について図面を参照して説明する。
【0010】図1は本発明の1実施例の分解斜視図、図2は図1の実施例の要部断面図である。
【0011】図1および図2において、本実施例は、コードレス電話機の子機に本発明を適用した例である。この子機の筐体の構造は、絶縁性部材の樹脂を成形して、受話器3、送話器4、ダイヤルボタン5、機能ボタン6などが取付けられた表ケース1と、アンテナとして必要な長さ、形状、材質の金属線である導電性部材11が射出成形時に金型にセットして絶縁性部材の樹脂とともに成形された裏ケース2とからなる。裏面の電気回路がプリントもしくははんだ付け去れたプリント基板7は、ビス9により貫通孔8を通して表ケース1のボスに、またはスナップフィット方式などにより、表ケース1に固定される。プリント基板7上の接点10は、シリコン製のゴムスイッチを介してダイヤル、機能の各ボタン5，6に接続される。金属線のアンテナ11は、筐体が組み立てられたとき、裏ケース2のリブ12上でプリント基板7のアンテナ端子である導通端子部13と接触し、基板7の電気回路が送受信する電波を発射または受信する。
【0012】本実施例では、線状の導電性部材11を金属線として裏ケース2の内部表面に成形したが、導電性部材は、金属線とは限らず、アンテナとして使用可能であれば、フェライト、カーボン、その他の導電性部材を線状にしたものでもよく、また、プリント基板7との位置関係や他の部品の実装などの都合によっては、図1に示すように、アンテナの配置位置を表ケース1の内面の点線14の位置として、プリント基板7の導通端子部13にその端部が接触するようにしてもよい。
【0013】また、いずれの場合も、導電性部材は、筐体の表面に露出せず、プリント基板との接触部分を除い

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000464

て筐体内部に埋め込まれてもよい。特に金属線が埋め込まれた場合は、樹脂製の筐体を補強する効果が期待できる。

【００１４】図３および図４は、筐体の１部である電池カバー１５にアンテナ１１を成形した例を示す図である。電池カバー１５を図３の矢印方向にスライドさせて４箇所の爪部１７により電話機本体に固定させると、図４の断面図に示すように、アンテナ１１の端部１６がプリント基板７の導通端子部１３に接触する。このとき、アンテナ端部１６、導通端子部１３のいずれか一方、もしくは両方がわずかに撓むように作られていると、それぞれの部材の寸法精度の差の影響が軽減されて、確実な導通がえられる。

【００１５】図５は、プリント基板７の導通端子部１３付近の斜視図で、導通端子部１３に撓み姓を与えるために、小さな平板状の導通端子部１３に平行してその両側の基板に切り欠き部１８を設けたものである。

【００１６】

【発明の効果】本発明の無線装置の筐体は、アンテナを構成する導電性部材が筐体と一体に成形されるので、アンテナを固定するビス等の部品が不要になり、部品点数および取付け作業が削減される。また、アンテナを配置する位置の自由度が大きくなり、アンテナの位置決め部および取付け部の構造が簡単になるので、筐体内部の空間が広がり、他の部品の組立作業が楽になることにより、無線装置の小型化およびコストダウンが可能となる効果がある。

【００１７】また、金属線のアンテナを樹脂製の筐体内部に埋め込んで成形する場合に、筐体の破損、欠損に対する補強効果が期待できる。

【図面の簡単な説明】

【図１】本発明の１実施例の分解斜視図である。

【図２】図１の要部断面図である。

【図３】本発明の他の実施例の斜視図である。

【図４】導電性部材と基板の導通端子部との接触部分の断面図である。

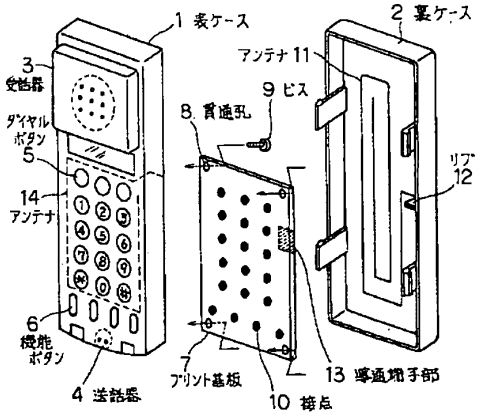
【図５】プリント基板の導通部周辺の切り欠き部を示す図である。

【図６】従来の無線装置のアンテナ取付け部を示す図である。

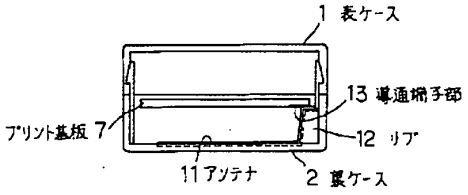
【符号の説明】

１　絶縁性部材の筐体、表ケース
２　絶縁性部材の筐体、裏ケース
３　受話器、スピーカ
４　送話器、マイクロホン
５　ダイヤルボタン
６　機能ボタン
７　プリント基板
８　貫通孔
９，２１　ビス
１０　接点
１１，１４，１９　導電性部材、金属線、アンテナ
１２　リブ
１３　導通端子部
１５　電池カバー
１６　アンテナ端部、接触部
１７　爪部
１８　切り欠き部
２０　アンテナ位置決め部
２２　アンテナの根本部

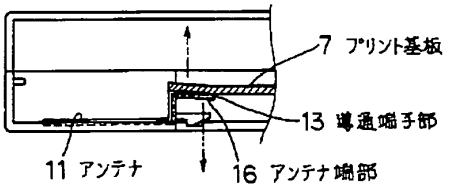
【図１】



【図２】

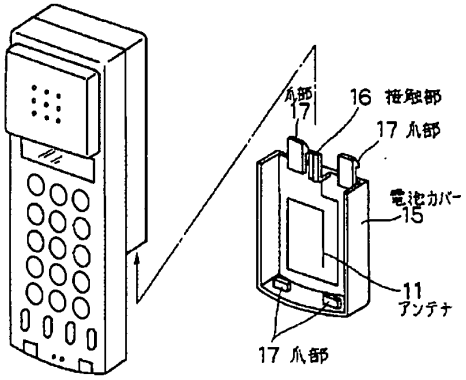


【図４】

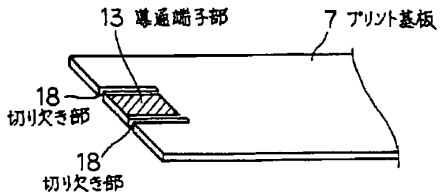


Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000465

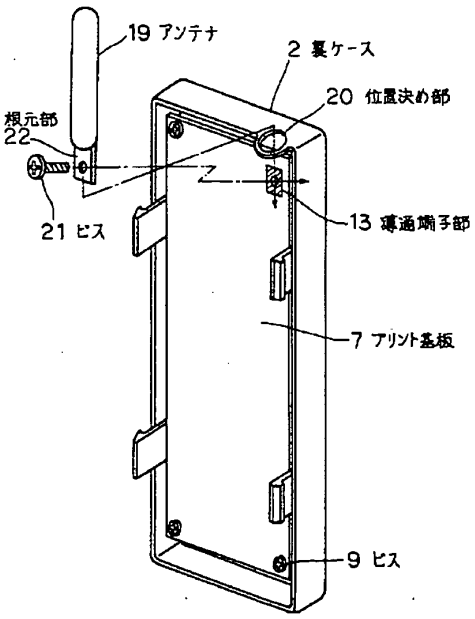
【図3】



【図5】



【図6】



フロントページの続き

(51)Int.Cl.⁶	識別記号	庁内整理番号	FI	技術表示箇所
H05K 5/00		C 7362－4E		

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000466

H07-273685

(11)Publication number 07-273685
(43)Date of publication of application 20.10.1995
(51)Int.Cl.
H04B 1/38
H01Q 1/24
H04Q 7/32
H04M 1/02
H05K 5/00

(21)Application number 06-060666
(22)Date of filing 30.03.1994
(71)Applicant CANON INC
(72)Inventor OKAMOTO HIDEAKI
(54)ENCLOSURE FOR RADIO EQUIPMENT
(57)Abstract
PURPOSE: To obtain a structure with excellent assembling performance for the enclosure of a radio equipment.
CONSTITUTION: The enclosure is made up of a front side case 1 by making it with an insulating resin and to which a receiver 3, a transmitter 4, a dial button 5 and a function button 6 or the like are mounted and of a rear side case 2 formed by a conductive member 11 being a metallic wire having a required length and shape as an antenna with an insulating resin while the member 11 is set to a metallic die in the injection molding. A printed circuit board 7 whose rear side electric circuit is printed or soldered is fitted to a boss of the front case 1 through a throughhole 8 by a machine screw 9. Contacts 10 on the printed circuit board 7 are connected to the dial and function buttons 5, 6 via a silicon rubber switch. The antenna 11 is in contact with a conduction terminal 13 of the printed circuit board 7 on a rib 12 of the rear case 2 when the enclosure is assembled and is used to emit or receive a radio wave sent/ received by the electric circuit of the printed circuit board 7.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000467

CLAIMS

[Claim(s)]

[Claim 1]In radio equipment which has an antenna, an insulation member which constitutes a housing of the aforementioned radio equipment, and a linear conductive member which constitutes the aforementioned antenna as one, And a housing of radio equipment having the structure which arranges, and simultaneous molding is carried out and becomes so that the part may be exposed to the surface of the aforementioned insulation member at least including one end of the aforementioned conductive member.

[Claim 2]A housing of the radio equipment according to claim 1 which an end of a conductive member exposed on the surface of an insulation member contacts one conduction terminal area of a substrate with which it is equipped, and is arranged so that conduction is possible.

[Claim 3]A housing of the radio equipment according to claim 1 or 2 characterized by comprising the following.

A peripheral part of an end of a conductive member exposed on the surface of an insulation member.

Flexibility of a degree in which at least 1 side with a conduction terminal area of a substrate which touches the aforementioned end can maintain both contact.

[Claim 4]A housing of radio equipment of a description in any 1 item of Claims 1-3 which a conductive member embeds most excluding [a metal wire by which temporary molding was carried out] end of one of these inside an insulating material in predetermined form, and are molded.

DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Industrial Application]The present invention relates to the housing of radio equipment, and relates to the structure of the housing of radio equipment with antennas, such as a cordless telephone and a portable radio receiver-transmitter, particularly.

[0002]

[Description of the Prior Art]The conventional radio equipment of the same kind is stored in a housing by using as an antenna the conductive member 19 of rod form thru/or lines, such as a metal wire covered with vinyl chloride resin etc. in the surface, and a ferrite core, with the printed circuit board 7 in which various kinds of electric circuit and parts were mounted, as shown in Fig.6. Attachment of the conductive member 19 is drawn in a housing through the opening of the antenna positioning part 20, and is performed by fixing the fundamental part 22 to the back case 2 of a housing on the screw 21 with the printed circuit board 7. The electric wave received with the antenna of the conductive member 19 is transmitted to an internal electric circuit via the current carrying part 13 which is one terminal of the printed circuit board 7 which touches from the fundamental part 22.

[0003]

[Problem to be solved by the invention]As mentioned above, since it fixed to the back case 2 and the antenna 19 was conventionally assembled on the screw 21 after positioning with the substrate 7 through the antenna positioning part 20, assembly nature was not good. Since the rigidity of the antenna itself was low, the assembly of the small radio equipment which incorporates linear long ANATENA in a housing especially had the defect of being hard to do mounting work.

[0004]The object of this invention eliminates an above-mentioned defect, and there is in providing the housing of the radio equipment of a good structure of assembly nature.

[0005]

[Means for solving problem]Moreover, the insulation member from which the housing of the radio equipment of the present invention constitutes a housing, and the linear conductive member which constitutes an antenna have as one the structure which comes to carry out simultaneous molding by exposing the part on the surface of an insulation member at least including one end of a conductive member.

[0006]The end of the conductive member exposed on the surface of an insulation member contacts one conduction terminal area of the substrate with which it is equipped, and is arranged so that conduction is possible.

[0007]At least 1 side of the peripheral part of the end of the conductive member exposed on the surface of an insulation member and the conduction terminal area of the substrate which touches

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000469

this end has flexibility.

[0008]

[Function]Since the conductive member which constitutes an antenna is integrally molded with the housing, the fittings and mounting work for fixing an antenna to a housing become unnecessary at the time of an assembly of radio equipment.

[0009]

[Working example]Next, with reference to Drawings, it describes about the working example of the present invention.

[0010]Fig.1 is an exploded perspective view of one working example of the present invention, and Fig.2 is an essential part cross sectional view of the working example of Fig.1.

[0011]In Fig.1 and Fig.2, this example is an example which applied the present invention to the cordless handset of the cordless telephone. The front case 1 in which the structure of the housing of this cordless handset molded resin of the insulation member, and the receiver 3, the transmitter 4, the dial button 5, the feature button 6, etc. were attached, Length required as an antenna, form, and the conductive member 11 that is the metal wires of a material consist of the back case 2 which set to the mold at the time of injection moulding, and was molded with resin of the insulation member. As for a print or the soldering ****** printed circuit board 7, an electric circuit on the back is fixed to the front case 1 by the boss of the front case 1, or the snap fitting system through the through-hole 8 on the screw 9. The contact 10 on the printed circuit board 7 is connected to each button 5 and 6 of a dial and a function via the rubber switch made from silicon. When a housing assembled and shines, the antenna 11 of a metal wire contacts the conduction terminal area 13 which is an antenna terminal of the printed circuit board 7 on the rib 12 of the back case 2, and discharges or receives the electric wave which the electric circuit of the substrate 7 transmits and receives.

[0012]Although molded into the inner surface of the back case 2 by using the linear conductive member 11 as a metal wire in this example, If a conductive member is not restricted but its metal wire is usable as an antenna, What was made into the line may be [the conductive member of a ferrite, carbon, and others] used, and depending on the convenience of positional relationship with the printed circuit board 7, mounting of other parts, etc. The locating position of an antenna may be made for the end to contact the conduction terminal area 13 of the printed circuit board 7 as a position of the dotted line 14 of the inner surface of the front case 1, as shown in Fig.1.

[0013]Neither of the cases exposes a conductive member on the surface of a housing, but may be embedded to the inside of a housing except for contacting parts with a printed circuit board. When especially a metal wire is embedded, the effect of reinforcing the housing made of resin can be expected.

[0014]Fig.3 and Fig.4 are the figures showing the example which molded the antenna 11 in the

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000470

battery cover 15 which is one copy of a housing. If the battery cover 15 is made to slide to the arrow direction of Fig.3 and it is made to fix to a telephone set body by the four claw parts 17, as shown in the cross sectional view of Fig.4, the end 16 of the antenna 11 will contact the conduction terminal area 13 of the printed circuit board 7. If it is made at this time so that either one of the antenna end part 16 or the conduction terminal area 13, or both may bend slightly, the influence of the difference of the dimensional accuracy of each component will be reduced, and positive conduction will be obtained.

[0015]Fig.5 is a perspective view near [conduction terminal area 13] the printed circuit board 7, and in order to bend in the conduction terminal area 13 and to give a family name, it provides the notch section 18 to the substrate of the both sides in parallel with the conduction terminal area 13 plate-like [small].

[0016]

[Effect of the Invention]Since the conductive member from which the housing of the radio equipment of the present invention constitutes an antenna is integrally molded with a housing, parts, such as a screw which fixes an antenna, become unnecessary and the number of parts and mounting work are reduced. Since the flexibility of the position which arranges an antenna enlarges and the structure of the positioning part of an antenna and a fixing part becomes easy, space inside a housing spreads, and when the assembly operation of other parts becomes easy, there is an effect whose miniaturization and cost cut of radio equipment are attained.

[0017]When embedding the antenna of a metal wire to the inside of the housing made of resin and molding it, the reinforcing effect over damage of a housing and a deficit can be expected.

(19)日本国特許庁(JP)　(12)公開特許公報(A)　(11)特許出願公開番号
特開2004-187134
(P2004-187134A)
(43)公開日　平成16年7月2日(2004.7.2)

(51) Int.Cl.[7]		F I			テーマコード（参考）
H04N	5/225	H04N	5/225	D	5C022
H04M	1/02	H04N	5/225	E	5C064
H04N	5/238	H04M	1/02	C	5K023
// H04N	7/14	H04N	5/238	Z	
		H04N	7/14		

審査請求 未請求　請求項の数 5　OL　（全 13 頁）

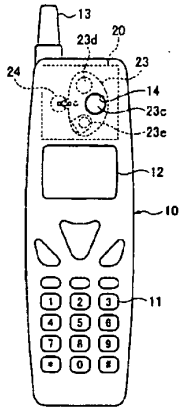
(21) 出願番号　特願2002-353643 (P2002-353643)
(22) 出願日　平成14年12月5日 (2002.12.5)

(71) 出願人　000001225
日本電産コパル株式会社
東京都板橋区志村２丁目１８番１０号
(74) 代理人　100106312
弁理士　山本　敬敏
(72) 発明者　日高　光隆
東京都板橋区志村２丁目１８番１０号　日本電産コパル株式会社内
(72) 発明者　大江　晴樹
東京都板橋区志村２丁目１８番１０号　日本電産コパル株式会社内

最終頁に続く

(54)【発明の名称】携帯情報端末装置

(57)【要約】
【課題】携帯電話機等に搭載のカメラの破損、焼損等を防止し、又、撮影画像が白く霞む現象等を防止して、高画質の画像を撮影できるようにする。
【解決手段】撮影窓１４を有する本体１０、本体１０の内部に配置されレンズ２１及びＣＣＤ２２を含むカメラ２０を備え、ＣＣＤ２２及びレンズ２１よりも被写体側で撮影窓１４の背後に、全開部２３ｃ、全開部２３ｄ、小絞り部２３ｅをもつ可動羽根２３を配置し、撮影モード、非撮影モードに応じて、電磁アクチュエータ２４により可動羽根２３を開閉駆動する。これにより、開閉操作の煩わしさが解消され、可動羽根２３を非撮影時にバリヤとして又撮影時に機械的なシャッタとして用いることができ、ＣＣＤの焼損等による破損、カラーフィルタの退色等を防止できると共に、高画質の画像を得ることができる。
【選択図】　図１



Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000472

【特許請求の範囲】
【請求項１】
撮影窓を有する本体と、前記本体の内部に配置され被写体を撮影するためのレンズ及び撮像素子を含むカメラと、を備えた携帯情報端末装置であって、
前記撮像素子よりも被写体側に配置されて入り込む光量を調整するべく前記撮影窓を全開、全閉、小絞りのいずれかの状態にする可動羽根と、前記可動羽根を駆動する電磁アクチュエータと、を含む、
ことを特徴とする携帯情報端末装置。
【請求項２】
前記可動羽根は、前記レンズよりも被写体側に配置されている、
ことを特徴とする請求項１記載の携帯情報端末装置。
【請求項３】
前記可動羽根は、前記撮影窓を全閉して光を遮断する全閉部、前記撮影窓を全開して光を通す全開部、前記撮影窓を絞って所定量の光を通す小絞り部を有し、前記全閉部、全開部、及び小絞り部のいずれかが前記撮影窓に臨むように往復動自在に支持されている、
ことを特徴とする請求項１又は２に記載の携帯情報端末装置。
【請求項４】
前記可動羽根は、光を遮る不透明板により形成されており、
前記全開部は、前記不透明板に開けられた貫通孔により形成され、
前記小絞り部は、前記不透明板に開けられた貫通孔にＮＤフィルタを貼付して形成されている、
ことを特徴とする請求項３記載の携帯情報端末装置。
【請求項５】
前記可動羽根は、光を透過させる透明板により形成されており、
前記全閉部は、遮光材を前記透明板にコーティングして形成され、
前記小絞り部は、ＮＤフィルタ材を前記透明板にコーティングして形成されている、
ことを特徴とする請求項３記載の携帯情報端末装置。
【発明の詳細な説明】
【０００１】
【発明の属する技術分野】
本発明は、携帯電話機あるいは携帯型パーソナルコンピュータ（ＰＤＡ）等の携帯情報端末装置に関し、特に、操作者あるいは周辺の風景等を撮影可能なカメラを備えた携帯情報端末装置に関する。
【０００２】
【従来の技術】
近年において、画像信号を送受信できる携帯電話機あるいは携帯型パーソナルコンピュータ等の携帯情報端末装置が開発されている。例えば、カメラ（いわゆるモバイルカメラ）を搭載した携帯電話機としては、その本体に撮影窓を設け、本体の内部にデジタル画像を撮影するためのレンズ及びＣＣＤ等の撮像素子からなるカメラを配置し、さらに、レンズあるいは撮像素子を保護するために、手動にて撮影窓を開閉し得るように本体に対して遮光用のカバーを摺動自在に設けたものが知られている（例えば、特許文献１参照）。
【０００３】
【特許文献１】
特開平２０００－３３２８７１号公報
【０００４】
【発明が解決しようとする課題】
ところで、上記従来の携帯電話機においては、カメラにより撮影する際には、操作者がカバーをスライドさせて撮影窓を開放しなければならないため操作が煩わしく、又、非撮影時でも操作の煩わしさから開放したまま保持される場合があり、撮影窓から強力な光線が入り込んで撮像素子の破損、焼損、あるいは撮像素子の前面にあるカラーフィルタの退色

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000473

等を招く虞がある。

【０００５】

また、上記従来の携帯電話機においては、カメラで撮影する際の露光時間は、撮像素子に対する電力供給のオン／オフ操作、すなわち、電子シャッタのみにより規定されている。したがって、被写体の光量（輝度）が多い（高輝度）の場合には、単に電子シャッタの操作だけでは撮像素子の画素に蓄積した電荷の吐き出しが十分に行われず、撮影画像が全体的に白く霞んで画質が低下するという問題があった。

【０００６】

さらに、カメラが携帯電話機等に搭載された場合には、操作者が誤って携帯電話機を落下させあるいは他の物体と衝突させて、カメラが衝撃を受ける場合がある。したがって、このように外部から衝撃を受けても、カメラが所望の撮影動作を行うような対策を講じる必要がある。

【０００７】

本発明は、上記の事情に鑑みて成されたものであり、その目的とするところは、カメラで撮影する際の操作の煩わしさを解消でき、太陽光等の強力な光線による撮像素子の焼損、破損あるいはカラーフィルタの退色等を防止でき、レンズ等を保護でき、又、被写体が高輝度の場合であっても撮影画像の画質の低下等を防止でき、しかも広帯域の輝度に亘って高画質の画像を撮影でき、さらには、落下、衝突等により外部から衝撃を受けても撮影動作が確実に行われるカメラを備えた携帯情報端末装置を提供することにある。

【０００８】

【課題を解決するための手段】

本発明の携帯情報端末装置は、撮影窓を有する本体と、本体の内部に配置され被写体を撮影するためのレンズ及び撮像素子を含むカメラと、を備えた携帯情報端末装置であって、上記撮像素子よりも被写体側に配置されて入り込む光量を調整するべく撮影窓を全開、全閉、小絞りのいずれかの状態にする可動羽根と、可動羽根を駆動する電磁アクチュエータと、を含む、ことを特徴としている。

この構成によれば、例えば、電磁アクチュエータにより、非撮影モードでは撮影窓を全閉しかつ撮影モードでは撮影窓を全開又は小絞りにするように可動羽根を駆動制御することで、開閉操作の煩わしさが解消される。

また、非撮影モードでは、可動羽根を全閉にしてバリヤとして用いることができ、撮影モードでは、可動羽根を全閉↑全開又は小絞り↑全閉となるように駆動して機械的なシャッタとして用いることができる。

これにより、非撮影時において強力な光線の進入を阻止でき、撮像素子の焼損等による破損あるいは撮像素子の前面にあるカラーフィルタの退色等を防止でき、撮影時において被写体の輝度に応じて最適な露出を行うことができ、高画質の画像を撮影することができる。

【０００９】

上記構成において、可動羽根は、レンズよりも被写体側に配置されている、構成を採用できる。

この構成によれば、可動羽根を、撮像素子を保護するバリヤあるいは機械的なシャッタとしてだけでなく、レンズを保護するバリヤとしても用いることができる。

【００１０】

上記構成において、可動羽根は、撮影窓を全閉して光を遮断する全閉部、撮影窓を全開して光を通す全開部、撮影窓を絞って所定量の光を通す小絞り部を有し、全閉部、全開部、及び小絞り部のいずれかが撮影窓に臨むように往復動自在に支持されている、構成を採用できる。

この構成によれば、電磁アクチュエータを起動させて、撮影窓に対して全閉部、全開部、小絞り部のいずれかが撮影窓に対向する（臨む）ように、可動羽根を移動させることにより、非撮影モード／撮影モードあるいは被写体の光量に応じて、撮影窓を全閉、全開、小絞りのいずれかの状態にすることができる。

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000474

【００１１】
上記構成において、可動羽根は光を遮る不透明板により形成されており、全開部は不透明板に開けられた貫通孔により形成され、小絞り部は不透明板に開けられた貫通孔にＮＤフィルタを貼付して形成されている、構成を採用できる。
この構成によれば、一枚の不透明板に対して、貫通孔を開けて全開部を、又、貫通孔を開けかつＮＤフィルタを貼付して小絞り部を形成するだけで、バリヤ及び機械的なシャッタとして機能する可動羽根を形成することができる。
【００１２】
上記構成において、可動羽根は光を透過させる透明板により形成されており、全閉部は遮光材を透明板にコーティングして形成され、小絞り部はＮＤフィルタ材を透明板にコーティングして形成されている、構成を採用できる。
この構成によれば、一枚の透明板に対して、遮光材をコーティングして全閉部を、又、ＮＤフィルタ材をコーティングして小絞り部を形成するだけで、バリヤ及び機械的なシャッタとして機能する可動羽根を形成することができる。
【００１３】
【発明の実施の形態】
以下、本発明の実施の形態について、添付図面を参照しつつ説明する。
図１ないし図８は、本発明に係る携帯情報端末装置（ここでは、携帯電話機）の一実施形態を示すものであり、図１はその外観正面図、図２は可動羽根及び電磁アクチュエータを示す正面図、図３は可動羽根を含むカメラの断面図、図４はシステム全体の制御回路を示すブロック図、図５は可動羽根の動作を説明する平面図、図６ないし図８は制御シーケンスを示すフローチャートである。
【００１４】
この携帯電話機は、図１ないし図４に示すように、本体１０の表面に種々の操作を行う操作釦１１及び種々の情報を表示する表示部（液晶モニター）１２が配置され、本体１０の上端に信号の送受信を行うアンテナ１３が伸縮自在に設けられ、本体１０の表面で表示部１２の近傍には撮影窓１４が設けられている。
また、本体１０の内部には、撮影窓１４の背後にカメラ２０が配置され、他の内部領域には制御回路等を構成する種々の電子部品を実装した回路基板が配置されている。
【００１５】
カメラ２０は、図１ないし図３に示すように、本体１０の内壁に固定されており、レンズ２１（第１レンズ２１ａ，第２レンズ２１ｂ）、撮像素子としてのＣＣＤ（電荷結合素子）２２、撮影窓１４の背後でかつレンズ２１（第１レンズ２１ａ）よりも被写体側（すなわち、ＣＣＤ２２よりも被写体側）に配置された可動羽根２３、可動羽根２３を開閉駆動する電磁アクチュエータとしてのステッピングモータ２４等を備えている。
【００１６】
可動羽根２３は、図２に示すように、光を遮ぎる不透明板により略半円形状に形成されており、この不透明板には、支軸２５が通される支持孔２３ａ、後述する駆動ピン２４ａ´が連結される長孔２３ｂ、撮影窓１４を全閉して光を遮断する全閉部２３ｃ、撮影窓１４を全開して光を通す貫通孔からなる全開部２３ｄ、撮影窓１４を絞って所定量の光を通す貫通孔及びＮＤフィルタ２３ｅ´からなる小絞り部２３ｅが形成されている。
ここで、小絞り部２３ｅに貼付されたＮＤ（ｎｅｕｔｒａｌ　ｄｅｎｓｉｔｙ）フィルタ２３ｅ´は、殆んど色の変化を生ずることなく光の強度（光量）を減少させる光学フィルタである。
【００１７】
そして、可動羽根２３は、支軸２５により回動自在に支持されて、図５（ａ）に示すように撮影窓１４を全閉部２３ｃにより閉鎖する閉じ位置を挟んで、図５（ｂ）に示すように撮影窓１４を全開部２３ｄにより全開する全開位置と、図５（ｃ）に示すように撮影窓１４を小絞り部２３ｅにより小絞りにする小絞り位置との間を、往復動自在となっている。
【００１８】

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000475

このように、可動羽根２３は、ＣＣＤ２２及びレンズ２１（第１レンズ２１ａ、第２レンズ２１ｂ）よりも被写体側に配置されているため、可動羽根２３の全閉部２３ｃにより撮影窓１４が閉じられることで、外部からの強い光線（例えば、太陽光）が入り込んで、ＣＣＤ２２を焼損、あるいはＣＣＤ２２の前面に設けられたカラーフィルタが退色するのを防止でき、又、レンズ２１にキズ、　等が付着するのを防止できる。

【００１９】

ステッピングモータ２４は、図２に示すように、回転中心から偏　した駆動ピン２４ａ′を有し所定の刻み角度（ステップ幅）で回転するロータ２４ａ、励磁用のコイル（不図示）等により形成されており、可動羽根２３を全閉位置、全開位置、小絞り位置のいずれかに位置付けるようになっている。

尚、電磁アクチュエータとしては、ステッピングモータ２４に限らず、少なくとも３箇所に停止できるものであれば、所定の角度範囲を回動するロータを含むムービングマグネット型のアイリスモータであってもよい。

【００２０】

制御回路は、図４に示すように、種々の制御信号を発し全体の制御を司るＣＰＵ等からなる制御部３１、ＣＣＤ２２に対する電力供給のオン／オフ等を行うＣＣＤ駆動回路３２、ＣＣＤ２２により撮影された画像信号を処理する画像信号処理回路３３、撮像された画像を表示部１２に表示するための処理を行う画像表示回路３４、モータ２４への通電を制御するモータ駆動回路３５、撮影された画像情報等を記憶する記憶部３６、カメラ２０を起動させるメインスイッチ３７、撮影の際にカメラ２０のレリーズ動作を行うレリーズスイッチ３８、その他アンテナ１３を介しての信号の送信及び受信処理を行う送受信処理回路（不図示）等により形成されている。尚、メインスイッチ３７及びレリーズスイッチ３８は、本体１０の表面に配置された操作釦１１の一部として組み込まれている。

【００２１】

制御部３１は、種々の検出信号、操作による指令信号等に基づいて演算処理、判定処理等を行って、種々の制御信号を発信するものである。

例えば、制御部３１は、ＣＣＤ２２及び画像信号処理回路３３を通して得られた画像情報に基づいて、被写体からの反射光の光量レベルを判定し撮影に最適な露光時間を算出する。

また、制御部３１は、操作者のレリーズ動作によりレリーズスイッチ３８がオンとされると、モータ２４に対して所定の通電を行うようにモータ駆動回路３５に制御信号を発し、又、ＣＣＤ２２による静止画撮影（電子シャッタのオン／オフ等）のための制御信号をＣＣＤ駆動回路３２に発する。

【００２２】

さらに、制御部３１は、操作者によるメインスイッチ３７のオン／オフ操作により、カメラ２０を撮影モード／非撮影モードにするべく、可動羽根２３に開閉動作を行わせるための制御信号をモータ駆動回路３５に発し、又、ＣＣＤ２２による動画撮影のための制御信号をＣＣＤ駆動回路３２に発し、さらに、表示部１２に撮影画像を表示させるための制御信号を画像表示回路３４に発する。

【００２３】

メインスイッチ３７は、オン操作により非撮影モード（撮影を行わない状態）から撮影モード（撮影待機状態）に切り替えてカメラ２０を起動させ、動画の撮影を行えると同時に静止画を撮影可能な待機状態とする場合、又、オフ操作により撮影モードから非撮影モードに切り替えて動画の撮影及び静止画の撮影を行えない非撮影状態とする場合に、制御部３１及びＣＣＤ駆動回路３２を介して、ＣＣＤ２２に対する電力供給のオン／オフ等を行う際のトリガをなすものである。

【００２４】

また、メインスイッチ３７は、非撮影モードから撮影モードへの切り替えにより、可動羽根２３に一旦閉じ（全閉）動作を行わせてから開き（全開又は小絞り）動作を行わせるべく、あるいは、撮影モードから非撮影モードへの切り替えにより、可動羽根２３に閉じ（

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000476

全閉）動作を行わせるべく、制御部３１及びモータ駆動回路３５を介して、モータ２４に対する通電制御を行う際のトリガをなすものである。

【００２５】

このように、非撮影モードに切り替えられたときに、可動羽根２３を全閉することで、カメラ２０を使用しない非撮影の状態においては、必ず撮影窓１４が閉鎖されるため、外部から強い光線あるいは　等が進入するのを防止できる。これにより、ＣＣＤ２２が焼損等を招くのを防止でき、又、レンズ２１にキズあるいは　等が付着するのを防止できる。

【００２６】

レリーズスイッチ３８は、メインスイッチ３７がオンとされた撮影モード（静止画の撮影待機状態）において、被写体の静止画を撮影する際のトリガをなすものである。すなわち、レリーズスイッチ３８が、例えば操作釦１１の一つのプッシュ操作（レリーズ動作）によりオンとされると、可動羽根２３が一旦閉じ（全閉）動作を行った後に開き（全開又は小絞り）動作を行うように、又、所定時間（露出時間）経過後に可動羽根２３が閉じ（全閉）動作を行うように、制御部３１は、モータ駆動回路３５に制御信号を発する。

【００２７】

また、レリーズスイッチ３８がオンとされると、可動羽根２３の閉じ（全閉）動作に続いてＣＣＤ２２が一旦オフとされ再びオンとされて（すなわち、それまで蓄積した電荷を吐き出して初期化された後）電荷の蓄積を開始して静止画を撮影（電子シャッタのオン（開き）／オフ（閉じ）等を）するように、制御部３１は、ＣＣＤ駆動回路３２に制御信号を発する。

【００２８】

上記のように、可動羽根２３に一旦閉じ（全閉）動作を行わせることで、非撮影モードであるにも拘わらず衝撃等を受けて開いた（全開又は小絞り）状態にあった場合に確実に可動羽根２３を初期位置（全閉の閉じ位置）に位置付けることができ、この初期位置を基準とした所定の駆動制御を行うことができる。また、撮影前に、可動羽根２３を一旦全閉することで、ＣＣＤ２２に蓄積された電荷の吐き出しが確実に行われ、特に被写体が高輝度の場合に白く霞む現象を防止でき、高画質の画像を得ることができる。

【００２９】

次に、上記携帯電話機におけるカメラ２０での撮影動作について、図６ないし図８のフローチャートに基づき説明する。

先ず、メインスイッチ３７がオフのとき、カメラ２０は起動しておらず、非撮影モードの状態にある（ステップＳ１）。このとき、可動羽根２３は撮影窓１４を全閉した状態に保持されている。したがって、外部からの光線等の進入が阻止され、ＣＣＤ２２、レンズ２１等が保護される。

【００３０】

ここで、メインスイッチ３７がオンとされると（ステップＳ２）、カメラ２０は起動して撮影モードに移行する。そして、全閉位置、全開位置、小絞り位置のいずれの位置にあるかに拘わらず、可動羽根２３が閉じ（全閉）動作を行うように駆動される。したがって、可動羽根２３は、全閉状態にあればそのまま保持され、開き（全開又は小絞り）状態にあれば閉じ動作を行って撮影窓１４を閉鎖する（ステップＳ３）。続けて、ＣＣＤ２２がオフとされてすでに蓄積した電荷を吐き出すように制御される（ステップＳ４）。

【００３１】

続いて、可動羽根２３が開き（全開）動作を行う（ステップＳ５）ことで、ＣＣＤ２２により動画の撮影が可能となる。ここで、表示部１２を眺めながら、静止画として撮影したい構図を設定する（ステップＳ６）。

そして、構図設定が完了し、操作者がレリーズ動作を行ってレリーズスイッチ３８がオンとされると（ステップＳ７）、先ず、ＣＣＤ２２の画像情報に基づいて被写体の光量（輝度）レベル（明るさ）が測定され、撮影に最適な露光時間（シャッタ秒時）が決定される（ステップＳ８）。

【００３２】

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000477

次に、可動羽根２３が閉じ（全閉）動作を行い（ステップＳ９）、続けて、ＣＣＤ２２がオフ（電子シャッタが閉じ）とされて（ステップＳ１０）、それまで蓄積された電荷が吐き出される（ステップＳ１１）。ここで、遮蔽効果の大きい可動羽根２３を閉じることにより、被写体が特に高輝度の場合でも、撮影の前に蓄積された不要な電荷を確実に吐き出すことができるため、フィルムの場合の二重露光に相当するような撮影画像が白く霞む現象を防止できる。

【００３３】

続いて、ステップＳ８にて測定された光量が所定レベル以上か否かすなわち高輝度か否かが判断される（ステップＳ１２）。ここで、高輝度と判断された場合（Ａで示す流れ）は、可動羽根２３が小絞りの開き動作を行って（ステップＳ１３）、ＣＣＤ２２が電荷の蓄積（電子シャッタが開き）を開始して、予め決定された露光時間に亘り露光状態が持続される（ステップＳ１４）。

【００３４】

そして、適正な露光時間が経過したと判断されると（ステップＳ１５）、可動羽根２３が閉じ（全閉）動作を行う（ステップＳ１６）。これにより、露光時間の終わりが高精度に規定されるため、単に電子シャッタによる場合に比べて高画質の画像を得ることができる。

続けて、ＣＣＤ２２により撮影された画像データは、記憶部３６に記憶されるべく転送される（ステップＳ１７）。そして、データの転送が終了したか否かの判断がなされる（ステップＳ１８）。

【００３５】

データの転送が終了した場合には、メインスイッチ３７がオフとされたか否かの判断がなされる（ステップＳ１９）。ここで、メインスイッチ３７がオフとされると、カメラ２０は非撮影モードに移行し（ステップＳ２０）、可動羽根２３は閉じ（全閉）動作を行って撮影窓１４を閉鎖する。一方、メインスイッチ３７がオンのままである場合は、ステップＳ５に戻って（Ｃで示す流れ）前述同様のシーケンスを繰り返す。

【００３６】

一方、ステップ１２において、高輝度でない（光量が所定レベルを超えない低輝度）と判断された場合（Ｂで示す流れ）は、可動羽根２３が全開の開き動作を行って（ステップＳ２１）、ＣＣＤ２２が電荷の蓄積（電子シャッタが開き）を開始して、予め決定された露光時間に亘り露光状態が持続される（ステップＳ２２）。

【００３７】

そして、適正な露光時間が経過したと判断されると（ステップＳ２３）、可動羽根２３が閉じ（全閉）動作を行う（ステップＳ２４）。これにより、露光時間の終わりが高精度に規定されるため、単に電子シャッタによる場合に比べて高画質の画像を得ることができる。

続けて、ＣＣＤ２２により撮影された画像データは、記憶部３６に記憶されるべく転送される（ステップＳ２５）。そして、データの転送が終了したか否かの判断がなされる（ステップＳ２６）。

【００３８】

データの転送が終了した場合には、メインスイッチ３７がオフとされたか否かの判断がなされる（ステップＳ２７）。ここで、メインスイッチ３７がオフとされると、カメラ２０は非撮影モードに移行し（ステップＳ２８）、可動羽根２３は閉じ（全閉）動作を行って撮影窓１４を閉鎖する。一方、メインスイッチ３７がオンのままである場合は、ステップＳ５に戻って（Ｄで示す流れ）前述同様のシーケンスを繰り返す。

【００３９】

このように、可動羽根２３が、非撮影モードでは撮影窓１４を遮蔽するバリヤとして又撮影時には機械的なシャッタとして自動的に駆動されることで、カメラ２０で撮影する際の操作の煩わしさを解消でき、非撮影時において、太陽光等の強力な光線が進入するのを阻止してＣＣＤ２２の焼損、破損等、カラーフィルタの退色等を防止でき、又、レンズ２１

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000478

へのキズあるいは　の付着を防止でき、さらに、被写体が高輝度の場合であっても又広範囲の輝度レベルに亘って高画質の画像を得ることができる。

【００４０】

図９は、本発明に係る携帯情報端末装置に搭載される可動羽根の他の実施形態を示すものである。この実施形態においては、前述の実施形態に対して可動羽根の構造のみが異なるため、異なる構造についてのみ説明し、同一の構成については説明を省略する。

【００４１】

すなわち、この実施形態に係る可動羽根２３０は、図９に示すように、光を透過させる透明板により略半円形状に形成されており、この透明板には、支軸２５が通される支持孔２３０ａ、駆動ピン２４ａ´が連結される長孔２３０ｂが開けられている。

また、この透明板には、図９の斜線部分で示すように、撮影窓１４を全閉して光を遮断するべく遮光材をコーティングした全閉部２３０ｃ、撮影窓１４を全開して光を通すべく遮光材をコーティングせず円形に画定された全開部２３０ｄ、撮影窓１４を絞って所定量の光を通すべく遮光材をコーティングせず円形に画定された部分にＮＤフィルタ材をコーティングした小絞り部２３０ｅが、それぞれ形成されている。

【００４２】

このように、一枚の透明板に対して、遮光材をコーティングして全閉部２３０ｃを、又、ＮＤフィルタ材をコーティングして小絞り部２３０ｅを形成するだけで、バリヤ及び機械的なシャッタとして機能する可動羽根２３０を簡単に形成することができる。

【００４３】

上記実施形態においては、カメラ２０を構成するレンズ２１として、第１レンズ２１ａ及び第２レンズ２１ｂからなる２枚構成を示したが、これに限定されるものではなく、１枚構成であっても３枚以上の構成であってもよい。

また、上記実施形態においては、可動羽根２３．２３０を、レンズ２１よりも被写体側に配置した構成を示したが、これに限定されるものではなく、ＣＣＤ２２よりも被写体側であればレンズ２１の後方に配置してもよい。この場合、撮影窓１４には光の通過を許容する透明板を設けるのが好ましい。

【００４４】

上記実施形態においては、カメラ２０のレンズ光学系として、単焦点の場合を示したが、これに限定されるものではなく、望遠～広角の撮影が可能な変倍レンズ光学系を備えたカメラにおいて本発明に係る可動羽根２３．２３０を採用してもよい。また、上記実施形態においては、可動羽根として、所定の角度範囲を揺動するものを示したが、これに限定されるものではなく、撮影窓１４を開閉し得るものであれば、その開閉動作は直線的に往復動するものでも、リボルバー状に形成された円板状のものが回転するものであってもよい。

さらに、上記実施形態においては、カメラ２０を搭載する携帯情報端末装置として、携帯電話機を示したが、携帯型パーソナルコンピュータ等その他のものであってもよい。

【００４５】

【発明の効果】

以上述べたように、本発明の携帯情報端末装置によれば、撮影窓を有する本体、本体の内部に配置され被写体を撮影するためのレンズ及び撮像素子を含むカメラを備えた構成において、撮像素子よりも被写体側に配置されて入り込む光量を調整するべく撮影窓を全開、全閉、小絞りのいずれかの状態にする可動羽根、可動羽根を駆動する電磁アクチュエータを採用したことにより、非撮影モードでは撮影窓を全閉しかつ撮影モードでは撮影窓を全開又は小絞りにするように可動羽根を駆動制御することで、開閉操作の煩わしさが解消される。

また、非撮影モードでは、可動羽根を全閉にしてバリヤとして用いることができ、撮影モードでは、可動羽根を全閉↑全開又は小絞り↑全閉となるように駆動して機械的なシャッタとして用いることができる。これにより、非撮影時において強力な光線の進入を阻止でき、撮像素子の焼損等による破損あるいは撮像素子の前面にあるカラーフィルタの退色等

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000479

を防止でき、撮影時において被写体の輝度に応じて最適な露出を行うことができ、高画質の画像を撮影することができる。

【図面の簡単な説明】

【図１】本発明に係る携帯情報端末装置（携帯電話機）の外観を示す平面図である。

【図２】可動羽根及び電磁アクチュエータを示す正面図である。

【図３】本体に内蔵したカメラ、可動羽根、電磁アクチュエータ等を示す断面図である。

【図４】カメラの制御回路を含むシステム全体のブロック図である。

【図５】可動羽根の動作を説明するためのものであり、（ａ）は撮影窓を全閉した状態を示す平面図、（ｂ）は撮影窓を全開した状態を示す平面図、（ｃ）は撮影窓を小絞りにした状態を示す平面図である。

【図６】カメラにより撮影する際の制御シーケンスを示すフローチャートである。

【図７】カメラにより撮影する際の制御シーケンスを示すフローチャートである。

【図８】カメラにより撮影する際の制御シーケンスを示すフローチャートである。

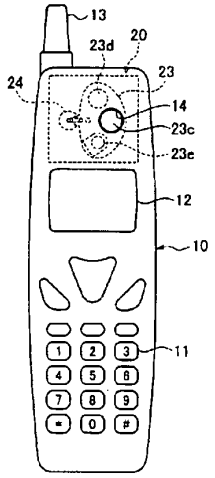
【図９】可動羽根の他の実施形態を示す正面図である。

【符号の説明】

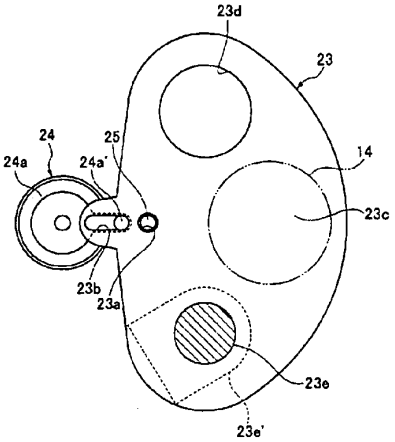
１０　本体
１１　操作釦
１２　表示部
１３　アンテナ
１４　撮影窓
２０　カメラ
２１（２１ａ、２１ｂ）　レンズ
２２　ＣＣＤ（撮像素子）
２３　可動羽根
２３ｃ　全閉部
２３ｄ　全開部
２３ｅ　小絞り部
２３ｅ´　ＮＤフィルタ
２４　ステッピングモータ（電磁アクチュエータ）
２５　支軸
３１　制御部
３２　ＣＣＤ駆動回路
３３　画像信号処理回路
３４　画像表示回路
３５　モータ駆動回路
３６　記憶部
３７　メインスイッチ
３８　レリーズスイッチ
２３０　可動羽根
２３０ｃ　全閉部
２３０ｄ　全開部
２３０ｅ　小絞り部

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000480

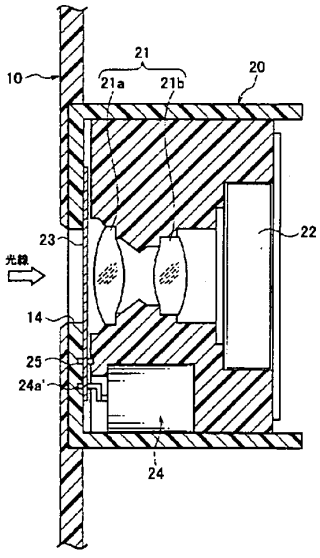
【図１】



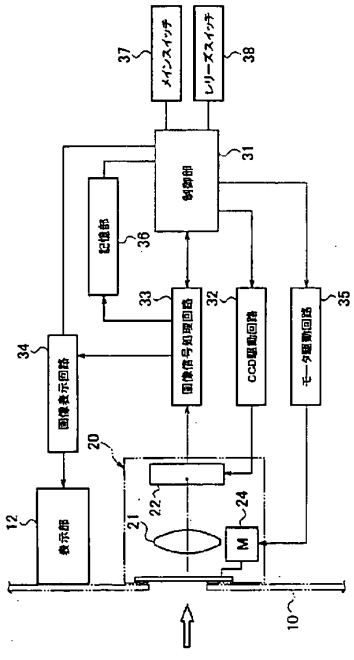
【図２】



【図３】

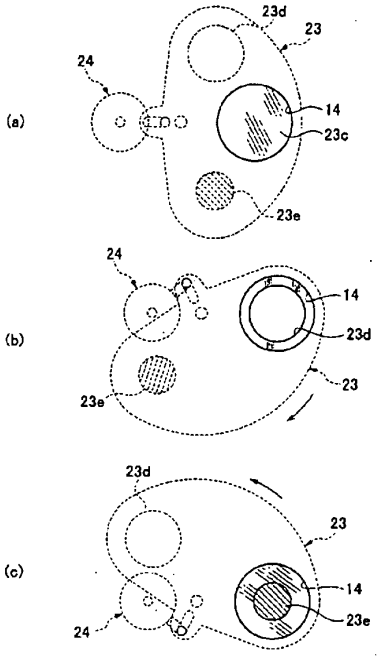


【図４】

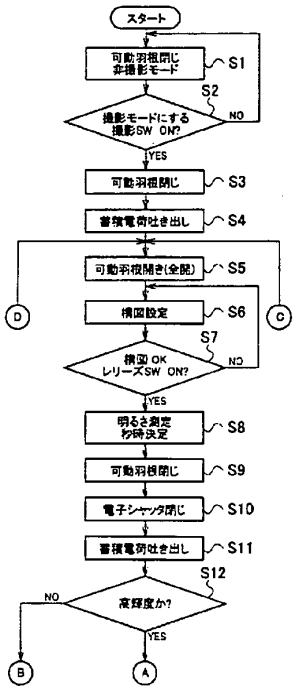


Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000481

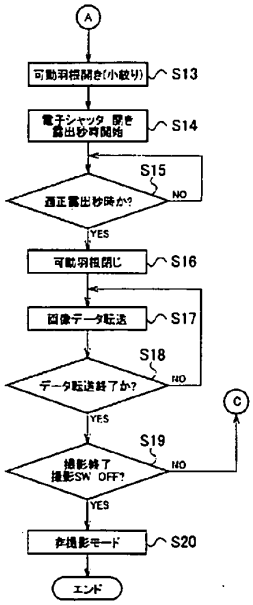
【図５】



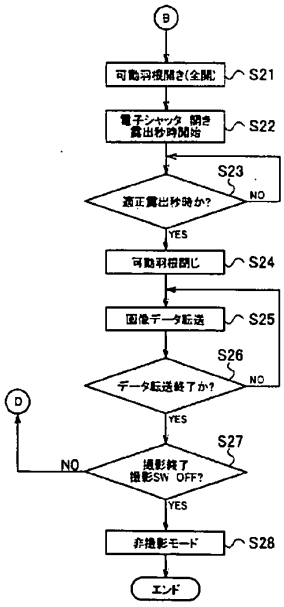
【図６】



【図７】

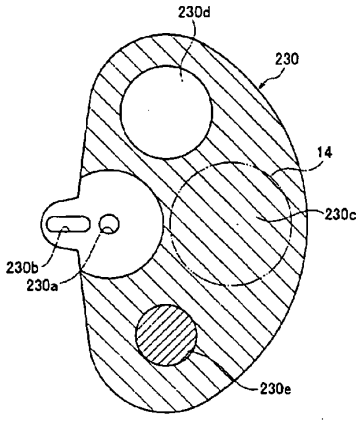


【図８】



Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000482

【図９】



Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000483

フロントページの続き

(72)発明者 摩 清
東京都板橋区志村２丁目１８番１０号 日本電産コパル株式会社内

Ｆターム(参考) 5C022 AA12 AB12 AB13 AC52 AC55 AC63
5C064 AA01 AB03 AC04 AC12 AD18
5K023 AA07 BB21 DD06 EE09 MM25

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000484

2004-187134

(11)Publication number 2004-187134
(43)Date of publication of application 02.07.2004
(51)Int.Cl.
H04N 5/225
H04M 1/02
H04N 5/238
// H04N 7/14

(21)Application number 2002-353643
(22)Date of filing 05.12.2002
(71)Applicant NIDEC COPAL CORP
(72)Inventor HIDAKA MITSUTAKA
OE HARUKI
TOMA KIYOSHI
(54)PORTABLE INFORMATION TERMINAL
(57)Abstract
PROBLEM TO BE SOLVED: To prevent a damage, to burning, etc., of a camera mounted on a cellular phone, etc. and to photograph a high image quality image by preventing a phenomenon, etc., that the photographed image is blurred and hazy.
SOLUTION: This portable information terminal is provided with: a main body 10 having a photographing window 14; and a camera 20 arranged inside the main body 10 and including a lens 21 and a CCD 22. A movable blade 23 having an all close part 23c, an all open part 23d and a small diaphragm part 23e is arranged behind the photographing window 14 on a side closer to the object than the CCD 22. The movable blade 23 is driven to be opened and closed by an electromagnetic actuator 24 according to a photographic mode and a non-photographic mode. Thus, troublesomeness of opening/closing operations is dissolved, the movable blade 23 is used as a barrier in the case no photograph is taken and used as a mechanical shutter in the case of photography, the damage due to the burning of the CCD, etc., and color fading of a color filter, etc. are prevented, and the high image quality image is obtained.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000485

CLAIMS

[Claim(s)]

[Claim 1]

It is the personal digital assistant unit provided with a camera containing a lens and an image sensor for being arranged inside a main part which has a photographing window, and the aforementioned main part, and photoing an object,

An adjustable vane which changes the aforementioned photographing window into one state of full admission, full close, and a small diaphragm in order to adjust light volume which is arranged at the object side and enters rather than the aforementioned image sensor, and an electromagnetic actuator which drives the aforementioned adjustable vane are included,

A personal digital assistant unit characterized by things.

[Claim 2]

The aforementioned adjustable vane is arranged rather than the aforementioned lens at the object side,

The personal digital assistant unit according to claim 1 characterized by things.

[Claim 3]

The aforementioned adjustable vane has a full admission part which opens fully the fully closed part and aforementioned photographing window which carries out full close of the aforementioned photographing window, and intercepts light, and lets light pass, and a small converging section which extracts the aforementioned photographing window and lets light of the specified quantity pass, and it is supported, enabling free reciprocation so that either said fully closed part, a full admission part and a small converging section may attend the aforementioned photographing window,

The personal digital assistant unit according to claim 1 or 2 characterized by things.

[Claim 4]

The aforementioned adjustable vane is formed by an opaque plate which interrupts light,

The aforementioned full admission part is formed by through-hole which was able to be opened in the aforementioned opaque plate,

The aforementioned smallness converging section sticks an ND filter on a through-hole which was able to be opened in the aforementioned opaque plate, and is formed in it,

The personal digital assistant unit according to claim 3 characterized by things.

[Claim 5]

The aforementioned adjustable vane is formed with a transparent sheet which makes light transmit,

Said fully closed part coats the aforementioned transparent sheet with protection-from-light material, and is formed,

The aforementioned smallness converging section coats the aforementioned transparent sheet with

ND filter material, and it is formed,

The personal digital assistant unit according to claim 3 characterized by things.

DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention]

The present invention relates to personal digital assistant units, such as a cellular phone or a portable personal computer (PDA), and relates to the personal digital assistant unit provided with the camera which can photo the scenery of an operator or a periphery, etc. especially.

[0002]

[Description of the Prior Art]

In recent years, personal digital assistant units which can transmit and receive a picture signal, such as a cellular phone or a portable personal computer, are developed. For example, as a cellular phone which mounted the camera (what is called a mobile camera), In order to provide a photographing window on the main part, to arrange the camera which consists of image sensors, such as a lens for photoing a digital image inside a main part, and CCD, and to protect a lens or an image sensor further, What provided covering for protection from light slidably to the main part so that a photographing window could be opened and closed manually is known (for example, see Patent Document 1).

[0003]

[Patent document 1]

JP,H2000-332871,A

[0004]

[Problem to be solved by the invention]

By the way, in the above-mentioned conventional cellular phone, When taking a photograph with a camera, operation is troublesome, in order for an operator to have to make covering have to slide and to have to open a photographing window, It may be held opened wide from the troublesomeness of operation also in the time of non-photographing, and there is a possibility of causing fading etc. of the color filter where a powerful beam of light enters from a photographing window and which is in the front face of damage of an image sensor, damage by fire, or an image sensor.

[0005]

In the above-mentioned conventional cellular phone, the exposure time at the time of taking a photograph with a camera is specified by ON/OFF operation of the electric power supply to an image sensor, i.e., an electronic shutter. Therefore, when the light volume (luminance) of an object was [many / (high-intensity)], only by operation of an electronic shutter, discharge of the electric charge accumulated in the pixel of the image sensor was not performed sufficiently, but there was a problem that it grew dim as for a taken image white on the whole, and image quality was

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000488

deteriorated.

[0006]

When a camera is mounted on a cellular phone etc., an operator may drop a cellular phone accidentally, or it may be made to collide with other objects, and a camera may be shocked. Therefore, even if shocked from outside in this way, it is necessary to take a measure with which a camera performs desired photographing operation.

[0007]

the present invention is made in light of the above-mentioned circumstances, and comes out.

the object can cancel the troublesomeness of the operation at the time of coming out and taking a photograph, and an image sensor with powerful beams of light, such as sunlight, [by fire and] Damage or fading of a color filter can be prevented and a lens etc. can be protected, Even if deterioration of image quality of a taken image, etc. can be prevented even if it is a case where an object is high-intensity, luminance of a broadband is moreover covered, a high-definition image can be photoed and it is further shocked from outside by fall, collision, etc., there is photographing operation in providing a personal digital assistant unit provided with a camera performed reliably.

[0008]

[Means for solving problem]

The camera containing the lens and image sensor for the personal digital assistant unit of the present invention being arranged inside the main part which has a photographing window, and a main part, and photoing an object, It is preparation ********** and is characterized by what the adjustable vane which changes a photographing window into one state of full admission, full close, and a small diaphragm in order to adjust the light volume which is arranged at the object side and enters rather than the above-mentioned image sensor, and the electromagnetic actuator which drives an adjustable vane are included for.

According to this composition, the troublesomeness of switching operation is eliminated by carrying out drive controlling of the adjustable vane so that full close of the photographing window may be carried out in non-photographing mode and a photographing window may be made full admission or a small diaphragm by photographing mode with an electromagnetic actuator for example.

moreover -- in non-photographing mode, an adjustable vane can be made fully closed and can be used as a barrier -- photographing mode -- an adjustable vane -- full-close -> full admission or the small diaphragm -> -- it drives and can use as a mechanical shutter so that it may become fully closed.

By this, penetration of a powerful beam of light can be prevented at the time of non-photographing, fading of the color filter in the front face of the damage by damage by fire of an image sensor, etc.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000489

or an image sensor, etc. can be prevented, optimal exposure can be performed according to the luminance of an object at the time of photographing, and a high-definition image can be photoed.

[0009]

In the above-mentioned composition, the composition arranged rather than the lens at the object side can be used for an adjustable vane.

According to this composition, it can use also as a barrier which protects a lens not only as the barrier which protects an image sensor for an adjustable vane, or a mechanical shutter.

[0010]

It has a full admission part which opens fully the fully closed part and photographing window which an adjustable vane carries out full close of the photographing window in the above-mentioned composition, and intercept light, and lets light pass, and a small converging section which extracts a photographing window and lets the light of the specified quantity pass, and can adopt the composition currently supported enabling free reciprocation so that either a fully closed part and full admission part and a small converging section may attend a photographing window.

According to this composition, start an electromagnetic actuator and either a fully closed part and full admission part or a small converging section opposes to a photographing window to a photographing window (it faces), By moving an adjustable vane, a photographing window can be changed into one state of full close, full admission, and a small diaphragm according to the light volume of non-photographing mode / photographing mode, or an object.

[0011]

In the above-mentioned composition, the adjustable vane is formed by the opaque plate which interrupts light, a full admission part is formed by the through-hole which was able to be opened in the opaque plate, and the small converging section can adopt the composition which sticks an ND filter on the through-hole which was able to be opened in the opaque plate, and is formed in it.

According to this composition, the adjustable vane which functions as a barrier and a mechanical shutter can be formed only by opening a through-hole, and opening a through-hole for a full admission part to the opaque plate of one sheet, again, and sticking an ND filter, and forming a small converging section.

[0012]

In the above-mentioned composition, the adjustable vane is formed with the transparent sheet which makes light transmit, a fully closed part coats a transparent sheet with protection-from-light material, and is formed, and the small converging section can adopt the composition which coats a transparent sheet with ND filter material, and is formed.

According to this composition, the adjustable vane which functions as a barrier and a mechanical shutter can be formed only by coating protection-from-light material, coating ND filter material for a fully closed part to one transparent sheet, again, and forming a small converging section.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000490

[0013]

[Mode for carrying out the invention]

Hereinafter, it describes about an embodiment of the invention, referring to an accompanying drawing.

A personal digital assistant unit which requires Fig.1 thru/or Fig.8 for the present invention (here) One embodiment of a cellular phone is shown and Fig.1 is the appearance front view. The front view in which Fig.2 shows an adjustable vane and an electromagnetic actuator, the cross sectional view of the camera with which Fig.3 contains an adjustable vane, the block diagram in which Fig.4 shows the control circuit of the whole system, and the plan view, Fig.6 or Fig.8 in which Fig.5 describes operation of an adjustable vane is flow charts which show a control sequence.

[0014]

The display part (liquid crystal display monitor) 12 as which this cellular phone displays the operating button 11 and various information that various operations are performed on the surface of the main part 10 as shown in Fig.1 thru/or Fig.4 is arranged, The antenna 13 which transmits and receives a signal to the upper end of the main part 10 is provided elastically, and the photographing window 14 is provided near the display part 12 on the surface of the main part 10.

Inside the main part 10, the camera 20 is arranged behind the photographing window 14, and the circuit board which mounted various electronic components which constitute a control circuit etc. in other contrant regions is arranged.

[0015]

The camera 20 is fixed to the wall of the main part 10, as shown in Fig.1 thru/or Fig.3, It is CCD(charge coupled device) 22 as the lens 21 (the 1st lens 21a, the 2nd lens 21b) and an image sensor, and the back of the photographing window 14, and is an object side () from the lens 21 (the 1st lens 21a). That is, it has the stepping motor 24 as an electromagnetic actuator which carries out the opening-and-closing drive of the adjustable vane 23 arranged rather than CCD22 at the object side, and the adjustable vane 23, etc.

[0016]

As shown in Fig.2, the adjustable vane 23 is formed in approximately semicircle shape by the ****** opaque plate, and light to this opaque plate, The support hole 23a which lets the pivot 25 pass, the long hole 23b with which drive pin 24a' mentioned below is connected, a photographing window -- 14 -- full close -- carrying out -- light -- intercepting -- fully closed -- a part -- 23 -- c -- a photographing window -- 14 -- opening fully -- light -- letting it pass -- a through-hole -- which consists of -- full admission -- a part -- 23 -- d -- a photographing window -- 14 -- extracting -- the specified quantity -- light -- letting it pass -- a through-hole -- and -- an ND filter -- 23 -- e -- ' -- which consists of -- small -- a converging section -- 23 -- e -- forming -- having -- **** .

Here, ND (neutral density) filter 23e' stuck on the small converging section 23e is a light filter which

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000491

decreases luminous intensity (light volume), without producing change of ********.

[0017]

And the adjustable vane 23 is supported by the pivot 25, enabling free rotation, and it faces across the closing place which closes the photographing window 14 by the fully closed part 23c as shown in Fig.5 (a), Between the full open position which opens the photographing window 14 fully by the full admission part 23d as shown in Fig.5 (b), and the small diaphragm positions which make the photographing window 14 a small diaphragm with the small converging section 23e as shown in Fig.5 (c) can be reciprocated freely.

[0018]

Thus, since the adjustable vane 23 is arranged at the object side rather than CCD22 and the lens 21 (the 1st lens 21a, the 2nd lens 21b), it is that the photographing window 14 is closed by the fully closed part 23c of the adjustable vane 23, A crack, dust, etc. can be prevented from the powerful beam of light (for example, sunlight) from the outside entering, and being able to prevent the color filter provided by the front face of damage-by-fire or CCD22 in CCD22 from fading, and adhering to the lens 21.

[0019]

The stepping motor 24 is the rotor 24a which has drive pin 24a' deflected from the rotation center, and it rotates at a predetermined unit angle (step size), as shown in Fig.2. It is formed by coil (not shown) for excitation, etc., and the adjustable vane 23 is positioned in a fully closed position, a full open position, or a small diaphragm position.

As an electromagnetic actuator, as long as it can stop not only to the stepping motor 24 but to at least three places, it may be a moving magnet type iris motor containing the rotor rotating around a predetermined angle range.

[0020]

As shown in Fig.4, a control circuit. By CCD drive circuit 32 and CCD22 which performs ON/OFF etc. of the electric power supply to control part 31 and CCD22 which consists of a CPU etc. which emit various control signals and manage the whole control. The photoed picture signal. The picture signal processing circuit 33 to process and the imaged image. The processing for displaying on the display part 12. The energization to the image display circuit 34 and the motor 24 to perform. Via the storage part 36 which memorizes the motor drive circuit 35 to control, the photoed picture information, etc., the main switch 37 made to start the camera 20, the release switch 38 which performs release operation of the camera 20 in the case of photographing, and the other antennas 13. It is formed by transmitting-and-receiving-processing circuit (not shown) etc. which perform transmission of ****** and reception. The main switch 37 and the release switch 38 are incorporated as a part of operating button 11 arranged on the surface of the main part 10.

[0021]

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000492

The control part 31 performs data processing, decision processing, etc. based on various detecting signals, the command signal by operation, etc., and sends various control signals.

For example, based on the picture information obtained through CCD22 and the picture signal processing circuit 33, the control part 31 judges the luminous energy level of the reflected light from an object, and computes the optimal exposure time for photographing.

If the release switch 38 is set to ON by an operator's release operation, the control part 31, A control signal is emitted to the motor drive circuit 35 so that predetermined energization may be performed to the motor 24, and the control signal for the static image photographing (ON/OFF of an electronic shutter, etc.) by CCD22 is emitted to CCD drive circuit 32.

[0022]

By ON/OFF operation of the main switch 37 according [the control part 31] to an operator, The control signal for making a switching action perform to the adjustable vane 23 in order to make the camera 20 into photographing mode / non-photographing mode is emitted to the motor drive circuit 35, The control signal for the animation photographing by CCD22 is emitted to CCD drive circuit 32, and the control signal for displaying a taken image on the display part 12 is further emitted to the image display circuit 34.

[0023]

Switch the main switch 37 to photographing mode (photographing standby state) by ON operation from non-photographing mode (state which does not take a photograph), and it starts the camera 20, When considering it as the waiting state which can photo a still picture while an animation can be photoed, When changing into the non-photographing state where it switches in non-photographing mode from photographing mode by a turn off operation, and cannot perform photographing of an animation, and photographing of a still picture, the trigger at the time of performing ON/OFF of the electric power supply to CCD22, etc. is made via the control part 31 and CCD drive circuit 32.

[0024]

The main switch 37 by the change to photographing mode from non-photographing mode, In order open after making it operate by once closing (fully closed) to the adjustable vane 23 (full admission or small diaphragm), and to make it operate. Or the trigger at the time of performing energization control to the motor 24 is made via the control part 31 and the motor drive circuit 35 in order to make it operate by closing to the adjustable vane 23 (fully closed) by the change in non-photographing mode from photographing mode.

[0025]

Thus, since the photographing window 14 is certainly closed by carrying out full close of the adjustable vane 23 in the state of the non-photographing which does not use the camera 20 when it switches at non-photographing mode, a strong beam of light or dust etc. can be prevented from

entering from the outside. A crack or dust can be prevented from being able to prevent CCD22 from causing damage by fire etc. by this, and adhering to the lens 21.

[0026]

The release switch 38 makes the trigger at the time of the main switch 37 photoing the still picture of an object in the photographing mode (photographing standby state of a still picture) set to ON. Namely, so that it may open after operating by the adjustable vane 23 once closing (fully closed) (full admission or small diaphragm) and may operate, if the release switch 38 is set to ON by one push operation (release operation) of the operating button 11, for example. The control part 31 emits a control signal to the motor drive circuit 35 so that it may operate by the adjustable vane 23 closing (fully closed) after a lapse for a predetermined period (exposure time).

[0027]

If the release switch 38 is set to ON, CCD22 will once be made off following closing (full close) operation of the adjustable vane 23, and it will be again set to ON (). That is, the control part 31 emits a control signal to CCD drive circuit 32 so that accumulation of the back electric charge initialized by breathing out the electric charge accumulated till then may be started and a still picture may be photoed (ON (difference)/OFF of an electronic shutter (closing)).

[0028]

By as mentioned above, the thing made to operate by once closing (fully closed) to the adjustable vane 23, In spite of being in non-photographing mode, when the state (full admission or small diaphragm) where it opened in response to the shock etc. is suited, the adjustable vane 23 can be reliably positioned in an initial position (fully closed closing place), and predetermined drive controlling on the basis of this initial position can be performed. By once carrying out full close of the adjustable vane 23 before photographing, discharge of the electric charge accumulated in CCD22 can be performed reliably, when especially an object is high-intensity, the phenomenon of growing dim white can be prevented, and a high-definition image can be acquired.

[0029]

Next, based on the flow chart of Fig.6 thru/or Fig.8, it describes about the photographing operation in the camera 20 in the above-mentioned cellular phone.

First, when the main switch 37 is OFF, the camera 20 is not started but is in the state in non-photographing mode (Step S1). At this time, the adjustable vane 23 is held at the state where full close of the photographing window 14 was carried out. Therefore, penetration of the beam of light from the outside, etc. is prevented, and CCD22, the lens 21, etc. are protected.

[0030]

Here, if the main switch 37 is set to ON (Step S2), the camera 20 will be started and will shift to photographing mode. And irrespective of whether it is in which position of a fully closed position, a full open position, and a small diaphragm position, it drives so that it may operate by the adjustable

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000494

vane 23 closing (fully closed). Therefore, if the adjustable vane 23 is in a full close state, it will be held as it is and it will be opened (full admission or small diaphragm), if it is in a state, will perform a closing action and will close the photographing window 14 (Step S3). It is controlled to breathe out the electric charge which it already accumulated continuously CCD22 having been used as off (step S4).

[0031]

Then, photographing of an animation is attained by CCD22 by what is operated by the adjustable vane 23 opening (full admission) (Step S5). Here, composition to photo as a still picture is set up, looking at the display part 12 (Step S6).

And if composition setting out is completed, an operator performs release operation and the release switch 38 is set to ON (Step S7), First, based on the picture information of CCD22, the light volume (luminance) level (luminosity) of an object is measured, and the optimal exposure time (at the time of a shutter second) for photographing is determined (Step S8).

[0032]

Next, it operates by the adjustable vane 23 closing (fully closed) (step S9), and continuously, CCD22 is set to OFF (an electronic shutter closing) (Step S10), and the electric charge accumulated till then is breathed out (Step S11). Here, since the unnecessary electric charge accumulated before photographing can be reliably breathed out even when especially an object is high-intensity by closing the large adjustable vane 23 of a shielding effect, a taken image which is equivalent to the double exposure in the case of being a film can prevent the phenomenon of growing dim white.

[0033]

Then, it is judged whether the light volume measured at Step S8 is more than a predetermined level, i.e., high-intensity, (Step S12). Here, when judged as high-intensity (flow shown by A), the adjustable vane 23 performs opening operation of a small diaphragm (Step S13), CCD22 starts accumulation (an electronic shutter is a difference) of an electric charge, and an exposed state is maintained [the exposure time determined preliminarily] (Step S14).

[0034]

And if it is judged that proper exposure time passed (Step S15), it will operate by the adjustable vane 23 closing (fully closed) (Step S16). Thereby, since the end of exposure time is specified with high precision, a high-definition image can be acquired compared with the case where it is only based on an electronic shutter.

Continuously, the image data photoed by CCD22 is transmitted in order to be memorized by the storage part 36 (Step S17). And judgment whether the data transfer was completed is made (Step S18).

[0035]

When a data transfer is completed, judgment whether it was presupposed that the main switch 37

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000495

was off is made (Step S19). Here, if it is off [the main switch 37], the camera 20 shifts to non-photographing mode (Step S20), and the adjustable vane 23 will operate by closing (fully closed), and will close the photographing window 14. On the other hand, when the main switch 37 continues being ON, it returns to Step S5 and repeats the same sequence as the above-mentioned (flow shown by C).

[0036]

On the other hand, when it is judged in Step 12 that it is not high-intensity (low-intensity in which light volume does not exceed a predetermined level) (flow shown by B), The adjustable vane 23 performs opening operation of full admission (Step S21), CCD22 starts accumulation (an electronic shutter is a difference) of an electric charge, and an exposed state is maintained [the exposure time determined preliminarily] (Step S22).

[0037]

And if it is judged that proper exposure time passed (Step S23), it will operate by the adjustable vane 23 closing (fully closed) (Step S24). Thereby, since the end of exposure time is specified with high precision, a high-definition image can be acquired compared with the case where it is only based on an electronic shutter.

Continuously, the image data photoed by CCD22 is transmitted in order to be memorized by the storage part 36 (Step S25). And judgment whether the data transfer was completed is made (Step S26).

[0038]

When a data transfer is completed, judgment whether it was presupposed that the main switch 37 was off is made (Step S27). Here, if it is off [the main switch 37], the camera 20 shifts to non-photographing mode (Step S28), and the adjustable vane 23 will operate by closing (fully closed), and will close the photographing window 14. On the other hand, when the main switch 37 continues being ON, it returns to Step S5 and repeats the same sequence as the above-mentioned (flow shown by D).

[0039]

The adjustable vane 23 by thus, the thing automatically driven as a mechanical shutter again as a barrier which shields the photographing window 14 in non-photographing mode at the time of photographing, In [can cancel the troublesomeness of the operation at the time of taking a photograph with the camera 20, and] the time of non-photographing, Prevent that powerful beams of light, such as sunlight, enter, and Damage by fire of CCD22, damage, etc., Fading of a color filter, etc. can be prevented, and the crack to the lens 21 or adhesion of dust can be prevented, further, even if it is a case where an object is high-intensity, a wide range luminance level can be covered again and a high-definition image can be acquired.

[0040]

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000496

Fig.9 shows other embodiments of the adjustable vane mounted on the personal digital assistant unit concerning the present invention. In this embodiment, since only the structures of an adjustable vane differ to the above-mentioned embodiment, it describes only about a different structure and omits a description about the same composition.

[0041]

That is, as shown in Fig.9, the adjustable vane 230 concerning this embodiment is formed in approximately semicircle shape with the transparent sheet which makes light transmit, and the support hole 230a which lets the pivot 25 pass, and the long hole 230b with which drive pin 24a' is connected have opened it in this transparent sheet.

The fully closed part 230c which coated protection-from-light material in order to carry out full close of the photographing window 14 and to intercept light, as the shadow area of Fig.9 shows to this transparent sheet, The small converging section 230e which coated with ND filter material the portion which did not coat protection-from-light material but was demarcated circularly in order to extract the full admission part 230d and the photographing window 14 which did not coat protection-from-light material but were circularly demarcated in order to open the photographing window 14 fully and to let light pass and to let the light of the specified quantity pass is formed, respectively.

[0042]

Thus, the adjustable vane 230 which functions as a barrier and a mechanical shutter can be easily formed only by coating protection-from-light material, coating ND filter material for the fully closed part 230c to one transparent sheet, again, and forming the small converging section 230e.

[0043]

In the above-mentioned embodiment, although the two-sheet composition which consists of the 1st lens 21a and the 2nd lens 21b was shown as the lens 21 which constitutes the camera 20, it may not be limited to this, and may be single sheet constitution, or may be the composition of three or more sheets.

In the above-mentioned embodiment, although the composition which has arranged the adjustable vane 23,230 to the object side rather than the lens 21 was shown, it is not limited to this, and as long as it is an object side, it may arrange behind the lens 21 rather than CCD22. In this case, it is preferable to provide the transparent sheet which permits passage of light to the photographing window 14.

[0044]

In the above-mentioned embodiment, although the case of the single focus was shown as a lens optical system of the camera 20, it is not limited to this and the adjustable vane 23,230 applied to the present invention in the camera provided with the variable power lens optical system in which looking far - photographing of a wide angle are possible may be adopted. Although what swings a

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000497

predetermined angle range as an adjustable vane was shown in the above-mentioned embodiment, As long as it is not limited to this and can open and close the photographing window 14, the disc-like thing formed in the shape of a revolver may rotate the switching action also what reciprocates linearly.

In the above-mentioned embodiment, although the cellular phone was shown as a personal digital assistant unit which mounts the camera 20, portable personal computers etc. may be other things.

[0045]

[Effect of the Invention]

In the composition provided with the camera containing the lens and image sensor for according to the personal digital assistant unit of the present invention being arranged inside a main part and the main part which have a photographing window, and photoing an object as stated above, By having adopted the electromagnetic actuator which drives the adjustable vane which changes a photographing window into one state of full admission, full close, and a small diaphragm in order to adjust the light volume which is arranged at the object side and enters rather than an image sensor, and an adjustable vane, In non-photographing mode, the troublesomeness of switching operation is eliminated by carrying out drive controlling of the adjustable vane so that full close of the photographing window may be carried out and a photographing window may be made full admission or a small diaphragm in photographing mode.

moreover -- in non-photographing mode, an adjustable vane can be made fully closed and can be used as a barrier -- photographing mode -- an adjustable vane -- full-close -> full admission or the small diaphragm -> -- it drives and can use as a mechanical shutter so that it may become fully closed. By this, penetration of a powerful beam of light can be prevented at the time of non-photographing, fading of the color filter in the front face of the damage by damage by fire of an image sensor, etc. or an image sensor, etc. can be prevented, optimal exposure can be performed according to the luminance of an object at the time of photographing, and a high-definition image can be photoed.

[Brief Description of the Drawings]

[Drawing 1]It is a plan view showing the appearance of the personal digital assistant unit (cellular phone) concerning the present invention.

[Drawing 2]It is a front view showing an adjustable vane and an electromagnetic actuator.

[Drawing 3]It is a cross sectional view showing the camera built in the main part, an adjustable vane, an electromagnetic actuator, etc.

[Drawing 4]It is a block diagram of the whole system including the control circuit of a camera.

[Drawing 5]It is for describing operation of an adjustable vane, and the plan view showing the state where (a) carried out full close of the photographing window, the plan view showing the state where (b) opened the photographing window fully, and (c) are the plan views showing the state

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000498

where the photographing window was made the small diaphragm.

[Drawing 6]It is a flow chart which shows the control sequence at the time of taking a photograph with a camera.

[Drawing 7]It is a flow chart which shows the control sequence at the time of taking a photograph with a camera.

[Drawing 8]It is a flow chart which shows the control sequence at the time of taking a photograph with a camera.

[Drawing 9]It is a front view showing other embodiments of an adjustable vane.

[Explanations of letters or numerals]

10 Main part

11 Operating button

12 Display part

13 Antenna

14 Photographing window

20 Camera

21 (21a, 21b) Lens

22 CCD (image sensor)

23 Adjustable vane

23c Fully closed part

23 d Full admission part

23e Small converging section

23e'ND filter

24 Stepping motor (electromagnetic actuator)

25 Pivot

31 Control part

32 CCD drive circuit

33 Picture signal processing circuit

34 Image display circuit

35 Motor drive circuit

36 Storage part

37 Main switch

38 Release switch

230 Adjustable vane

230c Fully closed part

230 d Full admission part

230e Small converging section

(19)日本国特許庁(JP)　(12)公開特許公報(A)　(11)特許出願公開番号
特開2004-222193
(P2004-222193A)
(43)公開日　平成16年8月5日(2004.8.5)

(51)Int.Cl.[7]	F I		テーマコード（参考）
H04M 1/02	H04M 1/02	E	5C022
H04N 5/225	H04N 5/225	E	5K023
	H04N 5/225	Z	

審査請求 未請求　請求項の数 9　OL　（全 8 頁）

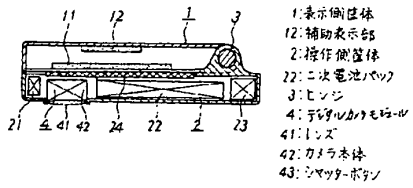
(21)出願番号　特願2003-10071 (P2003-10071)
(22)出願日　平成15年1月17日 (2003.1.17)

(71)出願人　000006013
三菱電機株式会社
東京都千代田区丸の内二丁目２番３号
(74)代理人　100073759
弁理士　大岩　増雄
(74)代理人　100093562
弁理士　児玉　俊英
(74)代理人　100088199
弁理士　竹中　岑生
(74)代理人　100094916
弁理士　村上　啓吾
(72)発明者　玉木　靖之
東京都千代田区丸の内二丁目２番３号　三菱電機株式会社内

最終頁に続く

(54)【発明の名称】携帯電話機

(57)【要約】
【課題】表示側　体と操作側　体とを二つ折りした状態で、撮像時の手ぶれの問題が改善された携帯電話機および当該携帯電話機による撮像方法を提供することを課題とするものである。
【解決手段】情報表示部を有する表示側　体１、キー操作部を有する操作側　体２、撮像レンズ４１を有するデジタルカメラモジュール４、二次電池パック２２、および表示側　体１と操作側　体２とを二つ折り可能にするヒンジ３を備えた携帯電話機であって、撮像レンズ４１と二次電池パック２２とは操作側　体２内に設けられ、且つ二次電池パック２２は操作側　体２の長手方向でのヒンジ３側に、撮像レンズ４１は二次電池パック２２を挟んでヒンジ３の反対側に、それぞれ設けられる。
【選択図】　図４



Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000500

【特許請求の範囲】
【請求項１】
情報表示部を有する表示側　体、キー操作部を有する操作側　体、撮像レンズ、携帯電話機駆動用電池、および上記表示側　体と上記操作側　体との二つ折りを可能にする連結装置を備え、上記撮像レンズおよび上記携帯電話機駆動用電池は上記操作側　体に設けられ、上記携帯電話機駆動用電池は上記撮像レンズと上記連結装置との間に設けられることを特徴とする携帯電話機。
【請求項２】
上記撮像レンズからの入射光を電気信号に変換するイメージセンサを備え、上記携帯電話機駆動用電池は、上記イメージセンサと上記連結装置との間に設けられることを特徴とする請求項１記載の携帯電話機。
【請求項３】
上記携帯電話機駆動用電池は、上記操作側　体の長手方向中心よりも上記連結装置側に重心が位置するように設けられることを特徴とする請求項１または請求項２記載の携帯電話機。
【請求項４】
上記操作側　体の長手方向側面にシャッターボタンが設けられることを特徴とする請求項１～請求項３のいずれか一項記載の携帯電話機。
【請求項５】
上記シャッターボタンは、上記携帯電話機の上記連結装置側を把持した際にその把持した手の人差し指により押下可能な位置に設けられることを特徴とする請求項４記載の携帯電話機。
【請求項６】
上記表示側　体と上記操作側　体との二つ折り状態における上記表示側　体の外表面に、上記イメージセンサにおける被写体像を表示する補助表示部を備えたことを特徴とする請求項１～請求項５のいずれか一項記載の携帯電話機。
【請求項７】
上記撮像レンズの露出面を機械的に保護するレンズ保護装置を備えたことを特徴とする請求項１記載の携帯電話機。
【請求項８】
上記操作側　体または上記表示側　体の上記連結装置の近傍に上記携帯電話機を保持するための紐を通す紐孔を有することを特徴とする請求項１記載の携帯電話機。
【請求項９】
上記連結装置側の把持する個所の表面に把持を容易にする有機高分子層が施されたことを特徴とする請求項５記載の携帯電話機。
【発明の詳細な説明】
【０００１】
【発明の属する技術分野】
本発明は、撮像装置を備えた携帯電話機に関し、特に良質の撮像を得ることに好適な携帯電話機に関するものである。
【０００２】
【従来の技術】
情報表示部を有する表示側　体、キー操作部を有する操作側　体、撮像装置、携帯電話機駆動用電池、および上記表示側　体と上記操作側　体との二つ折りを可能にする連結装置を備えた携帯電話機、および当該携帯電話機において上記撮像装置と上記携帯電話機駆動用電池とを上記操作側　体内に設けることは、後記する特許文献１から従来公知である。
【０００３】
【特許文献１】
特開２００２－３００２３７号公報（請求項１、段落番号３～段落番３２、図１）
【０００４】

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000501

従来の撮像装置付き携帯電話機は、それを用いて撮像する場合、表示側　体と操作側　体とを開いた状態、即ち二つ折りしない状態で操作側　体の端を握ってシャッターボタンを押すように設計されていて、このために撮像装置およびシャッターボタンは、上記連結装置の近傍に設置されてきている。

【０００５】

ところで近時においては、携帯電話機の撮像装置を一層高機能化して鮮明度あるいは解像度の高い高品質の撮像を得る要求が高まっている。かかる斯界の要求からすれば、上記した開いた状態で細長く延びた携帯電話機の一端を把持しての撮像では、シャッターボタンを押す際に手ぶれが生じ易いために鮮明度の高い撮像が得難い問題がある。従来の携帯電話機の撮像装置に用いられているイメージセンサの画素数は、３０万ピクセル程度の低画素数のものであって、もともと解像度が高くないので、撮像時の手ぶれは然程問題とされてこなかったが、５０万ピクセルあるいはそれ以上の高画素数のイメージセンサを有する高性能撮像装置が搭載されるようになると、撮像時の手ぶれはかかる撮像装置の高性能を活かし得ない大きな問題となる。

【０００６】

【発明が解決しようとする課題】

本発明は、従来技術における如上の問題、並びに近時における携帯電話機の撮像装置を一層高性能化しようとする趨勢に鑑みて、撮像時の手ぶれの問題が改善された携帯電話機を提供することを課題とするものである。

【０００７】

【課題を解決するための手段】

本発明の携帯電話機は、情報表示部を有する表示側　体、キー操作部を有する操作側　体、撮像レンズ、携帯電話機駆動用電池、および上記表示側　体と上記操作側　体との二つ折りを可能にする連結装置を備え、上記撮像レンズおよび上記携帯電話機駆動用電池は上記操作側　体に設けられ、上記携帯電話機駆動用電池は上記撮像レンズと上記連結装置との間に設けられることを特徴とするものである。

【０００８】

【発明の実施の形態】

以下において、説明の早い図に示された部位または表示が後続の図でも示される場合には、互いに同じ符号または表示を付して後続の図では説明を省略することがある。

【０００９】

実施の形態１.

図１～図４は、本発明の携帯電話機における実施の形態１を説明するものであって、図１は当該携帯電話機を二つ折りした状態でのレンズ側から見た斜視図、図２は図１の二つ折り体を人の手で把持した状態での斜視図、図３は図１のＩＩＩ－ＩＩＩ線に沿った概略断面図、また図４は図１のＩＶ－ＩＶ線に沿った概略断面図である。

【００１０】

図１～図４において、携帯電話機は、主要部として表示側　体１、操作側　体２、前記連結装置の一例としてのヒンジ３を含み、操作側　体２と表示側　体１とは、ヒンジ３により二つ折り可能に連結されている。表示側　体１は、内面に情報表示部１１を、外表面に後記のデジタルカメラモジュール４における被写体像を表示する機能を有する補助表示部１２をそれぞれ備えている。操作側　体２は、その　体内に、図３および図４の図上での左側から外部インターフェースのコネクタとして用いられるＩ／Ｏコネクタ２１、デジタルカメラモジュール４、前記携帯電話機駆動用電池の一例としての二次電池パック２２、および送受信アンテナ２３を内蔵している。また二次電池パック２２は、操作側　体２の長手方向中心よりもヒンジ３側に重心が位置するように設けられている。なお携帯電話機内には、二次電池パック２２の他にパックアップ用など、複数の電池が設けられることもあるが、二次電池パック２２は携帯電話機内に設けられる電池のうちではサイズまたは重量が最も大きく、主電源として用いられるものである。

【００１１】

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000502

図３における一点鎖線３１は、ヒンジ３のヒンジ軸位置を示す。また操作側　体２は、情報表示部１１と対向する内面にキー操作部２４を、その外面にデジタルカメラモジュール４の撮像撮像レンズ４１、スピーカの放音孔５を有する。図１および図２における実線２５は、二次電池パック２２のための電池見切りラインを示す。

【００１２】

デジタルカメラモジュール４は、撮像レンズ４１、カメラ本体４２、および操作側　体２の側面上に設けられたシャッターボタン４３を含む。カメラ本体４２は、撮像レンズ４１からの入射光を電気信号に変換するイメージセンサを備えており、当該イメージセンサとしては、画素数が３０万ピクセル程度の従来使用のものであってもよいが、画素数が５０万ピクセル以上、特に１～２メガピクセル程度あるいはそれ以上の高画素数のイメージセンサ、例えばＣＣＤ、Ｃ－ＭＯＳなどを備えたものが特に好ましい。シャッターボタン４３は、上記の通り操作側　２の側面上に設けられるが、図２に示すように、当該携帯電話機を二つ折りした状態でヒンジ３あるいはヒンジ３を含む端部を把持して当該ボタン４３を押す場合、人の人差し指の先が無理なく当該ボタン４３上となる位置、即ちヒンジ３とヒンジ３から人の人差し指の平均長の位置との間に設けられることが好ましい。

【００１３】

実施の形態１の携帯電話機を用いて撮像する場合、先ず表示側　体１と操作側　体２とは二つ折りして図１の状態とし、ついで図２に示すように二つ折りされた携帯電話機の撮像レンズ４１が被写体に向くようにヒンジ３あるいはヒンジ３と共にその近傍部、特に二つ折りされた携帯電話機の端部を把持する。符号６は、かかる把持部を示す。その状態では、撮像者は補助表示部１２に表示された被写体像を確認することができるので、必要に応じて上記携帯電話機の位置や角度を変えて補助表示部１２に所望の被写体像が表示されるようにし、ついでシャッターボタン４３を押す。

【００１４】

実施の形態１の携帯電話機は、表示側　体１と操作側　体２とを二つ折りした状態では、ヒンジ３のない側での表示側　体１と操作側　体２の端同士を結合するものがないので当該端部を把持すると、両　体の端部間で僅かではあるが、相対移動して把持が不安定となり、このために撮像に際してはカメラぶれあるいは手ぶれが生じ易い問題がある。これに対してヒンジ３のある側では、上記した両　体の端部間での相対移動の問題がないので把持部６での把持は安定しており、このために撮像に際してはカメラぶれや手ぶれが生じ難い。また二次電池パック２２は、操作側　体２の長手方向でのヒンジ３側に、一方デジタルカメラモジュール４およびその撮像レンズ４１は二次電池パック２２を挟んでヒンジ３の反対側にそれぞれ設けられているので、撮像に際してヒンジ３側を把持しても撮像レンズ４１は撮像者の手で塞がれる問題はなく、さらに他の部材と比較して高重量の二次電池パック２２がヒンジ３側に、換言すると携帯電話機の把持側に設置されているので重量バランスが良好となって持ち易くなり、またさらにシャッターボタン４３がヒンジ３側にあるので、これらの点からもシャッターボタン４３を押す際の手ぶれが生じ難い利点がある。この結果、デジタルカメラモジュール４として前記した高画素数のイメージセンサを備えたものを使用しても、その性能が活かされて従来と比較して格段に鮮明度や解像度の高い良質の撮像を得ることができる。

【００１５】

なお実施の形態１では、送受信アンテナ２３はヒンジ３側に、一方、Ｉ／Ｏコネクタ２１はその反対側に設置されているが、当該両者を入れ換えて、Ｉ／Ｏコネクタ２１はヒンジ３側に、送受信アンテナ２３はその反対側に設置されてもよい。後続の実施の形態でも同じである。

【００１６】

実施の形態２.

図５は、本発明の携帯電話機における実施の形態２を説明するものであって、当該携帯電話機を二つ折りした状態の一部破断図を含む斜視図である。図５において、携帯電話機の把持部６の表面には有機高分子層６１が設けられており、実施の形態２は前記実施の形態

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000503

１とは有機高分子層６１を有する点において異なり、その他の構成は同じである。表示側　体１と上記操作側　体２とを二つ折りした状態にて把持部６を把持して撮像する際、有機高分子層６１は撮像者による把持部６の把持を容易にする作用をなして、シャッターボタン４３押す際の手ぶれを一層少なくする効果がある。

【００１７】

しかして有機高分子層６１は、かかる作用を奏し得る有機高分子にて形成されればよい。上記有機高分子としては、具体的には適度のすべり防止性を示すゴム弾性体、例えば各種の合成ゴムや天然ゴムの架橋または加硫物類、あるいは各種の熱可塑性エラストマー類などが例示され、就中、ウレタン系エラストマー類は、良好な手触感触を有しながら、皮膜の機械的強靭性、耐熱性、耐油性、耐磨耗性などにも優れているので、特に好ましい。

【００１８】

実施の形態３．

図６は、本発明の携帯電話機における実施の形態３を説明するものであって、当該携帯電話機を二つ折りした状態の斜視図である。図６において、デジタルカメラモジュール４は、操作側　体２の外面に設けられたレンズ保護装置４４を備えており、実施の形態３は前記実施の形態１とはレンズ保護装置４４を有する点において異なり、その他の構成は同じである。レンズ保護装置４４は、図６の矢印Ａの左右方向に移動自在のレンズカバー４４２と当該カバー４４２を収容する収容部４４１を含む。デジタルカメラモジュール４を使用しないときは、レンズカバー４４２は、矢印Ａの左方向に移動せしめられて撮像レンズ４１の露出面、即ち全外表面を覆うことによりそれを機械的に保護する機能をなし、デジタルカメラモジュール４を使用する時には矢印Ａの右方向に移動せしめられてデジタルカメラモジュール４を稼動可能状態とする。レンズカバー４４２の上記左右方向の移動は、斯界で周知あるいは公知の開閉機構あるいは移動機構を採用すればよい。

【００１９】

実施の形態３では、撮像レンズ４１が二次電池パック２２が実装された面に向いているため、撮像レンズ４１を下向けにして置いてしまう可能性がある。そこでレンズカバー４４２が撮像レンズ４１の外表面を覆うように設置されることで当該撮像レンズ４１の傷つきを防止し、あるいはゴミ、　、指紋などの付着を防止することができる。なおレンズカバー４４２は、操作側　体２の外面から少し内部に入り込んだ位置で開閉する内層式のものであってもよい。

【００２０】

実施の形態４．

図７は、本発明の携帯電話機における実施の形態４を説明するものであって、当該携帯電話機を二つ折りした状態の斜視図である。図７において、操作側　体２は、ヒンジ３の近傍に、携帯電話機を保持するための前記紐の一例としてのストラップを通す紐孔７を有し、実施の形態４は前記実施の形態１とは紐孔７を有する点において異なり、その他の構成は同じである。

【００２１】

ストラップを通す紐孔７は、撮像レンズ４１の反対側のヒンジ３側に配置されて、撮像時にストラップによってレンズが隠れたり、撮像の邪魔にならないようされている。さらにヒンジ３の近くに紐孔７を配置することで、撮像時、ストラップに腕を通して撮像すると、携帯電話機が滑って落ちる問題がない。

【００２２】

【発明の効果】

本発明の携帯電話機は、以上説明した通り、情報表示部を有する表示側　体、キー操作部を有する操作側　体、撮像レンズ、携帯電話機駆動用電池、および上記表示側　体と上記操作側　体との二つ折りを可能にする連結装置を備え、上記撮像レンズおよび上記携帯電話機駆動用電池は上記操作側　体に設けられたことを特徴とするものである。このために表示側　体と操作側　体とを二つ折りした状態での撮像に際しては、手ぶれが生じ難い。さらに、高重量の携帯電話機駆動用電池が携帯電話機の把持側に設置されているので重量

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000504

バランスが良好となって持ち易くなり、シャッターボタンを押す際のカメラぶれ（手ぶれ）が生じ難い利点がある。この結果、撮像装置として高画素数のイメージセンサを備えたものを使用しても、その性能が活かされて従来と比較して格段に解像度の高い撮像を得ることができる。

【図面の簡単な説明】

【図１】本発明の携帯電話機における実施の形態１の、当該携帯電話機を二つ折りした状態の斜視図。

【図２】図１の二つ折り体を人の手で把持した状態の斜視図。

【図３】図１のＩＩＩ－ＩＩＩ線に沿った概略断面図。

【図４】図１のＩＶ－ＩＶ線に沿った概略断面図。

【図５】本発明の携帯電話機における実施の形態２の、当該携帯電話機を二つ折りした状態の一部破断図を含む斜視図。

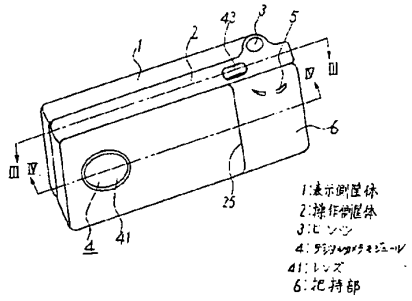
【図６】本発明の携帯電話機における実施の形態３の、当該携帯電話機を二つ折りした状態の斜視図。

【図７】本発明の携帯電話機における実施の形態４の、当該携帯電話機を二つ折りした状態の斜視図。

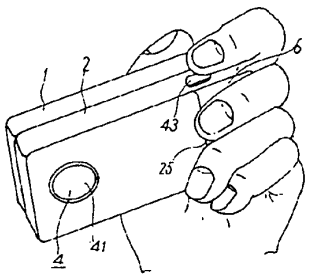
【符号の説明】

１　表示側　体、１１　情報表示部、１２　補助表示部、２　操作側　体、
２１　Ｉ／Ｏコネクタ、２２　二次電池パック、２３　送受信アンテナ、
２４　キー操作部、３　ヒンジ、３１　ヒンジ軸位置、
４　デジタルカメラモジュール、４１　撮像レンズ、４２　カメラ本体、
４３　シャッターボタン、４４　レンズ保護装置、４４１　収容部、
４４２　レンズカバー、５　放音孔、６　把持部、６１　有機高分子層、
７　細孔。

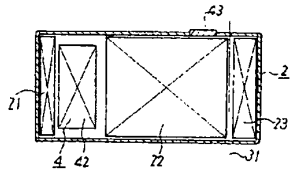
【図１】



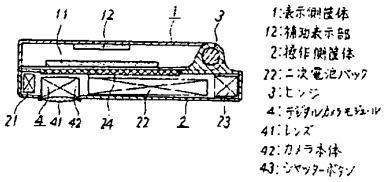
【図２】



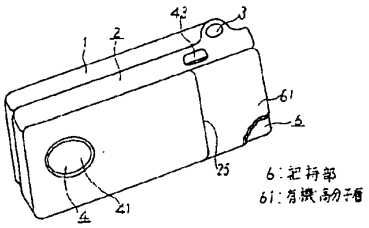
【図３】



【図４】

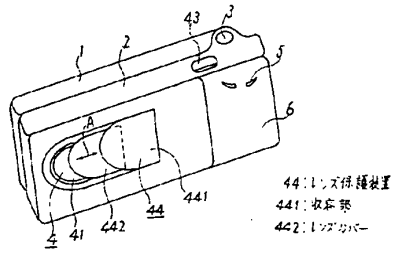


【図５】

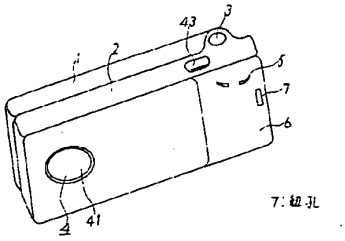


Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000505

【図６】



【図７】



Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000506

フロントページの続き

(72)発明者 立川 律哉
東京都千代田区丸の内二丁目２番３号 三菱電機株式会社内
(72)発明者 大伏 俊也
東京都千代田区丸の内二丁目２番３号 三菱電機株式会社内

Fターム(参考) 5C022 AA00 AB55 AC01 AC52 AC67 AC77
5K023 AA07 BB11 DD08 MM00 MM25 PP11

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000507

(19)日本国特許庁(JP)　(12)公開特許公報(A)　(11)特許出願公開番号
特開2004-312300
(P2004-312300A)
(43)公開日　平成16年11月4日(2004.11.4)

(51)Int.Cl.[7]		F I			テーマコード（参考）
H04M	1/11	H04M	1/11	Z	5K023
H04B	7/26	H04M	1/725		5K027
H04M	1/725	H04B	7/26	Y	5K067

審査請求 未請求　請求項の数 12　OL　（全 12 頁）

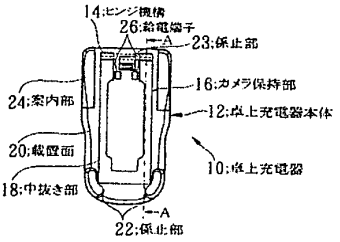
(21)出願番号　特願2003-102098(P2003-102098)
(22)出願日　平成15年4月4日(2003.4.4)

(71)出願人　000004237
日本電気株式会社
東京都港区芝五丁目７番１号
(74)代理人　100099830
弁理士　西村　征生
(72)発明者　綿貫　隆
東京都港区芝五丁目７番１号　日本電気株式会社内

Fターム(参考)　5K023 AA07 KK04 LL04 MM00
5K027 AA11 BB01 GG04
5K067 AA34 BB04 EE02 KK06 KK17

(54)【発明の名称】携帯電話用卓上充電装置

(57)【要約】
【課題】バッテリーの充電と同時にカメラによる撮影を行う。
【解決手段】カメラ保持部１６をヒンジ機構１４で回動し、起立させて固定する。カメラ付折り畳み式携帯電話機を本体１２の主筐体の自由端を係止ツメ部２２に当接しつつ主筐体の後端を係止ツメ部２３に当て係止ツメ部２３を後方に撓ませ、主筐体の後端を係止ツメ部２３で係止するのと同時的に、携帯電話機の副筐体の自由端をカメラ保持部１６の係止ツメ部に当てこれを自由端方向に撓ませ副筐体の自由端を係止ツメ部に係止して携帯電話機を本体１２とカメラ保持部１６で保持する。このとき、携帯電話機の受電端子は本体１２の給電端子に当接してバッテリーの充電をする。充電しつつ携帯電話機のカメラによる撮影を行う。
【選択図】　図1



Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000508

【特許請求の範囲】
【請求項1】
第１のユニットにカメラ及び背面表示部が搭載され、第２のユニットにバッテリーが搭載され、前記第１のユニットと前記第２のユニットとが、ヒンジ機構を介して、折り畳み可能に結合されたカメラ付携帯電話機を充電するための携帯電話用卓上充電装置であって、前記第２のユニットを搭載装着した状態で前記カメラ付携帯電話機を充電させるための卓上充電器本体と、
前記第１のユニットを、前記カメラが撮影可能であると共に看者が前記背面表示部を視認できる態様で、かつ、直立又は斜めの姿態で、保持するためのカメラ保持手段とを備えてなることを特徴とする携帯電話用卓上充電装置。
【請求項2】
前記カメラ付携帯電話機の前記第２のユニットが前記卓上充電器本体に保持されるときの前記カメラ付携帯電話機の受電端子に対応する前記卓上充電器本体の部位に給電端子が設けられ、前記カメラ付携帯電話機を開いたときの前記第１のユニットが前記カメラ保持手段で保持されると共に、前記第２のユニットが前記卓上充電器本体で保持されるとき、前記カメラ付携帯電話機の受電端子が前記給電端子に当接するように構成されたことを特徴とする請求項１記載の携帯電話用卓上充電装置。
【請求項3】
前記カメラ付携帯電話機の前記第２のユニットが前記卓上充電器本体に保持されるときの前記カメラ付携帯電話機の受電端子に対応する前記卓上充電器本体の部位に給電端子が設けられ、折り畳んだ前記カメラ付携帯電話機の前記第２のユニットが前記卓上充電器本体で保持されるとき、前記カメ付携帯電話機の受電端子が前記給電端子に当接するように構成されたことを特徴とする請求項１記載の携帯電話用卓上充電装置。
【請求項4】
前記給電端子は、前記カメラ保持手段が前記卓上充電器本体に取着される部位に近い部位に設けられたことを特徴とする請求項２又は３記載の携帯電話用卓上充電装置。
【請求項5】
前記カメラ保持手段の自由端に係止ツメ部を設ける一方、前記カメラ付携帯電話機の前記第２のユニットを前記卓上充電器本体に保持するときの前記ヒンジ機構に近い部位に対応する前記卓上充電器本体の部位に第１の係止ヅメ部を設けると共に、前記第２のユニットの自由端に対応する前記卓上充電器本体の部位に第２の係止ツメ部を設け、前記カメラ付携帯電話機を開いて保持するときの前記第１のユニットの自由端を前記保持部材の前記係止ツメ部で係止し、かつ、前記第２のユニットを前記第１の係止ツメ部と前記第２の係止ツメ部とで係止することを特徴とする請求項１、２、３又は４記載の携帯電話用卓上充電装置。
【請求項6】
折り畳んだ前記カメラ付携帯電話機の前記第２のユニットを前記卓上充電器本体に保持するときの前記ヒンジ機構に近い部位に対応する前記卓上充電器本体の部位に第１の係止ヅメ部を設けると共に、前記第２のユニットの自由端に対応する前記卓上充電器本体の部位に第２の係止ツメ部を設け、折り畳んだ前記カメラ付携帯電話機の前記第２のユニットを前記第１の係止ツメ部と前記第２の係止ツメ部とで係止することを特徴とする請求項１、２、３又は４記載の携帯電話用卓上充電装置。
【請求項7】
前記カメラ保持手段は、前記カメラ保持手段が取着される部位が少なくとも直線状に形成されると共に、前記卓上充電器本体に前記カメラ保持手段と略同輪郭で僅かに大きく形成されて折り畳まれて来る前記カメラ保持手段を受け入れる凹部が設けられ、前記カメラ保持手段は、前記カメラ保持手段が取着される部位と該部位に対応する前記凹部の部位との間に介設されたヒンジ機構で回動自在に軸支されていることを特徴とする請求項１乃至６のいずれか一に記載の携帯電話用卓上充電装置。
【請求項8】

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000509

前記カメラ保持手段は、前記カメラ保持手段が取着される部位が少なくとも直線状に形成されると共に、前記卓上充電器本体に前記カメラ保持手段と略同輪郭で僅かに大きく形成されて折り畳まれて来る前記カメラ保持手段を受け入れる凹部が設けられ、前記カメラ保持手段は、前記カメラ保持手段が取着される部位と該部位に対応する前記凹部の部位との間に介設された軸支部と、前記カメラ保持手段の自由端部側の部位と前記カメラ保持手段が取着される部位から離れる方向の前記卓上本体本体の部位との間に設けられた屈曲式腕とで回動自在に支えられていることを特徴とする請求項１乃至６のいずれか一に記載の携帯電話用卓上充電装置。

【請求項9】

前記第１の係止ツメ部は１つ、前記第２の係止ツメ部は２つ設けられていることを特徴とする請求項５、６、７又は８記載の携帯電話用卓上充電装置。

【請求項10】

前記第１の係止ツメ部は２つ、前記第２の係止ツメ部は１つ設けられていることを特徴とする請求項５、６、７又は８記載の携帯電話用卓上充電装置。

【請求項11】

前記係止ツメ部は、可撓性材で、かつ、可撓構造に形成されていることを特徴とする請求項５乃至１０のいずれか一に記載の携帯電話用卓上充電装置。

【請求項12】

可撓性材は樹脂であることを特徴とする請求項１１記載の携帯電話用卓上充電装置。

【発明の詳細な説明】

【０００１】

【発明の属する技術分野】

この発明は、携帯電話用卓上充電装置に関し、詳しくは卓上充電器本体からカメラ保持手段を直立又は斜めの姿態でカメラ付携帯電話機のバッテリーを充電しながらデジタルカメラで撮像する携帯電話用卓上充電装置に関する。

【０００２】

【従来の技術】

従来においても、卓上充電器でカメラ付折り畳み式携帯電話機を充電するほか、その卓上充電器でカメラ付折り畳み式携帯電話機を安定に保持してカメラで撮像を行う卓上充電器が知られている。その例は特開２００２－２６１９０４号公報に記載されている。

【０００３】

同公報に記載される技術は、図１４に示すように、卓上充電器７０の充電器本体７２の挿通孔７４にカメラ付折り畳み式携帯電話機７６を挿入し、カメラ付折り畳み式携帯電話機７６の受電端子７８を充電器本体７２の給電端子８０に当接させてカメラ付折り畳み式携帯電話機７６のバッテリー（図示せず）を充電するほか、図１５に示すように、カメラ付折り畳み式携帯電話機７６の載置用保持部８４を回動させて延出した載置用保持部８４の挿通孔８５にカメラ付折り畳み式携帯電話機７６を挿入して保持し、そのカメラ付折り畳み式携帯電話機７６のデジタルカメラ８６で所要の撮像を行うものである。

したがって、この公報に記載される技術において、単一の卓上充電器で充電と撮像をすることはできる。

【０００４】

【発明が解決しようとする課題】

しかしながら、上記公報に記載される技術においては、充電時の保持部と撮像時の保持部との構造が異なっている。

つまり、充電時の保持部に形成される充電系は、撮像時には全く継受され得ない構造となっている。

したがって、上記充電系は、カメラ付折り畳み式携帯電話機のデジタルカメラで撮像しながら、そのバッテリーを充電することは不可能である。

このことは、携帯電話機が高性能になると共に消費電力も増大して来ている現状においては上記卓上充電器は用途に制限があり、特にテレビ会議等でカメラを長時間使用する用途

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000510

には適用し難い致命傷となる。
【０００５】
この発明は、上述の事情に鑑みてなされたもので、卓上充電器本体からカメラ保持手段を直立又は斜めの姿態でカメラ付携帯電話機のバッテリーを充電しながらデジタルカメラでの撮像動作を継続的に生じさせ得る携帯電話用卓上充電装置を提供することを目的としている。
【０００６】
【課題を解決するための手段】
上記課題を解決するために、請求項１記載の発明は、第１のユニットにカメラ及び背面表示部が搭載され、第２のユニットにバッテリーが搭載され、上記第１のユニットと上記第２のユニットとが、ヒンジ機構を介して、折り畳み可能に結合されたカメラ付携帯電話機を充電するための携帯電話用卓上充電装置に係り、上記第２のユニットを搭載装着した状態で上記カメラ付携帯電話機を充電させるための卓上充電器本体と、上記第１のユニットを、上記カメラが撮影可能であると共に看者が上記背面表示部を視認できる態様で、かつ、直立又は斜めの姿態で、保持するためのカメラ保持手段とを備えてなることを特徴としている。
【０００７】
請求項２記載の発明は、請求項１記載の携帯電話用卓上充電装置に係り、上記カメラ付携帯電話機の上記第２のユニットが上記卓上充電器本体に保持されるときの上記カメラ付携帯電話機の受電端子に対応する上記卓上充電器本体の部位に給電端子が設けられ、上記カメラ付携帯電話機を開いたときの上記第１のユニットが上記カメラ保持手段で保持されると共に、上記第２のユニットが上記卓上充電器本体で保持されるとき、上記カメラ付携帯電話機の受電端子が上記給電端子に当接するように構成されたことを特徴としている。
【０００８】
請求項３記載の発明は、請求項１記載の携帯電話用卓上充電装置に係り、上記カメラ付携帯電話機の上記第２のユニットが上記卓上充電器本体に保持されるときの上記カメラ付携帯電話機の受電端子に対応する上記卓上充電器本体の部位に給電端子が設けられ、折り畳んだ上記カメラ付携帯電話機の上記第２のユニットが上記卓上充電器本体で保持されるとき、上記カメ付携帯電話機の受電端子が上記給電端子に当接するように構成されたことを特徴としている。
【０００９】
請求項４記載の発明は、請求項２又は３記載の携帯電話用卓上充電装置に係り、上記給電端子は、上記カメラ保持手段が上記卓上充電器本体に取着される部位に近い部位に設けられたことを特徴としている。
【００１０】
請求項５記載の発明は、請求項１、２、３又は４記載の携帯電話用卓上充電装置に係り、上記カメラ保持手段の自由端に係止ツメ部を設ける一方、上記カメラ付携帯電話機の上記第２のユニットを上記卓上充電器本体に保持するときの上記ヒンジ機構に近い部位に対応する上記卓上充電器本体の部位に第１の係止ヅメ部を設けると共に、上記第２のユニットの自由端に対応する上記卓上充電器本体の部位に第２の係止ツメ部を設け、上記カメラ付携帯電話機を開いて保持するときの上記第１のユニットの自由端を上記保持部材の上記係止ツメ部で係止し、かつ、上記第２のユニットを上記第１の係止ツメ部と上記第２の係止ツメ部とで係止することを特徴としている。
【００１１】
請求項６記載の発明は、請求項１、２、３又は４記載の携帯電話用卓上充電装置に係り、折り畳んだ上記カメラ付携帯電話機の上記第２のユニットを上記卓上充電器本体に保持するときの上記ヒンジ機構に近い部位に対応する上記卓上充電器本体の部位に第１の係止ヅメ部を設けると共に、上記第２のユニットの自由端に対応する上記卓上充電器本体の部位に第２の係止ツメ部を設け、折り畳んだ上記カメラ付携帯電話機の上記第２のユニットを上記第１の係止ツメ部と上記第２の係止ツメ部とで係止することを特徴としている。

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000511

【００１２】
請求項７記載の発明は、請求項１乃至６のいずれか一に記載の携帯電話用卓上充電装置に係り、上記カメラ保持手段は、上記カメラ保持手段が取着される部位が少なくとも直線状に形成されると共に、上記卓上充電器本体に上記カメラ保持手段と略同輪郭で僅かに大きく形成されて折り畳まれて来る上記カメラ保持手段を受け入れる凹部が設けられ、上記カメラ保持手段は、上記カメラ保持手段が取着される部位と該部位に対応する上記凹部の部位との間に介設されたヒンジ機構で回動自在に軸支されていることを特徴としている。
【００１３】
請求項８記載の発明は、請求項１乃至６のいずれか一に記載の携帯電話用卓上充電装置に係り、上記カメラ保持手段は、上記カメラ保持手段が取着される部位が少なくとも直線状に形成されると共に、上記卓上充電器本体に上記カメラ保持手段と略同輪郭で僅かに大きく形成されて折り畳まれて来る上記カメラ保持手段を受け入れる凹部が設けられ、上記カメラ保持手段は、上記カメラ保持手段が取着される部位と該部位に対応する上記凹部の部位との間に介設された軸支部と、上記カメラ保持手段の自由端部側の部位と上記カメラ保持手段が取着される部位から離れる方向の上記卓上本体本体の部位との間に設けられた屈曲式腕とで回動自在に支えられていることを特徴としている。
【００１４】
請求項９記載の発明は、請求項５、６、７又は８記載の携帯電話用卓上充電装置に係り、上記第１の係止ツメ部は１つ、上記第２の係止ツメ部は２つ設けられていることを特徴としている。
【００１５】
請求項１０記載の発明は、請求項５、６、７又は８記載の携帯電話用卓上充電装置に係り、上記第１の係止ツメ部は２つ、上記第２の係止ツメ部は１つ設けられていることを特徴としている。
【００１６】
請求項１１記載の発明は、請求項５乃至１０のいずれか一に記載の携帯電話用卓上充電装置に係り、上記係止ツメ部は、可撓性材で、かつ、可撓構造に形成されていることを特徴としている。
【００１７】
請求項１２記載の発明は、請求項１１記載の携帯電話用卓上充電装置に係り、可撓性材は樹脂であることを特徴としている。
【００１８】
【発明の実施の形態】
以下、図面を参照して、この発明の実施の形態について説明する。説明は、実施例を用いて具体的に説明する。
◇第１実施例
図１は、この発明の第１実施例である卓上充電器の平面図、図２は、同卓上充電器の側面図、図３は、図１の線Ａ－ＡのＡの方向から見た断面図、図４は、同卓上充電器のカメラ保持部の起立前後の状態を図解する図、図５は、カメラ付折り畳み式携帯電話機を開いた状態の平面図、図６は、同カメラ付折り畳み式携帯電話機を開いた状態の側面図、図７は、同カメラ付折り畳み式携帯電話機を開いた状態の背面図、図８は、折り畳んだ状態のカメラ付折り畳み式携帯電話機を卓上充電器に保持させて充電するときの平面図、図９は、折り畳んだ状態のカメラ付折り畳み式携帯電話機を卓上充電器に保持させて充電するときの側面図、図１０は、直角に曲げた状態のカメラ付折り畳み式携帯電話機を卓上充電器に保持させて充電しつつ撮像するときの平面図、図１１は、直角に曲げた状態のカメラ付折り畳み式携帯電話機を卓上充電器に保持させて充電しつつ撮像するときの側面図、図１２は、直角に曲げた状態のカメラ付折り畳み式携帯電話機を卓上充電器に保持させて充電しつつ撮像するときの背面図である。
【００１９】
この実施例の卓上充電器は、開いた状態のカメラ付折り畳み式携帯電話機のバッテリーを

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000512

充電しつつデジタルカメラで（以下、カメラという）撮影し得ると共に、折り畳んだ状態のカメラ付折り畳み式携帯電話機のバッテリーの充電も行い得る卓上充電器に係り、図１に示すように、卓上充電器１０は、卓上充電器本体１２と、卓上充電器本体１２に設けられたヒンジ機構１４と、一方の端部をヒンジ機構１４で回動自在に軸支され他方の端部を自由端とするコの字型のカメラ保持部１６と、カメラ保持部１６をすっぽり収める卓上充電器本体１２の中抜き部１８（図３）と、卓上充電器本体１２の底面と並行に形成されカメラ付折り畳み式携帯電話機５０（以下、携帯電話機５０ともいう）を載せる載置面２０と、卓上充電器本体１２の（ヒンジ機構１４側を後方としての）前方で載置面２０から上方へ垂直に形成された係止ツメ部２２と、ヒンジ機構１４の僅か前方の位置で載置面から上方へ形成され上記後方へ撓み得る係止ツメ部２３と、卓上充電器本体１２の上記後方の一部側面に載置面２０から上方へ垂直に形成された案内部２４と、中抜き部１８の係止ツメ部２３から僅か前方の位置で底面から上方に向け、かつ、コの字型のカメラ保持部１６の間を通り抜けて形成された給電端子対２６と、該給電端子対２６に接続された雌型コネクタ（図示せず）とから成る。

【００２０】

コの字型のカメラ保持部１６の両側の脚部の間に、カメラ付折り畳み式携帯電話機５０のデジタルカメラ６０（後述）が来るように構成されると共に、上記脚部間から背面スクリーンが見えるように構成されている（図１２）。

係止ツメ部２３は、上記後方への外力の印加でその方向へ撓み得る素材からモールディング成形され、また、撓み得る構造に成形されている。素材は、例えば、樹脂である。

また、雌型コネクタは、アダプタを介して商用電源のコネクタに接続される。

【００２１】

カメラ保持部１６を回動自在に軸支するヒンジ機構１４は、カメラ保持部１６を載置面２０から９０だけ回動させ得る構造に構成されている。

したがって、カメラ保持部１６は、卓上充電器１０の載置面２０より底面側の中抜き部１８内に収納された位置と、載置面２０から９０度だけ回動された位置とを取り得る回動機構の１素子として組み立てられている。

そのカメラ保持部１６の自由端には、カメラ付折り畳み式携帯電話機５０を保持する係止ツメ部（ツメ）１７（図３）が形成されている。カメラ保持部１６はその係止ツメ部１７に対してカメラ保持部１６の自由端の方へ外力を印加したとき、その方向へ撓み得る素材からモールディング成形されている。また、係止ツメ部１７は撓み得る構造に成形されている。

【００２２】

載置面２０、係止ツメ部２２及び係止ツメ部２３が、カメラ付折り畳み式携帯電話機５０を折り畳んで載置面２０上に載置されたときの該携帯電話機５０の第２のユニット５４（図５）を保持する第１の保持機構が卓上充電器１０に構成されるほか、この第１の保持機構（載置面２０、係止ツメ部２２及び係止ツメ部２３）は、また、カメラ付折り畳み式携帯電話機５０を開いて載置面２０上に載置しときの携帯電話機５０の第２のユニット５４の保持機構を成すと共に、これに加えて、カメラ保持部１６を直角に起立させたときの係止ツメ部１７が携帯電話機５０の第１のユニット５２を保持する第２の保持機構が、卓上充電器１０に構成されている。

【００２３】

いずれの保持機構において携帯電話機５０が保持されても、卓上充電器１０の給電端子対２６と載置面２０上に載せられたカメラ付折り畳み式携帯電話機５０の受電端子対５８（図７）との位置関係は同一である。

すなわち、その位置関係は、載置面２０上に載せられて保持された携帯電話機５０の受電端子対５８が給電端子対２６に当接し得る位置関係である。この位置関係を取り得るように、給電端子対２６は、載置面２０上方所定の位置であって係止ツメ部２２から所定の距離後方（係止ツメ部２２側を前方といいヒンジ機構１６側を後方という）の位置に配置される一方、携帯電話機５０の受電端子対５８は、上記第１の保持機構に保持され携帯電話

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000513

機５０の自由端から上記所定の距離後方（該自由端側を前方といい携帯電話機５０のヒンジ機構５３（図６）側を後方という）の位置に設けられている。

【００２４】

カメラ付折り畳み式携帯電話機５０は、図５乃至図７に示すように、第２のユニット５４と第１のユニット５２とから成る。第２のユニット５４と第１のユニット５２とは、ヒンジ機構５３によって回動自在に連結されている。

第２のユニット５４には、バッテリー５６及び上述の受電端子対５８が、この発明との関係において設けられている。バッテリー５６の端子対は、受電端子対５８に接続されている。なお、第２のユニット５４の上面には、通常設けられる数字キー及び機能キーがある。

また、第１のユニット５２には、デジタルカメラ６０、正面スクリーン６２及び背面スクリーン６４が、この発明との関係において設けられている。

【００２５】

次に、図１乃至図１２を参照して、この実施例の動作について説明する。

先ず、卓上充電器１０を用いたカメラ付折り畳み式携帯電話機５０の充電のみについて説明する。

卓上充電器１０のカメラ保持部１６の背面（カメラ保持部１６を直角に起立させたとき裏側に位置する面）が載置面２０と同一平面となる位置まで、ヒンジ機構１４を回動中心にして中抜き部１８内の方へカメラ保持部１６を折り込み、卓上充電器１０の載置面（載置面２０及びこれと同一平面上にあるカメラ保持部１６の背面）上に携帯電話機５０を載せ得る状態を作る。中抜き部１８内へカメラ保持部１６が折り畳まれた状態を図９に点線で示す。

【００２６】

このような状態に置かれた卓上充電器１０に携帯電話機５０を保持し、携帯電話機５０のバッテリー５６の充電を行うに際して、携帯電話機５０を折り畳んで卓上充電器１０に携帯電話機５０を保持させる。その保持は、次のようにして行う。

折り畳まれた携帯電話機５０の第２のユニット５４の自由端を係止ツメ部２２に当接させた状態において第２のユニット５４の後端部で係止ツメ部２３を（係止ツメ部２２側を前方として）後方へ撓ませつつ該後端部を係止ツメ部２３に係止させ、係止ツメ部２３のバネ力で第２のユニット５４を係止ツメ部２２と係止ツメ部２３との間に弾性的に保持させる

【００２７】

この保持の完了後に、卓上充電器１０の雌型コネクタに差し込まれたアダプタの雄型コネクタを商用の交流電源の雌型コネクタに差し込む。

上記保持の完了で、卓上充電器１０の給電端子対２６と受電端子対５８とが接触するから、アダプタからバッテリー５６へ形成されている通電路を経てバッテリー５６の充電が行われる。

【００２８】

次に、卓上充電器１０を用いたカメラ付折り畳み式携帯電話機５０の充電とそのカメラによる撮影とを並行して行う場合について説明する。

カメラ保持部１６の背面が卓上充電器１０の載置面２０と同一の平面となっている状態にあるカメラ保持部１６を上記平面から直角になる位置まで、ヒンジ機構１４を回動中心にして中抜き部１８内から起立させ（図４の点線、そして実線）、卓上充電器１０に携帯電話機５０を保持させる状態を卓上充電器１０に作る。

【００２９】

そして、携帯電話機５０のヒンジ機構５３を回動中心にして折り畳んである第１のユニット５２を略直角となる位置まで回動させ、その状態にある携帯電話機５０の第２のユニット５４の自由端を、上記充電の場合と同様にして、係止ツメ部２２に当接させた状態において第２のユニット５４の後端部で係止ツメ部２３を後方へ撓ませつつ該後端部を係止ツメ部２３のバネ力で第２のユニット５４を係止ツメ部２２と係止ツメ部２３との間に弾性

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000514

的に保持させると共に、第１のユニット５２の自由端でカメラ保持部１６の係止ツメ部１７をその先端方向へ撓ませつつ該自由端を係止ツメ部１７に係止させ、係止ツメ部１７のバネ力で第１のユニット５２を充電本体１２と係止ツメ部１７との間に弾性的に保持させる。

【００３０】

この保持の完了後に、卓上充電器１０の雌型コネクタに差し込まれたアダプタの雄型コネクタを商用の交流電源の雌型コネクタに差し込む。

上記保持の完了で、卓上充電器１０の給電端子対２６と受電端子対５８とが接触するから、アダプタからバッテリー５６へ形成されている通電路を経てバッテリー５６の充電が行われる。

この充電を行いつつ、カメラ付折り畳み式携帯電話機５０に装備されているシャッタ機能を作動させるボタンを押してカメラによる必要な撮影を行う。

【００３１】

このように、この実施例の構成によれば、カメラ付折り畳み式携帯電話機のバッテリーの充電とカメラによる撮影とを同一の保持機構で行うことができるから、バッテリーの充電をしながら、カメラによる撮影を行い得、カメラを長時間使用するテレビ会議でもバッテリーを気にすることなく会議に集中することができる。

その際に、卓上充電器から垂直に起立させられたカメラ保持部によって、開いたカメラ付折り畳み式携帯電話機に振れを生じさせることなく、携帯電話機を保持することができる。

したがって、携帯電話機に装備されているカメラのシャッタ機能を作動させるボタンを押す動作によって生ぜしめられるカメラ付折り畳み式携帯電話機のブレを無くすことが可能になり、綺麗な画像を得ることができる。

【００３２】

また、カメラ付折り畳み式携帯電話機を安定して保持することができるから、テレビ会議等において、ハンズフリーでその会議に臨むことができる。

また、カメラ保持部を卓上充電器内に収納し得る構造となっているから、卓上充電器の外観を損なわず、占有スペースも少なく小型化に適している。

【００３３】

◇第２実施例

図１３は、この発明の第２実施例である卓上充電器の側面図である。

この実施例の構成が、第１実施例のそれと大きく異なるところは、カメラ保持部を屈曲式腕で回動自在に保持するようにした点である。

この実施例の卓上充電器１０Ａは、図１３に示すように、カメラ保持部１６を屈曲式腕３０によって回動させてカメラ保持部１６を起立させるようにしたことに特徴がある。

カメラ保持部１６は、卓上充電器１０Ａの本体１２の背面側の部位に軸受２３Ａ（図１３には図示せず）で回動自在に軸支され、卓上充電器１０Ａの本体１２上に垂直に起立した状態と、本体１２の中抜き部１８内に折り畳まれた状態との姿勢を取り得るように構成されている。

【００３４】

屈曲式腕３０は、その第１の腕３２の一方の端部をカメラ保持部１６の自由端側の部位に回動可能に軸支する一方、第２の腕３４の一方の端部を中抜き部１８の係止ツメ部２２に近い部位に回動可能に軸支し、第１の腕３２の他方の端部と第２の腕３４の他方の端部とを軸３６で屈曲自在に連結して構成されている。

この屈曲式腕３０は、図１３ではカメラ保持部１６の片側のみしか示していないが、カメラ保持部１６のもう一方の側にも同一構成のものが設けられている。

そして、屈曲式腕３０は、軸３６で下方に折り曲げられたとき、中抜き部１８内に折り畳まれて収納され得る構造に構成されている。

この構成を除くこの実施例の構成は、第１実施例の構成と同一なので、それらの各部には同一の参照符号を付してその逐一の説明は省略する。

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000515

【００３５】
次に、図１３を参照して、この実施例の動作について説明する。
この実施例においても、カメラ付折り畳み式携帯電話機５０を折り畳んだ状態で、携帯電話機５０のバッテリーの充電だけをすることもできるし、また、携帯電話機５０を開いてカメラで撮影をしながら、バッテリーの充電をすることもできる。
【００３６】
携帯電話機５０のバッテリーの充電だけを行う場合には、第１実施例と同様、カメラ保持部１６を折り畳んで折り畳まれたカメラ保持部１６を充電器１０Ａの本体１２内に収納する。
そして、携帯電話機５０を折り畳み、その携帯電話機５０を充電器１０Ａの本体１２の係止ツメ部２２と係止ツメ部２３との間に保持させる。この保持の完了後に、携帯電話機５０の雌型コネクタに差し込まれたアダプタの雄型コネクタを商用電源の雌型コネクタに差し込む。
上記保持により、携帯電話機５０の受電端子５８は、充電器１０Ａの本体の給電端子２６に接触するから、アダプタから給電端子２６、そして受電端子５８を経て携帯電話機５０のバッテリーに形成されている通電路によってバッテリーの充電が行われる。
【００３７】
携帯電話機５０を開いてカメラで撮影をしながら、バッテリーの充電をする場合には、本体１２の中抜き部１８内に収納されているカメラ保持部１６を軸２３Ａで上方へ回動させて起立させつつ、屈曲式腕３０を伸ばし、カメラ保持部１６が垂直に起立したとき屈曲式腕３０は伸び切ってカメラ保持部１６のそれ以上の回動を止めてその位置にカメラ保持部１６Ａを固定する。
【００３８】
このようにして固定されたカメラ保持部１６及び本体１２への、略直角に開いた折り畳み式携帯電話機５０の保持の仕方は、第１実施例と同様である。
折り畳み式携帯電話機５０を卓上充電器１０Ａに保持した後、携帯電話機５０の雌型コネクタに差し込まれたアダプタの雄型コネクタを商用電源の雌型コネクタに差し込む。
上記保持の完了により、携帯電話機５０の受電端子５８は、充電器１０Ａの本体の給電端子２６に接触するから、アダプタから給電端子２６、そして受電端子５８を経て携帯電話機５０のバッテリーに形成されている通電路によってバッテリーの充電が行われる。
この充電を行いながら、カメラ付折り畳み式携帯電話機５０に装備されているシャッタ機能を作動させるボタンを押してカメラによる必要な撮影を行う。
【００３９】
このように、この実施例の構成によれば、バッテリーの充電をしながら、カメラによる撮影を行い得る。その際に、卓上充電器から屈曲式腕により自由な角度に起立させられたカメラ保持部によって、開いたカメラ付折り畳み式携帯電話機に振れを生じさせることなく、携帯電話機を保持することができる。
したがって、そのような保持姿勢においても、携帯電話機に装備されているカメラのシャッタ機能を作動させるボタンを押す動作によって生ぜしめられるカメラ付折り畳み式携帯電話機のブレを無くすことが可能になり、綺麗な画像を得ることができる。
【００４０】
また、カメラ付折り畳み式携帯電話機の安定した保持により、テレビ会議等において、ハンズフリーでその会議に臨むことができるほか、バッテリーの充電をしながら、カメラによる撮影を行い得ることにより、カメラを長時間使用するテレビ会議でもバッテリーを気にすることなく会議に集中することができる等の効果が得られる。
【００４１】
以上、この発明の実施例を、図面を参照して詳述してきたが、この発明の具体的な構成は、これらの実施例に限られるものではなく、この発明の要旨を逸脱しない範囲の設計の変更等があってもそれらはこの発明に含まれる。
例えば、カメラ保持部１６は、コの字形状のものについて説明したが、デジタルカメラの

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000516

視野を妨げないその他の形状、例えば、係止ツメ部のないU字状のものであってもよい。
したがって、係止ツメ部１７は、単一構造でなく、複数のツメ構造であってもよい。
また、デジタルカメラは、他の形式のカメラであってもよい。
【００４２】
本体１２に形成される係止ツメ部２２、２３は、３点支持構造のものを示しているが、カメラ保持部１６の係止ツメ部１７との関係で１点支持構造であってもよい。
また、係止ツメ部２２、２３は、多点支持構造の例として、係止ツメ部２２と係止ツメ部２３とを入れ替えた構造でもよい。
【００４３】
さらに、上記いずれの実施例も、カメラ付折り畳み式携帯電話機の例であったが、同様な形式のストレートタイプの携帯電話機においてもこの発明を実施し得る。
また、カメラ付折り畳み式携帯電話機以外の携帯情報端末装置のうちの本願で問題とするのと同様の技術的課題を持つ携帯情報端末装置においてもこの発明を実施し得る。
【００４４】
【発明の効果】
以上説明したように、この発明の構成によれば、カメラ保持手段によって第１のユニットを、カメラが撮影可能であると共に看者が背面表示部を視認できる態様で、かつ、直立又は斜めの姿態で、保持するようにしたので、カメラ付携帯電話機は、卓上充電器に安定して保持されているから、カメラのブレの発生を回避できて綺麗な画像を得ることができる。
また、バッテリーの充電を行いつつカメラを動作させることができる。ハンズフリーでテレビ会議に臨むことができる。
【００４５】
また、カメラの長時間の使用時において、バッテリーの消耗を気にしなくて済み、意図している作業に集中することができる。
カメラ保持手段を卓上充電器本体に折り畳み得る構造となっているから、卓上充電器の外観を損なわず、占有スペースも少なく小型化に適している。
また、屈曲式腕をカメラ保持手段の支持に用いる場合には、カメラ保持手段を任意の姿勢にしてカメラ付携帯電話機のカメラに任意の角度での撮像を可能にする。
【図面の簡単な説明】
【図１】この発明の第１実施例である卓上充電器の平面図である。
【図２】同卓上充電器の側面図である。
【図３】同卓上充電器の図１の線Ａ－ＡのＡの方向から見た断面図である。
【図４】同卓上充電器のカメラ保持部の起立前後の状態を図解する図である。
【図５】カメラ付折り畳み式携帯電話機を開いた状態の平面図である。
【図６】同カメラ付折り畳み式携帯電話機を開いた状態の側面図である。
【図７】同カメラ付折り畳み式携帯電話機を開いた状態の背面図である。
【図８】折り畳んだ状態のカメラ付折り畳み式携帯電話機を卓上充電器に保持させて充電するときの平面図である。
【図９】折り畳んだ状態のカメラ付折り畳み式携帯電話機を卓上充電器に保持させて充電するときの側面図である。
【図１０】直角に曲げた状態のカメラ付折り畳み式携帯電話機を卓上充電器に保持させて充電しつつ撮像するときの平面図である。
【図１１】直角に曲げた状態のカメラ付折り畳み式携帯電話機を卓上充電器に保持させて充電しつつ撮像するときの側面図である。
【図１２】直角に曲げた状態のカメラ付折り畳み式携帯電話機を卓上充電器に保持させて充電しつつ撮像するときの側面図である。
【図１３】この発明の第２実施例の卓上充電器の側面図である。
【図１４】従来形式の卓上充電器においてカメラ付折り畳み式携帯電話機のバッテリーを充電するときの側面図である。

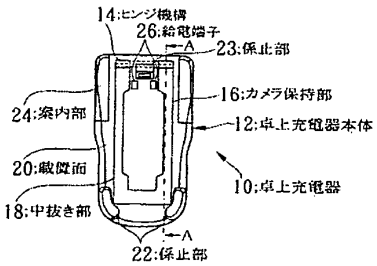
Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000517

【図１５】従来形式の卓上充電器においてカメラ付折り畳み式携帯電話機を保持して撮像するときの側面図である。

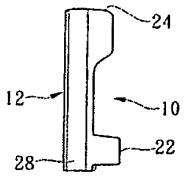
【符号の説明】

１０、１０Ａ　　卓上充電器（携帯電話用卓上充電装置）
１２　　卓上充電器本体
１４　　ヒンジ機構
１６　　カメラ保持部（カメラ支持手段）
１７　　係止ツメ部
１８　　中抜き部（凹部）
２０　　載置面
２２　　係止ツメ部
２３　　係止ツメ部
２６　　給電端子
５０　　カメラ付折り畳み式携帯電話機（カメラ付携帯電話機）
５２　　第１のユニット
５３　　ヒンジ機構
５４　　第２のユニット
５６　　バッテリー
５８　　受電端子
６０　　デジタルカメラ
６２　　正面スクリーン
６４　　背面スクリーン（背面表示部）

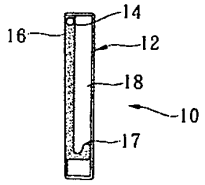
【図1】



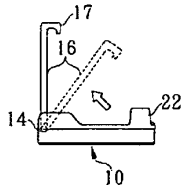
【図2】



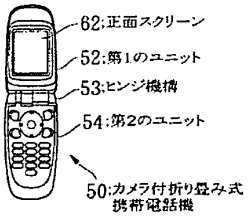
【図3】



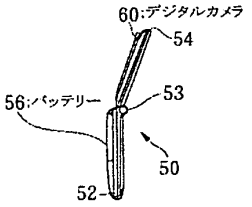
【図4】



【図5】

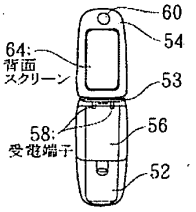


【図6】

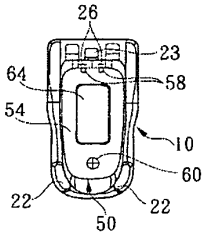


Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000518

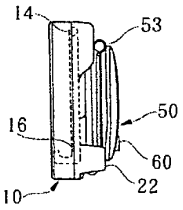
【図7】



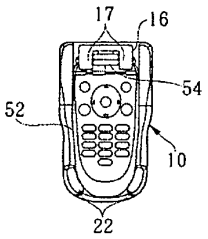
【図8】



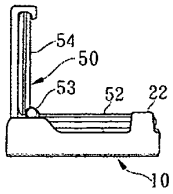
【図9】



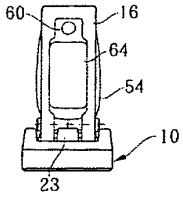
【図10】



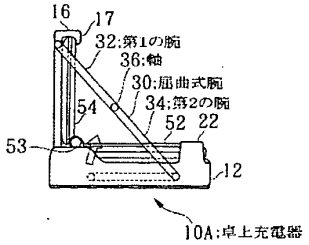
【図11】



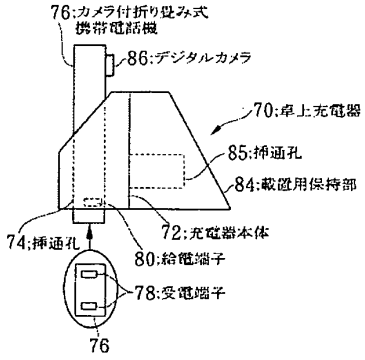
【図12】



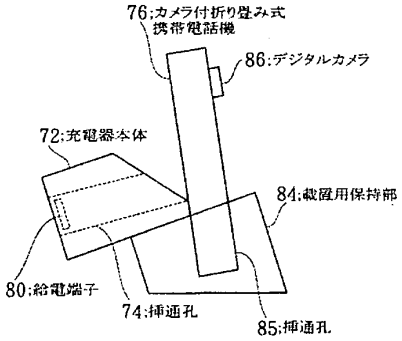
【図13】



【図14】



【図15】



Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000519

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000520

2004-222193

(11)Publication number 2004-222193
(43)Date of publication of application 05.08.2004
(51)Int.Cl.
H04M 1/02
H04N 5/225

(21)Application number 2003-010071
(22)Date of filing 17.01.2003
(71)Applicant MITSUBISHI ELECTRIC CORP
(72)Inventor TAMAKI YASUYUKI
TACHIKAWA NORIYA
INUBUSHI TOSHIYA

(54)PORTABLE TELEPHONE SET

(57)Abstract

PROBLEM TO BE SOLVED: To provide a portable telephone set that improves a camera shake problem at the time of image picking up while a display side housing and an operation side housing are folded in two and to provide an image pickup method.

SOLUTION: This portable telephone set is provided with the display side housing 1 having an information display part, the operation side housing 2 having a key operating part, a digital camera module 4 having an image pickup lens 41, a secondary battery pack 22 and a hinge 3 that can fold the display side housing 1 and the operation side housing 2 in two. The image pickup lens 41 and the secondary battery pack 22 are provided in the operation side housing 2. In addition, the secondary battery pack 22 is provided on the hinge 3 side in the lengthwise direction of the operation side housing 2 and the image pickup lens 41 is provided on the opposite side from the hinge 3 across the secondary battery pack 22, respectively.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000521

CLAIMS

[Claim(s)]

[Claim 1]

The display side housing which has information display sections, the operation side housing which has a key operation section, an imaging lens, It has a coupling device which enables double fold with a cell for a cellular phone drive and the above-mentioned display side housing, and the above-mentioned operation side housing, A cellular phone, wherein the above-mentioned imaging lens and the above-mentioned cell for a cellular phone drive are provided by the above-mentioned operation side housing and the above-mentioned cell for a cellular phone drive is provided between the above-mentioned imaging lens and the above-mentioned coupling device.

[Claim 2]

The cellular phone according to claim 1, wherein it has an image sensor which converts incident light from the above-mentioned imaging lens to an electrical signal and the above-mentioned cell for a cellular phone drive is provided between the above-mentioned image sensor and the above-mentioned coupling device.

[Claim 3]

The cellular phone according to claim 1 or 2, wherein the above-mentioned cell for a cellular phone drive is provided so that the center of gravity may be placed at the above-mentioned coupling device side rather than the longitudinal direction center of the above-mentioned operation side housing.

[Claim 4]

Claim 1, wherein a shutter release is provided by longitudinal direction side surface of the above-mentioned operation side housing - a cellular phone of an any 1 item description of Claim 3.

[Claim 5]

The cellular phone according to claim 4, wherein the above-mentioned shutter release is provided by position which can be depressed by an index finger of the hand which ****ed when the above-mentioned coupling device side of the above-mentioned cellular phone is ****ed.

[Claim 6]

Claim 1 provided with an auxiliary display which displays an object image in the above-mentioned image sensor on an outer surface of the above-mentioned display side housing in a two folded state of the above-mentioned display side housing and the above-mentioned operation side housing - a cellular phone of an any 1 item description of Claim 5.

[Claim 7]

The cellular phone according to claim 1 provided with a lens protector which protects an exposed surface of the above-mentioned imaging lens mechanically.

[Claim 8]

The cellular phone according to claim 1 having a string hole which lets a string for holding the above-mentioned cellular phone near the above-mentioned coupling device of the above-mentioned operation side housing or the above-mentioned display side housing pass.

[Claim 9]

The cellular phone according to claim 5, wherein an organic polymer layer which makes grip easy is given to the surface of a part on the above-mentioned coupling device side which ****s.

DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention]

The present invention relates to the cellular phone provided with the imaging device, and relates to a cellular phone suitable for obtaining good imaging especially.

[0002]

[Description of the Prior Art]

The display side housing which has information display sections, the operation side housing which has a key operation section, an imaging device, The cell for a cellular phone drive, and the cellular phone provided with the coupling device which enables double fold with the above-mentioned display side housing and the above-mentioned operation side housing, And it is conventionally publicly known to provide the above-mentioned imaging device and the above-mentioned cell for a cellular phone drive in the above-mentioned operation side housing in the cellular phone concerned from the Patent document 1 which carries out a postscript.

[0003]

[Patent document 1]

JP,2002-300237,A (Claim 1, the paragraph number 3 - the paragraph watch 32, Fig.1)

[0004]

The conventional cellular phone with an imaging device is the state which opened the display side housing and the operation side housing when imaging using it. That is, it is designed to grasp the end of the operation side housing in the state where it does not fold in half, and push a shutter release, for this reason the imaging device and the shutter release have been installed near the above-mentioned coupling device.

[0005]

By the way, in recently, the demand which has advanced features the imaging device of a cellular phone further, and obtains the high quality imaging with color definition or high resolution is increasing. If it carries out from the demand of this field, since it is easy to produce camera shake when pushing a shutter release, by the imaging which ****s the end of the cellular phone extended long and slender in the above-mentioned state where it opened, there is a problem that imaging with high color definition is difficult to get. The pixel number of the image sensor used for the imaging device of the conventional cellular phone was a thing of the low pixel number of the 300,000 Bichsel degree, since it was not high-resolution from the first, camera shake at the time of imaging was not made into the problem like **, but. If the highly efficient imaging device which has an image sensor of 500,000 Bichsel or the number of high pixels beyond it comes to be mounted, the camera shake at the time of imaging will harness the high performance of this imaging device,

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000524

and will pose a profitable big problem which is not.

[0006]

[Problem to be solved by the invention]

The present invention makes it problem to provide the cellular phone with which the problem of the camera shake at the time of imaging has been solved in view of the problem of ** in a prior art, and the trend which is going to make highly efficient further the imaging device of the cellular phone in recently.

[0007]

[Means for solving problem]

The cellular phones of the present invention are the display side housing which has information display sections, and the operation side housing which has a key operation section. It has a coupling device which enables double fold with an imaging lens, the cell for a cellular phone drive and the above-mentioned display side housing, and the above-mentioned operation side housing, The above-mentioned imaging lens and the above-mentioned cell for a cellular phone drive are provided by the above-mentioned operation side housing, and the above-mentioned cell for a cellular phone drive is provided between the above-mentioned imaging lens and the above-mentioned coupling device.

[0008]

[Mode for carrying out the invention]

When the part or display shown in the early figure of the description below is shown by the following figure, the same code or display may be attached mutually and a description may be omitted in the following figure.

[0009]

Embodiment 1.

Fig.1 - Fig.4 are what describes the embodiment 1 in the cellular phone of the present invention, The perspective view seen from the lens side in the state where Fig.1 folded the cellular phone concerned in half, the perspective view in the state where Fig.2 ****ed the double fold object of Fig.1 by people's hand, the outline cross sectional view where Fig.3 was along the III-III line of Fig.1, and Fig.4 are the outline cross sectional views which were along the IV-IV line of Fig.1.

[0010]

As the principal part, including the hinge 3 as an example of the display side housing 1, the operation side housing 2, and the aforementioned coupling device, as for the operation side housing 2 and the display side housing 1, in Fig.1 - Fig.4, the cellular phone is connected by the hinges 3 so that double fold is possible. The display side housing 1 equips the inner surface with the auxiliary display 12 which has a function which displays an object image [in / for the information display sections 11 / the after-mentioned digital camera module 4] on an outer surface,

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000525

respectively. The operation side housing 2 in the housing, The I/O connector 21 and the digital camera module 4 which are used as a connector of an external interface from the left-hand side on Fig.3 and the figure of Fig.4, the secondary battery pack 22 as an example of the aforementioned cell for a cellular phone drive, and the transceiver antennae 23 are built in. The secondary battery pack 22 is provided so that the center of gravity may be placed at the hinge 3 side rather than the longitudinal direction center of the operation side housing 2. Although a plurality of cells other than the secondary battery pack 22, such as an object for backup, are provided and things are also in a cellular phone, among the cells provided in a cellular phone, as for the secondary battery pack 22, size or weight is most largely used as a main power supply.

[0011]

The alternate long and short dash line 31 in Fig.3 shows the hinge shaft position of the hinge 3. The operation side housing 2 has the key operation section 24 in the information display sections 11 and the inner surface which opposes, and has the imaging imaging lens 41 of the digital camera module 4, and the sound hole 5 of a loudspeaker on the outer surface. The solid line 25 in Fig.1 and Fig.2 shows the cell sacrifice line for the secondary battery pack 22.

[0012]

The digital camera module 4 contains the shutter release 43 provided on the side surface of the imaging lens 41, the camera body 42, and the operation side housing 2. The camera body 42 is provided with the image sensor which converts the incident light from the imaging lens 41 to an electrical signal, and as the image sensor concerned, Although a pixel number may be a thing of the conventional use which is a 300,000 Bichsel degree, especially the thing that the pixel number equipped with the image sensor of a 1-2 mega Bichsel degree or the number of high pixels beyond it, for example, CCD, 500,000 or more Bichsel of C-MOS, etc. especially is preferable. Although the shutter release 43 is provided on the side surface of operation side ** 2 as above-mentioned, As shown in Fig.2, when the end which contains the hinge 3 or the hinge 3 where the cellular phone concerned is folded in half is ****ed and the button 43 concerned is pushed, It is preferable that the point of people's index finger is provided between the positions of the average length people's index finger from the position it becomes a top the button [position] 43 concerned reasonable, i.e., the hinge 3, and the hinge 3.

[0013]

When imaging using the cellular phone of embodiment 1, fold in half the display side housing 1 and the operation side housing 2 first, and it changes into the state of Fig.1, Subsequently, the near part, especially the end of a cellular phone folded in half are ****ed with the hinge 3 or the hinge 3 so that the imaging lens 41 of the cellular phone folded in half as shown in Fig.2 may turn to an object. The code 6 shows this grip part. In the state, since the imaging person can check the object image displayed on the auxiliary display 12, the position and angle of the above-mentioned cellular phone

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000526

are changed if needed, a desired object image is displayed on the auxiliary display 12, and, subsequently he pushes the shutter release 43.

[0014]

If the end concerned is ****ed since the cellular phone of embodiment 1 does not have what combines the ends of the display side housing 1 in the side which does not have the hinge 3, and the operation side housing 2 where the display side housing 1 and the operation side housing 2 are folded in half, it is small between the ends of both housings, but. There is a problem which carries out relative displacement, and becomes unstable [grip], for this reason camera-shake or camera shake tends to produce when imaging. On the other hand, in a side with the hinge 3, since there is no problem of the relative displacement between the ends of both the above-mentioned housings, the grip in the grip part 6 is stably, for this reason neither camera-shake nor camera shake produces it easily when imaging. Since the digital camera module 4 and its imaging lens 41 are provided by the opposite side of the hinge 3 on both sides of the secondary battery pack 22 at the hinge 3 side in the longitudinal direction of the operation side housing 2, respectively on the other hand, the secondary battery pack 22, Even if it ****s the hinge 3 side when imaging, there is no problem of 41 imaging lens closed with an imaging person's hand, As compared with a yet another component, the secondary battery pack 22 of the amount of Takashige to the hinge 3 side, Since weight balance becomes good and it becomes easy to have, since it is installed in the grip side of a cellular phone if it puts in another way, and also the shutter release 43 is in the hinge 3 side, there is an advantage which the camera shake at the time of pushing the shutter release 43 does not produce from these points easily. As a result, even if it uses the thing provided with the image sensor of the above-mentioned number of high pixels as the digital camera module 4, that performance is utilized and the good imaging with color definition or markedly high resolution can be obtained as compared with the former.

[0015]

In embodiment 1, although the transceiver antennae 23 are installed in the opposite side on the other hand at the hinge 3 side as for the I/O connector 21, the both concerned are replaced and, as for the I/O connector 21, the transceiver antennae 23 may be installed in the opposite side at the hinge 3 side. A following embodiment is also the same.

[0016]

Embodiment 2.

Fig.5 is a perspective view including the partial fracture figure in the state where describe the embodiment 2 in the cellular phone of the present invention, and it folded the cellular phone concerned in half. In Fig.5, the organic polymer layer 61 is provided by the surface of the grip part 6 of a cellular phone, embodiment 2 differs from the aforementioned embodiment 1 in the point of having the organic polymer layer 61, and other composition is the same. Where the display side

housing 1 and the above-mentioned operation side housing 2 are folded in half, when ****ing and imaging the grip part 6, the organic polymer layer 61 makes the operation which makes easy grip of the grip part 6 by an imaging person, and there is an effect which lessens further camera shake at the time of pushing shutter release 43.

[0017]

The organic polymer layer 61 should just be then formed with the organic high polymer which can play this operation. As the above-mentioned organic high polymer, it is a rubber elastomer in which appropriate nonskid nature is shown specifically. For example, since it excels in the mechanical toughness of a coat, heat resistance, oil resistance, abrasion resistance, etc. while various kinds of synthetic rubbers, cross-bridging or vulcanizate of crude rubber, or various kinds of thermoplastic elastomer is illustrated and urethane system elastomers have a good feel feel above all, it is especially preferable.

[0018]

Embodiment 3.

Fig.6 is a perspective view in the state where describe the embodiment 3 in the cellular phone of the present invention, and it folded the cellular phone concerned in half. In Fig.6, the digital camera module 4 is provided with the lens protector 44 provided by the outer surface of the operation side housing 2, and differs in embodiment 3 from the aforementioned embodiment 1 in the point of having the lens protector 44, and its other composition is the same. The lens protector 44 contains the accommodation part 441 which stores the lens cover 442 which can move to right and left directions freely and the covering 442 concerned of the arrow A of Fig.6. When not using the digital camera module 4, The lens cover 442 is made to move leftward [of the arrow A], and is an exposed surface of the imaging lens 41. Namely, when making the function which protects it mechanically by covering entire outside surfaces and using the digital camera module 4, it is made to move rightward [of the arrow A] and the digital camera module 4 is changed into the state which can be worked. The movement of the above-mentioned right and left directions of the lens cover 442 should just adopt well-known, a publicly known opening and closing mechanism, or a moving mechanism in the field.

[0019]

in embodiment 3, since the imaging lens 41 has turned to the surface where the secondary battery pack 22 was mounted, decline the imaging lens 41 -- it may carry out [it may be alike and] and place. Then, it can prevent with the crack of the imaging lens 41 concerned by being installed so that the lens cover 442 may cover the outer surface of the imaging lens 41, or can prevent adhesion of garbage, dust, a fingerprint, etc. The lens cover 442 may be a thing of the internal-layer type opened and closed in the position which entered into the inside for a while from the outer surface of the operation side housing 2.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000528

[0020]

Embodiment 4.

Fig.7 is a perspective view in the state where describe the embodiment 4 in the cellular phone of the present invention, and it folded the cellular phone concerned in half. In Fig.7, the operation side housing 2 has the string hole 7 which lets the strap as an example of the aforementioned string for holding a cellular phone pass near the hinge 3, and differs in embodiment 4 in the point of having the string hole 7 with the aforementioned embodiment 1, and its other composition is the same.

[0021]

The string hole 7 which lets a strap pass is arranged at the hinge 3 side of the opposite side of the imaging lens 41, and a lens hides with a strap at the time of imaging, or it is carried out as [become / the obstacle of imaging]. When it images through an arm by furthermore arranging the string hole 7 near the hinge 3 to a strap at the time of imaging, there is no problem from which a cellular phone is slippery and falls.

[0022]

[Effect of the Invention]

The cellular phone of the present invention is the display side housing which has information display sections as described above. It had the coupling device which enables double fold with the operation side housing and imaging lens which have a key operation section, the cell for a cellular phone drive and the above-mentioned display side housing, and the above-mentioned operation side housing, and the above-mentioned imaging lens and the above-mentioned cell for a cellular phone drive were provided by the above-mentioned operation side housing. For this reason, on the occasion of imaging in the state where the display side housing and the operation side housing were folded in half, it is hard to produce camera shake. Since the cell for a cellular phone drive of the amount of Takashige is installed in the grip side of a cellular phone, weight balance becomes good and it becomes easy to have, and there is an advantage which the camera-shake at the time of pushing a shutter release (camera shake) does not produce easily. As a result, even if it uses the thing provided with the image sensor of the number of high pixels as an imaging device, that performance is utilized and markedly high-resolution imaging can be obtained as compared with the former.

[Brief Description of the Drawings]

[Drawing 1]The perspective view in the state where the cellular phone concerned of the embodiment 1 in the cellular phone of the present invention was folded in half.

[Drawing 2]The perspective view in the state where the double fold object of Fig.1 was ****ed by people's hand.

[Drawing 3]The outline cross sectional view which was along the III-III line of Fig.1.

[Drawing 4]The outline cross sectional view which was along the IV-IV line of Fig.1.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000529

[Drawing 5]A perspective view including the partial fracture figure in the state where the cellular phone concerned of the embodiment 2 in the cellular phone of the present invention was folded in half.

[Drawing 6]The perspective view in the state where the cellular phone concerned of the embodiment 3 in the cellular phone of the present invention was folded in half.

[Drawing 7]The perspective view in the state where the cellular phone concerned of the embodiment 4 in the cellular phone of the present invention was folded in half.

[Explanations of letters or numerals]

1 The display side housing and 11 Information display sections and 12 An auxiliary display and 2 The operation side housing,

21 An I/O connector, 22 secondary battery packs, 23 transceiver antennae,

24 A key operation section and 3 A hinge, 31 hinge-shaft position,

4 A digital camera module, 41 imaging lenses, 42 camera bodies,

43 A shutter release, 44 lens protectors, and 441 Accommodation part,

442 A lens cover and 5 A sound hole and 6 A grip part and 61 Organic polymer layer,

7 String hole.

(19)日本国特許庁(JP)　(12)公開特許公報(A)　(11)特許出願公開番号
特開2004-312300
(P2004-312300A)
(43)公開日　平成16年11月4日(2004.11.4)

(51)Int.Cl.[7]		F I			テーマコード（参考）
H04M	1/11	H04M	1/11	Z	5K023
H04B	7/26	H04M	1/725		5K027
H04M	1/725	H04B	7/26	Y	5K067

審査請求 未請求　請求項の数 12　OL　（全 12 頁）

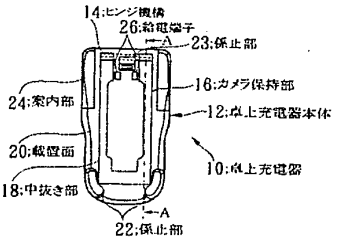
(21)出願番号　特願2003-102098(P2003-102098)
(22)出願日　平成15年4月4日(2003.4.4)

(71)出願人　000004237
日本電気株式会社
東京都港区芝五丁目７番１号
(74)代理人　100099830
弁理士　西村　征生
(72)発明者　綿貫　隆
東京都港区芝五丁目７番１号　日本電気株式会社内

Fターム(参考)　5K023 AA07 KK04 LL04 MM00
5K027 AA11 BB01 GG04
5K067 AA34 BB04 EE02 KK06 KK17

(54)【発明の名称】携帯電話用卓上充電装置

(57)【要約】
【課題】バッテリーの充電と同時にカメラによる撮影を行う。
【解決手段】カメラ保持部１６をヒンジ機構１４で回動し、起立させて固定する。カメラ付折り畳み式携帯電話機を本体１２の主筐体の自由端を係止ツメ部２２に当接しつつ主筐体の後端を係止ツメ部２３に当て係止ツメ部２３を後方に撓ませ、主筐体の後端を係止ツメ部２３で係止するのと同時的に、携帯電話機の副筐体の自由端をカメラ保持部１６の係止ツメ部に当てこれを自由端方向に撓ませ副筐体の自由端を係止ツメ部に係止して携帯電話機を本体１２とカメラ保持部１６で保持する。このとき、携帯電話機の受電端子は本体１２の給電端子に当接してバッテリーの充電をする。充電しつつ携帯電話機のカメラによる撮影を行う。
【選択図】　図1



Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000531

【特許請求の範囲】
【請求項1】
第１のユニットにカメラ及び背面表示部が搭載され、第２のユニットにバッテリーが搭載され、前記第１のユニットと前記第２のユニットとが、ヒンジ機構を介して、折り畳み可能に結合されたカメラ付携帯電話機を充電するための携帯電話用卓上充電装置であって、前記第２のユニットを搭載装着した状態で前記カメラ付携帯電話機を充電させるための卓上充電器本体と、
前記第１のユニットを、前記カメラが撮影可能であると共に看者が前記背面表示部を視認できる態様で、かつ、直立又は斜めの姿態で、保持するためのカメラ保持手段とを備えてなることを特徴とする携帯電話用卓上充電装置。
【請求項2】
前記カメラ付携帯電話機の前記第２のユニットが前記卓上充電器本体に保持されるときの前記カメラ付携帯電話機の受電端子に対応する前記卓上充電器本体の部位に給電端子が設けられ、前記カメラ付携帯電話機を開いたときの前記第１のユニットが前記カメラ保持手段で保持されると共に、前記第２のユニットが前記卓上充電器本体で保持されるとき、前記カメラ付携帯電話機の受電端子が前記給電端子に当接するように構成されたことを特徴とする請求項１記載の携帯電話用卓上充電装置。
【請求項3】
前記カメラ付携帯電話機の前記第２のユニットが前記卓上充電器本体に保持されるときの前記カメラ付携帯電話機の受電端子に対応する前記卓上充電器本体の部位に給電端子が設けられ、折り畳んだ前記カメラ付携帯電話機の前記第２のユニットが前記卓上充電器本体で保持されるとき、前記カメ付携帯電話機の受電端子が前記給電端子に当接するように構成されたことを特徴とする請求項１記載の携帯電話用卓上充電装置。
【請求項4】
前記給電端子は、前記カメラ保持手段が前記卓上充電器本体に取着される部位に近い部位に設けられたことを特徴とする請求項２又は３記載の携帯電話用卓上充電装置。
【請求項5】
前記カメラ保持手段の自由端に係止ツメ部を設ける一方、前記カメラ付携帯電話機の前記第２のユニットを前記卓上充電器本体に保持するときの前記ヒンジ機構に近い部位に対応する前記卓上充電器本体の部位に第１の係止ヅメ部を設けると共に、前記第２のユニットの自由端に対応する前記卓上充電器本体の部位に第２の係止ツメ部を設け、前記カメラ付携帯電話機を開いて保持するときの前記第１のユニットの自由端を前記保持部材の前記係止ツメ部で係止し、かつ、前記第２のユニットを前記第１の係止ツメ部と前記第２の係止ツメ部とで係止することを特徴とする請求項１、２、３又は４記載の携帯電話用卓上充電装置。
【請求項6】
折り畳んだ前記カメラ付携帯電話機の前記第２のユニットを前記卓上充電器本体に保持するときの前記ヒンジ機構に近い部位に対応する前記卓上充電器本体の部位に第１の係止ヅメ部を設けると共に、前記第２のユニットの自由端に対応する前記卓上充電器本体の部位に第２の係止ツメ部を設け、折り畳んだ前記カメラ付携帯電話機の前記第２のユニットを前記第１の係止ツメ部と前記第２の係止ツメ部とで係止することを特徴とする請求項１、２、３又は４記載の携帯電話用卓上充電装置。
【請求項7】
前記カメラ保持手段は、前記カメラ保持手段が取着される部位が少なくとも直線状に形成されると共に、前記卓上充電器本体に前記カメラ保持手段と略同輪郭で僅かに大きく形成されて折り畳まれて来る前記カメラ保持手段を受け入れる凹部が設けられ、前記カメラ保持手段は、前記カメラ保持手段が取着される部位と該部位に対応する前記凹部の部位との間に介設されたヒンジ機構で回動自在に軸支されていることを特徴とする請求項１乃至６のいずれか一に記載の携帯電話用卓上充電装置。
【請求項8】

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000532

前記カメラ保持手段は、前記カメラ保持手段が取着される部位が少なくとも直線状に形成されると共に、前記卓上充電器本体に前記カメラ保持手段と略同輪郭で僅かに大きく形成されて折り畳まれて来る前記カメラ保持手段を受け入れる凹部が設けられ、前記カメラ保持手段は、前記カメラ保持手段が取着される部位と該部位に対応する前記凹部の部位との間に介設された軸支部と、前記カメラ保持手段の自由端部側の部位と前記カメラ保持手段が取着される部位から離れる方向の前記卓上本体本体の部位との間に設けられた屈曲式腕とで回動自在に支えられていることを特徴とする請求項１乃至６のいずれか一に記載の携帯電話用卓上充電装置。

【請求項9】

前記第１の係止ツメ部は１つ、前記第２の係止ツメ部は２つ設けられていることを特徴とする請求項５、６、７又は８記載の携帯電話用卓上充電装置。

【請求項10】

前記第１の係止ツメ部は２つ、前記第２の係止ツメ部は１つ設けられていることを特徴とする請求項５、６、７又は８記載の携帯電話用卓上充電装置。

【請求項11】

前記係止ツメ部は、可撓性材で、かつ、可撓構造に形成されていることを特徴とする請求項５乃至１０のいずれか一に記載の携帯電話用卓上充電装置。

【請求項12】

可撓性材は樹脂であることを特徴とする請求項１１記載の携帯電話用卓上充電装置。

【発明の詳細な説明】

【０００１】

【発明の属する技術分野】

この発明は、携帯電話用卓上充電装置に関し、詳しくは卓上充電器本体からカメラ保持手段を直立又は斜めの姿態でカメラ付携帯電話機のバッテリーを充電しながらデジタルカメラで撮像する携帯電話用卓上充電装置に関する。

【０００２】

【従来の技術】

従来においても、卓上充電器でカメラ付折り畳み式携帯電話機を充電するほか、その卓上充電器でカメラ付折り畳み式携帯電話機を安定に保持してカメラで撮像を行う卓上充電器が知られている。その例は特開２００２－２６１９０４号公報に記載されている。

【０００３】

同公報に記載される技術は、図１４に示すように、卓上充電器７０の充電器本体７２の挿通孔７４にカメラ付折り畳み式携帯電話機７６を挿入し、カメラ付折り畳み式携帯電話機７６の受電端子７８を充電器本体７２の給電端子８０に当接させてカメラ付折り畳み式携帯電話機７６のバッテリー（図示せず）を充電するほか、図１５に示すように、カメラ付折り畳み式携帯電話機７６の載置用保持部８４を回動させて延出した載置用保持部８４の挿通孔８５にカメラ付折り畳み式携帯電話機７６を挿入して保持し、そのカメラ付折り畳み式携帯電話機７６のデジタルカメラ８６で所要の撮像を行うものである。

したがって、この公報に記載される技術において、単一の卓上充電器で充電と撮像をすることはできる。

【０００４】

【発明が解決しようとする課題】

しかしながら、上記公報に記載される技術においては、充電時の保持部と撮像時の保持部との構造が異なっている。

つまり、充電時の保持部に形成される充電系は、撮像時には全く継受され得ない構造となっている。

したがって、上記充電系は、カメラ付折り畳み式携帯電話機のデジタルカメラで撮像しながら、そのバッテリーを充電することは不可能である。

このことは、携帯電話機が高性能になると共に消費電力も増大して来ている現状においては上記卓上充電器は用途に制限があり、特にテレビ会議等でカメラを長時間使用する用途

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000533

には適用し難い致命傷となる。

【０００５】

この発明は、上述の事情に鑑みてなされたもので、卓上充電器本体からカメラ保持手段を直立又は斜めの姿態でカメラ付携帯電話機のバッテリーを充電しながらデジタルカメラでの撮像動作を継続的に生じさせ得る携帯電話用卓上充電装置を提供することを目的としている。

【０００６】

【課題を解決するための手段】

上記課題を解決するために、請求項１記載の発明は、第１のユニットにカメラ及び背面表示部が搭載され、第２のユニットにバッテリーが搭載され、上記第１のユニットと上記第２のユニットとが、ヒンジ機構を介して、折り畳み可能に結合されたカメラ付携帯電話機を充電するための携帯電話用卓上充電装置に係り、上記第２のユニットを搭載装着した状態で上記カメラ付携帯電話機を充電させるための卓上充電器本体と、上記第１のユニットを、上記カメラが撮影可能であると共に看者が上記背面表示部を視認できる態様で、かつ、直立又は斜めの姿態で、保持するためのカメラ保持手段とを備えてなることを特徴としている。

【０００７】

請求項２記載の発明は、請求項１記載の携帯電話用卓上充電装置に係り、上記カメラ付携帯電話機の上記第２のユニットが上記卓上充電器本体に保持されるときの上記カメラ付携帯電話機の受電端子に対応する上記卓上充電器本体の部位に給電端子が設けられ、上記カメラ付携帯電話機を開いたときの上記第１のユニットが上記カメラ保持手段で保持されると共に、上記第２のユニットが上記卓上充電器本体で保持されるとき、上記カメラ付携帯電話機の受電端子が上記給電端子に当接するように構成されたことを特徴としている。

【０００８】

請求項３記載の発明は、請求項１記載の携帯電話用卓上充電装置に係り、上記カメラ付携帯電話機の上記第２のユニットが上記卓上充電器本体に保持されるときの上記カメラ付携帯電話機の受電端子に対応する上記卓上充電器本体の部位に給電端子が設けられ、折り畳んだ上記カメラ付携帯電話機の上記第２のユニットが上記卓上充電器本体で保持されるとき、上記カメ付携帯電話機の受電端子が上記給電端子に当接するように構成されたことを特徴としている。

【０００９】

請求項４記載の発明は、請求項２又は３記載の携帯電話用卓上充電装置に係り、上記給電端子は、上記カメラ保持手段が上記卓上充電器本体に取着される部位に近い部位に設けられたことを特徴としている。

【００１０】

請求項５記載の発明は、請求項１、２、３又は４記載の携帯電話用卓上充電装置に係り、上記カメラ保持手段の自由端に係止ツメ部を設ける一方、上記カメラ付携帯電話機の上記第２のユニットを上記卓上充電器本体に保持するときの上記ヒンジ機構に近い部位に対応する上記卓上充電器本体の部位に第１の係止ヅメ部を設けると共に、上記第２のユニットの自由端に対応する上記卓上充電器本体の部位に第２の係止ツメ部を設け、上記カメラ付携帯電話機を開いて保持するときの上記第１のユニットの自由端を上記保持部材の上記係止ツメ部で係止し、かつ、上記第２のユニットを上記第１の係止ツメ部と上記第２の係止ツメ部とで係止することを特徴としている。

【００１１】

請求項６記載の発明は、請求項１、２、３又は４記載の携帯電話用卓上充電装置に係り、折り畳んだ上記カメラ付携帯電話機の上記第２のユニットを上記卓上充電器本体に保持するときの上記ヒンジ機構に近い部位に対応する上記卓上充電器本体の部位に第１の係止ヅメ部を設けると共に、上記第２のユニットの自由端に対応する上記卓上充電器本体の部位に第２の係止ツメ部を設け、折り畳んだ上記カメラ付携帯電話機の上記第２のユニットを上記第１の係止ツメ部と上記第２の係止ツメ部とで係止することを特徴としている。

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000534

【００１２】
請求項７記載の発明は、請求項１乃至６のいずれか一に記載の携帯電話用卓上充電装置に係り、上記カメラ保持手段は、上記カメラ保持手段が取着される部位が少なくとも直線状に形成されると共に、上記卓上充電器本体に上記カメラ保持手段と略同輪郭で僅かに大きく形成されて折り畳まれて来る上記カメラ保持手段を受け入れる凹部が設けられ、上記カメラ保持手段は、上記カメラ保持手段が取着される部位と該部位に対応する上記凹部の部位との間に介設されたヒンジ機構で回動自在に軸支されていることを特徴としている。
【００１３】
請求項８記載の発明は、請求項１乃至６のいずれか一に記載の携帯電話用卓上充電装置に係り、上記カメラ保持手段は、上記カメラ保持手段が取着される部位が少なくとも直線状に形成されると共に、上記卓上充電器本体に上記カメラ保持手段と略同輪郭で僅かに大きく形成されて折り畳まれて来る上記カメラ保持手段を受け入れる凹部が設けられ、上記カメラ保持手段は、上記カメラ保持手段が取着される部位と該部位に対応する上記凹部の部位との間に介設された軸支部と、上記カメラ保持手段の自由端部側の部位と上記カメラ保持手段が取着される部位から離れる方向の上記卓上本体本体の部位との間に設けられた屈曲式腕とで回動自在に支えられていることを特徴としている。
【００１４】
請求項９記載の発明は、請求項５、６、７又は８記載の携帯電話用卓上充電装置に係り、上記第１の係止ツメ部は１つ、上記第２の係止ツメ部は２つ設けられていることを特徴としている。
【００１５】
請求項１０記載の発明は、請求項５、６、７又は８記載の携帯電話用卓上充電装置に係り、上記第１の係止ツメ部は２つ、上記第２の係止ツメ部は１つ設けられていることを特徴としている。
【００１６】
請求項１１記載の発明は、請求項５乃至１０のいずれか一に記載の携帯電話用卓上充電装置に係り、上記係止ツメ部は、可撓性材で、かつ、可撓構造に形成されていることを特徴としている。
【００１７】
請求項１２記載の発明は、請求項１１記載の携帯電話用卓上充電装置に係り、可撓性材は樹脂であることを特徴としている。
【００１８】
【発明の実施の形態】
以下、図面を参照して、この発明の実施の形態について説明する。説明は、実施例を用いて具体的に説明する。
◇第１実施例
図１は、この発明の第１実施例である卓上充電器の平面図、図２は、同卓上充電器の側面図、図３は、図１の線Ａ－ＡのＡの方向から見た断面図、図４は、同卓上充電器のカメラ保持部の起立前後の状態を図解する図、図５は、カメラ付折り畳み式携帯電話機を開いた状態の平面図、図６は、同カメラ付折り畳み式携帯電話機を開いた状態の側面図、図７は、同カメラ付折り畳み式携帯電話機を開いた状態の背面図、図８は、折り畳んだ状態のカメラ付折り畳み式携帯電話機を卓上充電器に保持させて充電するときの平面図、図９は、折り畳んだ状態のカメラ付折り畳み式携帯電話機を卓上充電器に保持させて充電するときの側面図、図１０は、直角に曲げた状態のカメラ付折り畳み式携帯電話機を卓上充電器に保持させて充電しつつ撮像するときの平面図、図１１は、直角に曲げた状態のカメラ付折り畳み式携帯電話機を卓上充電器に保持させて充電しつつ撮像するときの側面図、図１２は、直角に曲げた状態のカメラ付折り畳み式携帯電話機を卓上充電器に保持させて充電しつつ撮像するときの背面図である。
【００１９】
この実施例の卓上充電器は、開いた状態のカメラ付折り畳み式携帯電話機のバッテリーを

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000535

充電しつつデジタルカメラで（以下、カメラという）撮影し得ると共に、折り畳んだ状態のカメラ付折り畳み式携帯電話機のバッテリーの充電も行い得る卓上充電器に係り、図１に示すように、卓上充電器１０は、卓上充電器本体１２と、卓上充電器本体１２に設けられたヒンジ機構１４と、一方の端部をヒンジ機構１４で回動自在に軸支され他方の端部を自由端とするコの字型のカメラ保持部１６と、カメラ保持部１６をすっぽり収める卓上充電器本体１２の中抜き部１８（図３）と、卓上充電器本体１２の底面と並行に形成されカメラ付折り畳み式携帯電話機５０（以下、携帯電話機５０ともいう）を載せる載置面２０と、卓上充電器本体１２の（ヒンジ機構１４側を後方としての）前方で載置面２０から上方へ垂直に形成された係止ツメ部２２と、ヒンジ機構１４の僅か前方の位置で載置面から上方へ形成され上記後方へ撓み得る係止ツメ部２３と、卓上充電器本体１２の上記後方の一部側面に載置面２０から上方へ垂直に形成された案内部２４と、中抜き部１８の係止ツメ部２３から僅か前方の位置で底面から上方に向け、かつ、コの字型のカメラ保持部１６の間を通り抜けて形成された給電端子対２６と、該給電端子対２６に接続された雌型コネクタ（図示せず）とから成る。

【００２０】

コの字型のカメラ保持部１６の両側の脚部の間に、カメラ付折り畳み式携帯電話機５０のデジタルカメラ６０（後述）が来るように構成されると共に、上記脚部間から背面スクリーンが見えるように構成されている（図１２）。

係止ツメ部２３は、上記後方への外力の印加でその方向へ撓み得る素材からモールディング成形され、また、撓み得る構造に成形されている。素材は、例えば、樹脂である。

また、雌型コネクタは、アダプタを介して商用電源のコネクタに接続される。

【００２１】

カメラ保持部１６を回動自在に軸支するヒンジ機構１４は、カメラ保持部１６を載置面２０から９０だけ回動させ得る構造に構成されている。

したがって、カメラ保持部１６は、卓上充電器１０の載置面２０より底面側の中抜き部１８内に収納された位置と、載置面２０から９０度だけ回動された位置とを取り得る回動機構の１素子として組み立てられている。

そのカメラ保持部１６の自由端には、カメラ付折り畳み式携帯電話機５０を保持する係止ツメ部（ツメ）１７（図３）が形成されている。カメラ保持部１６はその係止ツメ部１７に対してカメラ保持部１６の自由端の方へ外力を印加したとき、その方向へ撓み得る素材からモールディング成形されている。また、係止ツメ部１７は撓み得る構造に成形されている。

【００２２】

載置面２０、係止ツメ部２２及び係止ツメ部２３が、カメラ付折り畳み式携帯電話機５０を折り畳んで載置面２０上に載置されたときの該携帯電話機５０の第２のユニット５４（図５）を保持する第１の保持機構が卓上充電器１０に構成されるほか、この第１の保持機構（載置面２０、係止ツメ部２２及び係止ツメ部２３）は、また、カメラ付折り畳み式携帯電話機５０を開いて載置面２０上に載置しときの携帯電話機５０の第２のユニット５４の保持機構を成すと共に、これに加えて、カメラ保持部１６を直角に起立させたときの係止ツメ部１７が携帯電話機５０の第１のユニット５２を保持する第２の保持機構が、卓上充電器１０に構成されている。

【００２３】

いずれの保持機構において携帯電話機５０が保持されても、卓上充電器１０の給電端子対２６と載置面２０上に載せられたカメラ付折り畳み式携帯電話機５０の受電端子対５８（図７）との位置関係は同一である。

すなわち、その位置関係は、載置面２０上に載せられて保持された携帯電話機５０の受電端子対５８が給電端子対２６に当接し得る位置関係である。この位置関係を取り得るように、給電端子対２６は、載置面２０上方所定の位置であって係止ツメ部２２から所定の距離後方（係止ツメ部２２側を前方といいヒンジ機構１６側を後方という）の位置に配置される一方、携帯電話機５０の受電端子対５８は、上記第１の保持機構に保持され携帯電話

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000536

機５０の自由端から上記所定の距離後方（該自由端側を前方といい携帯電話機５０のヒンジ機構５３（図６）側を後方という）の位置に設けられている。

【００２４】

カメラ付折り畳み式携帯電話機５０は、図５乃至図７に示すように、第２のユニット５４と第１のユニット５２とから成る。第２のユニット５４と第１のユニット５２とは、ヒンジ機構５３によって回動自在に連結されている。

第２のユニット５４には、バッテリー５６及び上述の受電端子対５８が、この発明との関係において設けられている。バッテリー５６の端子対は、受電端子対５８に接続されている。なお、第２のユニット５４の上面には、通常設けられる数字キー及び機能キーがある。

また、第１のユニット５２には、デジタルカメラ６０、正面スクリーン６２及び背面スクリーン６４が、この発明との関係において設けられている。

【００２５】

次に、図１乃至図１２を参照して、この実施例の動作について説明する。

先ず、卓上充電器１０を用いたカメラ付折り畳み式携帯電話機５０の充電のみについて説明する。

卓上充電器１０のカメラ保持部１６の背面（カメラ保持部１６を直角に起立させたとき裏側に位置する面）が載置面２０と同一平面となる位置まで、ヒンジ機構１４を回動中心にして中抜き部１８内の方へカメラ保持部１６を折り込み、卓上充電器１０の載置面（載置面２０及びこれと同一平面上にあるカメラ保持部１６の背面）上に携帯電話機５０を載せ得る状態を作る。中抜き部１８内へカメラ保持部１６が折り畳まれた状態を図９に点線で示す。

【００２６】

このような状態に置かれた卓上充電器１０に携帯電話機５０を保持し、携帯電話機５０のバッテリー５６の充電を行うに際して、携帯電話機５０を折り畳んで卓上充電器１０に携帯電話機５０を保持させる。その保持は、次のようにして行う。

折り畳まれた携帯電話機５０の第２のユニット５４の自由端を係止ツメ部２２に当接させた状態において第２のユニット５４の後端部で係止ツメ部２３を（係止ツメ部２２側を前方として）後方へ撓ませつつ該後端部を係止ツメ部２３に係止させ、係止ツメ部２３のバネ力で第２のユニット５４を係止ツメ部２２と係止ツメ部２３との間に弾性的に保持させる

【００２７】

この保持の完了後に、卓上充電器１０の雌型コネクタに差し込まれたアダプタの雄型コネクタを商用の交流電源の雌型コネクタに差し込む。

上記保持の完了で、卓上充電器１０の給電端子対２６と受電端子対５８とが接触するから、アダプタからバッテリー５６へ形成されている通電路を経てバッテリー５６の充電が行われる。

【００２８】

次に、卓上充電器１０を用いたカメラ付折り畳み式携帯電話機５０の充電とそのカメラによる撮影とを並行して行う場合について説明する。

カメラ保持部１６の背面が卓上充電器１０の載置面２０と同一の平面となっている状態にあるカメラ保持部１６を上記平面から直角になる位置まで、ヒンジ機構１４を回動中心にして中抜き部１８内から起立させ（図４の点線、そして実線）、卓上充電器１０に携帯電話機５０を保持させる状態を卓上充電器１０に作る。

【００２９】

そして、携帯電話機５０のヒンジ機構５３を回動中心にして折り畳んである第１のユニット５２を略直角となる位置まで回動させ、その状態にある携帯電話機５０の第２のユニット５４の自由端を、上記充電の場合と同様にして、係止ツメ部２２に当接させた状態において第２のユニット５４の後端部で係止ツメ部２３を後方へ撓ませつつ該後端部を係止ツメ部２３のバネ力で第２のユニット５４を係止ツメ部２２と係止ツメ部２３との間に弾性

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000537

的に保持させると共に、第１のユニット５２の自由端でカメラ保持部１６の係止ツメ部１７をその先端方向へ撓ませつつ該自由端を係止ツメ部１７に係止させ、係止ツメ部１７のバネ力で第１のユニット５２を充電本体１２と係止ツメ部１７との間に弾性的に保持させる。

【００３０】

この保持の完了後に、卓上充電器１０の雌型コネクタに差し込まれたアダプタの雄型コネクタを商用の交流電源の雌型コネクタに差し込む。

上記保持の完了で、卓上充電器１０の給電端子対２６と受電端子対５８とが接触するから、アダプタからバッテリー５６へ形成されている通電路を経てバッテリー５６の充電が行われる。

この充電を行いつつ、カメラ付折り畳み式携帯電話機５０に装備されているシャッタ機能を作動させるボタンを押してカメラによる必要な撮影を行う。

【００３１】

このように、この実施例の構成によれば、カメラ付折り畳み式携帯電話機のバッテリーの充電とカメラによる撮影とを同一の保持機構で行うことができるから、バッテリーの充電をしながら、カメラによる撮影を行い得、カメラを長時間使用するテレビ会議でもバッテリーを気にすることなく会議に集中することができる。

その際に、卓上充電器から垂直に起立させられたカメラ保持部によって、開いたカメラ付折り畳み式携帯電話機に振れを生じさせることなく、携帯電話機を保持することができる。

したがって、携帯電話機に装備されているカメラのシャッタ機能を作動させるボタンを押す動作によって生ぜしめられるカメラ付折り畳み式携帯電話機のブレを無くすことが可能になり、綺麗な画像を得ることができる。

【００３２】

また、カメラ付折り畳み式携帯電話機を安定して保持することができるから、テレビ会議等において、ハンズフリーでその会議に臨むことができる。

また、カメラ保持部を卓上充電器内に収納し得る構造となっているから、卓上充電器の外観を損なわず、占有スペースも少なく小型化に適している。

【００３３】

◇第２実施例

図１３は、この発明の第２実施例である卓上充電器の側面図である。

この実施例の構成が、第１実施例のそれと大きく異なるところは、カメラ保持部を屈曲式腕で回動自在に保持するようにした点である。

この実施例の卓上充電器１０Ａは、図１３に示すように、カメラ保持部１６を屈曲式腕３０によって回動させてカメラ保持部１６を起立させるようにしたことに特徴がある。

カメラ保持部１６は、卓上充電器１０Ａの本体１２の背面側の部位に軸受２３Ａ（図１３には図示せず）で回動自在に軸支され、卓上充電器１０Ａの本体１２上に垂直に起立した状態と、本体１２の中抜き部１８内に折り畳まれた状態との姿勢を取り得るように構成されている。

【００３４】

屈曲式腕３０は、その第１の腕３２の一方の端部をカメラ保持部１６の自由端側の部位に回動可能に軸支する一方、第２の腕３４の一方の端部を中抜き部１８の係止ツメ部２２に近い部位に回動可能に軸支し、第１の腕３２の他方の端部と第２の腕３４の他方の端部とを軸３６で屈曲自在に連結して構成されている。

この屈曲式腕３０は、図１３ではカメラ保持部１６の片側のみしか示していないが、カメラ保持部１６のもう一方の側にも同一構成のものが設けられている。

そして、屈曲式腕３０は、軸３６で下方に折り曲げられたとき、中抜き部１８内に折り畳まれて収納され得る構造に構成されている。

この構成を除くこの実施例の構成は、第１実施例の構成と同一なので、それらの各部には同一の参照符号を付してその逐一の説明は省略する。

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000538

【００３５】
次に、図１３を参照して、この実施例の動作について説明する。
この実施例においても、カメラ付折り畳み式携帯電話機５０を折り畳んだ状態で、携帯電話機５０のバッテリーの充電だけをすることもできるし、また、携帯電話機５０を開いてカメラで撮影をしながら、バッテリーの充電をすることもできる。
【００３６】
携帯電話機５０のバッテリーの充電だけを行う場合には、第１実施例と同様、カメラ保持部１６を折り畳んで折り畳まれたカメラ保持部１６を充電器１０Ａの本体１２内に収納する。
そして、携帯電話機５０を折り畳み、その携帯電話機５０を充電器１０Ａの本体１２の係止ツメ部２２と係止ツメ部２３との間に保持させる。この保持の完了後に、携帯電話機５０の雌型コネクタに差し込まれたアダプタの雄型コネクタを商用電源の雌型コネクタに差し込む。
上記保持により、携帯電話機５０の受電端子５８は、充電器１０Ａの本体の給電端子２６に接触するから、アダプタから給電端子２６、そして受電端子５８を経て携帯電話機５０のバッテリーに形成されている通電路によってバッテリーの充電が行われる。
【００３７】
携帯電話機５０を開いてカメラで撮影をしながら、バッテリーの充電をする場合には、本体１２の中抜き部１８内に収納されているカメラ保持部１６を軸２３Ａで上方へ回動させて起立させつつ、屈曲式腕３０を伸ばし、カメラ保持部１６が垂直に起立したとき屈曲式腕３０は伸び切ってカメラ保持部１６のそれ以上の回動を止めてその位置にカメラ保持部１６Ａを固定する。
【００３８】
このようにして固定されたカメラ保持部１６及び本体１２への、略直角に開いた折り畳み式携帯電話機５０の保持の仕方は、第１実施例と同様である。
折り畳み式携帯電話機５０を卓上充電器１０Ａに保持した後、携帯電話機５０の雌型コネクタに差し込まれたアダプタの雄型コネクタを商用電源の雌型コネクタに差し込む。
上記保持の完了により、携帯電話機５０の受電端子５８は、充電器１０Ａの本体の給電端子２６に接触するから、アダプタから給電端子２６、そして受電端子５８を経て携帯電話機５０のバッテリーに形成されている通電路によってバッテリーの充電が行われる。
この充電を行いながら、カメラ付折り畳み式携帯電話機５０に装備されているシャッタ機能を作動させるボタンを押してカメラによる必要な撮影を行う。
【００３９】
このように、この実施例の構成によれば、バッテリーの充電をしながら、カメラによる撮影を行い得る。その際に、卓上充電器から屈曲式腕により自由な角度に起立させられたカメラ保持部によって、開いたカメラ付折り畳み式携帯電話機に振れを生じさせることなく、携帯電話機を保持することができる。
したがって、そのような保持姿勢においても、携帯電話機に装備されているカメラのシャッタ機能を作動させるボタンを押す動作によって生ぜしめられるカメラ付折り畳み式携帯電話機のブレを無くすことが可能になり、綺麗な画像を得ることができる。
【００４０】
また、カメラ付折り畳み式携帯電話機の安定した保持により、テレビ会議等において、ハンズフリーでその会議に臨むことができるほか、バッテリーの充電をしながら、カメラによる撮影を行い得ることにより、カメラを長時間使用するテレビ会議でもバッテリーを気にすることなく会議に集中することができる等の効果が得られる。
【００４１】
以上、この発明の実施例を、図面を参照して詳述してきたが、この発明の具体的な構成は、これらの実施例に限られるものではなく、この発明の要旨を逸脱しない範囲の設計の変更等があってもそれらはこの発明に含まれる。
例えば、カメラ保持部１６は、コの字形状のものについて説明したが、デジタルカメラの

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000539

視野を妨げないその他の形状、例えば、係止ツメ部のないU字状のものであってもよい。
したがって、係止ツメ部１７は、単一構造でなく、複数のツメ構造であってもよい。
また、デジタルカメラは、他の形式のカメラであってもよい。
【００４２】
本体１２に形成される係止ツメ部２２、２３は、３点支持構造のものを示しているが、カメラ保持部１６の係止ツメ部１７との関係で１点支持構造であってもよい。
また、係止ツメ部２２、２３は、多点支持構造の例として、係止ツメ部２２と係止ツメ部２３とを入れ替えた構造でもよい。
【００４３】
さらに、上記いずれの実施例も、カメラ付折り畳み式携帯電話機の例であったが、同様な形式のストレートタイプの携帯電話機においてもこの発明を実施し得る。
また、カメラ付折り畳み式携帯電話機以外の携帯情報端末装置のうちの本願で問題とするのと同様の技術的課題を持つ携帯情報端末装置においてもこの発明を実施し得る。
【００４４】
【発明の効果】
以上説明したように、この発明の構成によれば、カメラ保持手段によって第１のユニットを、カメラが撮影可能であると共に看者が背面表示部を視認できる態様で、かつ、直立又は斜めの姿態で、保持するようにしたので、カメラ付携帯電話機は、卓上充電器に安定して保持されているから、カメラのブレの発生を回避できて綺麗な画像を得ることができる。
また、バッテリーの充電を行いつつカメラを動作させることができる。ハンズフリーでテレビ会議に臨むことができる。
【００４５】
また、カメラの長時間の使用時において、バッテリーの消耗を気にしなくて済み、意図している作業に集中することができる。
カメラ保持手段を卓上充電器本体に折り畳み得る構造となっているから、卓上充電器の外観を損なわず、占有スペースも少なく小型化に適している。
また、屈曲式腕をカメラ保持手段の支持に用いる場合には、カメラ保持手段を任意の姿勢にしてカメラ付携帯電話機のカメラに任意の角度での撮像を可能にする。
【図面の簡単な説明】
【図１】この発明の第１実施例である卓上充電器の平面図である。
【図２】同卓上充電器の側面図である。
【図３】同卓上充電器の図１の線Ａ－ＡのＡの方向から見た断面図である。
【図４】同卓上充電器のカメラ保持部の起立前後の状態を図解する図である。
【図５】カメラ付折り畳み式携帯電話機を開いた状態の平面図である。
【図６】同カメラ付折り畳み式携帯電話機を開いた状態の側面図である。
【図７】同カメラ付折り畳み式携帯電話機を開いた状態の背面図である。
【図８】折り畳んだ状態のカメラ付折り畳み式携帯電話機を卓上充電器に保持させて充電するときの平面図である。
【図９】折り畳んだ状態のカメラ付折り畳み式携帯電話機を卓上充電器に保持させて充電するときの側面図である。
【図１０】直角に曲げた状態のカメラ付折り畳み式携帯電話機を卓上充電器に保持させて充電しつつ撮像するときの平面図である。
【図１１】直角に曲げた状態のカメラ付折り畳み式携帯電話機を卓上充電器に保持させて充電しつつ撮像するときの側面図である。
【図１２】直角に曲げた状態のカメラ付折り畳み式携帯電話機を卓上充電器に保持させて充電しつつ撮像するときの側面図である。
【図１３】この発明の第２実施例の卓上充電器の側面図である。
【図１４】従来形式の卓上充電器においてカメラ付折り畳み式携帯電話機のバッテリーを充電するときの側面図である。

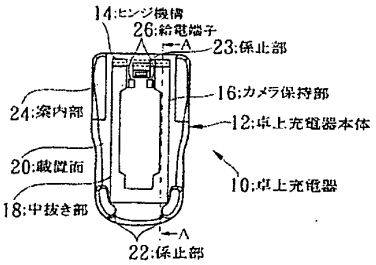
Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000540

【図１５】従来形式の卓上充電器においてカメラ付折り畳み式携帯電話機を保持して撮像するときの側面図である。

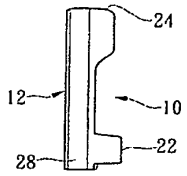
【符号の説明】

１０、１０Ａ　　卓上充電器（携帯電話用卓上充電装置）
１２　　卓上充電器本体
１４　　ヒンジ機構
１６　　カメラ保持部（カメラ支持手段）
１７　　係止ツメ部
１８　　中抜き部（凹部）
２０　　載置面
２２　　係止ツメ部
２３　　係止ツメ部
２６　　給電端子
５０　　カメラ付折り畳み式携帯電話機（カメラ付携帯電話機）
５２　　第１のユニット
５３　　ヒンジ機構
５４　　第２のユニット
５６　　バッテリー
５８　　受電端子
６０　　デジタルカメラ
６２　　正面スクリーン
６４　　背面スクリーン（背面表示部）

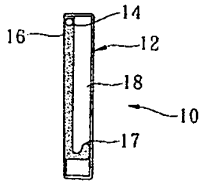
【図1】



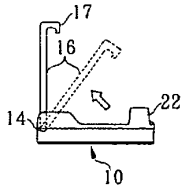
【図2】



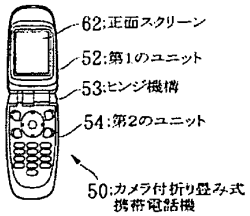
【図3】



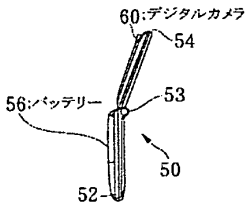
【図4】



【図5】

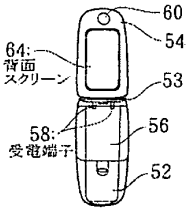


【図6】

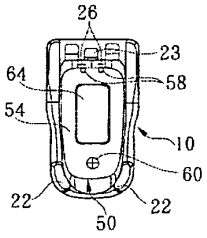


Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000541

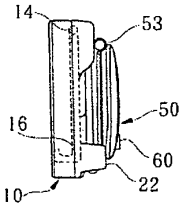
【図7】



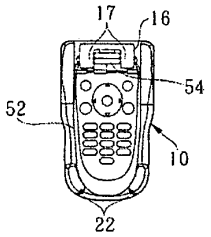
【図8】



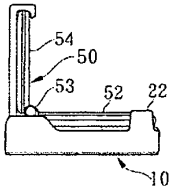
【図9】



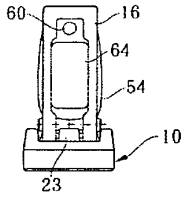
【図10】



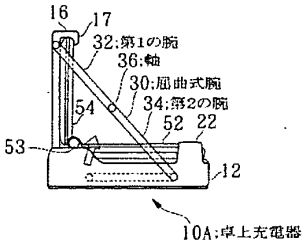
【図11】



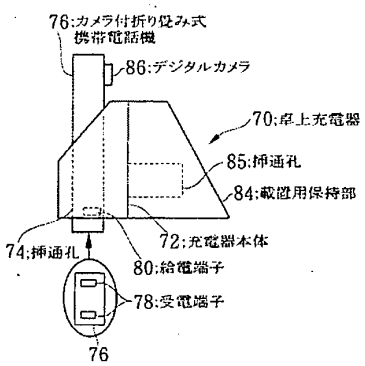
【図12】



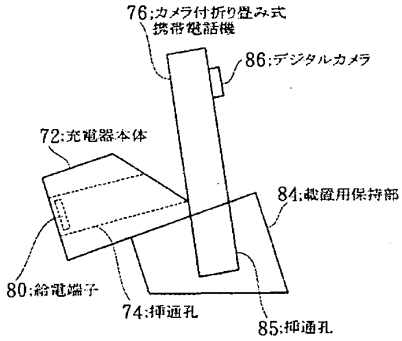
【図13】



【図14】



【図15】



Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000542

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000543

(11)Publication number 2004-312300

(43)Date of publication of application 04.11.2004

(51)Int.Cl. H04M 1/11

H04B 7/26

H04M 1/725

(21)Application number 2003-102098

(22)Date of filing 04.04.2003

(71)Applicant NEC CORP

(72)Inventor WATANUKI TAKASHI

---

(54)DESKTOP CHARGER FOR PORTABLE TELEPHONE

(57)Abstract

PROBLEM TO BE SOLVED: To perform photographing by a camera simultaneously with charging of a battery.

SOLUTION: A camera holding part 16 is turned by a hinge mechanism 14, erected and fixed. For a foldable portable telephone set with the camera, while the free end of the main case body of a main body 12 is abutted to a locking pawl part 22, the rear end of the main case body is abutted to a locking pawl part 23, the locking pawl part 23 is deflected to a rear part and the rear end of the main case body is locked by the locking pawl part 23. Simultaneously, the free end of the sub case body of the portable telephone set is abutted to the locking pawl part of the camera holding part 16, it is deflected in the direction of the free end, the free end of the sub case body is locked to the locking pawl part, and the portable telephone set is held by the main body 12 and the camera holding part 16. At the time, the power receiving terminal of the portable telephone set is abutted to a power feeding terminal of the main body 12 and the battery is charged. The photographing by the camera of the portable telephone set is performed while performing charging.

* NOTICES *

JPO and INPIT are not responsible for any

damages caused by the use of this translation.

1.This document has been translated by computer. So the translation may not

reflect the original precisely.

2.**** shows the word which can not be translated.

3.In the drawings, any words are not translated.

CLAIMS

[Claim(s)]

[Claim 1]

It is the desk charging equipment for mobile phones for a camera and a back display to be mounted on a first unit, for a battery to be mounted on a second unit, and for said first unit and said second unit charge a cellular phone with a camera combined so that folding was possible via a hinge mechanism,

A desk charger body for making a cellular phone with the aforementioned camera charge, where loading wearing of said second unit is carried out,

Desk charging equipment for mobile phones which the aforementioned camera can photo said first unit, and an observer is a mode which can recognize the aforementioned back display visually, and is provided with camera holding mechanism for holding by a style of erection or slant, and is characterized by things.

[Claim 2]

A power supply terminal is provided by part of the aforementioned desk charger body corresponding to a power receiving terminal of a cellular phone with the aforementioned camera in case said second unit of a cellular phone with the aforementioned camera is held at the aforementioned desk charger body, Said first unit when a cellular phone with the aforementioned camera is opened is held by the aforementioned camera holding mechanism, and. The desk charging equipment for mobile phones according to claim 1, wherein a power receiving terminal of a cellular phone with the aforementioned camera is constituted so that the aforementioned power supply terminal may be abutted when said second unit is held with the aforementioned desk charger body.

[Claim 3]

A power supply terminal is provided by part of the aforementioned desk charger body corresponding to a power receiving terminal of a cellular phone with the aforementioned camera in case said second unit of a cellular phone with the aforementioned camera is held at the aforementioned desk charger body, The desk charging equipment for mobile phones according to claim 1, wherein a power receiving terminal of a cellular phone with the aforementioned jar is constituted so that the aforementioned power supply terminal may be abutted when said second unit of a folded cellular phone with the aforementioned camera is held with the aforementioned desk charger body.

[Claim 4]

The desk charging equipment for mobile phones according to claim 2 or 3 characterized by what the aforementioned power supply terminal was provided for by part with the aforementioned camera holding mechanism near a part attached in the aforementioned desk charger body.

[Claim 5]

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000545

While providing a locking claw portion to the free end of the aforementioned camera holding mechanism, provide a first locking ZUME part to a part of the aforementioned desk charger body corresponding to a part near the aforementioned hinge mechanism when holding said second unit of a cellular phone with the aforementioned camera to the aforementioned desk charger body, and. A second locking claw portion is provided to a part of the aforementioned desk charger body corresponding to the free end of said second unit, The free end of said first unit when opening and holding a cellular phone with the aforementioned camera is locked by the aforementioned locking claw portion of the aforementioned attachment component, And the desk charging equipment for mobile phones according to claim 1, 2, 3, or 4 locking said second unit by said first locking claw portion and said second locking claw portion.

[Claim 6]

Provide a first locking ZUME part to a part of the aforementioned desk charger body corresponding to a part near the aforementioned hinge mechanism when holding said second unit of a folded cellular phone with the aforementioned camera to the aforementioned desk charger body, and. A second locking claw portion is provided to a part of the aforementioned desk charger body corresponding to the free end of said second unit, The desk charging equipment for mobile phones according to claim 1, 2, 3, or 4 locking said second unit of a folded cellular phone with the aforementioned camera by said first locking claw portion and said second locking claw portion.

[Claim 7]

A part in which the aforementioned camera holding mechanism is attached is formed in linear shape at least, and the aforementioned camera holding mechanism. It is provided by concave part in which the aforementioned camera holding mechanism which is largely formed in the aforementioned desk charger body, and is slightly folded up with the aforementioned camera holding mechanism and a substantially the same outline is accepted, and the aforementioned camera holding mechanism, The desk charging equipment for mobile phones according to any one of claims 1 to 6 currently supporting pivotally with a hinge mechanism interposed between a part in which the aforementioned camera holding mechanism is attached, and a part of the aforementioned concave part corresponding to the part enabling free rotation.

[Claim 8]

A part in which the aforementioned camera holding mechanism is attached is formed in linear shape at least, and the aforementioned camera holding mechanism. It is provided by concave part in which the aforementioned camera holding mechanism which is largely formed in the aforementioned desk charger body, and is slightly folded up with the aforementioned camera holding mechanism and a substantially the same outline is accepted, and the aforementioned camera holding mechanism, A pivotal supporting part interposed between a part in which the aforementioned camera holding mechanism is attached, and a part of the aforementioned concave part corresponding to the part, The desk charging equipment

for mobile phones according to any one of claims 1 to 6 currently supporting with a bending type arm provided between a part on the free end section side of the aforementioned camera holding mechanism, and a part of the aforementioned desk main part main part of a direction away from a part in which the aforementioned camera holding mechanism is attached enabling free rotation.

[Claim 9]

The desk charging equipment for mobile phones according to claim 5, 6, 7, or 8 with which said first locking claw portion is characterized by providing one and said two second locking claw portions.

[Claim 10]

The desk charging equipment for mobile phones according to claim 5, 6, 7, or 8 with which said first locking claw portion is characterized by providing two and said one second locking claw portion.

[Claim 11]

The desk charging equipment for mobile phones according to any one of claims 5 to 10 which the aforementioned locking claw portion is flexible material, and is characterized by being formed in flexible structure.

[Claim 12]

The desk charging equipment for mobile phones according to claim 11, wherein flexible material is resin.

DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention]

This invention relates to the desk charging equipment for mobile phones which images camera holding mechanism with a digital camera while charging the battery of a cellular phone with a camera by the style of erection or slant from a desk charger body in detail about the desk charging equipment for mobile phones.

[0002]

[Description of the Prior Art]

In the former, a foldaway cellular phone with a camera is charged with a desk battery charger, and also the desk battery charger which holds a foldaway cellular phone with a camera stably with the desk battery charger, and images with a camera is known. The example is described in JP,2002-261904,A.

[0003]

as shown in Fig.14, the technology described in the gazette the foldaway cellular phone 76 with a camera to the insertion hole 74 of the charger body 72 of the desk battery charger 70, [insert and] Make the power supply terminal 80 of the charger body 72 abut the power receiving terminal 78 of the foldaway cellular phone 76 with a camera, charge the battery (not shown) of the foldaway cellular phone 76 with a camera, and also as shown in Fig.15. The foldaway cellular phone 76 with a camera is inserted

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000547

and held to the insertion hole 85 of the holding part 84 for placing which rotated the holding part 84 for placing of the foldaway cellular phone 76 with a camera, and extended, and the digital camera 86 of the foldaway cellular phone 76 with a camera performs necessary imaging.

Therefore, in the technology described in this gazette, charge and imaging can be carried out with a single desk battery charger.

[0004]

[Problem to be solved by the invention]

However, in the technology described in the above-mentioned gazette, the structures of the holding part at the time of charge and the holding part at the time of imaging differ.

That is, the charging system formed in the holding part at the time of charge has structure which must have been inherited at all at the time of imaging.

Therefore, the above-mentioned charging system cannot charge the battery, imaging with the digital camera of a foldaway cellular phone with a camera.

As for this, a cellular phone becomes highly efficient, and in the actual condition that power consumption has also been increasing, the above-mentioned desk battery charger has restriction in a use, and serves as a mortal wound which is hard to apply to the use which uses a camera especially at a teleconference etc. for a long time.

[0005]

This invention was made in view of the above-mentioned situation, and an object of invention is to provide the desk charging equipment for mobile phones which may produce the imaging operation in a digital camera continuously while charging the battery of a cellular phone with a camera for camera holding mechanism by the style of erection or slant from a desk charger body.

[0006]

[Means for solving problem]

The present invention is characterized by the invention according to claim 1 comprising the following, in order to solve an aforementioned problem.

A camera and a back display are mounted on a first unit, a battery is mounted on a second unit, and the 1st unit of the above and the 2nd unit of the above via a hinge mechanism, A desk charger body for making a cellular phone with the above-mentioned camera charge, where it started desk charging equipment for mobile phones for charging a cellular phone with a camera combined so that folding was possible and loading wearing of the 2nd unit of the above is carried out.

Camera holding mechanism for the above-mentioned camera being able to photo the 1st unit of the above, and an observer being a mode which can recognize the above-mentioned back display visually, and holding by a style of erection or slant.

[0007]

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000548

The invention according to claim 2 relates to the desk charging equipment for mobile phones according to claim 1, A power supply terminal is provided by the part of the above-mentioned desk charger body corresponding to the power receiving terminal of a cellular phone with the above-mentioned camera in case the 2nd unit of the above of a cellular phone with the above-mentioned camera is held at the above-mentioned desk charger body, When the 1st unit of the above when a cellular phone with the above-mentioned camera is opened is held by the above-mentioned camera holding mechanism and the 2nd unit of the above is held with the above-mentioned desk charger body, the power receiving terminal of the cellular phone with the above-mentioned camera is characterized by being constituted so that the above-mentioned power supply terminal may be abutted.

[0008]

The invention according to claim 3 relates to the desk charging equipment for mobile phones according to claim 1, A power supply terminal is provided by the part of the above-mentioned desk charger body corresponding to the power receiving terminal of a cellular phone with the above-mentioned camera in case the 2nd unit of the above of a cellular phone with the above-mentioned camera is held at the above-mentioned desk charger body, When the 2nd unit of the above of the folded cellular phone with the above-mentioned camera is held with the above-mentioned desk charger body, the power receiving terminal of the cellular phone with the above-mentioned jar is characterized by being constituted so that the above-mentioned power supply terminal may be abutted.

[0009]

The invention according to claim 4 relates to the desk charging equipment for mobile phones according to claim 2 or 3, and the above-mentioned power supply terminal is characterized by what was provided by the part with the above-mentioned camera holding mechanism near the part attached in the above-mentioned desk charger body.

[0010]

The invention according to claim 5 relates to the desk charging equipment for mobile phones according to claim 1, 2, 3, or 4, While providing a locking claw portion to the free end of the above-mentioned camera holding mechanism, provide a first locking ZUME part to the part of the above-mentioned desk charger body corresponding to the part near the above-mentioned hinge mechanism when holding the 2nd unit of the above of a cellular phone with the above-mentioned camera to the above-mentioned desk charger body, and. A second locking claw portion is provided to the part of the above-mentioned desk charger body corresponding to the free end of the 2nd unit of the above, It is characterized by locking the free end of the 1st unit of the above when opening and holding a cellular phone with the above-mentioned camera by the above-mentioned locking claw portion of the above-mentioned attachment component, and locking the 2nd unit of the above by the locking claw portion of the above 1st, and the locking claw portion of the above 2nd.

[0011]

The invention according to claim 6 relates to the desk charging equipment for mobile phones according to claim 1, 2, 3, or 4, Provide a first locking ZUME part to the part of the above-mentioned desk charger body corresponding to the part near the above-mentioned hinge mechanism when holding the 2nd unit of the above of the folded cellular phone with the above-mentioned camera to the above-mentioned desk charger body, and. It is characterized by providing a second locking claw portion to the part of the above-mentioned desk charger body corresponding to the free end of the 2nd unit of the above, and locking the 2nd unit of the above of the folded cellular phone with the above-mentioned camera to it by the locking claw portion of the above 1st, and the locking claw portion of the above 2nd.

[0012]

The invention according to claim 7 relates to the desk charging equipment for mobile phones according to any one of claims 1 to 6, and the above-mentioned camera holding mechanism, The part in which the above-mentioned camera holding mechanism is attached is formed in linear shape at least, and. It is provided by the concave part in which the above-mentioned camera holding mechanism which is largely formed in the above-mentioned desk charger body, and is slightly folded up with the above-mentioned camera holding mechanism and a substantially the same outline is accepted, and the above-mentioned camera holding mechanism, It is characterized by being supported pivotally with the hinge mechanism interposed between the part in which the above-mentioned camera holding mechanism is attached, and the part of the above-mentioned concave part corresponding to the part, enabling free rotation.

[0013]

The invention according to claim 8 relates to the desk charging equipment for mobile phones according to any one of claims 1 to 6, and the above-mentioned camera holding mechanism, The part in which the above-mentioned camera holding mechanism is attached is formed in linear shape at least, and. It is provided by the concave part in which the above-mentioned camera holding mechanism which is largely formed in the above-mentioned desk charger body, and is slightly folded up with the above-mentioned camera holding mechanism and a substantially the same outline is accepted, and the above-mentioned camera holding mechanism, The pivotal supporting part interposed between the part in which the above-mentioned camera holding mechanism is attached, and the part of the above-mentioned concave part corresponding to the part, It is characterized by supporting with the bending type arm provided between the part on the free end section side of the above-mentioned camera holding mechanism, and the part of the above-mentioned desk main part main part of the direction away from the part in which the above-mentioned camera holding mechanism is attached, enabling free rotation.

[0014]

The invention according to claim 9 relates to the desk charging equipment for mobile phones according to claim 5, 6, 7, or 8, and the locking claw portion of the above 1st is characterized by providing one and two locking claw portions of the above 2nd.

[0015]

The invention according to claim 10 relates to the desk charging equipment for mobile phones according to claim 5, 6, 7, or 8, and the locking claw portion of the above 1st is characterized by providing two and one locking claw portion of the above 2nd.

[0016]

The invention according to claim 11 relates to the desk charging equipment for mobile phones according to any one of claims 5 to 10, and the above-mentioned locking claw portion is flexible material, and is characterized by being formed in flexible structure.

[0017]

The invention according to claim 12 relates to the desk charging equipment for mobile phones according to claim 11, and flexible material is characterized by being resin.

[0018]

[Mode for carrying out the invention]

Hereinafter, with reference to Drawings, it describes about this embodiment of the invention. A description is specifically described using an working example.

<> The 1st working example

The plan view of the desk battery charger whose Fig.1 is the 1st working example of this invention, and Fig.2, The cross sectional view which the side view of the desk battery charger and Fig.3 looked at from the direction of A of line A-A of Fig.1, and Fig.4, The figure and Fig.5 illustrating the state before and behind standing up of the camera holding part of the desk battery charger, The plan view in the state where the foldaway cellular phone with a camera was opened, and Fig.6, The side view in the state where the foldaway cellular phone with the said camera was opened, and Fig.7, The rear elevation in the state where the foldaway cellular phone with the said camera was opened, and Fig.8, A plan view when making the foldaway cellular phone with a camera in the state where it folded up hold to a desk battery charger and charging, and Fig.9, A side view when making the foldaway cellular phone with a camera in the state where it folded up hold to a desk battery charger and charging, and Fig.10, A plan view when imaging making the foldaway cellular phone with a camera in the state where it bent right-angled hold to a desk battery charger, and charging, and Fig.11, A side view when imaging making the foldaway cellular phone with a camera in the state where it bent right-angled hold to a desk battery charger, and charging, and Fig.12 are rear elevations when imaging making the foldaway cellular phone with a camera in the state where it bent right-angled hold to a desk battery charger, and charging.

[0019]

Can photo the desk battery charger of this working example with a digital camera, charging the battery of the foldaway cellular phone with a camera in the state where it opened (henceforth a camera), and. As the desk battery charger which can also perform charge of the battery of the foldaway cellular phone with a camera in the state where it folded up is started and it is shown in Fig.1, the desk battery charger 10, The desk charger body 12 and the hinge mechanism 14 provided by the desk charger body 12, The

U-shaped camera holding part 16 which is supported pivotally with the hinge mechanism 14 in one end, enabling free rotation, and uses the end of another side as the free end, The extraction part 18 (Fig.3) of the desk charger body 12 which stores the camera holding part 16 entirely, The mounting surface 20 on which it is formed in in parallel with the bottom surface of the desk charger body 12, and the foldaway cellular phone 50 (henceforth the cellular phone 50) with a camera is put, The locking claw portion 22 vertically formed upwards from the mounting surface 20 ahead [of the desk charger body 12] (it is considering the hinge mechanism 14 side as back), The locking claw portion 23 which is formed upwards from a mounting surface in the position ahead of [small] the hinge mechanism 14, and may bend to the above-mentioned back, and the guiding part 24 vertically formed in the partial side surface behind [above-mentioned] the desk charger body 12 upwards from the mounting surface 20, The female connector (not shown) connected to the power supply terminal pair 26 which passed between the U-shaped camera holding parts 16, and was formed, and the power supply terminal pair 26 towards the upper part in the position ahead of small from the bottom surface from the locking claw portion 23 of the extraction part 18 is comprised.

[0020]

It is constituted so that the digital camera 60 (after-mentioned) of the foldaway cellular phone 50 with a camera may come between the U-shaped legs of the both sides of the camera holding part 16, and it is constituted so that a back face screen may appear from between the above-mentioned legs (Fig.12).

The locking claw portion 23 is molded into the structure where molding molding is carried out from the material which may be bent by the application of the external force to the above-mentioned back in the direction, and it may bend. A material is resin, for example.

A female connector is connected to the connector of commercial power via an adapter.

[0021]

The hinge mechanism 14 which supports the camera holding part 16 pivotally enabling free rotation is constituted by the structure where only the mounting surfaces 20-90 may rotate the camera holding part 16.

Therefore, from the mounting surface 20 of the desk battery charger 10, the camera holding part 16 is assembled as one element of the moving mechanism which can take the position stored in the extraction part 18 on the bottom surface side, and the position rotated only 90 degree from the mounting surface 20, and shines.

The locking claw portion (pawl) 17 (Fig.3) holding the foldaway cellular phone 50 with a camera is formed in the free end of the camera holding part 16. When external force is applied to the direction of the free end of the camera holding part 16 to the locking claw portion 17, molding molding of the camera holding part 16 is carried out from the material which may bend in the direction. The locking claw portion 17 is molded into the structure where it may bend.

[0022]

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000552

The first maintaining structure holding the second unit 54 (Fig.5) of the cellular phone 50 when the mounting surface 20, the locking claw portion 22, and the locking claw portion 23 fold up the foldaway cellular phone 50 with a camera and are placed on the mounting surface 20 is constituted by the desk battery charger 10, and also. This first maintaining structure (the mounting surface 20, the locking claw portion 22, and the locking claw portion 23), Open the foldaway cellular phone 50 with a camera, place on the mounting surface 20, and accomplish the maintaining structure of the second unit 54 of the cellular phone 50 at the time, and. In addition, the second maintaining structure in which the locking claw portion 17 when raising the camera holding part 16 right-angled holds the first unit 52 of the cellular phone 50 is constituted by the desk battery charger 10.

[0023]

Even if the cellular phone 50 is held in which maintaining structure, the positional relationship of the power supply terminal pair 26 of the desk battery charger 10 and the power receiving terminal pair 58 (Fig.7) of the foldaway cellular phone 50 with a camera carried on the mounting surface 20 is the same.

That is, the power receiving terminal pair 58 of the cellular phone 50 which the positional relationship was carried on the mounting surface 20, and was held is the positional relationship to which the power supply terminal pair 26 can be abutted. So that this positional relationship can be taken the power supply terminal pair 26, While it is a mounting surface 20 upper-part position and is arranged from the locking claw portion 22 in the position of predetermined distance back (the good hinge mechanism 16 side is called back for the locking claw portion 22 side with the front), The power receiving terminal pair 58 of the cellular phone 50 is held at the 1st maintaining structure of the above, and is provided by the position of the above-mentioned predetermined distance back (the hinge mechanism 53 (Fig.6) side of the good cellular phone 50 is called back for the free edge with the front) from the free end of the cellular phone 50.

[0024]

The foldaway cellular phone 50 with a camera comprises the second unit 54 and the first unit 52, as shown in Fig.5 thru/or Fig.7. The second unit 54 and the first unit 52 are connected by the hinge mechanism 53, enabling free rotation.

The battery 56 and the above-mentioned power receiving terminal pair 58 are provided in the relation with this invention by the second unit 54. The terminal pair of the battery 56 is connected to the power receiving terminal pair 58. There are the numerical keypad and functional key which are usually provided in the upper surface of the second unit 54.

The digital camera 60, the transverse-plane screen 62, and the back face screen 64 are provided by the first unit 52 in the relation with this invention.

[0025]

Next, with reference to Fig.1 thru/or Fig.12, it describes about operation of this working example.

First, it describes only about charge of the foldaway cellular phone 50 with a camera using the desk

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000553

battery charger 10.

To the position used as the mounting surface 20 and the same plane, the back face (surface which is placed at the back side when raising the camera holding part 16 right-angled) of the camera holding part 16 of the desk battery charger 10, The hinge mechanism 14 is made into a rotation center, the camera holding part 16 is inserted in to the direction in the extraction part 18, and the state where the cellular phone 50 can be carried on the mounting surface (back face of the camera holding part 16 on the mounting surface 20 and the same plane as this) of the desk battery charger 10 is made. A dotted line shows the state where the camera holding part 16 was folded up to Fig.9 into the extraction part 18.

[0026]

The cellular phone 50 is held to the desk battery charger 10 placed by such state, the cellular phone 50 is folded up and the cellular phone 50 is made to hold to the desk battery charger 10 when charging the battery 56 of the cellular phone 50. The holding is performed as follows.

The rear end part is made to lock to the locking claw portion 23, sagging the locking claw portion 23 in the rear end part of the second unit 54 back (making the locking claw portion 22 side into the front) in the state where the locking claw portion 22 was made to abut the free end of the second unit 54 of the folded-up cellular phone 50. The second unit 54 is made to hold elastically between the locking claw portion 22 and the locking claw portion 23 by the spring force of the locking claw portion 23.

[0027]

After completion of this holding, the male connector of the adapter inserted in the female connector of the desk battery charger 10 is inserted in the female connector of commercial AC power supply.

By completion of the above-mentioned holding, since the power supply terminal pair 26 of the desk battery charger 10 and the power receiving terminal pair 58 contact, charge of the battery 56 is performed through the energization way currently formed in the battery 56 from an adapter.

[0028]

Next, it describes about the case where charge of the foldaway cellular phone 50 with a camera using the desk battery charger 10 and photographing with the camera are performed in parallel.

From the above-mentioned plane to the position which becomes right-angled, the camera holding part 16 in the state where the back face of the camera holding part 16 is the mounting surface 20 of the desk battery charger 10, and the same plane, The state of making the hinge mechanism 14 into a rotation center, making it standing up out of the extraction part 18 (the dotted line of Fig.4 and a solid line), and making the cellular phone 50 holding to the desk battery charger 10 is made to the desk battery charger 10.

[0029]

And the first unit 52 that makes a rotation center the hinge mechanism 53 of the cellular phone 50, and it has folded up is rotated to the position used as an abbreviated right angle, The free end of the second unit 54 of the cellular phone 50 in the state is made to be the same as that of the case of the

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000554

above-mentioned charge, Sagging the locking claw portion 23 in the rear end part of the second unit 54 back in the state where the locking claw portion 22 was made to abut, make the second unit 54 hold elastically between the locking claw portion 22 and the locking claw portion 23 by the spring force of the locking claw portion 23, and the rear end part. The free end is made to lock to the locking claw portion 17, sagging the locking claw portion 17 of the camera holding part 16 in the free end of the first unit 52 in the direction of a tip, and the first unit 52 is made to hold elastically between the charge main part 12 and the locking claw portion 17 by the spring force of the locking claw portion 17.

[0030]

After completion of this holding, the male connector of the adapter inserted in the female connector of the desk battery charger 10 is inserted in the female connector of commercial AC power supply.

By completion of the above-mentioned holding, since the power supply terminal pair 26 of the desk battery charger 10 and the power receiving terminal pair 58 contact, charge of the battery 56 is performed through the energization way currently formed in the battery 56 from an adapter.

Performing this charge, the button which operates the shutter functions with which the foldaway cellular phone 50 with a camera is equipped is pushed, and required photographing with a camera is performed.

[0031]

Thus, since charge of the battery of a foldaway cellular phone with a camera and photographing with a camera can be performed by the same maintaining structure according to the composition of this working example, while charging a battery, Photographing with a camera can be performed, and it can concentrate on a meeting, without the teleconference which uses a camera for a long time also caring about a battery.

A cellular phone can be held without making the open foldaway cellular phone with a camera produce deflection from a desk battery charger by the camera holding part raised vertically in that case.

Therefore, it becomes possible to lose the blur of the foldaway cellular phone with a camera made to be generated by the operation which pushes the button which operates the shutter functions of the camera with which the cellular phone is equipped, and can acquire a beautiful image.

[0032]

Since a foldaway cellular phone with a camera can be held stably, at a teleconference etc., it is handsfree and can attend the meeting.

Since it has structure which can store a camera holding part in a desk battery charger, appearance of a desk battery charger is not impaired but the occupancy space is also suitable for the miniaturization few.

[0033]

<> The 2nd working example

Fig.13 is a side view of the desk battery charger which is the 2nd working example of this invention.

The place where the composition of this working example differs from it of the 1st working example largely is the point of having held the camera holding part with the bending type arm enabling free

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000555

rotation.

The desk battery charger 10A of this working example has the characteristics in rotating the camera holding part 16 with the bending type arm 30, and having made it raise the camera holding part 16, as shown in Fig.13.

The state where the camera holding part 16 was supported pivotally with the bearing 23A (not shown to Fig.13) by the part of the back side of the main part 12 of the desk battery charger 10A, enabling free rotation, and it stood up vertically on the main part 12 of the desk battery charger 10A, It is constituted so that the attitude in the state where it was folded up in the extraction part 18 of the main part 12 can be taken.

[0034]

While supporting one end of the first arm 32 pivotally rotatable to the part of the free edge of the camera holding part 16, the bending type arm 30, One end of the second arm 34 is supported pivotally rotatable to the part near the locking claw portion 22 of the extraction part 18, and the end of another side of the first arm 32 and the end of another side of the second arm 34 are connected with the axis 36, enabling free bend, and it is constituted.

Although this bending type arm 30 shows only one side of the camera holding part 16 by Fig.13, the thing of the identical configuration is provided also at another camera holding part 16 side.

And the bending type arm 30 is constituted by the structure which may be folded up and stored in the extraction part 18 when caudad bent with the axis 36.

Since the composition of this working example except this composition is the same as the composition of the 1st working example, the same reference mark is given to those each part, and the description of that ** 1 is omitted.

[0035]

Next, with reference to Fig.13, it describes about operation of this working example.

Also in this working example, where the foldaway cellular phone 50 with a camera is folded up, the battery of the cellular phone 50 can also be charged, and a battery can also be charged, opening the cellular phone 50 and taking a photograph with a camera.

[0036]

In performing only charge of the battery of the cellular phone 50, it stores the camera holding part 16 folded up by folding up the camera holding part 16 in the main part 12 of the battery charger 10A like the 1st working example.

And the cellular phone 50 is folded up and the cellular phone 50 is made to hold between the locking claw portion 22 of the main part 12 of the battery charger 10A, and the locking claw portion 23. After completion of this holding, the male connector of the adapter inserted in the female connector of the cellular phone 50 is inserted in the female connector of commercial power.

Since the power receiving terminal 58 of the cellular phone 50 contacts the power supply terminal 26 of

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000556

the main part of the battery charger 10A, charge of a battery is performed by the above-mentioned holding by the energization way currently formed in the battery of the cellular phone 50 through the power supply terminal 26 and the power receiving terminal 58 from the adapter.

[0037]

In charging a battery, opening the cellular phone 50 and taking a photograph with a camera, Making it rotate upwards and raising the camera holding part 16 stored in the extraction part 18 of the main part 12 with the axis 23A. When the bending type arm 30 is lengthened and the camera holding part 16 stands up vertically, the bending type arm 30 has been extended, stops rotation beyond it of the camera holding part 16, and fixes the camera holding part 16A to the position.

[0038]

Thus, the method of holding of the foldaway cellular phone 50 open at the abbreviated right angle to the fixed camera holding part 16 and the main part 12 is the same as that of the 1st working example.

After holding the foldaway cellular phone 50 to the desk battery charger 10A, the male connector of the adapter inserted in the female connector of the cellular phone 50 is inserted in the female connector of commercial power.

Since the power receiving terminal 58 of the cellular phone 50 contacts the power supply terminal 26 of the main part of the battery charger 10A, charge of a battery is performed by completion of the above-mentioned holding by the energization way currently formed in the battery of the cellular phone 50 through the power supply terminal 26 and the power receiving terminal 58 from the adapter.

Performing this charge, the button which operates the shutter functions with which the foldaway cellular phone 50 with a camera is equipped is pushed, and required photographing with a camera is performed.

[0039]

Thus, according to the composition of this working example, photographing with a camera can be performed, charging a battery. A cellular phone can be held without making the open foldaway cellular phone with a camera produce deflection from a desk battery charger by the camera holding part raised by the free angle with the bending type arm in that case.

Therefore, also in such a holding attitude, it becomes possible to lose the blur of the foldaway cellular phone with a camera made to be generated by the operation which pushes the button which operates the shutter functions of the camera with which the cellular phone is equipped, and can acquire a beautiful image.

[0040]

In a teleconference etc. by holding where the foldaway cellular phone with a camera was stabilized, The effect of being able to concentrate on a meeting, without the teleconference which uses a camera for a long time also caring about a battery is acquired by the ability to perform photographing with a camera, being able to attend the meeting and also charging [it is handsfree, and] a battery.

[0041]

As mentioned above, although the working example of this invention has been explained in full detail with reference to Drawings, the specific constitution of this invention is not restricted to these working examples, and they are contained in this invention even if there are change etc. of a design of the range which does not deviate from the summary of this invention.

For example, although the camera holding part 16 described about the U-shaped thing, it may be a thing of the form of others which do not bar the view of a digital camera, for example, the shape of a U character without a locking claw portion. Therefore, the locking claw portions 17 may be not single structure but a plurality of pawl structures.

A digital camera may be a camera of other forms.

[0042]

Although the locking claw portions 22 and 23 formed in the main part 12 show the thing of the three-point supporting structure, they may be the one-point supporting structures in a relation with the locking claw portion 17 of the camera holding part 16.

The structure which replaced the locking claw portion 22 and the locking claw portion 23 may be sufficient as the locking claw portions 22 and 23 as an example of the multipoint supporting structure.

[0043]

Although any working example of the above was an example of the foldaway cellular phone with a camera, this invention can be carried out also in the cellular phone of the straight type of the same form.

Also in a personal digital assistant unit with the technical problem same with considering it as a problem, this invention can be carried out by this application of the personal digital assistant units other than a foldaway cellular phone with a camera.

[0044]

[Effect of the Invention]

As described above, according to the constitution of this invention, by camera holding mechanism, a camera can photo a first unit and an observer in the mode which can recognize a back display visually, And by the style of erection or slant, since it was made to hold, since it is held stably at the desk battery charger, the cellular phone with a camera can avoid generating of the blur of a camera, and can acquire a beautiful image.

A camera can be operated charging a battery. It is handsfree and can attend a teleconference.

[0045]

It is not necessary to care about consumption of a battery, and can concentrate on the work whose intention it has at the time of use of the long time of a camera.

Since it has structure which can fold up camera holding mechanism to a desk charger body, appearance of a desk battery charger is not impaired but the occupancy space is also suitable for the miniaturization few.

In using a bending type arm for support of camera holding mechanism, camera holding mechanism is

made into any attitude, and it enables imaging at any angle at the camera of a cellular phone with a camera.

[Brief Description of the Drawings]

[Drawing 1]It is a plan view of the desk battery charger which is the 1st working example of this invention.

[Drawing 2]It is a side view of the desk battery charger.

[Drawing 3]It is the cross sectional view seen from the direction of A of line A-A of the Fig.1 of the desk battery charger.

[Drawing 4]It is the figure illustrating the state before and behind standing up of the camera holding part of the desk battery charger.

[Drawing 5]It is a plan view in the state where the foldaway cellular phone with a camera was opened.

[Drawing 6]It is a side view in the state where the foldaway cellular phone with the said camera was opened.

[Drawing 7]It is a rear elevation in the state where the foldaway cellular phone with the said camera was opened.

[Drawing 8]It is a plan view when making the foldaway cellular phone with a camera in the state where it folded up hold to a desk battery charger and charging.

[Drawing 9]It is a side view when making the foldaway cellular phone with a camera in the state where it folded up hold to a desk battery charger and charging.

[Drawing 10]It is a plan view when imaging making the foldaway cellular phone with a camera in the state where it bent right-angled hold to a desk battery charger, and charging.

[Drawing 11]It is a side view when imaging making the foldaway cellular phone with a camera in the state where it bent right-angled hold to a desk battery charger, and charging.

[Drawing 12]It is a side view when imaging making the foldaway cellular phone with a camera in the state where it bent right-angled hold to a desk battery charger, and charging.

[Drawing 13]It is a side view of the desk battery charger of the 2nd working example of this invention.

[Drawing 14]It is a side view when charging the battery of a foldaway cellular phone with a camera in the desk battery charger of form conventionally.

[Drawing 15]It is a side view when holding and imaging a foldaway cellular phone with a camera in the desk battery charger of form conventionally.

[Explanations of letters or numerals]

10 10A Desk battery charger (desk charging equipment for mobile phones)

12 Desk charger body

14 Hinge mechanism

16 Camera holding part (camera support means)

17 Locking claw portion

18 Extraction part (concave part)

20 Mounting surface

22 Locking claw portion

23 Locking claw portion

26 Power supply terminal

50 Foldaway cellular phone with a camera (cellular phone with a camera)

52 A first unit

53 Hinge mechanism

54 A second unit

56 Battery

58 Power receiving terminal

60 Digital camera

62 Transverse-plane screen

64 Back face screen (back display)

(19)日本国特許庁(JP)　(12)公開特許公報(A)　(11)特許出願公開番号
特開2005-26881
(P2005-26881A)
(43)公開日　平成17年1月27日(2005.1.27)

(51)Int.Cl.[7]		F I			テーマコード（参考）
H04M	1/21	H04M	1/21	M	5C022
H04M	1/02	H04M	1/02	C	5K023
H04N	5/225	H04N	5/225	F	

審査請求 未請求　請求項の数 5　OL　（全 9 頁）

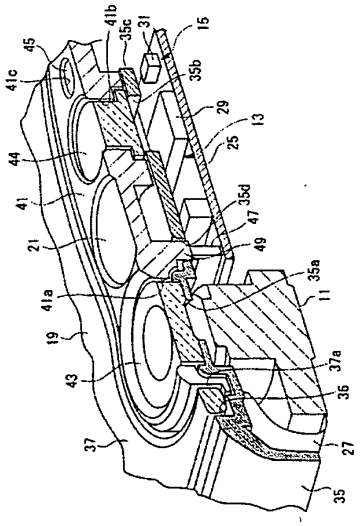
(21)出願番号　特願2003-188640(P2003-188640)
(22)出願日　平成15年6月30日(2003.6.30)

(71)出願人　000006633
京セラ株式会社
京都府京都市伏見区竹田鳥羽殿町６番地
(74)代理人　100064908
弁理士　志賀　正武
(74)代理人　100089037
弁理士　渡邊　隆
(74)代理人　100101465
弁理士　青山　正和
(74)代理人　100108453
弁理士　村山　靖彦
(72)発明者　堀井　省次
神奈川県横浜市都筑区加賀原２丁目１番１号　京セラ株式会社横浜事業所内

最終頁に続く

(54)【発明の名称】携帯端末装置

(57)【要約】
【課題】被写体を撮影するための撮像部及び自己撮影用のミラーを備えた携帯端末装置において、電気・電子部品の誤作動や故障を防止して、信頼性の高い携帯端末装置を提供できるようにする。
【解決手段】筐体と、該筐体内部に設けられ、前記筐体の表面１９から外方に露出させた撮像部１１と、該撮像部１１に電気的に接続された回路基板２５と、前記筐体の表面１９に、前記撮像部１１に隣接させて配された導電性材料からなるミラー２１とを備え、該ミラー２１が、前記回路基板２５のグランドパターンに電気的に接続されていることを特徴とする携帯端末装置を提供する。
【選択図】　図4



Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000561

【特許請求の範囲】
【請求項1】
筐体と、該筐体内部に設けられ、前記筐体の表面から外方に露出させた撮像部と、該撮像部に電気的に接続された回路基板と、前記筐体表面に、前記撮像部に隣接させて配された導電性材料からなるミラーとを備え、
該ミラーが、前記回路基板のグランドパターンに電気的に接続されていることを特徴とする携帯端末装置。
【請求項2】
前記ミラーに隣接させてフラッシュ部が配されていることを特徴とする請求項１に記載の携帯端末装置。
【請求項3】
前記ミラーと前記グランドパターンとの電気的な接点が２つ以上設けられていることを特徴とする請求項１又は請求項２に記載の携帯端末装置。
【請求項4】
前記筐体表面に、前記撮像部の撮影窓周囲を囲むように設けられた導電性材料からなるカバー部材を有し、該カバー部材に前記ミラーが一体的に形成され、当該ミラーが前記カバー部材を介して前記回路基板のグランドパターンと電気的に接続されていることを特徴とする請求項１に記載の携帯端末装置。
【請求項5】
前記筐体表面に、前記撮像部の撮影窓周囲及び前記フラッシュ部の閃光窓周囲をそれぞれ囲むように一体的に設けられた導電性材料からなるカバー部材を有し、該カバー部材に前記ミラーが一体的に形成され、当該ミラーが前記カバー部材を介して前記回路基板のグランドパターンと電気的に接続されていることを特徴とする請求項２に記載の携帯端末装置。

【発明の詳細な説明】
【０００１】
【発明の属する技術分野】
この発明は、被写体を撮影するための撮像部及び自己撮影用のミラーを備えた携帯電話機、ＰＤＡ（Ｐｅｒｓｏｎａｌ　Ｄｉｇｉｔａｌ　Ａｓｓｉｓｔａｎｔｓ）等の携帯端末装置に関する。
【０００２】
【従来の技術】
従来の携帯端末装置としては、筐体内部に、筐体表面から外方に露出させた撮像部を備え、撮像部に隣接する筐体表面にミラーが設けられているものがある（例えば、非特許文献１参照。）。このミラーは、撮影者が自らを撮影する際に、撮像部における撮影範囲、構図等の撮影状態を視認するためのものであり、筐体表面に粘着テープ等により接着されている。このミラーは、金属材料、若しくは、樹脂部材の表面にめっきを施して金属皮膜を形成したものからなり、導電性を有している。
なお、上述の撮像部は、ＣＣＤ（Ｃｈａｒｇｅ－Ｃｏｕｐｌｅｄ　Ｄｅｖｉｃｅ）、ＣＭＯＳ（Ｃｏｍｐｌｅｍｅｎｔａｒｙ　Ｍｅｔａｌ　Ｏｘｉｄｅ　Ｓｅｍｉｃｏｎｄｕｃｔｏｒ）イメージセンサー等の撮像素子を備えた所謂電子カメラである。
【０００３】
【非特許文献１】
［平成１５年６月２７日検索］、インターネット<ＵＲＬ：ｈｔｔｐ：／／ｗｗｗ．ｋｙｏｃｅｒａ．ｃｏ．ｊｐ／ｆｒａｍｅ／ｐｒｏｄｕｃｔ／ｔｅｌｅｃｏｍ／ｋｅｉｔａｉ／ｔｕｋａ／ｔｋ３１／ｃａｍｅｒａ．ｈｔｍｌ>
【０００４】
【発明が解決しようとする課題】
ところが、上記の携帯端末装置においては、外部（人体や他の電子機器等）より静電気が導かれると、撮像部を含む携帯端末装置内の電子部品の信号ラインにノイズが発生し、こ

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000562

のノイズにより誤作動を発生させたり、撮像部等の部品を破壊するという虞があった。
この発明は、上述した事情に鑑みてなされたものであって、電気・電子部品の誤作動や故障を防止して、信頼性の高い携帯端末装置を提供することを目的としている。
【０００５】
【課題を解決するための手段】
上記課題を解決するために、この発明は以下の手段を提案している。
請求項１に係る発明は、筐体と、該筐体内部に設けられ、前記筐体の表面から外方に露出させた撮像部と、該撮像部に電気的に接続された回路基板と、前記筐体表面に、前記撮像部に隣接させて配された導電性材料からなるミラーとを備え、該ミラーを前記回路基板のグランドパターンに電気的に接続して携帯端末装置を構成したことを特徴とする。
【０００６】
請求項２に係る発明は、請求項１に記載の携帯端末装置において、前記ミラーに隣接させてフラッシュ部が配されていることを特徴とする。
【０００７】
請求項３に係る発明は、請求項１又は請求項２に記載の携帯端末装置において、前記ミラーと前記グランドパターンとの電気的な接点が２つ以上設けられていることを特徴とする。
【０００８】
請求項４に係る発明は、請求項１に記載の携帯端末装置において、前記筐体表面に、前記撮像部の撮影窓周囲を囲むように設けられた導電性材料からなるカバー部材を有し、該カバー部材に前記ミラーを一体的に備えると共に、当該ミラーが前記カバー部材を介して前記回路基板のグランドパターンと電気的に接続されるように構成したことを特徴とする。
【０００９】
請求項５に係る発明は、請求項２に記載の携帯端末装置において、前記筐体表面に、前記撮像部の撮影窓周囲及び前記フラッシュ部の閃光窓周囲をそれぞれ囲むように一体的に設けられた導電性材料からなるカバー部材を有し、該カバー部材に前記ミラーを一体的に備えると共に、当該ミラーが前記カバー部材を介して前記回路基板のグランドパターンと電気的に接続されるように構成したことを特徴とする。
【００１０】
【発明の実施の形態】
図１から図４はこの発明に係る一実施形態を示す。ここで説明する実施の形態は、この発明を携帯電話機に適用した場合のものである。図１，２に示すように、この実施の形態に係る携帯電話機（携帯端末装置）１は、第１の筐体２と第２の筐体３とをヒンジ部４により互いに折り畳み自在に連結してなるものである。第１の筐体２の内部には通話キー、終話キー等の各種の操作キー５及びマイクロフォン部６が設けられており、これらは、第１の筐体２の厚さ方向の一端面７側に露出している。
【００１１】
第２の筐体３の内部には、表示部８、スピーカー部９、撮像部１１、フラッシュ部１３及び発光部１５が設けられており、表示部８の表示面８ａ及びスピーカー部９は、第２の筐体３の厚さ方向の一端面１７側に露出している。
スピーカー部９は、マイクロフォン部６と共に、第１、第２の筐体２，３を相互に開いた状態にてアンテナ１８を介して、無線通話を行うものである。なお、各筐体２，３の一端面７，１７は、２つの筐体２，３を相互に折り畳んだ状態において互いに対向し、操作キー５、マイクロフォン部６，表示部８及びスピーカー部９が、互いの筐体２，３により覆い隠されるようになっている。
【００１２】
撮像部１１、フラッシュ部１３及び発光部１５は、一端面１７の反対側に位置する第２の筐体３の他端面１９側に露出しており、この他端面１９には、撮像部１１やフラッシュ部１３に隣接してミラー２１が配されている。なお、このミラー２１は、撮像部１１により撮影者自身を被写体として撮影する際に、撮影者がその撮影範囲や構図等の撮影状態を視

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000563

認するためのものである。
撮像部１１は、被写体からの光を受光して、光の明暗に比例した電気信号を出力することにより被写体の撮影を行う所謂ＣＭＯＳである撮像素子を備えている。この撮像素子は、図３に示すように、第２の筐体３の内部に設けられた薄板状の回路基板２５にフレキシブルプリント配線板２７を介して電気的に接続されている。この撮像部１１において撮影された映像は、前述した表示部８において視認することができる。
【００１３】
フラッシュ部１３は、回路基板２５に固定されたフラッシュ素子２９を備えており、フラッシュ素子２９から発せられる閃光により撮影に必要な光量を得るものである。すなわち、フラッシュ部１３は、撮像部１１において被写体の映像を取得するタイミングに同期して、フラッシュ素子２９が被写体に向けて閃光を発することにより、暗い場所においても撮像部１１による撮影を可能とするものである。
【００１４】
発光部１５は、回路基板２５に固定された発光ダイオード３１を備えており、携帯電話機１の使用者に、各種の情報を発光ダイオード３１の点灯・点滅により報知するものである。すなわち、例えば、撮像部１１により撮影を行う際には、被写体に対して撮影のタイミングを発光ダイオード３１の点灯・点滅により知らせることができるようになっている。
【００１５】
第２の筐体３は、撮像部１１、フラッシュ部１３及び発光部１５を外方に露出させるように構成されている。すなわち、第２の筐体３は、前述の他端面１９側を構成する浅底状のリアケース３３を備えている。そして、リアケース３３は、厚さ方向に貫通し、撮像部１１、フラッシュ部１３及び発光部１５をそれぞれ外方に露出させる３つの貫通孔３５ａ～３５ｃを有するリアケース本体３５と、厚さ方向に貫通して、３つの貫通孔３５ａ～３５ｃを外方に露出させるための開口部３７ａを有する薄板状のリアプレート３７とを備えている。
リアケース本体３５及びリアプレート３７は、これらの厚さ方向に重ね合わせて結合するように構成されている。つまり、リアケース本体３５には、リアケース３３の他端面１９に向けて開口する凹部３６が形成されており、リアプレート３７は、この凹部３６に嵌め込まれ、接着等により一体的に固定されている。
なお、リアプレート３７は、リアケース本体３５の凹部３６の底面３６ａに当接する面と反対側に位置する面が、第２の筐体３の他端面１９となるように構成されている。
【００１６】
また、リアプレート３７の開口部３７ａ内には、この開口部３７ａの形状に略一致する外周形状を有するカバー部材４１が設けられている。このカバー部材４１は、リアケース本体３５とリアプレート３７とを相互に結合した状態において、これらリアケース本体３５とリアプレート３７との間にカバー部材４１の鍔部が挟み込まれることにより固定されるようになっている。
このカバー部材４１は、樹脂部材の表面にめっきを施して金属皮膜を形成したものであり、導電性を有している。このカバー部材４１には、前述したミラー２１が一体的に形成されている。このミラー２１は、携帯電話機の使用者が自らを被写体として撮像部１１により撮影する際に、撮影範囲や構図等の撮影状態を視認できるように構成されている。
また、このカバー部材４１には、厚さ方向に貫通する３つの貫通孔４１ａ～４１ｃが形成されており、各貫通孔４１ａ～４１ｃは、それぞれリアケース本体３５に形成された貫通孔３５ａ～３５ｃと共に撮像部１１、フラッシュ素子２９及び発光素子３１を外方に露出させるように構成されている。
【００１７】
リアケース本体３５とカバー部材４１との間には、カバー部材４１の各貫通孔４１ａ～４１ｃを隙間無く閉塞する窓部材４３～４５がそれぞれ設けられている。これら窓部材４３～４５は、それぞれ撮像部１１の撮影窓、フラッシュ素子２９の閃光窓及び発光素子３１の発光窓を形成するものであり、光を透過させるガラスやアクリル等の透過性材料から形

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000564

成されている。なお、貫通孔４１ａ，４１ｂを塞ぐ窓部材４４，４５は、一体的に形成されている。
また、これら窓部材４３～４５は、それぞれリアケース本体３５の各貫通孔３５ａ～３５ｃを塞ぐように、リアケース本体３５の底面３６ａに載置されるようになっている。したがって、これら窓部材４３～４５は、塵埃が第２の筐体３の内部に侵入することを防いで、撮像部１１、フラッシュ素子２９及び発光素子３１を保護している。
【００１８】
回路基板２５には、不図示のグランドパターンが形成されており、このグランドパターンに電気的に接続するように、フラッシュ素子２９や発光素子３１に隣接して弾性変形可能な２つの接続端子４７，４８が固定されている。これら接続端子４７，４８は、それぞれリアケース本体３５に形成された挿通孔３５ｄ，３５ｅを介してカバー部材４１に当接させるように構成されている。
すなわち、カバー部材４１には、リアケース本体３５側に向けて突出する２つの突起が形成されている。これら突起は、カバー部材４１をリアケース本体３５の底面３６ａに載置した状態において、リアケース本体３５の挿通孔３５ｄに挿入され、接続端子４７，４８に当接するようになっている。なお、これら接続端子４７，４８は、弾性変形可能となっているため、カバー部材４１の各突起により押圧された状態において、その弾性力により各突起と接触した状態に保持することができる。
【００１９】
カバー部材４１を挟み込んでリアケース本体３５及びリアプレート３７を相互に結合し、且つ回路基板２５をリアケース本体３５に近接させて配した状態においては、図４に示すように、前述したカバー部材４１の突起４９がリアケース本体３５の貫通孔３５ｄに挿入され、その先端部が接続端子４７に当接する。なお、図示していないが、カバー部材４１のもう一方の突起４９はリアケース本体３５の貫通孔３５ｅに挿入され、その先端部が接続端子４８に当接する。
また、この状態においては、撮像部１１は、リアケース本体３５の貫通孔３５ａ及びカバー部材４１の貫通孔４１ａを介して他端面１９から第２の筐体３の外方に露出している。さらに、フラッシュ素子２９や発光素子３１も、撮像部１１と同様にして、リアケース本体３５の貫通孔３５ｂ，３５ｃ及びカバー部材４１の貫通孔４１ｂ，４１ｃを介して第２の筐体３の外方に露出している。そして、この状態においては、撮像部１１、フラッシュ素子２９及び発光素子３１が、カバー部材４１に近接して配されることになる。
【００２０】
上記のように、この携帯電話機１によれば、導電性材料からなるカバー部材４１を回路基板２５のグランドパターンに電気的に接続することにより、外部より静電気が導かれても、この静電気を回路基板２５のグランドパターンに逃がすことができる。このため、撮像部１１を含む電子部品の信号ラインにノイズが発生することを防止でき、ノイズによって、表示部８、スピーカー部９等の電気部品や回路基板２５に搭載される各種電子部品の誤作動や故障を防止でき、信頼性の高い携帯電話機１を提供することができる。
また、カバー部材４１と回路基板２５のグランドパターンとの電気的な接点を２つ設けることにより、カバー部材４１が、携帯電話機１に搭載される各種電気部品、電子部品の動作周波数に基づいて発生する電磁波を受信・発信することを防止できる。即ち、カバー部材４１がアンテナのような特性を持つことを防ぎ、この電磁波に基づく各種電気部品、電子部品の誤作動や故障を防止できる。特に、アンテナ１８に受信されるべき電波がカバー部材４１に吸収されたり、前述の電磁波がアンテナ１８から発信された電波に干渉したりして、アンテナ１８の出力低下、受信感度劣化を招くことを防止することができる。
【００２１】
また、ミラー２１をカバー部材４１に一体的に形成しておくことにより、携帯電話機１を構成する部品点数を少なくして、携帯電話機１を容易に製造できると共に、携帯電話機１の製造コストの削減を図ることができる。
さらに、撮像部１１、ミラー２１、フラッシュ部１３、発光部１５を１つに集約して配置

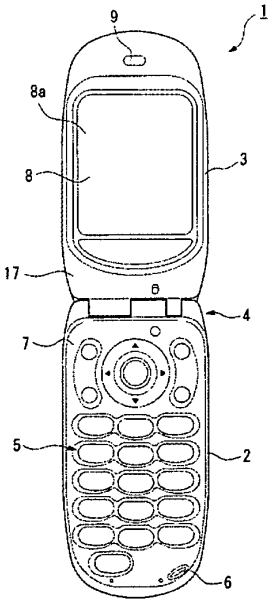
Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000565

することができるため、良好な外観意匠を有する携帯電話機１を提供できる。
【００２２】
なお、上記の実施の形態において、カバー部材４１は、樹脂部材の表面にめっきを施して金属皮膜を形成したものであるとしたが、これに限ることはなく、少なくとも導電性を有すると共に、ミラー２１を形成できるものであればよい。したがって、カバー部材４１は、例えば、金属材料から構成されるとしても良い。
また、撮像部１１の撮像素子は、ＣＭＯＳであるとしたが、これに限ることはなく、被写体からの光を受光して、その映像を電気信号に変換して表示部８や携帯電話機１の内部に設けられた記憶装置に出力するものであればよい。したがって、撮像素子は、例えば、ＣＣＤイメージセンサーであってもよい。
【００２３】
さらに、第２の筐体３を構成するリアケース３３は、リアケース本体３５とリアプレート３７とを結合させて構成されるとしたが、これに限ることはなく、少なくとも第２の筐体３の内部から外方に貫通し、カバー部材４１により閉塞される開口部を備えていればよい。したがって、リアケース３３は、これらリアケース本体３５及びリアプレート３７を一体的に形成したものであっても良い。
また、カバー部材４１と回路基板２５のグランドパターンとは、２つの接続端子４７，４８により電気的に接続されるとしたが、これに限ることはなく、３つ以上の接続端子により電気的に接続されるとしても良い。
【００２４】
さらに、２つの筐体２，３が互いに折り畳み自在に連結された携帯電話機１に限ることはなく、ＰＤＡやノートパソコン等のように、２つの筐体を連結手段により互いに開閉自在に連結した携行可能な携帯端末装置であればよい。したがって、例えば、携帯端末装置は、厚さ方向に重ね合わせ可能な２つの筐体を厚さ方向に沿う軸線を中心に相互に回動可能に連結して構成されたものであってもよい。
また、携帯端末装置は、２つの筐体を有することに限ることはなく、例えば、本実施形態の構造を有する１つの筐体から構成されていても構わない。
【００２５】
以上、本発明の実施形態について図面を参照して詳述したが、具体的な構成はこの実施形態に限られるものではなく、本発明の要旨を逸脱しない範囲の設計変更等も含まれる。
【００２６】
【発明の効果】
以上説明したように、本発明によれば、導電性材料からなるミラーを回路基板のグランドパターンに接続することにより、ミラーの帯電を抑制し、ミラーの帯電に基づいて発生するノイズによる各種電気部品、電子部品の誤作動や故障を防止できるため、信頼性の高い携帯端末装置を提供できる。
【図面の簡単な説明】
【図１】この発明の実施形態に係る携帯端末装置を構成する第１及び第２の筐体を相互に開いた状態を示す平面図である。
【図２】図１の携帯端末装置を構成する第１及び第２の筐体を相互に開いた状態を示す底面図である。
【図３】図１の携帯端末装置において、第２の筐体を構成するリアケース、及び第２の筐体内部に配される回路基板を示す分解斜視図である。
【図４】図１の携帯端末装置において、カバー部材が第２の筐体に固定された状態を示す要部拡大断面図である。
【符号の説明】
１　携帯電話機（携帯端末装置）
３　第２の筐体
１１　撮像部
１３　フラッシュ部

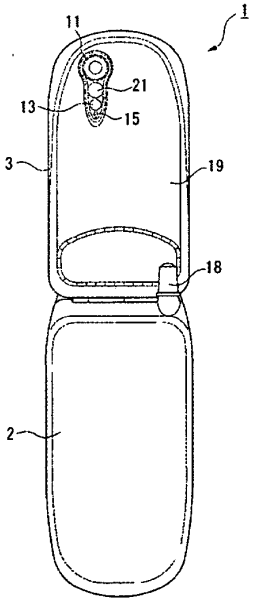
Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000566

１９　他端面（表面）
２１　ミラー
２５　回路基板
３７ａ　開口部
４１　カバー部材
４１ａ　貫通孔

【図1】

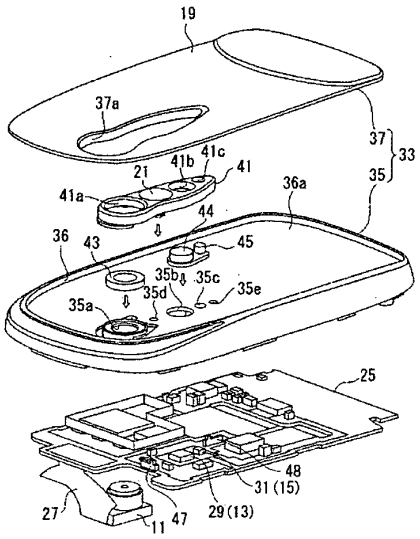


【図2】

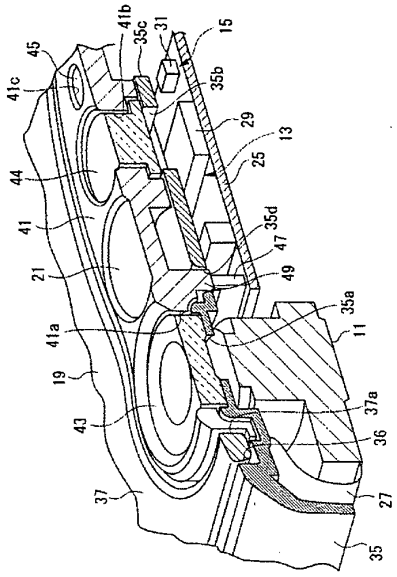


Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000567

【図3】



【図4】



Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000568

(72)発明者　古田　貴志
神奈川県横浜市都筑区加賀原２丁目１番１号　京セラ株式会社横浜事業所内

Ｆターム(参考) 5C022 AA12　AB40　AC51　AC70
5K023 AA07　BB20　BB26　DD08　MM00　MM25　PP01　QQ03

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000569

2005-026881

(11)Publication number 2005-026881
(43)Date of publication of application 27.01.2005
(51)Int.Cl.
H04M 1/21
H04M 1/02
H04N 5/225

(21)Application number 2003-188640
(22)Date of filing 30.06.2003
(71)Applicant KYOCERA CORP
(72)Inventor HORII SHOJI
FURUTA TAKASHI
(54)PORTABLE TERMINAL DEVICE
(57)Abstract
PROBLEM TO BE SOLVED: To provide a portable terminal device which prevents erroneous operation or faults of electric/electronic components and is highly reliable in the portable terminal provided with an imaging part for photographing a subject and a mirror for photographing a photographer himself or herself.
SOLUTION: The portable terminal comprises a casing; an imaging part 11 which is provided within the casing and exposed outward from a surface 19 of the casing; a circuit board 25 electrically connected to the imaging part 11; and the mirror 21 composed by conductive material which is arranged on the surface 19 of the casing, adjacent to the imaging part 11. The mirror 21 is electrically connected to a grounding trace of the circuit board 25.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000570

CLAIMS

[Claim(s)]

[Claim 1]

It provides inside a housing and the housing and has an imaging part exposed to a method of outside from the surface of the aforementioned housing, a circuit board electrically connected to the imaging part, and a mirror which consists of a conductive material which made the aforementioned housing surface adjoin the aforementioned imaging part, and was arranged at it,

Personal digital assistant equipment, wherein the mirror is electrically connected to a ground pattern of the aforementioned circuit board.

[Claim 2]

The personal digital assistant equipment according to claim 1, wherein it makes the aforementioned mirror adjoin and a flash part is arranged.

[Claim 3]

The personal digital assistant equipment according to claim 1 or 2, wherein two or more electric contact of the aforementioned mirror and the aforementioned ground pattern is provided.

[Claim 4]

It has a cover member which consists of a conductive material provided so that the circumference of a photographing window of the aforementioned imaging part might be surrounded on the aforementioned housing surface, The personal digital assistant equipment according to claim 1, wherein the aforementioned mirror is integrally formed in the cover member and the mirror concerned is electrically connected with a ground pattern of the aforementioned circuit board via the aforementioned cover member.

[Claim 5]

It has a cover member which consists of a conductive material integrally provided so that the photographing window circumference of the aforementioned imaging part and the circumference of a flash window of the aforementioned flash part might be surrounded on the aforementioned housing surface, respectively, The personal digital assistant equipment according to claim 2, wherein the aforementioned mirror is integrally formed in the cover member and the mirror concerned is electrically connected with a ground pattern of the aforementioned circuit board via the aforementioned cover member.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000571

DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention]

This invention relates to personal digital assistant equipment provided with the imaging part for photoing an object, and the mirror for self-photographing, such as a cellular phone and PDA (Personal Digital Assistants).

[0002]

[Description of the Prior Art]

As conventional personal digital assistant equipment, the inside of a housing is equipped with the imaging part exposed to the method of outside from the housing surface, and there are some by which the mirror is provided by the housing surface which adjoins at an imaging part (for example, see nonpatent literature 1.). This mirror is for recognizing visually photographing states, such as a photographic range in an imaging part, and composition, when a photographer photos oneself.

It adheres to the housing surface with adhesive tape etc.

This mirror consists of a metallic material or a thing which plated on the surface of the resin member and formed the metallic film, and has conductivity.

An above-mentioned imaging part is what is called an electronic camera provided with image sensors, such as CCD (Charge-Coupled Device) and a CMOS (Complementary Metal Oxide Semiconductor) image sensor.

[0003]

[Nonpatent literature 1]

[Heisei 15(2003) June 27 search], the Internet<URL:http://www.kyocera.co.jp/frame/product/telecom/keitai/tuka/tk31 / camera.html>

[0004]

[Problem to be solved by the invention]

However, in above personal digital assistant equipment, when static electricity was drawn from outside (a human body, other electronic devices, etc.), there was a possibility of a noise having occurred in the signal line of the electronic component in the personal digital assistant equipment containing an imaging part, and having generated malfunction by this noise, or destroying parts, such as an imaging part.

This invention is made in view of the situation mentioned above, prevents malfunction and failure of an electric electronic component, and an object of invention is to provide reliable personal digital assistant equipment.

[0005]

[Means for solving problem]

In order to solve an aforementioned problem, this invention has proposed the following means.

The imaging part which invention concerning Claim 1 is provided inside a housing and the housing, and was exposed to the method of outside from the surface of the aforementioned housing, It had the circuit board electrically connected to the imaging part, and the mirror which consists of the conductive material which made the aforementioned housing surface adjoin the aforementioned imaging part, and was arranged at it, the mirror was electrically connected to the ground pattern of the aforementioned circuit board, and personal digital assistant equipment was constituted.

[0006]

Invention concerning Claim 2 is made to adjoin the aforementioned mirror in the personal digital assistant equipment according to claim 1, and the flash part is arranged.

[0007]

As for invention concerning Claim 3, in the personal digital assistant equipment according to claim 1 or 2, two or more electric contact of the aforementioned mirror and the aforementioned ground pattern is provided.

[0008]

In the personal digital assistant equipment according to claim 1, invention concerning Claim 4 on the aforementioned housing surface, Have a cover member which consists of the conductive material provided so that the circumference of a photographing window of the aforementioned imaging part might be surrounded, and the cover member was integrally equipped with the aforementioned mirror, and it constituted so that the mirror concerned might electrically be connected with the ground pattern of the aforementioned circuit board via the aforementioned cover member.

[0009]

In the personal digital assistant equipment according to claim 2, invention concerning Claim 5 on the aforementioned housing surface, Have a cover member which consists of the conductive material provided integrally so that the photographing window circumference of the aforementioned imaging part and the circumference of a flash window of the aforementioned flash part may be surrounded, respectively, equip the cover member with the aforementioned mirror integrally, and. It constituted so that the mirror concerned might electrically be connected with the ground pattern of the aforementioned circuit board via the aforementioned cover member.

[0010]

[Mode for carrying out the invention]

Fig.4 shows one embodiment concerning this invention from Fig.1. The embodiment described here is a thing at the time of applying this invention to a cellular phone. As shown in Fig.1 and 2, the cellular phone (personal digital assistant equipment) 1 concerning this embodiment connects the first housing 2 and second housing 3 of each other by the hinge region 4, enabling free folding.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000573

Inside the first housing 2, various kinds of operation key 5 and microphone sections 6, such as a speaking key and a clear back key, are provided, and these are exposed to the end surface 7 side of the thickness direction of the first housing 2.

[0011]

Inside the second housing 3, the display part 8, the loudspeaker part 9, the imaging part 11, the flash part 13, and the light-emitting part 15 are provided, and the display surface 8a and the loudspeaker part 9 of the display part 8 are exposed to the end surface 17 side of the thickness direction of the second housing 3.

With the microphone section 6, the loudspeaker part 9 performs a radio call via the antenna 18, where the 1st and the second housings 2 and 3 are opened mutually. In the state where the two housings 2 and 3 were folded up mutually, the end surfaces 7 and 17 of each housing 2 and 3 oppose mutually, and the operation key 5, the microphone section 6, the display part 8, and the loudspeaker part 9 are covered with the mutual housings 2 and 3.

[0012]

The imaging part 11, the flash part 13, and the light-emitting part 15 are exposed to the other end face 19 side of the second housing 3 which is placed at the opposite side of the end surface 17, the imaging part 11 and the flash part 13 are adjoined, and the mirror 21 is arranged at this other end face 19. When this mirror 21 photos the photographer itself as an object by the imaging part 11, it is for a photographer to recognize visually photographing states, such as that photographic range, composition, etc.

The imaging part 11 carried out light reception of the light from an object, and is provided with the image sensor which is what is called CMOS that photos an object by outputting the electrical signal proportional to the light and darkness of light. This image sensor is electrically connected to the laminated circuit board 25 provided inside the second housing 3 via the flexible printed wiring board 27, as shown in Fig.3. In the display part 8 mentioned above, the image photoed in this imaging part 11 can be recognized visually.

[0013]

The flash part 13 is provided with the flash element 29 fixed to the circuit board 25, and obtains light volume required for photographing according to the flash emitted from the flash element 29. That is, synchronizing with the timing which acquires the image of an object in the imaging part 11, the flash part 13 enables photographing by the imaging part 11 also at a dark place, when the flash element 29 emits a flash towards an object.

[0014]

The light-emitting part 15 is provided with the light emitting diode 31 fixed to the circuit board 25, and reports various kinds of information to the user of the cellular phone 1 by lighting and blink of the light emitting diode 31. That is, for example, when taking a photograph by the imaging part 11,

the timing of photographing can be told by lighting and blink of the light emitting diode 31 to an object.

[0015]

The second housing 3 is constituted so that the imaging part 11, the flash part 13, and the light-emitting part 15 may be exposed to the method of outside. That is, the second housing 3 is provided with the rear case 33 of the shape of a shallow bottom which constitutes the above-mentioned other end face 19 side. And the rear case 33 is provided with the following.

The rear case main part 35 which has the three through-holes 35a-35c which penetrate to a thickness direction and expose the imaging part 11, the flash part 13, and the light-emitting part 15 to a method of outside, respectively.

The laminated rear plate 37 which has the opening 37a for penetrating to a thickness direction and exposing the three through-holes 35a-35c to a method of outside.

The rear case main part 35 and the rear plate 37 are constituted so that it may lay on top of these thickness directions and may combine with them. That is, the concave part 36 which carries out an opening towards the other end face 19 of the rear case 33 is formed, and the rear plate 37 is inserted in this concave part 36, and is integrally fixed to the rear case main part 35 by adhesion etc.

The rear plate 37 is constituted so that the surface where the bottom surface 36a of the concave part 36 of the rear case main part 35 is abutted, and the surface which is placed at an opposite side may turn into the other end face 19 of the second housing 3.

[0016]

In the opening 37a of the rear plate 37, the cover member 41 which has the peripheral shape which abbreviated-corresponds to the form of this opening 37a is provided. In the state where the rear case main part 35 and the rear plate 37 were combined mutually, this cover member 41 is fixed by putting the flange of the cover member 41 between these rear case main parts 35 and the rear plate 37.

This cover member 41 plates on the surface of a resin member, forms a metallic film, and has conductivity. The mirror 21 mentioned above is integrally formed in this cover member 41. When the user of a cellular phone takes a photograph by the imaging part 11 by using oneself as an object, this mirror 21 is constituted so that photographing states, such as a photographic range and composition, can be recognized visually.

The three through-holes 41a-41c penetrated to a thickness direction are formed in this cover member 41, and each through-hole 41a-41c, It is constituted so that the imaging part 11, the flash element 29, and the light emitting device 31 may be exposed to the method of outside with the through-holes 35a-35c formed in the rear case main part 35, respectively.

[0017]

Between the rear case main part 35 and the cover member 41, the window members 43-45 which blockade each through-hole 41a-41c of the cover member 41 without a gap are provided, respectively. These window members 43-45 form the photographing window of the imaging part 11, the flash window of the flash element 29, and the light-emitting window of the light emitting device 31, respectively, and are formed from permeable materials which make light transmit, such as glass and an acrylic. The window members 44 and 45 which close the through-holes 41a and 41b are formed integrally.

These window members 43-45 are placed on the bottom surface 36a of the rear case main part 35 so that each through-hole 35a-35c of the rear case main part 35 may be closed, respectively. Therefore, these window members 43-45 prevented dust entering into the inside of the second housing 3, and have protected the imaging part 11, the flash element 29, and the light emitting device 31.

[0018]

The ground pattern of not shown is formed, the flash element 29 and the light emitting device 31 are adjoined, and the two elastically deformable connecting terminals 47 and 48 are fixed to the circuit board 25 so that it may electrically connect with this ground pattern. These connecting terminals 47 and 48 are constituted so that the cover member 41 may be made to abut via the insertion holes 35d and 35e formed in the rear case main part 35, respectively.

That is, two projections projected towards the rear case main part 35 side are formed in the cover member 41. These projections are inserted in 35 d of insertion holes of the rear case main part 35 in the state where the cover member 41 was placed on the bottom surface 36a of the rear case main part 35, and the connecting terminals 47 and 48 are abutted. Since these connecting terminals 47 and 48 are elastically deformable, in the state where it was pressed by each projection of the cover member 41, they can be held in the state where each projection was contacted according to the elastic force.

[0019]

In the state where put the cover member 41, and combined the rear case main part 35 and the rear plate 37 mutually, and made the circuit board 25 approach the rear case main part 35, and it placed, As shown in Fig.4, the projection 49 of the cover member 41 mentioned above is inserted in 35 d of through-holes of the rear case main part 35, and the point abuts the connecting terminal 47. Although not illustrated, another projection 49 of the cover member 41 is inserted in the through-hole 35e of the rear case main part 35, and the point abuts the connecting terminal 48.

In this state, the imaging part 11 is exposed to a way outside the second housing 3 from the other end face 19 via the through-hole 35a of the rear case main part 35, and the through-hole 41a of the cover member 41. The flash element 29 and the light emitting device 31 as well as the imaging part

11 are exposed to a way outside the second housing 3 via the through-holes 35b and 35c of the rear case main part 35, and the through-holes 41b and 41c of the cover member 41. And in this state, the imaging part 11, the flash element 29, and the light emitting device 31 will approach and be arranged at the cover member 41.

[0020]

As mentioned above, according to this cellular phone 1, even if static electricity is drawn from outside by electrically connecting the cover member 41 which consists of a conductive material to the ground pattern of the circuit board 25, this static electricity can be missed to the ground pattern of the circuit board 25. For this reason, a noise can be prevented from occurring in the signal line of the electronic component containing the imaging part 11, the malfunction and failure of several kinds of electronic component which are mounted on electrical parts and the circuit boards 25, such as the display part 8 and the loudspeaker part 9, by the noise can be prevented, and the reliable cellular phone 1 can be provided.

It can prevent receiving and sending the electromagnetic waves which the cover member 41 generates based on the clock frequency of several kinds of electrical part and the electronic component which are mounted on the cellular phone 1 by providing two electric contact of the cover member 41 and the ground pattern of the circuit board 25. That is, the cover member 41 prevents having the characteristic like an antenna, and can prevent the malfunction and failure of several kinds of electrical part and an electronic component based on this electromagnetic wave. It can prevent the electric wave which should be especially received by the antenna 18 being absorbed into the cover member 41, or the above-mentioned electromagnetic waves interfering in the electric wave sent from the antenna 18, and causing the loss of power of the antenna 18, and receiving sensitivity degradation.

[0021]

The number of parts which constitutes the cellular phone 1 by forming the mirror 21 in the cover member 41 integrally is lessened, and the cellular phone 1 can be manufactured easily, and reduction of the manufacturing cost of the cellular phone 1 can be aimed at.

Since the imaging part 11, the mirror 21, the flash part 13, and the light-emitting part 15 can be collected and arranged to one, the cellular phone 1 which has a good external design can be provided.

[0022]

In the above-mentioned embodiment, although the cover member 41 presupposed that it plates on the surface of a resin member, and forms a metallic film, do not restrict it to this, and it has conductivity at least, and it just forms the mirror 21. Therefore, though the cover member 41 comprises a metallic material, for example, it is good.

Although the image sensor of the imaging part 11 presupposed that it is CMOS, it is not restricted

to this, carries out light reception of the light from an object, and should just output it to the memory storage which converted the image to the electrical signal and was provided the display part 8 and inside the cellular phone 1. Therefore, an image sensor may be CCD series, for example.

[0023]

Although the rear case 33 which constitutes the second housing 3 presupposed that the rear case main part 35 and the rear plate 37 are combined, and it is constituted, it did not restrict to this, and penetrated from the inside of the second housing 3 to the method of outside at least, and it should just be provided with the opening blockaded with the cover member 41. Therefore, the rear case 33 may form integrally these rear case main parts 35 and the rear plate 37.

Although the cover member 41 and the ground pattern of the circuit board 25 presupposed that it is electrically connected by the two connecting terminals 47 and 48, though it does not restrict to this and is electrically connected by three or more connecting terminals, they are good.

[0024]

The two housings 2 and 3 do not restrict to the cellular phone 1 connected mutually enabling free folding, and should just be the personal digital assistant equipment which connected two housings of each other freely openable/closable by the connection means and which can be carried like PDA or a notebook computer. Therefore, for example, personal digital assistant equipment connects mutually two housings which can be piled up rotatable focusing on the axis line along a thickness direction, and may be constituted by the thickness direction.

Personal digital assistant equipment may comprise one housing which does not restrict to having two housings, for example, has the structure of this embodiment.

[0025]

As mentioned above, although the embodiment of the present invention was explained in full detail with reference to Drawings, specific composition is not restricted to this embodiment and the change of design etc. of the range which does not deviate from the summary of the present invention are included.

[0026]

[Effect of the Invention]

As described above, according to the present invention, by connecting the mirror which consists of a conductive material to the ground pattern of a circuit board, Electric charge of a mirror is inhibited, and since the malfunction and failure of several kinds of electrical part and an electronic component by the noise which occurs based on electric charge of a mirror can be prevented, reliable personal digital assistant equipment can be provided.

[Brief Description of the Drawings]

[Drawing 1]It is a plan view showing the state where the 1st which constitutes the personal digital assistant equipment concerning the embodiment of this invention, and a second housing were

opened mutually.

[Drawing 2]It is a bottom view showing the state where the 1st which constitutes the personal digital assistant equipment of Fig.1, and a second housing were opened mutually.

[Drawing 3]In the personal digital assistant equipment of Fig.1, it is an exploded perspective view showing the rear case which constitutes a second housing, and the circuit board which is arranged at the inside of a second housing.

[Drawing 4]In the personal digital assistant equipment of Fig.1, it is an essential part expanded sectional view showing the state where the cover member was fixed to the second housing.

[Explanations of letters or numerals]

1 Cellular phone (personal digital assistant equipment)

3 A second housing

11 Imaging part

13 Flash part

19 Other end face (surface)

21 Mirror

25 Circuit board

37a Opening

41 Cover member

41a Through-hole

(19)日本国特許庁(JP)　(12)公開特許公報(A)　(11)特許出願公開番号
特開2005-286430
(P2005-286430A)
(43)公開日　平成17年10月13日(2005.10.13)

(51)Int.Cl.[7]	F I		テーマコード（参考）
H04M 1/02	H04M 1/02	C	5K023
	H04M 1/02	A	

審査請求 有　請求項の数 5　OL　（全 28 頁）

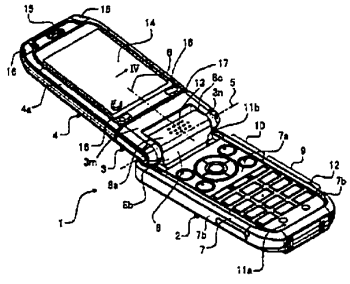
(21)出願番号　特願2004-93781 (P2004-93781)
(22)出願日　平成16年3月26日 (2004.3.26)

(71)出願人　000005049
シャープ株式会社
大阪府大阪市阿倍野区長池町２２番２２号
(74)代理人　110000338
特許業務法人原謙三国際特許事務所
(74)代理人　100080034
弁理士　原　謙三
(74)代理人　100113701
弁理士　木島　隆一
(74)代理人　100116241
弁理士　金子　一郎
(72)発明者　藤原　俊司
大阪府大阪市阿倍野区長池町２２番２２号
シャープ株式会社内

最終頁に続く

(54)【発明の名称】携帯機器

(57)【要約】
【課題】　表示部の表示に連動した音の聴取を良好に行うことができる携帯機器を提供する。
【解決手段】　ベース部７およびベース部７から突出する突出部８を含み、かつ突出部８にスピーカ孔１３が形成された第１の筐体２と、突出部８に回動軸５を介して回動自在に設けられるヒンジ部３と、ヒンジ部３に回動軸５と略直交する回転軸６を介して回転自在に設けられた第２の筐体４とを設ける。そして、ヒンジ部３を、第２の筐体４が連結される中央部３ｍと、中央部３ｍから枝分かれし、突出部８の一対の側面８ｂに各々連結される両端部３ｎとを有するU字状に構成する。さらに、第２の筐体４に、ヒンジ部３との連結面に略直角を成す少なくとも一つの面に第１の表示部１４を設ける。
【選択図】　図1



Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000580

【特許請求の範囲】
【請求項1】
ベース部および前記ベース部の端部から突出する突出部を含む第１の筐体と、前記突出部に第１の回動軸を中心として回動自在に設けられるヒンジ部と、前記ヒンジ部に前記第１の回動軸と略直交する第２の回転軸を中心として回転自在に設けられる第２の筐体とを備えた携帯機器であって、
前記第１の筐体は、前記突出部にスピーカ孔を備え、
前記第２の筐体は、前記第２の回転軸に略平行な少なくとも一つの面に、表示部を備えていることを特徴とする携帯機器。
【請求項2】
前記第１の筐体は、前記ベース部および前記突出部の間で連通した内部空間にスピーカを備えていることを特徴とする請求項１に記載の携帯機器。
【請求項3】
前記第１の筐体は、前記突出部と反対側の面に撮影レンズを備えるとともに、前記撮影レンズと前記スピーカとの間に、前記撮影レンズから入射された映像を撮影するカメラ部を備えていることを特徴とする請求項２に記載の携帯機器。
【請求項4】
前記第２の筐体は、前記表示部と同一面にキー操作部を備えていることを特徴とする請求項１に記載の携帯機器。
【請求項5】
前記第１の筐体は、前記突出部に十字キーを備えていることを特徴とする請求項１に記載の携帯機器。

【発明の詳細な説明】
【技術分野】
【0001】
本発明は、携帯機器に関し、特に、２つの筐体が回動可能に取り付けられて構成される携帯機器に関する。
【背景技術】
【0002】
従来、ヒンジを介して２つの筐体が開閉自在に連結された折り畳み型の携帯電話機が広く普及している。このタイプの携帯電話機では、一般的に、一方の筐体に表示部やレシーバなどが設けられ、他方の筐体には、操作ボタンやマイクなどが設けられている。さらに最近になって、互いに独立して回転する２つの回転軸を備えた折り畳み型の携帯電話機が販売され始めている。図１４は、２つの回転軸を備えた従来の折り畳み型の携帯電話機１０１における開いた状態を示す斜視図である。図１５は、図１４に示した従来の携帯電話機１０１における閉じた状態を示す斜視図である。図１６は、図１４および図１５に示した従来の携帯電話機１０１における閉じた状態を、図１５中の矢印ＸＩＩＩ方向から見た斜視図である。
【0003】
図１４～図１６に示すように、携帯電話機１０１は、表面１０３ａを有する筐体１０３と、筐体１０３に対して矢印１５１に示す方向に回動可能に設けられた筐体１０７および１０８と、筐体１０３内に収容された図示しないカメラ部とを備える。筐体１０７の内部には、筐体１０３と筐体１０７とを回動可能に連結し、筐体１０７と筐体１０８とを回転可能に連結する図示しないヒンジ装置が収容されている。
【0004】
筐体１０３には、ヒンジ装置側端部の周縁部に、表面１０３ａから突出するヒンジ支持部１０４ｍおよび１０４ｎが形成されている。ヒンジ支持部１０４ｍおよび１０４ｎは、互いに距離を隔てて設けられている。表面１０３ａ上のヒンジ支持部１０４ｍとヒンジ支持部１０４ｎとの間には、筐体１０７が位置決めされている。そして、ヒンジ支持部１０４ｍおよび１０４ｎと筐体１０７とが、筐体１０７内に収容されたヒンジ装置によって連

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000581

結されている。

【0005】

筐体１０３の表面１０３ａには、複数の操作ボタン１１８が設けられており、表面１０３ａの反対側に位置する筐体１０３の表面１０３ｂには、スピーカ１２２が設けられている。表面１０３ｂに対して段差をもって形成された表面１５３には、カメラ部の撮影レンズ１１４が露出している。撮影レンズ１１４は、携帯電話機１０１を開いた状態において、筐体１０８と隣り合う位置に設けられている。カメラ部は、表面１０３ａと表面１５３との間に挟まれた筐体１０３内の空間に配置されている。筐体１０８の表面１０８ａには、メイン表示部１１６が設けられている。

【0006】

図１７は、携帯電話機１０１において、図１４に示した状態から、メイン表示部が設けられた筐体１０８を回転させた場合の携帯電話機を示す斜視図である。この図に示すように、筐体１０８は、筐体１０７に対して矢印１５２に示す方向に回転可能に設けられている。これにより、メイン表示部１１６が設けられた表面１０８ａを適当な方向に向けることができる。

【0007】

また別に、開放状態および閉塞状態に拘わらず操作キーの操作を可能にして操作性の向上を図ることを目的として、第１の筐体と第２の筐体とを接続するヒンジ部に、第１の筐体と第２の筐体を折り畳んだ状態において操作可能な副操作キーを設けたモバイル情報端末機器が、特許文献１に開示されている。

【特許文献1】特開２００３－２２９９４１号公報（公開日２００３年８月１５日）

【発明の開示】

【発明が解決しようとする課題】

【0008】

前述のような２つの回転軸を備えた従来の折り畳み型の携帯電話機では、表示部を内面に閉塞した状態および外面に露出した状態で携帯電話機を閉じることができる。このため、持ち運び時における表示部の傷つき防止を図ることができ、また、携帯電話機を閉じた状態で表示部を使用することもできる等、機器の使用用途を広げることができる。

【0009】

しかし、上記従来の折り畳み型の携帯電話機では、携帯電話機を開いたとき、あるいは、表示部を外面に露出した状態で携帯電話機を閉じたときに、表示部とスピーカ孔とが互いに異なる面に位置するため、表示部の表示に連動した音を聴取し難い等の問題が発生する。

【0010】

本発明は、上記の問題点に鑑みてなされたものであり、その目的は、表示部の表示に連動した音の聴取を良好に行うことができる折り畳み型の携帯機器を提供することにある。

【課題を解決するための手段】

【0011】

前記目的を達成するために、本発明の携帯機器は、ベース部および前記ベース部の端部から突出する突出部を含む第１の筐体と、前記突出部に第１の回動軸を中心として回動自在に設けられるヒンジ部と、前記ヒンジ部に前記第１の回動軸と略直交する第２の回転軸を中心として回転自在に設けられる第２の筐体とを備えた携帯機器であって、前記第１の筐体は、前記突出部にスピーカ孔を備え、前記第２の筐体は、前記第２の回転軸に略平行な少なくとも一つの面に、表示部を備えていることを特徴としている。

【0012】

このような構成によれば、携帯機器を開いたとき、および表示部を外側に露出して携帯機器を閉じたときに、表示部とスピーカ孔とが略同一面になるよう配置される。このため、表示部からの光の進行方向と音の進行方向とが略同一となる。これにより、ユーザにとって、表示部の表示に連動した音を聴取しやすい状況を作り出すことができる。

【0013】

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000582

また、本発明の携帯機器は、前記の構成に加えて、前記第１の筐体が、前記ベース部および前記突出部の間で連通した内部空間にスピーカを備えていてもよい。

【0014】

このような構成によれば、前記第１の筐体における、ベース部から第２の筐体に連結される突出部にまで連通する内部空間にスピーカが収容される。このため、突出部における内部空間を、スピーカを収容する空間として利用しない場合、すなわち、突出部における内部空間以外にスピーカを収容する場合と比較して、ベース部の厚みを小さくできる。これにより、携帯機器の小型化を図ることができる。

【0015】

また、本発明の携帯機器は、前記の構成に加えて、前記第１の筐体が、前記突出部と反対側の面（対向する面）に撮影レンズを備えるとともに、前記撮影レンズと前記スピーカとの間に、前記撮影レンズから入射された映像を撮影するカメラ部を備えていてもよい。

【0016】

このような構成によれば、ベース部から第２の筐体に連結される突出部にまで連通する内部空間にスピーカおよびカメラ部が収容される。このため、突出部における内部空間を、スピーカおよびカメラ部を収容する空間として利用しない場合と比較して、ベース部の厚みを小さくしてスピーカおよびカメラ部を収容することができる。これにより、撮影機能付き携帯機器の小型化を図ることができる。

【0017】

また、本発明の携帯機器は、前述の構成に加えて、前記第２の筐体が、前記表示部と同一面にキー操作部を備えていてもよい。

【0018】

このような構成によれば、表示部を外側に露出して携帯機器を閉じたときに、表示部とスピーカ孔とキー操作部とが略同一面になるよう配置される。このため、表示部からの光の進行方向と音の進行方向とが略同一となるとともに、表示部を見ながらキー操作を行うことができる。これにより、ユーザにとって、表示部を用いたキー操作がし易く、かつ表示部の表示に連動した音を聴取しやすい状況を作り出すことができる。

【0019】

さらに、本発明の携帯機器は、前述の構成に加えて、前記第１の筐体は、前記突出部に十字キーを備えていてもよい。

【0020】

このような構成によれば、表示部を外側に露出して携帯機器を閉じたときに、表示部とスピーカ孔と十字キーとが略同一面になるよう配置される。このため、表示部からの光の進行方向と音の進行方向とが略同一となるとともに、表示部を見ながら十字キーの操作を行うことができる。これにより、ユーザにとって、表示部を用いたキー操作がし易く、かつ表示部の表示に連動した音を聴取しやすい状況を作り出すことができる。

【発明の効果】

【0021】

以上のように、本発明の携帯機器は、前記第１の筐体が、前記突出部にスピーカ孔を備え、前記第２の筐体が、前記第２の回転軸に略平行な少なくとも一つの面に、表示部を備えている。

【0022】

それゆえ、ユーザにとって、表示部の表示に連動した音を聴取しやすい状況を作り出すことができる。

【発明を実施するための最良の形態】

【0023】

本発明の実施の形態について、図面を参照して説明する。

本実施の形態にかかる携帯機器は、２つの筐体が開閉自在に連結された折り畳み型の携帯電話機である。なお、本実施の形態にかかる携帯機器は、ラジオ放送やテレビ放送等の視聴機としての機能、および、携帯ゲーム機としての機能を備えている。

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000583

【0024】
図１は、本実施の形態にかかる携帯電話機１の、開いた状態を示す斜視図である。図２は、携帯電話機１の、閉じた状態を示す斜視図である。図３は、携帯電話機１を図２中の矢印ＩＩＩ方向から見た斜視図である。
【0025】
図１～図３に示すよう、携帯電話機１は、カメラ機能を有する折り畳み型の携帯電話機であり、カメラ部（図示せず）を備える一方の筐体を表裏反転させることができるタイプの携帯電話機である。
【0026】
携帯電話機１は、第１の筐体２と、第１の筐体２に対して回動軸５（第１の回転軸）を中心に回動自在に連結されたヒンジ部３と、ヒンジ部３に対して回転軸６（第２の回転軸）を中心に回転自在に連結された第２の筐体４とから構成されている。なお、第１および第２の筐体２，４やヒンジ部３は、ＡＢＳ（Acrylonitrile Butadiene Styrene resin）やＰＣ－ＡＢＳ（Polycarbonate - Acrylonitrile Butadiene Styrene resin）等のプラスチック樹脂を材料として構成されている。
【0027】
また、回動軸５と回転軸６とは互いに略直交するように設けられている。そして、ヒンジ部３および第２の筐体４は、回動軸５を中心に角変位自在に回転させることができる。これにより、携帯電話機１の形状は、図１に示す開いた状態と図２および図３に示す閉じた状態との間で変化する。
【0028】
図１および図２に示すように、第１の筐体２は、略矩形形状の表面７ａを有するベース部７と、表面７ａの所定位置から突出して形成された突出部８とからなる。表面７ａは、携帯電話機１を開いた状態で外側に面し、閉じた状態で内側に面する表面である。すなわち、表面７ａは、携帯電話機１を閉じた状態では筐体４によって覆われており（閉塞しており）、携帯電話機１を開くことによって外部に対して開放状態となる。ベース部７は、表面７ａに対して略直角に連なり、表面７ａを挟んで互いに平行に延在する、一対の側面７ｂを有する。
【0029】
表面７ａには、数字および文字を入力するためのキーなどから構成される入力ボタン群９と、携帯電話機１における各種設定／機能切替を行うための機能ボタン群１０とが設けられている。これら入力ボタン群９や機能ボタン群１０のキートップ部は、ＡＢＳやＰＣ－ＡＢＳ等のプラスチック樹脂を材料として構成されており、さらに機能ボタン群１０のキートップ部には、クロームメッキ等のメッキ加工が施されている。
【0030】
なお、これら入力ボタン群９および機能ボタン群１０は、携帯電話機１の開閉操作および携帯電話機１を閉じた状態での機器への押圧によってキー操作されないように配置されている。具体的には、携帯電話機１が閉じた状態で、第１および第２の筐体２，４との間に間隙Ａが設けられるよう設計されている。
【0031】
また、表面７ａには、携帯電話機１を開いた状態での通話等に用いる第１のマイクに対応するマイク孔１１ａと、携帯電話機１を閉じた状態での通話等に用いる第２のマイクに対応するマイク孔１１ｂとが穿設されている。すなわち、第１のマイクは、マイク孔１１ａを介して伝導された音声を適切に取得（入力）できるように、マイク孔１１ａに対応（関連）する位置に配置されている。同様に、第２のマイクは、マイク孔１１ｂを介して伝導された音声を適切に取得できるように、マイク孔１１ｂに対応する位置に配置されている。第１のマイク孔１１ａは、突出部８が形成された端部側と反対側の端部側（対向する端部側）に配置されている。第２のマイク孔１１ｂは、突出部８の近傍に配置されており、第１の筐体２とヒンジ部３および第２の筐体４とが対向するように回転軸５を中心としてヒンジ部３を第１の筐体２に対して回転させ、携帯電話機１を閉じた状態において、中

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000584

央部３ｍに対向する位置に配置されている。すなわち、図２に示す、第１の筐体２とヒンジ部３との間に生じる間隙Ｂと、ヒンジ部３と第２の筐体４との間に生じる間隙Ｃとの中間に配置されている。

【0032】

なお、この第２のマイク孔１１ｂの配置については、携帯電話機１を閉じた状態において、第１の筐体２とヒンジ部３との間に生じる間隙Ｂまたはヒンジ部３と第２筐体４との間に生じる間隙Ｃが上部に来る位置であっても良い。

【0033】

また、第１のマイクおよびそれに対応する第１のマイク孔１１ａを廃止し、携帯電話機１を開いたときと閉じたときの何れの状態でも第２のマイクを用いるようにしても良い。このような構成とする場合、部品点数の増加を招くことなく、携帯電話機１を開いたときと閉じたときの何れの状態でも通話が可能となるよう構成することができる。

【0034】

さらに、側面７ｂの一方には、第１の筐体２の内部に収容されるカメラ部の使用時に操作されるシャッタボタン１２が設けられている。

【0035】

ヒンジ部３に隣り合って位置し、回動軸５が延びる方向に延在する表面７ａの周縁には、突出部８が設けられている。突出部８は、回動軸５が延びる方向に距離を隔てて位置し、表面７ａに対して略水平となる表面８ａと、表面７ａに略直角となるように表面８ａにおける表面７ａと離れた位置に連なる一対の側面８ｂとを有する。表面８ａには、着信メロディ等の音声を高レベルで出力する第１のスピーカ用の、第１のスピーカ孔１３が設けられている。突出部８における回転軸５方向の両端となる面である一対の側面８ｃの各々は、一対の側面７ｃの各々より所定の距離だけ内側に寄った位置で、表面７ａに連なっている。したがって、突出部８は、表面７ａの周縁の両端を除いた中心付近に設けられている。

【0036】

第１の筐体２には、突出部８に回動自在に設けられたヒンジ部３と、ヒンジ部３に対して回転軸６を中心に回転自在に設けられた第２の筐体４とが接続されている。回転軸６の延長線は、突出部８の中心、つまり、一対の側面８ｃの各々からの距離が等しい位置で回動軸５に直交している。

【0037】

ヒンジ部３は、回動軸５が延びる方向に延在する中央部３ｍと、中央部３ｍの両端から回転軸６が延びる方向に延在する両端部３ｎとによって、Ｕ字状に形成されている。ヒンジ部３は、両端部３ｎが突出部８の一対の側面８ｃを挟み込むように位置決めされている。ヒンジ部３の内部には、図示しないヒンジ装置とアンテナが収容されている。そして、ヒンジ装置によって、両端部３ｎと側面８ｃとが、回動自在に連結されている。これにより、中央部３ｍと第２の筐体４とが、第１の筐体２に対して回転自在に連結されている。また、アンテナを介して例えば基地局との信号の送受信が行われる。

【0038】

第２の筐体４は、ヒンジ部３が連結される端部側が一部切り欠かれた略矩形形状の表面４ａを有する。この表示面４ａは、第２の筐体４におけるヒンジ部３との連結面に略直角を成すように設けられている。すなわち、表示面４ａは、回転軸６に対して略平行に設けられている。

【0039】

また、表面４ａには、第１の表示部１４が設けられている。第１の表示部１４は、液晶ディスプレイやＥＬ（electro luminescent）ディスプレイなどによって構成されており、表示ドライバ部を介して与えられる画像データに基づいて画像を表示する。また、表面４ａには、通話等に用いるレシーバのレシーバ孔１５が穿設されている。レシーバ孔１５は、第２の筐体４における、ヒンジ部３が連結される端部側と反対側の（対向する）端部側に配置されている。なお、第１の表示部１４は、表面４ａにおける、ヒンジ部３が連結

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000585

される端部側とレシーバ孔１５との間に設けられている。また、表面４ａには、第１の表示部１４を外側にして携帯電話機１を閉じたときに用いる操作ボタン群（キー操作部）１６が設けられている。操作ボタン群１６は、第１の表示部１４の四隅にそれぞれ設けられている。

【0040】

また、第２の筐体４には、ヒンジ部３が連結される端部側の切り欠かれた部分に、緩衝部材１７が設けられている。この緩衝部材１７は、ＡＢＳやＰＣ－ＡＢＳ等のプラスチック樹脂や、プラスチック樹脂にメッキ加工を施したものよりも低硬度で且つ弾性を有するＴＰＥ（Thermoplastic-Elastomer）やＴＰＥＥ（Thermoplastic-Polyester-Elastomer）等のゴム含有プラスチック樹脂（エラストマー）を材料として構成されている。

【0041】

この緩衝部材１７が設けられる部分は、携帯電話機１を閉じたときに第１の表示部１４が閉塞される状態（表示部１４が第１の筐体２における表面７ａに対向している状態）でのヒンジ部３に対する第２の筐体４の角度を０度、携帯電話機１を閉じたときに第１の表示部１４が開放される状態（第２の筐体４における表示面１４の反対側の面である表面４ｂが、第１の筐体２における表面７ａに対向している状態）でのヒンジ部３に対する第２の筐体４の角度を１８０度としたとき、第２の筐体４をヒンジ部３に対して９０度回転させた状態で、ヒンジ部３を第１の筐体２に対して回動させたときに第１の筐体２に接触する、第２の筐体４の角部である。

【0042】

このように、第１の筐体２を構成する材質より低硬度の材質からなる緩衝部材１７を備えることにより、第２の筐体４の強度低下を抑制することができ、また、第１の筐体２および第２の筐体４の接触による破損を防止できる。なお、緩衝部材１７は、第１の筐体２を構成する材質と同等、もしくは第１の筐体２を構成する材質よりも硬い材質であっても良い。このような材質を用いる場合、緩衝部材１７が変形したり、第２の筐体４に対して緩衝部材１７が移動する等、第２の筐体４に対する押圧による力や摺動による力を軽減できるような構成とすれば良い。

【0043】

また、本実施の形態では、ヒンジ部３に対する第２の筐体４の回転範囲が０度から１８０度となるよう構成し、第２の筐体４を上部（回転軸６の延長線上であって、第２の筐体４に対してヒンジ部３側とは反対側）から見たとき、０度の状態から時計回り（右回り）に１８０度まで回転し、１８０度の状態から反時計回り（左回り）に０度まで回転するよう構成している。したがって、緩衝部材１６は、ヒンジ部３が連結される端部側の一方の角部に設けられている。

【0044】

このような構成とすることで、第２の筐体４において、第１の筐体２を構成する材質より低硬度の材質からなる部分を最小限に抑えることができ、第２の筐体４の強度低下をより抑制することができる。また、ヒンジ部３に対して第２の筐体４を回転させる場合の、ヒンジ部３と第２の筐体４とを結ぶ信号線（リード線やフレキシブル基板）の撓れを最小限に抑えることができる。さらに、ユーザは、緩衝部材１７が常に表面７ａ側に来るように第２の筐体４を回転させれば良いため、回転方向が認識し易く、誤った方向に回転させることを抑制することができる。そのため、第２の筐体４を誤った方向に回転させることによって生じるヒンジの破壊を抑制することができる。

【0045】

図３に示すように、表面７ａの反対側に位置するベース部７の表面７ｃには、突出部８の裏側に位置するように、撮影レンズ１８およびフラッシュ１９が並んで設けられている。フラッシュ１９は、後に説明するカメラ部で撮影する際の補助光源として使われる。一般的には、補助光源にはキセノン管が用いられ、また最近では、ＲＧＢのＬＥＤ（light emitting diode）が用いられている。これらの３色のＬＥＤを同時発光させることによって、白色光の照明を得ることができる。

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000586

【0046】
表面７ｃには、撮影レンズ１８の近傍に位置するように、第２の表示部２０および着信メロディ等の音声の出力に用いる第２のスピーカ用の、第２のスピーカ孔２１が並んで設けられている。第２の表示部２０は、液晶ディスプレイやＥＬディスプレイなどによって構成されている。
【0047】
図４は、携帯電話機１における第１の筐体２、ヒンジ部３、第２の筐体４の連結部を、図１中のＩＶ方向から見た断面図である。この図に示すように、第１の筐体２の内部には、突出部８とベース部７との間で連通する内部空間２２が規定されている。内部空間２２には、撮影レンズ１８の背面側に位置して、撮影レンズ１８から入射された映像を撮影するカメラ部２３と第１のスピーカ２４が収容されている。カメラ部２３は、オートフォーカス機能、２０倍デジタルズーム機能および２倍光学ズーム機能等を備える高性能カメラである。第１のスピーカ２４は着信メロディやラジオ放送またはテレビ放送の音声等を出力する高出力スピーカである。
【0048】
カメラ部２３は、ＣＣＤ（charge coupled device）イメージセンサまたはＣＭＯＳ（complementary metal oxide semiconductor）イメージセンサなどの撮影素子と、ＲＧＢの３色のカラーフィルタとを備える。カメラ部２３では、被写体で反射されて撮影レンズ１８に入射した光を、カラーフィルタを通してＲＧＢの３色光に変換し、ＲＧＢの３色光をそれぞれＣＣＤに入射させる。
【0049】
なお、第１のスピーカ２４に代えて通話等に用いられる低出力のレシーバを内部空間２２に収容するようにしても良く、このような構成とすることで、携帯電話機１を閉じた状態で、このレシーバと第１のマイクとを用いた通話を可能とすることができる。また、第１のスピーカ２４を電気的に高出力用と低出力用に切り替えるようにすることでも前述の効果を奏することができるが、この場合には、通話中に第１のスピーカ２４が高出力にならないよう規制する回路を設けると良い。これにより、通話中に第１のスピーカ２４が高出力になることによりユーザが聴覚障害を起こすといったことを防止することができる。
【0050】
図５は、図１に示した携帯電話機１の分解組立図である。図中には、開いた状態の携帯電話機１が表面７ａおよび４ａ側から示されている。図４および図５に示すよう荷、第１の筐体２は、表面７ａを有するキャビネット２ｐと、表面７ｃを有する背面キャビネット２ｑとから構成されている。第２の筐体４は、表面４ａを有するキャビネット４ｐと、表面４ｂを有する背面キャビネット４ｑとから構成されている。
【0051】
ヒンジ部３は、キャビネット３ｐと背面キャビネット３ｑとから構成されている。キャビネット３ｐと背面キャビネット３ｑとは、内部にヒンジ装置２５を収容して組み合わされる。ヒンジ装置２５は、中央部３ｍと第２の筐体４とを回転自在に連結するヒンジ機構２６と、両端部３ｎと側面８ｂとを回動自在に連結する２つのヒンジ機構２７とから構成されている。ヒンジ装置２５は、ヒンジ機構２６から２方向に枝分かれして延在し、その先端にヒンジ機構２７が設けられた形状を有する。カメラ部２３および第１のスピーカ２４は、２つのヒンジ機構２７の間に位置して第１の筐体２の内部に収容される。
【0052】
このような構成によれば、ヒンジ部３に連結される突出部８の内部にまで連通する内部空間２２にカメラ部２３と第１のスピーカ２４が収容される。このため、光学ズーム機能等を備えた大型のカメラ部２３であっても、第１の筐体２の表面７ｃ側における突出部８以外の部分を突出させることなく、第１のスピーカ２４とともに第１の筐体２の内部に収容することができる。このため、突出部８における内部空間２２を、第１のスピーカ２４を収容する空間として利用しない場合、すなわち、突出部８における内部空間２２以外の部分に第１のスピーカ２４を収容する場合と比較して、ベース部７の厚みを小さくできる

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000587

。これにより、第１の筐体２の厚みが大きくなることがないため、携帯電話機１の小型化を図ることができる。

【0053】

図６は、携帯電話機１を９０度開いた状態（ヒンジ部３および第２の筐体４を、回転軸５を中心に第１の筐体２に対して閉じた状態から９０度回動させた状態）とし、第２の筐体４を、回転軸６を中心にヒンジ部３に対して図１に示す状態から９０度だけ回転させた状態を示す斜視図である。第２の筐体４は、この状態のときに、第１の表示部１４が設けられた表面４ａと、入力ボタン群９および機能ボタン群１０が設けられた第１の筐体２の表面７ａとが直交するように位置決めされている。

【0054】

図７は、図６に示した状態から、携帯電話機１を１８０度開いた状態（ヒンジ部３および第２の筐体４を、回転軸５を中心に第１の筐体２に対して閉じた状態から１８０度回動させた状態）とし、第２の筐体４を、回転軸６を中心にヒンジ部３に対してさらに９０度だけ回転させた状態を示す斜視図である。この場合、第２の筐体４の表面４ａと第１の筐体２の表面７ｃとが同一方向を向き、第２の筐体４の表面４ｂと第１の筐体２の表面７ａとが同一方向を向くように位置決めされる。なお、図１、図６および図７に示す状態に限らず、第２の筐体４は回転軸６を中心に適当な角度だけ回転させることができる。したがって、表面４ａに設けられた第１の表示部１４を所望の方向に向けることができる。

【0055】

このように携帯電話機１では、第２の筐体４が、第１の筐体２に対して２方向に回転自在に設けられている。このため、カメラ部２３を用いて被写体を撮影する場合に、ユーザは、その撮影の条件にあわせて第１の表示部１４の向きを選択することができる。たとえば、正面に立った被写体を撮影する場合、ユーザは、第２の筐体４を図１に示す状態に位置決めすればよい。これにより、ユーザは、撮影レンズ１８を被写体に向けながら、第１の表示部１４に映し出された被写体の姿を確認することができる。また、第２の筐体４を図６に示す状態に位置決めすれば、ユーザは、正面に立った被写体の姿を、第１の表示部１４を被写体が位置する方向とは異なる方向臨み込むような姿勢を取りながら確認することができる。

【0056】

また、ユーザが自分の姿を撮影する場合、ユーザは、第２の筐体４を図７に示す状態に位置決めすれば良い。これにより、撮影レンズ１８を自分に向けながら、第１の表示部１４に映し出された自分の姿を確認することができる。なお、カメラ部２３がセルフタイマ機能を備える場合、ユーザは、携帯電話機１から離れた位置に立って自分の姿を撮影することもできる。また、この場合、図３中の第２の表示部２０にセルフタイマのカウントダウンを表示させても良い。

【0057】

図８は、図６に示した状態から、携帯電話機１を閉成方向（回転軸５を中心として閉じる方向）に回動させた状態を示す斜視図である。この図に示すように、携帯電話機１において、第２の筐体４に設けられた緩衝部材１７が、第１の筐体２の表面７ａに設けられた機能ボタン群１０のうち“Ｆキー”を押下するように閉じられる。携帯電話機１では、このような場合でも、“Ｆキー”は機能ボタン群１０のうちでも使用頻度が高いことから耐久性が高くなるよう構成されていること、および緩衝部材１７がＴＰＥやＴＰＥＥ等のゴム含有プラスチック樹脂によって構成されていることから、回動時の衝撃に伴う操作キーの破損を抑制することができる。

【0058】

また、第２の筐体４に対して回動軸５を中心に閉成方向に回動させる力を加えている状態で、第２の筐体４を、回転軸６を中心として回転させると、第２の筐体４に設けられた緩衝部材１７が、第１の筐体２の表面７ａや機能ボタン群１０の一部と接触しながら移動する。この場合、緩衝部材１７が、第１の筐体２の表面７ａや機能ボタン群１０より低硬度の材質である、ＴＰＥやＴＰＥＥ等のゴム含有プラスチック樹脂によって構成されてい

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000588

ることから、第１の筐体２の表面７ａや機能ボタン群１０に対する傷の発生を抑制することができる。

【0059】

図９は、表示面１４が外側を向くように携帯電話機１を閉じた場合の、携帯電話機１の状態を示す斜視図である。また、図１０は、この場合の、第１の筐体２の状態を示す透視斜視図である。すなわち、図９および図１０は、第２の筐体４を図７に示す状態から、第２の筐体４を、回動軸５を中心に閉成方向に回動させた状態を示している。この場合、携帯電話機１は、第１の表示部１４および操作ボタン群１６が設けられた表面４ａが外側を向き、表面４ｂが内側を向くように閉じられる。そして、この場合、ユーザは、例えばシャッタボタン１２（図１参照）に右手の人差し指を掛け、両手で携帯電話機１を把持した状態で撮影を行うことができる。すなわち、携帯電話機１を、専用のデジタルカメラのようにして構えることができる。このため、携帯電話機１をカメラとして用いる際の使い勝手を向上させることができる。

【0060】

また、この場合、第１の表示部１４と第１のスピーカ２４（あるいはスピーカ孔１３）を略同一面とすることができるため、ラジオ放送やテレビ放送等の視聴機として用いる際の携帯電話機１の使い勝手を向上させることができる。また、レシーバ１５も音声出力部として用いることにより、第１の表示部１４を挟んで左右に音声出力部を配置することもできる。これにより、ステレオ再生を実現することができる。

【0061】

また、携帯電話機１を閉じた状態で第１の表示部１４を確認しながら操作ボタン群１６を操作することができるため、携帯ゲーム機として用いる際の携帯電話機１の使い勝手を向上させることができる。この場合にも、第１の表示部１４と第１のスピーカ２４（あるいはスピーカ孔１３）が略同一面となることから、ユーザは臨場感のあるゲームを体感することができる。また、第１のスピーカ２４に代えて、もしくは第１のスピーカ２４と並列に、上下左右のキーからなる十字キー（図示せず）を設けるようにしても良い。これにより、携帯ゲーム機として用いる際の操作性を向上することができ、携帯電話機１の使い勝手をより向上させることができる。

【0062】

また、突出部８におけるスピーカ孔１３に隣接する位置に、十字キー（図示せず）を設けてもよい。すなわち、突出部８にスピーカ２４およびスピーカ孔１３を備え、突出部８におけるスピーカ孔１３と略同一面に、十字キーを備えるようにしてもよい。

【0063】

このような構成とすることにより、表示部１４を外側に露出して携帯電話機１を閉じたときに、表示部１４とスピーカ孔１３と十字キーとが略同一面になるよう配置される。このため、表示部１４からの光の進行方向と音の進行方向とが略同一となるとともに、表示部１４を見ながら十字キーの操作を行うことができる。したがって、ユーザにとって、表示部１４を用いたキー操作がし易く、かつ表示部１４の表示に連動した音を聴取しやすい状況を作り出すことができる。

【0064】

さらに、携帯電話機１を閉じた状態で、第２のマイク孔１１ｂは、中央部３ｍに対向する位置、すなわち第１の筐体２とヒンジ部３との間に生じる間隙Ｂと、ヒンジ部３と第２筐体４との間に生じる間隙Ｃとの中間に配置されることから、これら間隙Ｂ，Ｃから間隙Ａを通じて音声を拾いやすく、携帯電話機１を閉じた状態での通話品質を向上することができる。

【0065】

次に、図１１を参照して、携帯電話機１の電気的構成を説明する。図１１は、携帯電話機１の概略構成を示す機能ブロック図である。この図に示すように、携帯電話機１は、アンテナ２８、無線部２９、通信制御部３０、スピーカ駆動制御部３１、レシーバ３２、第１のスピーカ２４、第２のスピーカ３３、送話制御部３４、第１のマイク３５、第２のマ

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000589

イク３６、表示制御部３７、第１の表示部１４、第２の表示部２０、操作入力部３８、入力ボタン群９、機能ボタン群１０、操作ボタン群１６、カメラ部２３、画像制御部３９、光源制御部４０、フラッシュ１９、記憶部４１、第１のホール素子４２、第２のホール素子４３、状態検出制御部４４および主制御部４５によって構成されている。

【0066】

無線部２９は、アンテナ２８を介して基地局あるいは他の通信機器との間でやり取りされる通信データの送受信処理を行う。また、この無線部２９では、ラジオ放送やテレビ放送を受信することができる。通信制御部３０は、各種通信の制御を行う。例えば、ラジオ放送やテレビ放送の受信制御や、ウエブサイトにおけるアプリケーションプログラム（例えば、ゲームプログラム等）をウエブサーバーからダウンロードするための送受信制御、発信時における発呼制御、通話制御、着信時における着呼制御、電子メールの送受信制御などが行われる。

【0067】

スピーカ駆動制御部３１は、音声出力時においてレシーバ３２、第１スピーカ２４、第２のスピーカ３３を駆動する制御を行う。この第１のスピーカ２４および第２のスピーカ３３における駆動状態の切り替えは、状態検出制御部４４による端末状態の検出結果や、携帯電話機１の各種機能の使用状態に基づいて行われる。

【0068】

送話制御部３４は、通話時に第１のマイク３５および第２のマイク３６から入力される音声信号の入力制御を行う。この第１のマイク３５および第２のマイク３６からの入力の切り替え（第１のマイク３５および第２のマイク３６の有効／無効の切り替え）は、状態検出制御部４４による端末状態の検出結果に基づいて行われる。

【0069】

表示制御部３７は、第１の表示部１４および第２の表示部２０に表示する内容を切り替える制御を行う。この画面表示の切り替えは、状態検出制御部４４による端末状態の検出結果等に基づいて行われる。操作入力部３８は、入力ボタン群９、機能ボタン群１０、操作ボタン群１６におけるキー操作に基づいて入力処理を行う。

【0070】

画像制御部３９は、カメラ部２３からの撮像データや記憶部４１から読み出された画像データを表示用データに展開したり、ＪＰＥＧデータに圧縮するなどの制御を行う。光源制御部４０はフラッシュ１９の発光制御を行う。

【0071】

状態検出制御部４４は、携帯電話機１がいずれの端末状態にあるのかの検出を行う状態検出手段である。すなわち、第１および第２のホール素子４２，４３のオンオフに基づいて、携帯電話機１が閉じているかどうか、また第２の筐体４がヒンジ部３に対して０度の状態にあるのかが判別される。これにより、端末状態が自動的に検出されるので、音声の入出力や画像表示の切り替えを自動的に行わせることができる。なお、第１および第２のホール素子４２，４３は、第１または第２の筐体２，４あるいはヒンジ部３に設けられ、第１および第２のホール素子４２，４３に対向する他の筐体に設けられたマグネットからの磁力を検知することでオンオフするようになっている。

【0072】

次に、図１２および図１３を参照して、携帯電話機１の開閉動作および第２の筐体４の回転動作に伴う音声入力や表示内容の切り替え制御動作を説明する。図１２は、携帯電話機１における音声入力や表示内容の切り替え制御動作の流れを示すフロー図である。

【0073】

電源ＯＮ時（待受時、通話時、テレビ視聴時等）において、主制御部４５は、状態検出部４４からの検出信号を監視している。この状態で、状態検出部４４が携帯電話機１の状態変化を検出すると、主制御部４５は状態検出部４４からの検出信号に基づいて音声入力や表示内容の切り替え制御を行う。

【0074】

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000590

具体的には、まず、主制御部４５は、状態検出部４４によって、第２の筐体４およびヒンジ部３が、第１の筐体１に対して０度の状態であるか否か、すなわち、携帯電話機１が閉じられているか否かを検出する（ステップＳ１）。そして、携帯電話機１が閉じられている場合、主制御部４５は、状態検出部４４によって、第２の筐体４がヒンジ部３に対して回転しているか否かを検出する（ステップＳ２）。

【0075】

ここで、第２の筐体４がヒンジ部３に対して回転している場合、主制御部４５は、表示制御部３７を制御し、第１の表示部１４をオフにし（ステップＳ３）、第２の表示部２０をオンにする（ステップＳ４）。さらに、主制御部４５は、送話制御部３４を制御して、第１のマイクをオフ（無効）にし（ステップＳ５）、第２のマイクをオン（有効）にする（ステップＳ６）。そして、音声入力や表示内容の切り替え制御動作を終了する。

【0076】

一方、ステップＳ２において、第２の筐体４がヒンジ部３に対して回転していなかった場合、すなわち、状態検出部４４が、第２の筐体４がヒンジ部３に対して１８０度回転された状態で携帯電話機１が閉じられたことを検出した場合、主制御部４５は、表示制御部３７を制御し、第１の表示部１４をオンにし（ステップＳ７）、第２の表示部２０をオフにする（ステップＳ８）。その後、ステップＳ６およびＳ６の処理を行い、音声入力や表示内容の切り替え制御動作を終了する。

【0077】

また、ステップＳ１において、携帯電話機１が閉じていなかった場合、主制御部４５は、状態検出部４４によって、第２の筐体４がヒンジ部３に対して回転しているか否かを検出する（ステップＳ９）。すなわち、状態検出部４４によって、第２の筐体４がヒンジ部３に対して０度の状態で、携帯電話機１が開かれているか否かを検出する。

【0078】

そして、第２の筐体４がヒンジ部３に対して回転していない場合、主制御部４５は、主制御部４５は、表示制御部３７を制御し、第１の表示部１４をオンにするとともに、第１の表示部１４の一部（例えば画面左下）に、第２の筐体４が右回りに回転可能なことを視覚的に表す“右回りアイコン”を表示させる。図１３（ａ）は、第１の表示部１４の画面左下に、第２の筐体４が右回りに回転可能なことを視覚的に表す“右回りアイコン”を表示した状態を示す平面図である。

【0079】

さらに、主制御部４５は、第２の表示部２０をオフする（ステップＳ１２）とともに、送話制御部３４を制御し、第１のマイクをオン（ステップＳ１３）、第２のマイクをオフする（ステップＳ１４）。これにより、音声入力や表示内容の切り替え制御動作を終了する。

【0080】

一方、ステップＳ９において、第２の筐体４がヒンジ部３に対して回転していた場合、すなわち、状態検出部４４によって、第２の筐体４がヒンジ部３に対して１８０度回転した状態で携帯電話機１が開かれたことを検出した場合、主制御部４５は、表示制御部３７を制御し、第１の表示部１４をオンにするとともに、第１の表示部１４の一部（例えば画面左下）に、第２の筐体４が左回りに回転可能なことを視覚的に表す“左回りアイコン”を表示させる。図１３（ｂ）は、第１の表示部１４の画面左下に、第２の筐体４が左回りに回転可能なことを視覚的に表す“左回りアイコン”を表示した状態を示す平面図である。

【0081】

さらに、主制御部４５は、第２の表示部２０をオフする（ステップＳ１２）とともに、送話制御部３４を制御し、第１のマイクをオン（ステップＳ１３）、第２のマイクをオフする（ステップＳ１４）。これにより、音声入力や表示内容の切り替え制御動作を終了する。

【0082】

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000591

このように、携帯電話機１が開いているとき、第１の表示部１４の一部（例えば画面左下）に、第２の筐体４が回転可能な方向を視覚的に表すアイコンを表示することにより、ユーザが回転方向を認識し易くなり、ユーザが誤った方向に回転させることを抑制することができる。そのため、第２の筐体４を誤った方向に回転させることによって生じるヒンジの破壊を抑制することができる。しかも、本実施の形態では、上記したように、ユーザは緩衝部材１７の位置から回転可能な方向の認識することもできるので、回転可能な方向の視認性がより高くなっている。

【0083】

なお、第２の表示部２０にも第２の筐体４が回転可能な方向を視覚的に表すアイコンを表示するようにしても良い。これにより、第２の筐体４のヒンジ部３に対する回転角度が０度の状態で携帯電話機１が開かれた場合であって、第１の筐体２の主表面７ｃ側から携帯電話機１を見た場合でも、ユーザは第２の筐体４の回転可能な方向を認識することができる。そのため、第２の筐体４を誤った方向に回転させることによって生じるヒンジの破壊をより一層抑制することができる。

【0084】

また、例えば、第１のスピーカ孔１３に代えて表示部を設け、この表示部に、第２の筐体４が回転可能な方向を視覚的に表すアイコンを表示するようにしても良い。これにより、第２の筐体４のヒンジ部３に対する回転角度が１８０度の状態で携帯電話機１が開かれた場合であって、第１の筐体２の主表面７ａ側から携帯電話機１を見た場合でも、ユーザは第２の筐体４の回転可能な方向を認識することができる。このため、第２の筐体４を誤った方向に回転させることによって生じるヒンジの破壊をより一層抑制することができる。

【0085】

また、第２の筐体４が回転可能な方向を視覚的に表すアイコンは、携帯電話機１の開閉操作が行われた場合には即座に表示を切り替え、第２の筐体４の回転操作が行われた場合には即座に表示を切り替えないようにしてもよい。例えば、第２の筐体４の回転途中（１度～１７９度）においては、表示中のアイコンの表示を維持し、第２の筐体４の回転が完了（０度または１８０度）したとき、その状態に基づくアイコンを表示するようにしてもよい。これにより、ユーザが、回転途中において回転可能な方向を誤認することを防止できる。したがって、ユーザは、当初希望した方向に第２の筐体４を確実に回転させることができる。

【0086】

また、第２の筐体４の回転途中（１度～１７９度）においては、右回転および左回転の両方が可能なことから右回りアイコンあるいは左回りアイコンを表示しなくても良く、また、図１３（ｃ）に示すように、右回転および左回転の両方が可能なことを視覚的に表すアイコン（左右回りアイコン）を表示するようにしても良い。

【0087】

なお、本実施の形態では、折り畳み型の携帯電話機１を用いて説明したが、本発明による携帯機器はこれに限定されるものではない。本発明は、例えば、折り畳み式のＰＨＳ（Personal Handyphone System；登録商標）、折り畳み式のＰＤＡ（personal digital assistants）、折り畳み式のノート型パソコン、折り畳み式のワードプロセッサなどの、他の折り畳み式の携帯機器に対しても適用できる。

【0088】

本発明は上述した実施形態に限定されるものではなく、請求項に示した範囲で種々の変更が可能である。すなわち、請求項に示した範囲で適宜変更した技術的手段を組み合わせて得られる実施形態についても本発明の技術的範囲に含まれる。

【産業上の利用可能性】

【0089】

本発明は、折り畳み式の携帯電話機、折り畳み式のＰＨＳ（登録商標）、折り畳み式のＰＤＡ、折り畳み式のノート型パソコン、折り畳み式のワードプロセッサなど、折り畳み

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000592

式の携帯機器（情報端末装置）に対して適用できる。

【図面の簡単な説明】

【0090】

【図1】本発明の一実施の形態にかかる携帯機器における、開いた状態を示す斜視図である。

【図2】本発明の一実施の形態にかかる携帯機器における、閉じた状態を示す斜視図である。

【図3】本発明の一実施の形態にかかる携帯機器における、閉じた状態を、図２中の矢印ＩＩＩ方向から見た携帯電話機を示す斜視図である。

【図4】本発明の一実施の形態にかかる携帯機器における、第１の筐体、ヒンジ部、第２の筐体の連結部を、図１中のＩＶ方向から見た断面図である。

【図5】本発明の一実施の形態にかかる携帯機器の分解組立図である。

【図6】本発明の一実施の形態にかかる携帯機器において、ヒンジ部および第２の筐体を、第１の筐体２に対して閉じた状態から９０度回動させた状態とし、第２の筐体を、ヒンジ部に対して図１に示す状態から９０度だけ回転させた状態を示す斜視図である。

【図7】本発明の一実施の形態にかかる携帯機器において、図６に示した状態から、ヒンジ部および第２の筐体を、第１の筐体２に対して閉じた状態から１８０度回動させた状態とし、第２の筐体を、ヒンジ部に対してさらに９０度だけ回転させた状態を示す斜視図である。

【図8】本発明の一実施の形態にかかる携帯機器において、図６に示した状態から、ヒンジ部および第２の筐体を、第１の筐体２に対して閉じる方向に回動させた状態を示す斜視図である。

【図9】本発明の一実施の形態にかかる携帯機器において、表示面が外側を向くように携帯機器を閉じた場合の状態を示す斜視図である。

【図10】本発明の一実施の形態にかかる携帯機器において、表示面が外側を向くように携帯機器を閉じた場合の、第１の筐体の状態を示す透視斜視図である。

【図11】本発明の一実施の形態にかかる携帯機器の概略構成を示す機能ブロック図である。

【図12】本発明の一実施の形態にかかる携帯機器における、音声入力や表示内容の切り替え制御動作を示すフロー図である。

【図13】図１中の携帯電話機の画面表示例を示す説明図である。

【図14】従来において、２つの回転軸を備えた折り畳み型の携帯電話機の開いた状態を示す斜視図である。

【図15】図１４中の携帯電話機の閉じた状態を示す斜視図である。

【図16】図１４中の矢印ＸＩＩＩから見た携帯電話機を示す斜視図である。

【図17】図１４中のメイン表示部が設けられた筐体を回転させた場合の携帯電話機を示す斜視図である。

【符号の説明】

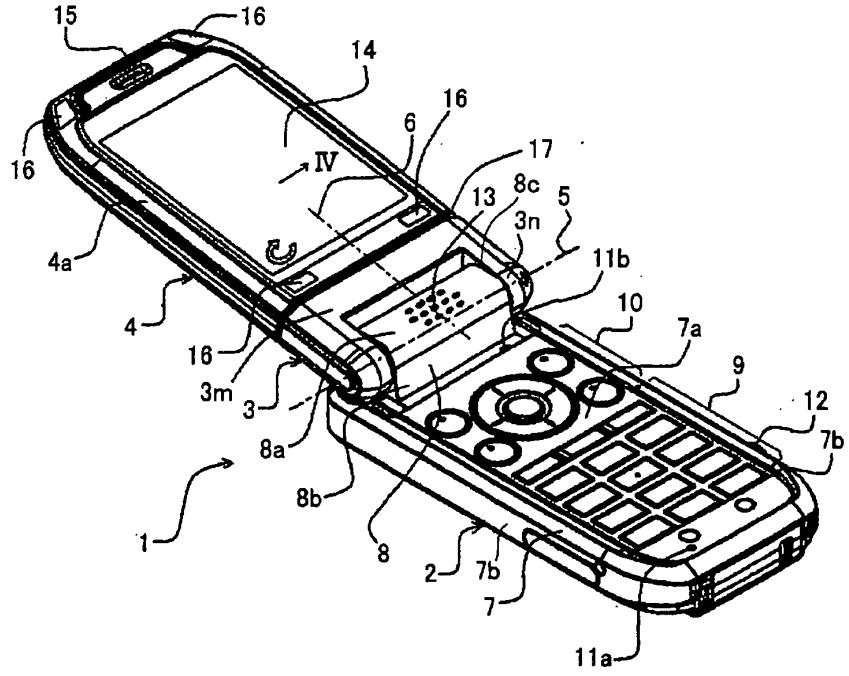
【0091】

１　　携帯電話機（携帯機器）
２　　第１の筐体
３　　ヒンジ部
４　　第２の筐体
５　　回動軸（第１の回転軸）
６　　回転軸（第２の回転軸）
７　　ベース部
８　　突出部
９　　入力ボタン群
１０　機能ボタン群
１１ａ　第１のマイク孔

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000593

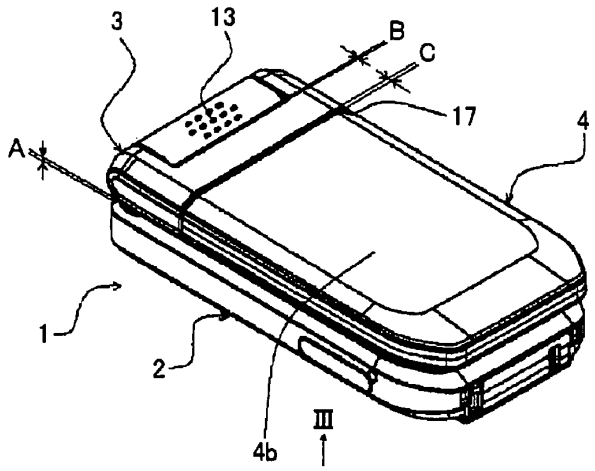
１１ｂ　第２のマイク孔
１２　シャッタボタン
１３　第１のスピーカ孔
１４　第１の表示部
１５　レシーバ孔
１６　操作ボタン群
１７　緩衝部材
１８　撮影レンズ
１９　フラッシュ
２０　第２の表示部
２１　第２のスピーカ孔
２２　内部空間
２３　カメラ部
２４　第１のスピーカ
２５　ヒンジ装置

【図1】

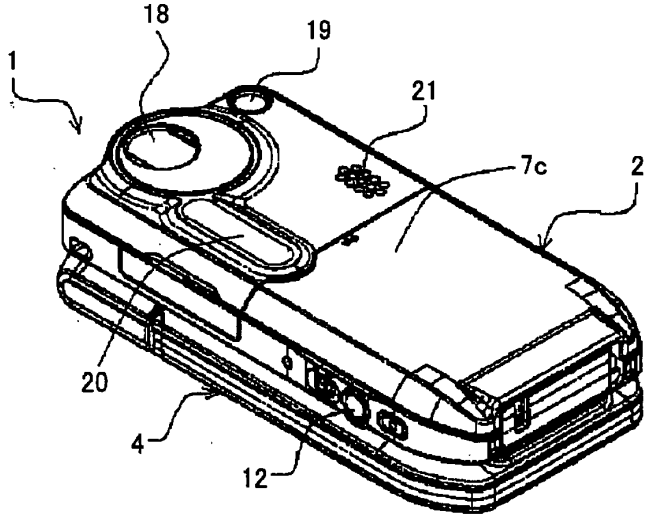


Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000594

【図2】

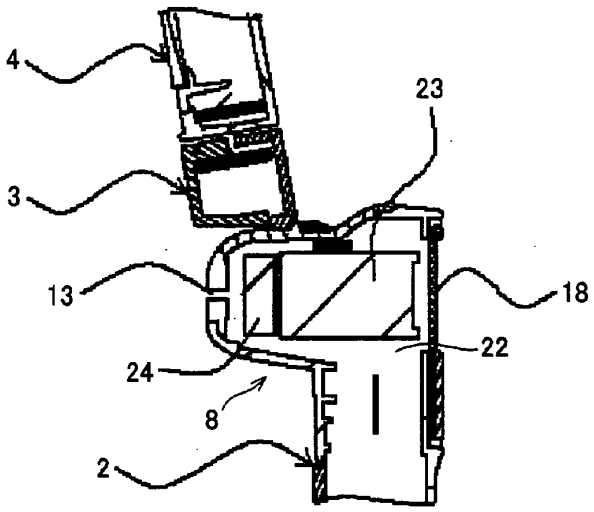


【図3】



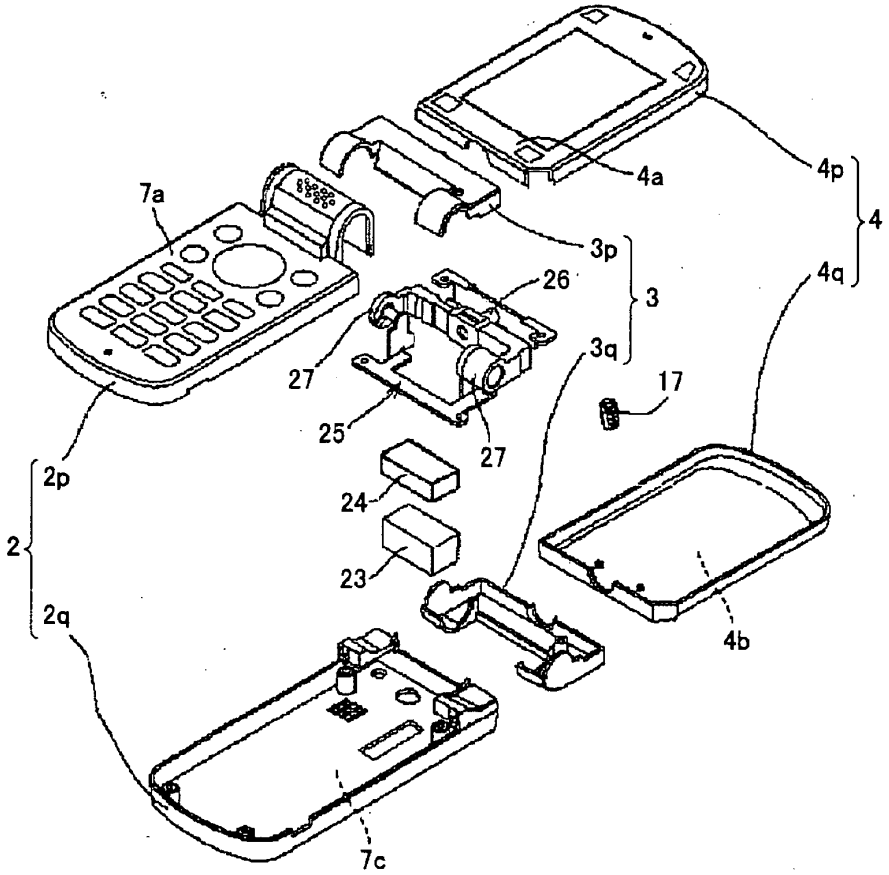
Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000595

【図4】



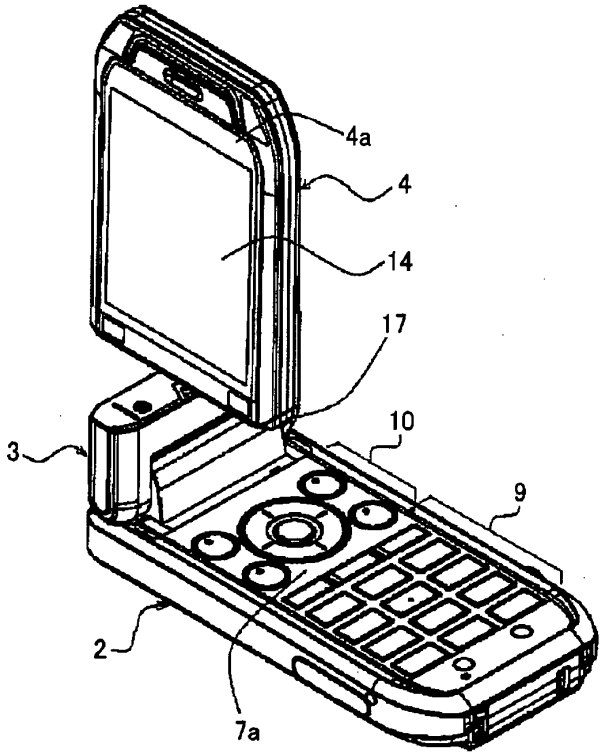
Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000596

【図5】



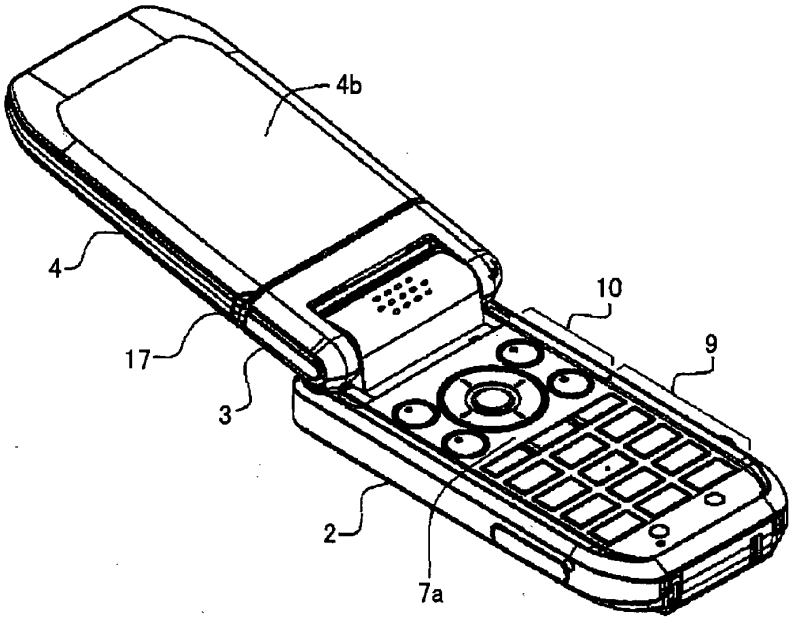
Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000597

【図6】

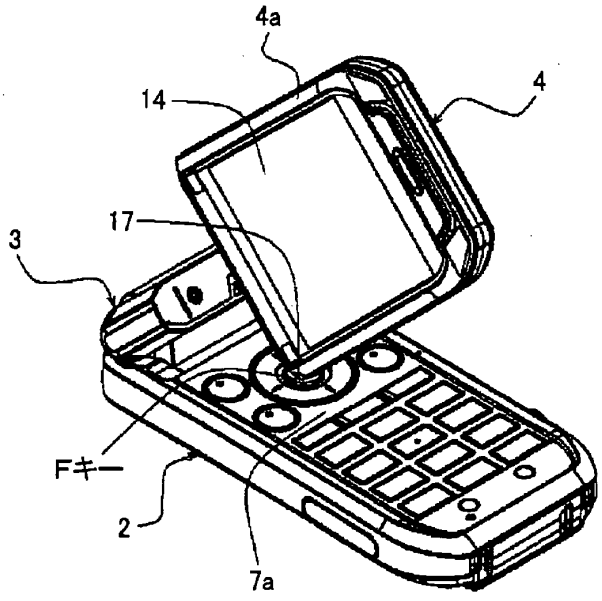


Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000598

【図7】

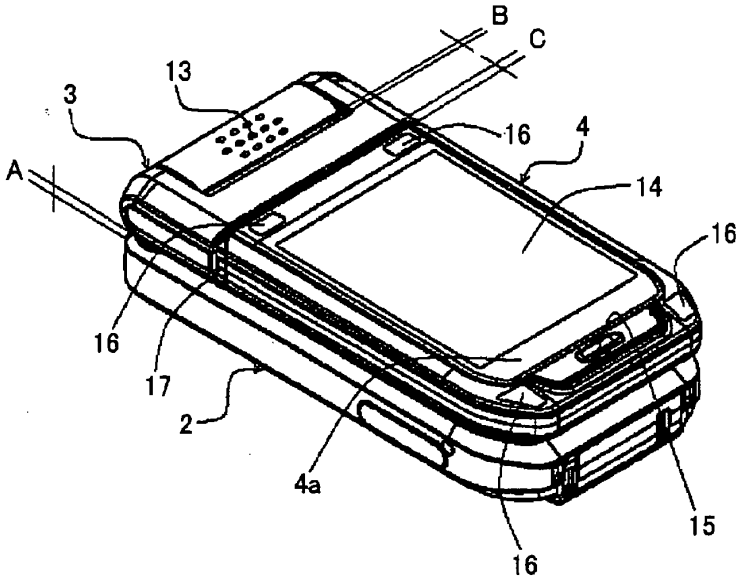


【図8】

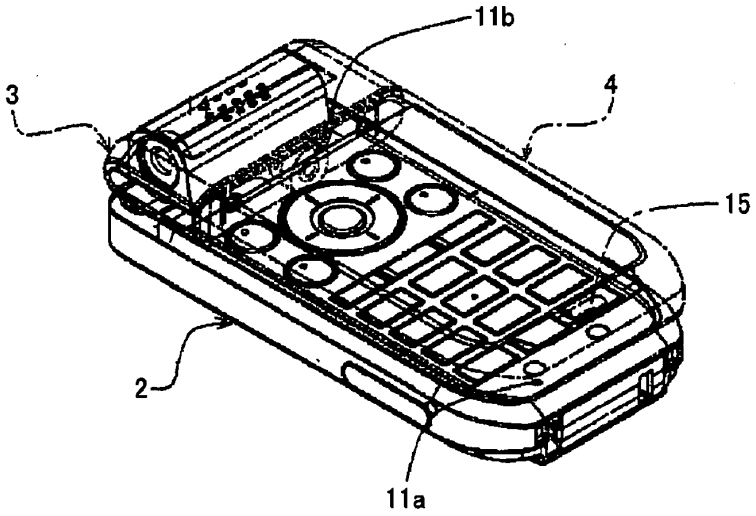


Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000599

【図9】

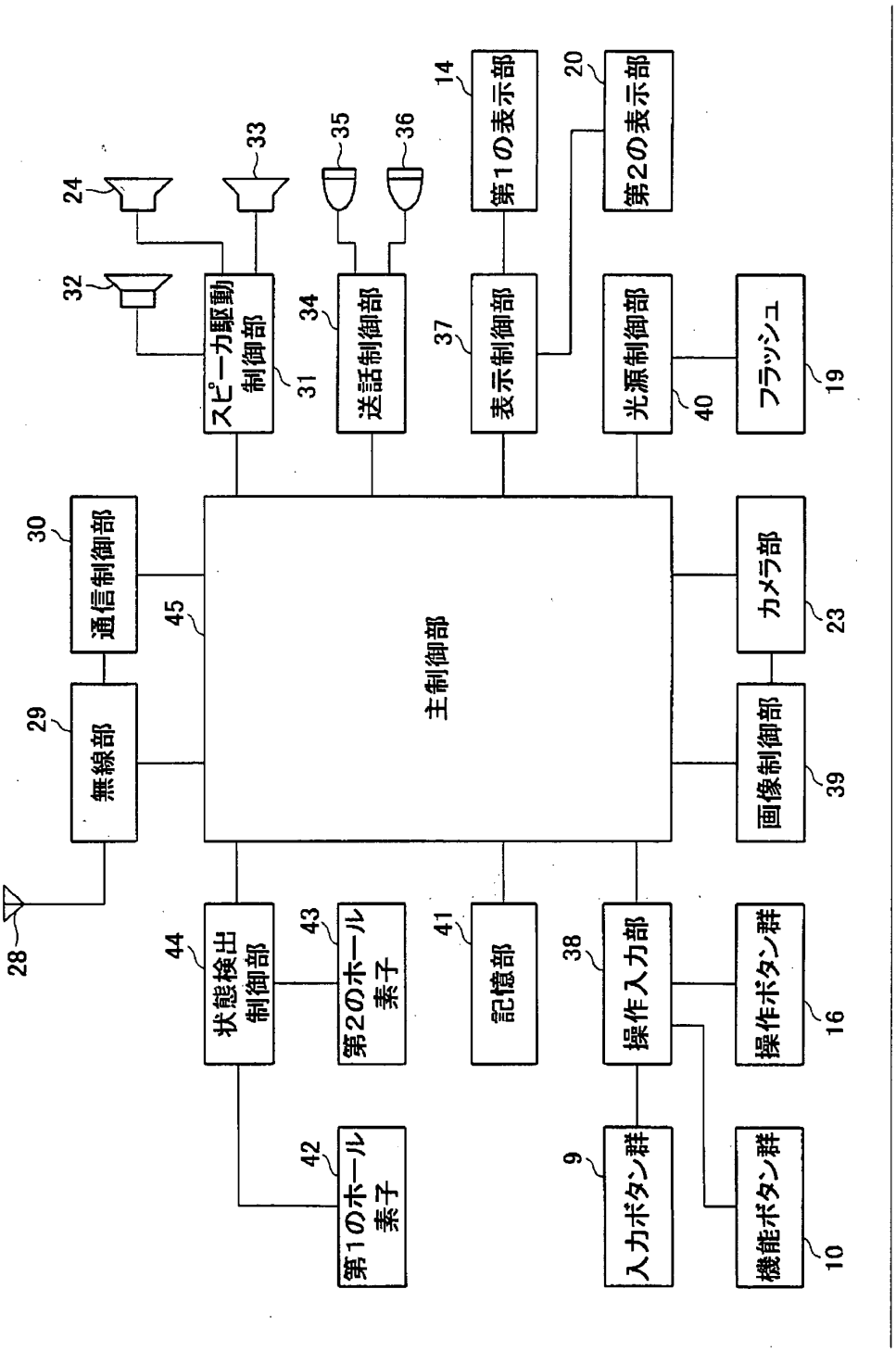


【図10】



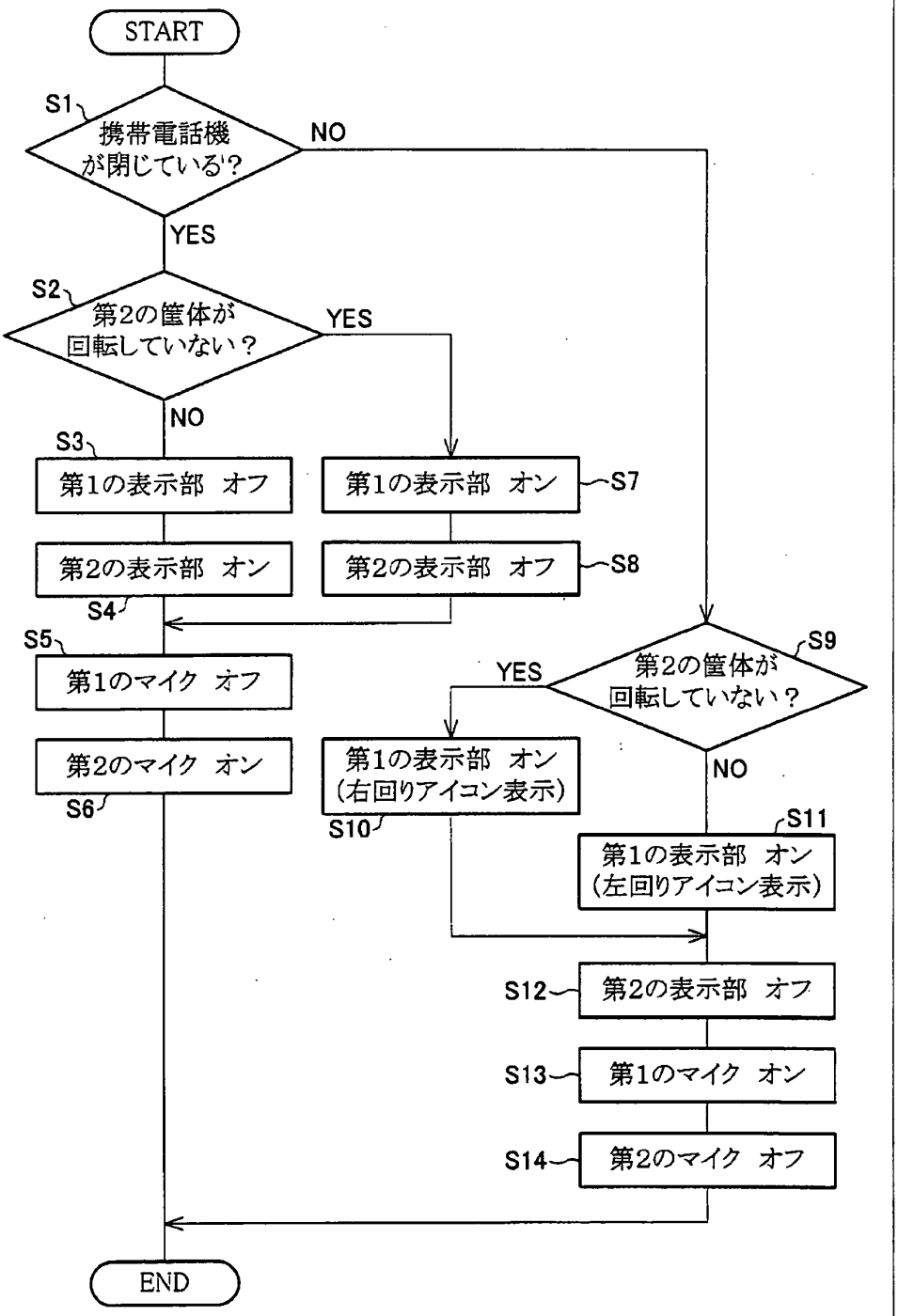
Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000600

【図11】



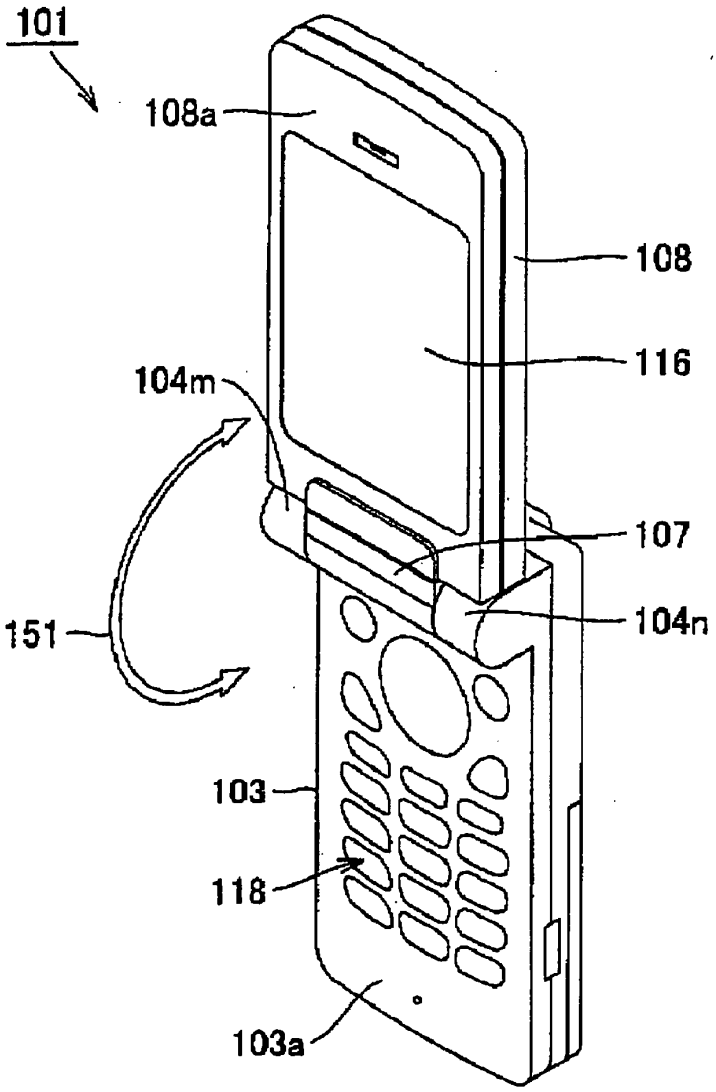
Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000601

【図12】



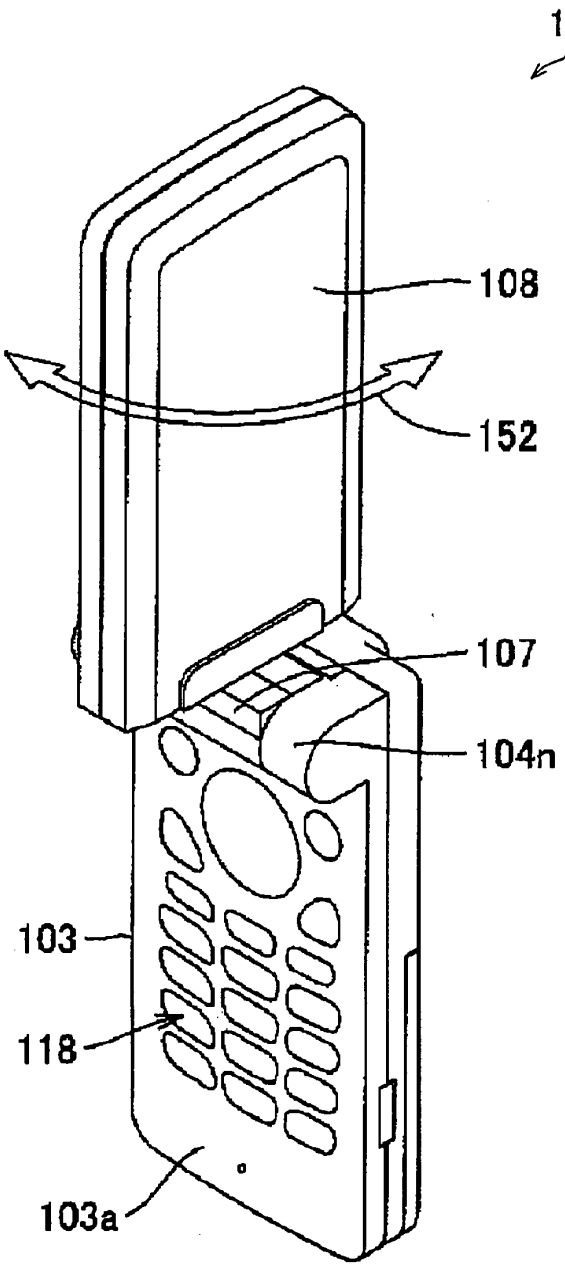
Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000602

【図14】



Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000603

【図17】



Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000604

(72)発明者　西元　和行
大阪府大阪市阿倍野区長池町２２番２２号　シャープ株式会社内
(72)発明者　藤本　正雄
大阪府大阪市阿倍野区長池町２２番２２号　シャープ株式会社内
Ｆターム(参考)、5K023 AA07　DD08　HH10

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000605

2005-286430

(11)Publication number 2005-286430
(43)Date of publication of application 13.10.2005
(51)Int.Cl.
H04M 1/02

(21)Application number 2004-093781
(22)Date of filing 26.03.2004
(71)Applicant SHARP CORP
(72)Inventor FUJIWARA SHUNJI
NISHIMOTO KAZUYUKI
FUJIMOTO MASAO
(54)PORTABLE DEVICE
(57)Abstract
PROBLEM TO BE SOLVED: To provide a portable device enabling a user to satisfactorily listen to sounds interlocking to the display of a display unit.
SOLUTION: The device is provided with a first case 2 including a base 7 and a protrude 8 protruding from the base 7, and having a speaker hole 13 provided on the protruding part 8; a hinge 3 rotatably provided on the protrude 8 via a rotary shaft 5; and a second case 4 rotatably provided on the hinge 3 via a rotary shaft 6 substantially crossing the rotary shaft 5 at right angles. The hinge part 3 is configured into a U-shape having a center portion 3m to which the second case 4 is coupled and a both end portion 3n branching from the center portion 3m and each coupled to a pair of side surfaces 8b of the protruding portion 8. Further, a first display section 14 is provided on the second case 4 on at least one surface forming an approximate right angle on a coupling surface with the hinge 3.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000606

CLAIMS

[Claim(s)]

[Claim 1]

A first housing containing a projection part projected from an end of a base part and the aforementioned base part, It is the portable device provided with a hinge region provided by the aforementioned projection part around the center of a first rotating shaft enabling free rotation, and a second housing rotatably provided by the aforementioned hinge region around the center of the second axis of rotation which abbreviated-intersects perpendicularly with said first rotating shaft,

Said first housing equips the aforementioned projection part with speaker holes,

A portable device, wherein said second housing equips at least one surface substantially parallel to said second axis of rotation with a display part.

[Claim 2]

The portable device according to claim 1, wherein said first housing equips with a loudspeaker internal space which communicated between the aforementioned base part and the aforementioned projection part.

[Claim 3]

The portable device according to claim 2, wherein said first housing is provided with a camera unit which photos an image which entered from the aforementioned taking lens between the aforementioned taking lens and the aforementioned loudspeaker while equipping a surface of the aforementioned projection part and an opposite side with a taking lens.

[Claim 4]

The portable device according to claim 1, wherein said second housing equips the same surface as the aforementioned display part with a key operation section.

[Claim 5]

The portable device according to claim 1, wherein said first housing equips the aforementioned projection part with an arrow key.

DETAILED DESCRIPTION

[Detailed Description of the Invention]

[Field of the Invention]

[0001]

The present invention relates to a portable device and relates to the portable device which two housings are attached rotatable and constituted especially.

[Background of the Invention]

[0002]

Conventionally, the folded-up type cellular phone with which two housings were connected freely openable/closable via the hinge has spread widely. In this type of cellular phone, a display part, a receiver, etc. are provided by one housing and a manual operation button, a microphone, etc. are generally provided by the housing of another side. The folded-up type cellular phone provided with the two axes of rotation which further recently rotate independently mutually is beginning to be sold. Fig.14 is a perspective view showing the state in the conventional folding type cellular phone 101 provided with the two axes of rotation where it opened. Fig.15 is a perspective view showing the state in the conventional cellular phone 101 shown in Fig.14 where it closed. Fig.16 is the perspective view which looked at the state in the conventional cellular phone 101 shown in Fig.14 and Fig.15 where it closed, from the arrow XIII direction in Fig.15.

[0003]

As shown in Fig.14 - Fig.16, the cellular phone 101 is provided with the housing 103 which has the surface 103a, the housings 107 and 108 provided rotatable in the direction shown in the arrow 151 to the housing 103, and the camera unit which were stored in the housing 103 and which is not illustrated. The hinge device which connects the housing 103 and the housing 107 with the inside of the housing 107 rotatable, and connects the housing 107 and the housing 108 with it pivotable and which is not illustrated is stored.

[0004]

The hinge supporting parts 104m and 104n projected from the surface 103a are formed in the peripheral edge part of a hinge device side end at the housing 103. The hinge supporting parts 104m and 104n separate distance mutually, and are provided. The housing 107 is positioned between the hinge supporting part 104m on the surface 103a, and the hinge supporting part 104n. And the hinge supporting parts 104m and 104n and the housing 107 are connected by the hinge device stored in the housing 107.

[0005]

A plurality of manual operation buttons 118 are provided by the surface 103a of the housing 103.

The loudspeaker 122 is provided by the surface 103b of the housing 103 which is placed at an opposite side of the surface 103a.

The taking lens 114 of a camera unit is exposed to the surface 153 formed with the level difference to the surface 103b. The taking lens 114 is provided in the state where the cellular phone 101 was opened by the housing 108 and the position which is adjacent to. The camera unit is arranged in space in the housing 103 inserted between the surface 103a and the surface 153. The main display 116 is provided by the surface 108a of the housing 108.

[0006]

Fig.17 is a perspective view showing the cellular phone at the time of rotating the housing 108 in which the main display was provided from the state shown in Fig.14 in the cellular phone 101. As shown in this figure, the housing 108 is provided pivotable in the direction shown in the arrow 152 to the housing 107. Thereby, the surface 108a where the main display 116 was provided can be turned in the suitable direction.

[0007]

It aims at enabling operation of an operation key and aiming at improvement in operability irrespective of a release position and a state of obstruction, independently, The mobile information terminal equipment which provided the operational suboperation key in the state where a first housing and second housing were folded up, to the hinge region which connects a first housing and second housing is disclosed in the Patent document 1.

[Patent document 1] JP,2003-229941,A (August [open day 2003 year] 15)

[Description of the Invention]

[Problem to be solved by the invention]

[0008]

In the conventional folding type cellular phone provided with the two above axes of rotation, where a display part is exposed to the state and outer surface which were blockaded inside, a cellular phone can be closed. For this reason, the usage of apparatus can be extended -- a display part can be used, where the display part at the time of carrying got damaged, and it could aim at prevention and a cellular phone is closed.

[0009]

However, in an above-mentioned folding [conventional] type cellular phone, when a cellular phone is opened, or when [where a display part is exposed outside,] a cellular phone is closed, in order that a display part and speaker holes may be placed at a mutually different surface, the problem of being hard to hear the sound interlocked with the display of the display part occurs.

[0010]

the present invention is made in view of the above-mentioned problem, and comes out.

The object is to provide a folded-up type portable device which can hear satisfactorily a sound interlocked with a display of **.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000609

[Means for solving problem]

[0011]

In order to achieve the aforementioned object, the portable device of the present invention, The first housing containing the projection part projected from the end of a base part and the aforementioned base part, The hinge region provided by the aforementioned projection part around the center of a first rotating shaft enabling free rotation, Are the second housing rotatably provided by the aforementioned hinge region around the center of the second axis of rotation which abbreviated-intersects perpendicularly with the above-mentioned first rotating shaft the portable device which it had, and the above-mentioned first housing, It is characterized by having equipped the aforementioned projection part with speaker holes, and the above-mentioned second housing equipping at least one surface substantially parallel to the above-mentioned second axis of rotation with the display part.

[0012]

According to such composition, when a portable device is opened, and when a display part is exposed outside and a portable device is closed, it is arranged so that a display part and speaker holes may become a substantially identical surface. For this reason, the moving direction of the light from a display part and the moving direction of a sound become substantially identical. The situation where this is easy to hear the sound interlocked with the display of the display part for a user can be made.

[0013]

In addition to the aforementioned composition, the portable device of the present invention may equip with the loudspeaker the internal space which the above-mentioned first housing communicated between the aforementioned base part and the aforementioned projection part.

[0014]

According to such composition, a loudspeaker is stored in the internal space which communicates even the projection part connected with a second housing from the base part in the above-mentioned first housing. For this reason, when not using internal space in a projection part as space in which a loudspeaker is stored, as compared with the case where a loudspeaker is stored, thickness of a base part can be made small in addition to the internal space in a projection part. Thereby, the miniaturization of a portable device can be attained.

[0015]

The portable device of the present invention may be provided with the camera unit which photos the image which entered from the aforementioned taking lens between the aforementioned taking lens and the aforementioned loudspeaker while the above-mentioned first housing equips the surface (surface which opposes) of the aforementioned projection part and an opposite side with a taking lens in addition to the aforementioned composition.

[0016]

According to such composition, a loudspeaker and a camera unit are stored in the internal space which communicates even the projection part connected with a second housing from a base part. For this reason, as compared with the case where internal space in a projection part is not used as space in which a loudspeaker and a camera unit are stored, thickness of a base part can be made small and a loudspeaker and a camera unit can be stored. Thereby, the miniaturization of a portable device with a photographing function can be attained.

[0017]

As for the portable device of the present invention, in addition to the above-mentioned composition, the above-mentioned second housing may equip the same surface as the aforementioned display part with the key operation section.

[0018]

When according to such composition a display part is exposed outside and a portable device is closed, it is arranged so that a display part, speaker holes, and a key operation section may become a substantially identical surface. For this reason, while the moving direction of the light from a display part and the moving direction of a sound become substantially identical, key operation can be performed, looking at a display part. The situation of being easy to hear the sound which it was easy to carry out key operation which used the display part, and was interlocked with the display of the display part for the user by this can be made.

[0019]

As for the portable device of the present invention, in addition to the above-mentioned composition, the above-mentioned first housing may equip the aforementioned projection part with the arrow key.

[0020]

When according to such composition a display part is exposed outside and a portable device is closed, it is arranged so that a display part, speaker holes, and an arrow key may become a substantially identical surface. For this reason, while the moving direction of the light from a display part and the moving direction of a sound become substantially identical, an arrow key can be operated, looking at a display part. The situation of being easy to hear the sound which it was easy to carry out key operation which used the display part, and was interlocked with the display of the display part for the user by this can be made.

[Effect of the Invention]

[0021]

As mentioned above, the above-mentioned first housing equipped the aforementioned projection part with speaker holes, and the portable device of the present invention equips with the display part at least one surface where the above-mentioned second housing is substantially parallel to the

above-mentioned second axis of rotation.

[0022]

So, the situation of being easy to hear the sound interlocked with the display of the display part for a user can be made.

[Best Mode of Carrying Out the Invention]

[0023]

About an embodiment of the invention, it describes with reference to Drawings.

The portable device concerning this embodiment is the folded-up type cellular phone with which two housings were connected freely openable/closable. The portable device concerning this embodiment is provided with the function as viewing-and-listening machines, such as a radio broadcast and television broadcasting, and the function as a handheld game machine.

[0024]

Fig.1 is a perspective view showing the state where the cellular phone 1 concerning this embodiment opened. Fig.2 is a perspective view showing the state where the cellular phone 1 closed. Fig.3 is the perspective view which looked at the cellular phone 1 from the arrow III direction in Fig.2.

[0025]

As shown in Fig.1 - Fig.3, the cellular phone 1 is a folded-up type cellular phone which has a camera function, and it has a camera unit (not shown) and it is a cellular phone of the type to which the obverse and reverse of the housing can be carried out.

[0026]

The cellular phone 1 comprises the first housing 2, the hinge region 3 connected focusing on the rotating shaft 5 (first axis of rotation) to the first housing 2 enabling free rotation, and the second housing 4 rotatably connected centering on the axis of rotation 6 (second axis of rotation) to the hinge region 3. The 1st, and the second housings 2 and 4 and the hinge region 3 are ABS (Acrylonitrile Butadiene Styrene resin).

PURA, such as ** PC-ABS (Polycarbonate - Acrylonitrile Butadiene Styrene resin)

SUCHIKKU resin is constituted as a material.

[0027]

The rotating shaft 5 and the axis of rotation 6 are provided so that it may abbreviated-intersect perpendicularly mutually. And the hinge region 3 and the second housing 4 can be rotated free [angular displacement] focusing on the rotating shaft 5. Thereby, the form of the cellular phone 1 changes between the states shown in the state where it opened, Fig.2, and Fig.3 which are shown in Fig.1 where it closed.

[0028]

As shown in Fig.1 and Fig.2, the first housing 2 consists of the base part 7 which has the surface 7a

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000612

of approximately rectangular shape, and the projection part 8 projected and formed from the predetermined position of the surface 7a. The surface 7a is the surface which faces inside in the state where faced outside and it closed where the cellular phone 1 is opened. That is, it will be covered with the housing 4 (blockading) and the surface 7a will be in a release position to outside by opening the cellular phone 1, where the cellular phone 1 is closed. The base part 7 has the pair of side surface 7b which stands in a row at an abbreviated right angle to the surface 7a, and extends in parallel mutually across the surface 7a.

[0029]

The input button group 9 which comprises a key for inputting a number and a character, etc., and the feature button group 10 for performing various setting out/function switchings in the cellular phone 1 are provided by the surface 7a. The keytop part of these input button groups 9 or the feature button group 10 is constituted considering plastic resin, such as ABS and PC-ABS, as a material, and metal plating processes, such as chromium plating, are further performed to the keytop part of the feature button group 10.

[0030]

These input button groups 9 and the feature button group 10 are arranged so that key operation may not be carried out by the press to the switching operation of the cellular phone 1, and the apparatus in the state where the cellular phone 1 was closed. Specifically, it is in the state which the cellular phone 1 closed, and it is designed so that the gap A may be provided between the 1st and the second housings 2 and 4.

[0031]

The microphone hole 11a corresponding to the first microphone used for a telephone call in the state where the cellular phone 1 was opened etc., and the microphone hole 11b corresponding to the second microphone used for a telephone call in the state where the cellular phone 1 was closed etc. are drilled in the surface 7a. That is, the first microphone is arranged in the position corresponding to the microphone hole 11a (relation) so that the sound conducted via the microphone hole 11a can be acquired appropriately (input). Similarly, the second microphone is arranged in the position corresponding to the microphone hole 11b so that the sound conducted via the microphone hole 11b can be acquired appropriately. The first microphone hole 11a is arranged the end side in which the projection part 8 was formed at the end side (end side which opposes) of an opposite side. The second microphone hole 11b is arranged near the projection part 8, and the hinge region 3 is rotated to the first housing 2 around the center of the axis of rotation 5 so that the first housing 2 and the hinge region 3, and the second housing 4 may oppose, In the state where the cellular phone 1 was closed, it is arranged in the position which opposes to the central part 3m. Namely, it is arranged in the middle with the gap C which produces between the gap B and the hinge region 3 which arise between the first housing 2 and the hinge region 3 which

are shown in Fig.2, and the second housing 4.

[0032]

The gap C which produces between the gap B or the hinge region 3 which arises between the first housing 2 and the hinge region 3 in the state where the cellular phone 1 was closed, about arrangement of this second microphone hole 11b, and the 2nd housing 4 may be a position which comes to the upper part.

[0033]

A first microphone and the first microphone hole 11a corresponding to it are abolished, and it may be made to use a second microphone also in the state of any when it closes with the time of opening the cellular phone 1. Without causing the increase in the number of parts, when it has such composition, it can constitute so that a telephone call may become possible also in the state of any when it closes with the time of opening the cellular phone 1.

[0034]

The shutter button 12 operated at the time of use of the camera unit stored in the inside of the first housing 2 is provided by one side of the side surface 7b.

[0035]

Are adjacent to, it is placed at the hinge region 3, and the projection part 8 is provided by the periphery of the surface 7a which extends in the direction which the rotating shaft 5 extends. The projection part 8 is provided with the following.

The surface 8a which separates distance in the direction which the rotating shaft 5 extends, is placed at it, and becomes approximately horizontal to the surface 7a.

The pair of side surface 8b which stands in a row in the surface 7a in the surface 8a, and a distant position so that it may become an abbreviated right angle on the surface 7a.

In the surface 8a, the first speaker holes 13 for the first loudspeakers that output sounds, such as a ringtone, with a high level provide.

**********. From each of the pair of side surface 7c, only a predetermined distance is the position which came together inside, and each of the pair of side surface 8c which is a surface used as the both ends of axis-of-rotation 5 direction in the projection part 8 stands in a row on the surface 7a. Therefore, the projection part 8 is provided near [except the both ends of the periphery of the surface 7a] the center.

[0036]

The hinge region 3 provided enabling the free rotation to the projection part 8 and the second housing 4 rotatably provided centering on the axis of rotation 6 to the hinge region 3 are connected to the first housing 2. The extension wire of the axis of rotation 6 lies at right angles to the rotating shaft 5 in the position where the distance from the center of the projection part 8, i.e., each of the pair of side surface 8c, is equal.

[0037]

The hinge region 3 is formed in the shape of a U character of the central part 3m which extends in the direction which the rotating shaft 5 extends, and the both ends 3n which extend in the direction which the axis of rotation 6 extends from the both ends of the central part 3m. The hinge region 3 is positioned so that the both ends 3n may put the pair of side surface 8c of the projection part 8. The hinge device and antenna which are not illustrated are stored in the inside of the hinge region 3. And the both ends 3n and the side surface 8c are connected by the hinge device, enabling free rotation. Thereby, the central part 3m and the second housing 4 are rotatably connected to the first housing 2. Transmission and reception of a signal with a base station are performed via an antenna.

[0038]

The second housing 4 has the surface 4a of approximately rectangular shape where a part of end side with which the hinge region 3 is connected was cut. This display surface 4a is provided so that an abbreviated right angle may be accomplished to a connected surface with the hinge region 3 in the second housing 4. That is, the display surface 4a is provided substantially parallel to the axis of rotation 6.

[0039]

The first display part 14 is provided by the surface 4a. The first display part 14 is constituted by a liquid crystal display, EL (electro luminescent) display, etc.

An image is displayed based on the image data given via a display driver part. The receiver hole 15 of the receiver which uses for a telephone call etc. is drilled in the surface 4a. The receiver hole 15 is arranged at the end (it opposes) side of an opposite side the end side in the second housing 4 with which the hinge region 3 is connected. The first display part 14 is provided between the end side with which the hinge region 3 is connected and the receiver hole 15 in the surface 4a. The manual operation button group (key operation section) 16 used for it when the first display part 14 is carried out outside and the cellular phone 1 is closed in the surface 4a is provided. The manual operation button group 16 is provided by the four corners of the first display part 14, respectively.

[0040]

The absorbing member 17 is provided by the cut portion on the end side by which the hinge region 3 is connected with the second housing 4. This absorbing member 17 Plastic resin, such as ABS and PC-ABS, To plastic resin, a metal plating process. Rubber content plastic resin (elastomer), such as TPE (Thermoplastic-Elastomer) which is low hardness and has elasticity rather than what was given, and TPEE (Thermoplastic-Polyester-Elastomer), is constituted as a material.

[0041]

The portion by which this absorbing member 17 is provided is 0 times about the angle of the second housing 4 to the hinge region 3 in the state (state where the display part 14 is opposing to

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000615

the surface 7a in the first housing 2) where the first display part 14 is blockaded when the cellular phone 1 is closed. The state where the first display part 14 is opened wide when the cellular phone 1 is closed (the surface 4b which is a surface of the opposite side of the display surface 14 in the second housing 4) When the angle of the second housing 4 to the hinge region 3 in the state where it is opposing to the surface 7a in the first housing 2 is made into 180 degree, where the second housing 4 is rotated 90 degree to the hinge region 3, When rotating the hinge region 3 to the first housing 2, it is a corner of the second housing 4 in contact with the first housing 2.

[0042]

Thus, it is ** about the absorbing member 17 which consists of the material of low hardness from the material which constitutes the first housing 2.

By obtaining, the strength reduction of the second housing 4 can be inhibited, and damage by contact of the first housing 2 and the second housing 4 can be prevented. The absorbing member 17 may be a material harder than the material which constitutes the material which constitutes the first housing 2, equivalent, or the first housing 2. When using such a material, it may consider that the absorbing member 17 deforms or the absorbing member 17 moves to the second housing 4 etc. as the composition which can reduce the power by the press to the second housing 4, and the power by a slide.

[0043]

At this embodiment, it constitutes so that the rotating range of the second housing 4 to the hinge region 3 may be 180 degree from 0 times, When the second housing 4 is seen from the upper part (it is on the extension wire of the axis of rotation 6, and is an opposite side as the hinge region 3 side to the second housing 4), it constitutes so that it may rotate from the state of 0 times to 180 degree clockwise (right-handed rotation) and may rotate from the state of 180 degree to 0 times counterclockwise (left-handed rotation). Therefore, the absorbing member 16 is provided by one corner on the end side with which the hinge region 3 is connected.

[0044]

By having such composition, in the second housing 4, the portion which consists of the material of low hardness can be minimized, and the strength reduction of the second housing 4 can be inhibited more from the material which constitutes the first housing 2. The twist of a signal wire (a lead and a flexible base) in the case, of rotating the second housing 4 to the hinge region 3 which ties the hinge region 3 and the second housing 4 can be minimized. Since the user should just rotate the second housing 4 so that the absorbing member 17 may always come to the surface 7a side, a hand of cut can inhibit being easy to recognize and making it rotate in the mistaken direction. Therefore, destruction of the hinge which arises by making it rotate in the direction which mistook the second housing 4 can be inhibited.

[0045]

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000616

As shown in Fig.3, the taking lens 18 and the flash plate 19 are located in a line, and are provided by the surface 7c of the base part 7 which is placed at the opposite side of the surface 7a so that it may be placed at the back side of the projection part 8. The flash plate 19 is used as a source of a fill-in flash at the time of taking a photograph by the camera unit described behind. Generally, a xenon tube is used for the source of a fill-in flash, and, these days, LED (light emitting diode) of RGB is used. The lighting of white light can be obtained by carrying out simultaneously emitting light of such LED of 3 colors.

[0046]

The second speaker holes 21 for the second loudspeakers used for the output of sounds, such as the second display part 20 and a ringtone, are located in a line, and are provided by the surface 7c so that it may be placed near the taking lens 18. The second display part 20 is constituted by a liquid crystal display, EL display, etc.

[0047]

Fig.4 is the cross sectional view which looked at the first housing 2 in the cellular phone 1, the hinge region 3, and the connection part of the second housing 4 from the IV direction in Fig.1. As shown in this figure, the internal space 22 which communicates between the projection part 8 and the base part 7 is specified to the inside of the first housing 2. It is placed at the back side of the taking lens 18, and the camera unit 23 which photos the image which entered from the taking lens 18, and the first loudspeaker 24 are stored in the internal space 22. The camera unit 23 is a powerful camera provided with an automatic focusing function, a 20 time digital zoom function, double optical zoom functions, etc. The first loudspeaker 24 is a high-output loudspeaker which outputs a ringtone, the sound of a radio broadcast or television broadcasting, etc.

[0048]

The camera unit 23 is provided with the following.

Photographing elements, such as a CCD (charge coupled device) image sensor or a CMOS (complementary metal oxide semiconductor) image sensor.

A color filter of 3 colors of RGB.

In the camera unit 23, the light which was reflected with the object and entered into the taking lens 18 is converted to 3 colored light of RGB through a color filter, and 3 colored light of RGB is entered in CCD, respectively.

[0049]

It may be made to store the receiver of low-power output which replaces with the first loudspeaker 24 and is used for a telephone call etc. in the internal space 22, and by having such composition, where the cellular phone 1 is closed, the telephone call using this receiver and first microphone can be enabled. Although switching the first loudspeaker 24 to the object for high power and low-power output electrically can also produce the above-mentioned effect, it is good to provide

the circuit restricted in this case so that the first loudspeaker 24 may not become high power during a telephone call. Thereby, a user can be prevented from causing the paracusis when the first loudspeaker 24 becomes high power during a telephone call.

[0050]

Fig.5 is an exploded view of the cellular phone 1 shown in Fig.1. In the figure, the cellular phone 1 in the state where it opened is shown from the surface 7a anda [4] side. As shown in Fig.4 and Fig.5, the load and the first housing 2 comprise the cabinet 2p which has the surface 7a, and the back face cabinet 2q which has the surface 7c. The second housing 4 comprises the cabinet 4p which has the surface 4a, and the back face cabinet 4q which has the surface 4b.

[0051]

The hinge region 3 comprises the cabinet 3p and the back face cabinet 3q. The cabinet 3p and the back face cabinet 3q store the hinge device 25 in an inside, and are combined to it. The hinge device 25 comprises the two hinge mechanisms 27 which connect the hinge mechanism 26 which connects rotatably the central part 3m and the second housing 4, and the both ends 3n and the side surface 8b enabling free rotation. The hinge device 25 branches into a 2-way from the hinge mechanism 26, and extends, and it has the form in which the hinge mechanism 27 was provided at the tip. The camera unit 23 and the first loudspeaker 24 are placed between the two hinge mechanisms 27, and are stored in the inside of the first housing 2.

[0052]

According to such composition, the camera unit 23 and the first loudspeaker 24 are stored in the internal space 22 which communicates even the inside of the projection part 8 connected with the hinge region 3. For this reason, it can accommodate in the inside of the first housing 2 with the first loudspeaker 24, without making portions other than projection part 8 on the surface 7c side of the first housing 2 project, even if it is the large-sized camera unit 23 provided with the optical zoom function etc. For this reason, when not using the internal space 22 in the projection part 8 as space in which the first loudspeaker 24 is stored, as compared with the case where the first loudspeaker 24 is stored in portions other than internal space 22 in the projection part 8, thickness of the base part 7 can be made small. Thereby, since the thickness of the first housing 2 does not enlarge, the miniaturization of the cellular phone 1 can be attained.

[0053]

The state in which Fig.6 opened the cellular phone 1 90 degree (the hinge region 3 and the second housing 4) It is a perspective view showing the state where changed into the state where it was made to rotate 90 degree from the state where it closed to the first housing 2 centering on the axis of rotation 5, and it rotated the second housing 4 only 90 degree from the state shown in Fig.1 to the hinge region 3 centering on the axis of rotation 6. In this state, the second housing 4 is positioned so that the surface 4a where the first display part 14 was provided, and the surface 7a of

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000618

the first housing 2 in which the input button group 9 and the feature button group 10 were provided may intersect perpendicularly.

[0054]

The state which opened the cellular phone 1 180 degree from the state which showed Fig.7 to Fig.6 (the hinge region 3 and the second housing 4) It is a perspective view showing the state where changed into the state where it was made to rotate 180 degree from the state where it closed to the first housing 2 centering on the axis of rotation 5, and it rotated the second housing 4 only further 90 degree to the hinge region 3 centering on the axis of rotation 6. In this case, it is positioned so that the surface 4a of the second housing 4 and the surface 7c of the first housing 2 may turn to a uniform direction and the surface 4b of the second housing 4 and the surface 7a of the first housing 2 may turn to a uniform direction. Only a suitable angle can rotate not only the state shown in Fig.1, Fig.6, and Fig.7 but the second housing 4 centering on the axis of rotation 6. Therefore, the first display part 14 provided by the surface 4a can be turned towards desired.

[0055]

Thus, in the cellular phone 1, the second housing 4 is rotatably provided by the 2-way to the first housing 2. For this reason, he is a user when photoing an object using the camera unit 23.

Direction of the first display part 14 can be chosen in accordance with the conditions of ** and its photographing. For example, when photoing the object built on the transverse plane, the user should just position the second housing 4 in the state which shows in Fig.1. Thereby, the user can check the figure of the object projected on the first display part 14, turning the taking lens 18 to an object. a different direction from the direction at which an object is placed about the first display part 14 in the figure of the object where the user stood on the transverse plane when positioning the second housing 4 in the state which shows in Fig.6 -- while taking a ********** attitude, it can check.

[0056]

When a user photos his figure, the user should just position the second housing 4 in the state which shows in Fig.7. Thereby, its figure projected on the first display part 14 can be checked, turning the taking lens 18 to itself. When the camera unit 23 is provided with a self-timer function, the user can stand on the position away from the cellular phone 1, and can also photo his figure. Countdown of a self-timer may be displayed on the second display part 20 in Fig.3 in this case.

[0057]

Fig.8 is a perspective view showing the state where the cellular phone 1 was rotated in the closing direction (direction closed around the center of the axis of rotation 5), from the state shown in Fig.6. As shown in this figure, in the cellular phone 1, the absorbing member 17 provided by the second housing 4 is closed so that the "F key" may be depressed among the feature button groups 10 provided by the surface 7a of the first housing 2. It is that such a case or the "F key" is constituted

with the cellular phone 1 so that durability may become high, since it is frequently-used also among the feature button groups 10. And since the absorbing member 17 is constituted by rubber content plastic resin, such as TPE and TPEE, damage of the operation key accompanying the shock at the time of rotation can be inhibited.

[0058]

In the state where the power rotated in the closing direction focusing on the rotating shaft 5 to the second housing 4 is applied, if it is made to rotate around the center of the axis of rotation 6, the absorbing member 17 provided by the second housing 4 will move the second housing 4, while contacting the surface 7a of the first housing 2, and a part of feature button group 10. In this case, since the absorbing member 17 is constituted from the surface 7a and the feature button group 10 of the first housing 2 by rubber content plastic resin which is the materials of low hardness, such as TPE and TPEE, generating of the crack over the surface 7a and the feature button group 10 of the first housing 2 can be inhibited.

[0059]

Fig.9 is a perspective view showing the state of the cellular phone 1 at the time of closing the cellular phone 1 so that the display surface 14 may turn to the outside. Fig.10 is a fluoroscopy perspective view showing the state of the first housing 2 in this case. That is, Fig.9 and Fig.10 show the state where the second housing 4 was rotated in the closing direction focusing on the rotating shaft 5, from the state which shows the second housing 4 in Fig.7. In this case, the cellular phone 1 is closed so that the surface 4a where the first display part 14 and the manual operation button group 16 were provided may turn to the outside and the surface 4b may turn to the inside. And the user can hang a right index finger, for example on the shutter button 12 (refer to Fig.1) in this case, and it can take a photograph in the state where the cellular phone 1 was ****ed with both hands. That is, the cellular phone 1 can be carried out like a digital camera for exclusive use, and can be established. For this reason, the usability at the time of using the cellular phone 1 as a camera can be improved.

[0060]

Since the first display part 14 and the first loudspeaker 24 (or speaker holes 13) can be made into a substantially identical surface in this case, the usability of the cellular phone 1 at the time of using as viewing-and-listening machines, such as a radio broadcast and television broadcasting, can be improved. When the receiver 15 also uses as a voice output part, on both sides of the first display part 14, a voice output part can also be arranged right and left. Thereby, stereophonic reproduction is realizable.

[0061]

It is the manual operation button group 16, checking the first display part 14, where the cellular phone 1 is closed.

Since it can be operated, the usability of the cellular phone 1 at the time of using as a handheld game machine can be improved. Also in this case, since the first display part 14 and the first loudspeaker 24 (or speaker holes 13) serve as a substantially identical surface, the user can feel a game with presence. It replaces with the first loudspeaker 24, or may make it provide the arrow key (not shown) which consists of a vertical and horizontal key in parallel with the first loudspeaker 24. The operability at the time of using as a handheld game machine can be improved by this, and the usability of the cellular phone 1 can be improved more.

[0062]

An arrow key (not shown) may be provided in the position which adjoins the speaker holes 13 in the projection part 8. That is, the projection part 8 is equipped with the loudspeaker 24 and the speaker holes 13, and it may be made to equip the speaker holes 13 and the substantially identical surface in the projection part 8 with an arrow key.

[0063]

When the display part 14 is exposed outside and the cellular phone 1 is closed by having such composition, it is arranged so that the display part 14, the speaker holes 13, and an arrow key may become a substantially identical surface. For this reason, while the moving direction of the light from the display part 14 and the moving direction of a sound become substantially identical, an arrow key can be operated, looking at the display part 14. Therefore, the situation of being easy to hear the sound which it was easy to carry out key operation which used the display part 14, and was interlocked with the display of the display part 14 for the user can be made.

[0064]

The cellular phone 1 in the state where it closed the second microphone hole 11b, The position which opposes to the central part 3m, i.e., the gap B which produces between the first housing 2 and the hinge region 3, Since it is arranged in the middle with the gap C which produces between the hinge region 3 and the 2nd housing 4, it is easy to pick up a sound through the gap A from these gaps B and C, and can improve the telephone speech quality in the state where the cellular phone 1 was closed.

[0065]

Next, the electric constitution of the cellular phone 1 is described with reference to Fig.11. Fig.11 is a functional block diagram showing the schematic structure of the cellular phone 1. As shown in this figure, the cellular phone 1, The antenna 28, the radio part 29, the communication control part 30, the speaker driving control part 31, the receiver 32, the first loudspeaker 24, the second loudspeaker 33, the transmission control part 34, the first microphone 35, the second microphone 36, the display control part 37, the first display part 14, the second display part 20, the operation input section 38, It is constituted by the input button group 9, the feature button group 10, the manual operation button group 16, the camera unit 23, the image control part 39, the light source

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000621

controlling part 40, the flash plate 19, the storage part 41, first Hall device 42, second Hall device 43, the state detection controlling part 44, and the main control part 45.

[0066]

The radio part 29 performs transmitting and receiving processing of the commo data exchanged between a base station or other communication equipment via the antenna 28. A radio broadcast and television broadcasting are receivable in this radio part 29. The communication control part 30 controls various communications. For example, a reception control of a radio broadcast or television broadcasting and an application program in a web site. The transmit/receive control for downloading (for example, a game program) etc. from a Web server, call origination control at the time of dispatch, call control, receipt control at the time of mail arrival, transmit/receive control of an E-mail, etc. are performed.

[0067]

The speaker driving control part 31 performs control which drives the receiver 32, the 1st loudspeaker 24, and the second loudspeaker 33 at the time of voice response. The change of the driving state in this first loudspeaker 24 and second loudspeaker 33 is performed based on the busy condition of the detection result of the terminal state by the state detection controlling part 44, and the various function of the cellular phone 1.

[0068]

The transmission control part 34 performs input control of the audio signal input from the first microphone 35 and the second microphone 36 at the time of a telephone call. The change (effective/invalid change of the first microphone 35 and the second microphone 36) of the input from this first microphone 35 and the second microphone 36 is a state.

It is carried out based on the detection result of the terminal state by the detection controller 44.

[0069]

The display control part 37 performs control to which the contents displayed on the first display part 14 and the second display part 20 are switched. The change of this screen display is performed based on the detection result of the terminal state by the state detection controlling part 44, etc. The operation input section 38 performs an input process based on the key operation in the input button group 9, the feature button group 10, and the manual operation button group 16.

[0070]

The image control part 39 controls developing to the data for a display or compressing into JPEG data the image data read from imaging data and the storage part 41 from the camera unit 23 etc. The light source controlling part 40 performs emission control of the flash plate 19.

[0071]

It is a state detecting means which detects whether the state detection controlling part 44 has the cellular phone 1 in which terminal state. That is, based on turning on and off of the 1st and second

Hall devices 42 and 43, it is distinguished whether the cellular phone 1 has closed and whether the second housing 4 is in the state of 0 times to the hinge region 3 again. Thereby, since a terminal state is detected automatically, audio input and output and the change of image display can be made to perform automatically. The 1st and second Hall devices 42 and 43 are turned on and off by detecting the magnetism from the magnet which was provided by the 1st, the second housings 2 and 4, or the hinge region 3, and was provided by other housings which oppose to the 1st and second Hall devices 42 and 43.

[0072]

Next, with reference to Fig.12 and Fig.13, the switching action of the cellular phone 1, and the voice input and the switching control operation of a display content accompanying the rotation operation of the second housing 4 are described. Fig.12 is a flow chart showing the flow of the voice input in the cellular phone 1, or switching control operation of a display content.

[0073]

At the times of the power supply ON, such as at the time [At the time / At the time of waiting / of a telephone call] of television reception, etc., the main control part 45 is monitoring the detecting signal from the state detection part 44. In this state, if the state detection part 44 detects the change of state of the cellular phone 1, the main control part 45 will perform switching control of voice input or a display content based on the detecting signal from the state detection part 44.

[0074]

Specifically, the main control part 45 first detects whether whether the second housing 4 and the hinge region 3 being in the state of 0 times to the first housing 1 and the cellular phone 1 are closed by the state detection part 44 (Step S1). And when the cellular phone 1 is closed, the main control part 45 detects whether the second housing 4 is rotating to the hinge region 3 by the state detection part 44 (Step S2).

[0075]

Here, when the second housing 4 is rotating to the hinge region 3, the main control part 45 controls the display control part 37, turns OFF the first display part 14 (Step S3), and turns ON the second display part 20 (step S4). The main control part 45 controls the transmission control part 34, turns OFF (invalid) a first microphone (Step S5), and turns ON (effective) a second microphone (Step S6). And voice input and switching control operation of a display content are ended.

[0076]

When the second housing 4 is not rotating to the hinge region 3 in Step S2 on the other hand, Namely, when it is detected that the cellular phone 1 was closed after the second housing 4 had rotated 180 degree to the hinge region 3 in the state detection part 44, the main control part 45, The display control part 37 is controlled, the first display part 14 is turned ON (Step S7), and the second display part 20 is turned OFF (Step S8). Then, Steps S6 and S6 are processed, and voice input

and switching control operation of a display content are ended.

[0077]

It is [whether in Step S1, when the cellular phone 1 has not closed, the second housing 4 is rotating the main control part 45 to the hinge region 3 by the state detection part 44, and] **.

It comes out and carries out (step S9). That is, the second housing 4 detects whether the cellular phone 1 is opened in the state of 0 times to the hinge region 3 by the state detection part 44.

[0078]

And when the second housing 4 is not rotating to the hinge region 3, the main control part 45, The main control part 45 displays on a part of first display part 14 (for example, screen lower left) the "right-handed-rotation icon" which expresses visually that the second housing 4 is pivotable in the right-handed rotation while it controls the display control part 37 and turns ON the first display part 14. Fig.13 (a) is a plan view showing the state where the second housing 4 displayed the "right-handed-rotation icon" which expresses a pivotable thing in the clockwise direction visually on the screen lower left of the first display part 14.

[0079]

the main control part 45 -- the second display part 20 -- turning off (Step S12) -- the transmission control part 34 is controlled and ON (Step S13) and a second microphone are turned off for a first microphone (Step S14). This ends voice input and switching control operation of a display content.

[0080]

On the other hand, in step S9, when the second housing 4 is rotating to the hinge region 3, by the state detection part 44, When it is detected that the cellular phone 1 was opened after the second housing 4 had rotated 180 degree to the hinge region 3, the main control part 45, While controlling the display control part 37 and turning ON the first display part 14, the "left-handed-rotation icon" which expresses visually that the second housing 4 is pivotable in the left-handed rotation is displayed on a part of first display part 14 (for example, screen lower left). Fig.13 (b) is a plan view showing the state where the second housing 4 displayed the "left-handed-rotation icon" which expresses a pivotable thing in the counterclockwise direction visually on the screen lower left of the first display part 14.

[0081]

the main control part 45 -- the second display part 20 -- turning off (Step S12) -- the transmission control part 34 is controlled and ON (Step S13) and a second microphone are turned off for a first microphone (Step S14). This ends voice input and switching control operation of a display content.

[0082]

Thus, when the cellular phone 1 is open and the second housing 4 displays the icon which expresses a pivotable direction visually on a part of first display part 14 (for example, screen lower left), It becomes easy for a user to recognize a hand of cut, and can inhibit making it rotate in the direction

which the user mistook. Therefore, destruction of the hinge which arises by making it rotate in the direction which mistook the second housing 4 can be inhibited. And in this embodiment, since the user can also recognize a pivotable direction from the position of the absorbing member 17 as described above, the visibility of the pivotable direction is higher.

[0083]

It may be made to display the icon which expresses a direction with the second pivotable housing 4 also with the second display part 20 visually. It is a case where the cellular phone 1 is opened by this in the state where angle of rotation to the hinge region 3 of the second housing 4 is 0 times, and even when the cellular phone 1 is seen from the main surface 7c side of the first housing 2, the user can recognize the pivotable direction of the second housing 4. Therefore, destruction of the hinge which arises by making it rotate in the direction which mistook the second housing 4 can be inhibited further.

[0084]

For example, it replaces with the first speaker holes 13, a display part is provided, and it may be made to display the icon to which the second housing 4 expresses a pivotable direction with this display part visually. It is a case where the cellular phone 1 is opened by this in the state where angle of rotation to the hinge region 3 of the second housing 4 is 180 degree, and even when the cellular phone 1 is seen from the main surface 7a side of the first housing 2, the user can recognize the pivotable direction of the second housing 4. For this reason, destruction of the hinge which arises by making it rotate in the direction which mistook the second housing 4 can be inhibited further.

[0085]

It may be made not to switch a display immediately [the icon to which the second housing 4 expresses a pivotable direction visually / when a display is immediately switched when switching operation of the cellular phone 1 is performed, and rotatably operating of the second housing 4 is performed]. For example, when the display of an icon on display is maintained in the middle of rotation of the second housing 4 (1 time - 179 degree) and rotation of the second housing 4 is completed to it (0 times or 180 degree), it may be made to display the icon based on the state. Thereby, a user can be prevented from taking a pivotable direction in the middle of rotation. Therefore, the user can rotate the second housing 4 in the direction for which it wished at the beginning reliably.

[0086]

[in the middle of rotation of the second housing 4 (1 time - 179 degree)], It may be made to display the icon (circumference icon of right and left) which expresses visually that both a RRC and a RLC are possible, as it is not necessary to display a right-handed-rotation icon or a

left-handed-rotation icon and since both a RRC and a RLC are possible, and shown in Fig.13 (c).

[0087]

In this embodiment, although described using the folded-up type cellular phone 1, the portable device by the present invention is not limited to this. The present invention is foldaway PHS (Personal Handyphone System; registered trademark), for example. Others, such as foldaway PDA (personal digital assistants), a foldaway notebook sized personal computer, and a foldaway word processor

It is applicable also to the portable device of **********.

[0088]

Change various in the range which is not limited to the embodiment mentioned above and was shown in the claim is possible for the present invention. That is, it is contained in technical scope of the present invention also about the embodiment obtained combining the technical means changed suitably in the range shown in the claim.

[Industrial applicability]

[0089]

The present invention can apply a foldaway cellular phone, foldaway PHS (registered trademark), foldaway PDA, a foldaway notebook sized personal computer, a foldaway word processor, etc. to a foldaway portable device (information terminal equipment).

[Brief Description of the Drawings]

[0090]

[Drawing 1]It is a perspective view in the portable device concerning the 1 embodiment of the present invention showing the state where it opened.

[Drawing 2]It is a perspective view in the portable device concerning the 1 embodiment of the present invention showing the state where it closed.

[Drawing 3]It is a perspective view in the portable device concerning the 1 embodiment of the present invention showing the cellular phone which looked at the state where it closed, from the arrow III direction in Fig.2.

[Drawing 4]It is the cross sectional view which looked at the first housing in the portable device concerning the 1 embodiment of the present invention, the hinge region, and the connection part of the second housing from the IV direction in Fig.1.

[Drawing 5]It is an exploded view of the portable device concerning the 1 embodiment of the present invention.

[Drawing 6]In the portable device concerning the 1 embodiment of the present invention, it is a perspective view showing the state where changed into the state where the hinge region and the second housing were rotated 90 degree from the state where it closed to the first housing 2, and it rotated the second housing only 90 degree from the state shown in Fig.1 to a hinge region.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000626

[Drawing 7]In the portable device concerning the 1 embodiment of the present invention, it is a perspective view showing the state where changed into the state where the hinge region and the second housing were rotated 180 degree from the state where it closed to the first housing 2, and it rotated the second housing only further 90 degree to the hinge region from the state shown in Fig.6.

[Drawing 8]In the portable device concerning the 1 embodiment of the present invention, it is a perspective view showing the state where the hinge region and the second housing were rotated in the direction closed to the first housing 2 from the state shown in Fig.6.

[Drawing 9]In the portable device concerning the 1 embodiment of the present invention, it is a perspective view showing the state at the time of closing a portable device so that a display surface may turn to the outside.

[Drawing 10]In the portable device concerning the 1 embodiment of the present invention, it is a fluoroscopy perspective view showing the state of a first housing at the time of closing a portable device so that a display surface may turn to the outside.

[Drawing 11]It is a functional block diagram showing the schematic structure of the portable device concerning the 1 embodiment of the present invention.

[Drawing 12]It is a flow chart showing the voice input and the switching control operation of a display content in the portable device concerning the 1 embodiment of the present invention.

[Drawing 13]It is an explanatory view showing the example of a screen display of the cellular phone in Fig.1.

[Drawing 14]In the former, it is a perspective view showing the state where the folded-up type cellular phone provided with the two axes of rotation opened.

[Drawing 15]It is a perspective view showing the state where the cellular phone in Fig.14 closed.

[Drawing 16]It is a perspective view showing the cellular phone seen from the arrow XIII in Fig.14.

[Drawing 17]It is a perspective view showing the cellular phone at the time of rotating the housing in which the main display in Fig.14 was provided.

[Explanations of letters or numerals]

[0091]

1 Cellular phone (portable device)

2 A first housing

3 Hinge region

4 A second housing

5 Rotating shaft (first axis of rotation)

6 Axis of rotation (second axis of rotation)

7 Base part

8 Projection part

9 Input button group

10 Feature button group

11a A first microphone hole

11b A second microphone hole

12 Shutter button

13 First speaker holes

14 A first display part

15 Receiver hole

16 Manual operation button group

17 Absorbing member

18 Taking lens

19 Flash plate

20 A second display part

21 Second speaker holes

22 Internal space

23 Camera unit

24 A first loudspeaker

25 Hinge device

(19)日本国特許庁(JP)　(12)公開特許公報(A)　(11)特許出願公開番号
特開2005-341047
(P2005-341047A)
(43)公開日　平成17年12月8日(2005.12.8)

(51)Int.Cl.[7]		F I			テーマコード（参考）
H04M	1/00	H04M	1/00	U	5K023
H04M	1/02	H04M	1/02	C	5K027

審査請求 未請求　請求項の数 5　OL　（全 10 頁）

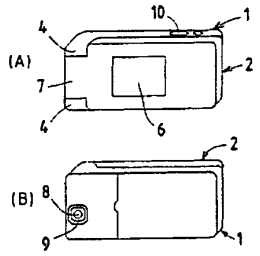
(21)出願番号　特願2004-154935 (P2004-154935)
(22)出願日　平成16年5月25日 (2004.5.25)

(71)出願人　000006013
三菱電機株式会社
東京都千代田区丸の内二丁目２番３号
(74)代理人　100066474
弁理士　田澤　博昭
(74)代理人　100088605
弁理士　加藤　公延
(74)代理人　100123434
弁理士　田澤　英昭
(74)代理人　100101133
弁理士　濱田　初音
(72)発明者　江村　泰輔
東京都千代田区丸の内二丁目２番３号　三菱電機株式会社内

Fターム(参考)　5K023 AA07 BB11 DD08 HH01 HH07
5K027 AA11 BB02 FF01 FF22 HH29

(54)【発明の名称】折畳式携帯機器

(57)【要約】
【課題】　折畳状態でも被写体を確認しながら撮影することができ、しかも、使用者自身および使用者以外の被写体を大画面で確認しながら撮影を行うことが可能な構成の折畳式携帯機器を得ることにある。
【解決手段】　操作キー３が実装された第１の筐体１と、片面にメイン表示部５を有し、その反対面にサブ表示部６を有して第１の筐体１の一側端部に折畳・展開方向へ回動可能に連結された第２の筐体２とを備え、前記メイン表示部５もしくはサブ表示部６に撮像を表示させるカメラ８を搭載した折畳式携帯機器において、前記第１の筐体１の表裏両面側に前記第２の筐体２を折畳可能にそれらの筐体１，２を回動可能に連結すると共に、前記カメラ８を、前記第１の筐体１の表面側および裏面側への第２の筐体２のいずれの折畳位置でも撮影可能に搭載したものである。
【選択図】　図１



Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000629

【特許請求の範囲】
【請求項1】
操作キーが実装された第１の筐体と、片面にメイン表示部を有し、その反対面にサブ表示部を有して、前記第１の筐体の一側端部に回動可能に連結された第２筐体とを備え、前記メイン表示部もしくは前記サブ表示部に表示させる画像を撮像するカメラを搭載した折畳式携帯機器において、前記第１の筐体の表裏両面側に前記第２の筐体を折畳可能に連結すると共に、前記カメラを、前記第１の筐体の表面側および裏面側への前記第２の筐体のいずれの折畳位置でも撮影可能に搭載したことを特徴とする折畳式携帯機器。
【請求項2】
カメラは、この筐体メイン表示部と同一面側に搭載されていることを特徴とする請求項１記載の折畳式携帯機器。
【請求項3】
カメラは、第１、第２の筐体における一方の筐体に搭載され、他方の筐体には、両筐体の一方向面への折畳時に前記カメラの正面に対向して当該カメラによる撮影を可能にする窓穴が設けられていることを特徴とする請求項１または請求項２記載の折畳式携帯機器。
【請求項4】
第１の筐体と第２の筐体はヒンジ機構で連結され、このヒンジ機構は、第１の筐体の操作キー実装面と第２の筐体のメイン表示部とが向かい合う折畳方向と、第１の筐体の操作キー実装面の反対面と第２の筐体のサブ表示部とが向かい合う折畳方向とに屈曲回動自在なリンク機構からなっていることを特徴とする請求項１記載の折畳式携帯機器。
【請求項5】
ヒンジ機構は、第１，第２の筐体を所定の角度に保持する係合手段を備えていることを特徴とする請求項４記載の折畳式携帯機器。

【発明の詳細な説明】
【技術分野】
【0001】
この発明は、使用者および使用者以外の被写体を視認しながら撮影することができるカメラ付きの折畳式携帯機器に関するものである。
【背景技術】
【0002】
従来のカメラ付きの折畳式携帯機器において、操作キーを有する第１の筐体と、表示部を有する第２の筐体とをヒンジ部を介して折畳・展開方向へ回動可能に連結し、前記第１の筐体のヒンジ部に撮影用のカメラを組み付け、前記第１，第２の筐体の回動により、前記カメラが前記表示部の表示方向に対して同一方向と反対方向のいずれか一方に選択的に向けられるように構成したものは既に知られている（例えば、特許文献１）。すなわち、前記第１，第２の筐体を、それらの操作キー実装面と表示部とが向かい合う折畳状態から９０度回動させて開いたときに前記表示部の表示方向と前記カメラの撮影方向とが逆向きとなり、また、前記両筐体を折畳状態から２７０度回動させて開いたときに前記表示部の表示方向と前記カメラの撮影方向が同一方向となるように構成したものである。
【0003】
このように構成された従来のカメラ付き折畳式携帯機器によれば、第１，第２の筐体を９０度の回動角度に開くことにより、表示部の表示方向とカメラの撮影方向が逆向きとなって、カメラで撮らえた使用者以外の被写体が前記表示部に表示されるので、その表示画像を確認しながら前記被写体を撮影でき、また、前記第１，第２の筐体を折畳状態から２７０度の回動角度に開けば、表示部の表示方向とカメラの撮影方向が同一方向に向くので、使用者自身をカメラで撮らえて表示部に表示させ、その表示画像を確認しながら使用者自身を撮影できるというものである。
【0004】
【特許文献1】特開２００３－１０１６１９号公報（第3頁、図2）
【発明の開示】

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000630

【発明が解決しようとする課題】
【0005】
従来のカメラ付きの折畳式携帯機器は以上のように構成されているので、第１，第２の筐体を開いた状態でしか被写体の画像を確認しながら撮影することができず、前記両筐体を折り畳んだ状態では被写体を表示部で確認しながら撮影することができないという課題があった。しかも、使用者自身を被写体として撮影する場合には前記両筐体を９０度の回動角度に開いた状態に保ち、使用者以外の被写体を撮影する場合には前記両筐体を２７０度の回動角度に開いた状態に保たなければ撮影できないという課題があった。
【0006】
なお、他の従来例として、片面に操作キーが実装された第１の筐体と、片面に大画面のメイン表示部を有し、その反対面に小画面のサブ表示部を有する第２の筐体とを折畳・展開可能に連結して二つ折り構成としたカメラ付きの折畳式携帯機器もある。このように第２の筐体にメイン表示部とサブ表示部を設けた二つ折り構成の折畳式携帯機器において、第１，第２の筐体の折畳状態でサブ表示部を表出させ、そのサブ表示部に使用者自身の画像を表示可能とした構成のものもあるが、この場合、前記両筐体を操作キーの実装面と大画面のメイン表示部とが向かい合う方向にしか折り畳むことができず、このため、前記両筐体の折畳状態では大画面のメイン表示部に使用者自身および使用者以外の画像を表示させることができないという課題があった。
【0007】
この発明は上記のような課題を解決するためになされたもので、折畳状態でも被写体を確認しながら撮影することができ、しかも、使用者自身および使用者以外の被写体を大画面で確認しながら撮影を行うことが可能な構成の折畳式携帯機器を得ることを目的とする。
【課題を解決するための手段】
【0008】
この発明に係る折畳式携帯機器は、操作キーが実装された第１の筐体と、片面にメイン表示部を有し、その反対面にサブ表示部を有して、前記第１の筐体の一側端部に折畳・展開方向へ回動可能に連結された第２の筐体とを備え、前記メイン表示部もしくは前記サブ表示部に撮像を表示させるカメラを搭載した折畳式携帯機器において、前記第１の筐体の表裏両面側に前記第２の筐体を折畳可能にそれらの筐体を回動可能に連結すると共に、前記カメラを、前記第１の筐体の表面側および裏面側への前記第２の筐体のいずれの折畳位置でも撮影可能に搭載したものである。
【発明の効果】
【0009】
この発明によれば、第１，第２の筐体を、第１の筐体の操作キー実装面と第２の筐体のメイン表示部とが向かい合う折畳状態と、第１の筐体における操作キー実装面の反対面と第２の筐体のサブ表示部とが向かう折畳状態とに折り畳むことができ、そのいずれの折畳状態でもカメラによる撮影が可能となるように構成したので、前記両筐体を折畳状態のまま、大画面の表示部に前記カメラによる撮像（被写体）を表示させ、その表示画像を確認しながら被写体を撮影することができるという効果がある。
【発明を実施するための最良の形態】
【0010】
実施の形態１．
図１（Ａ）はこの発明の実施の形態１による折畳式携帯機器の折畳状態を示す概略的な外観斜視図、図１（Ｂ）は図１（Ａ）を反対側から見た斜視図、図２（Ａ）は図１（Ａ）の展開状態を示す概略的な斜視図、図２（Ｂ）は図２（Ａ）を反対側から見た斜視図、図３は図１の折畳式携帯機器の具体的な要部構造を示す展開斜視図、図４（Ａ）は図３の折畳式携帯機器を反対側に折り畳んだ状態を示す側面図、図４（Ｂ）は図４（Ｂ）の斜視図である。
図１および図２に示す折畳式携帯機器は、第１の筐体１と第２の筐体２を折畳状態から

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000631

３６０度回動可能に連結した基本構成となっているもので、その詳細な具体的構成について以下に説明する。

【0011】

第１の筐体１は片面に複数の操作キー３が実装された本体側筐体となるもので、第２の筐体２との被接続端部に凹状のヒンジ部（ヒンジ壁部）４を有している。第２の筐体２は、片面にメイン表示部５が設けられ、その反対面にサブ表示部６が設けられた液晶側筐体となるもので、第１の筐体１との被接続端部に凸状のヒンジ部（ヒンジ壁部）７を有している。このような第１，第２の筐体１，２は、両者のヒンジ部４，７の相互を凹凸嵌合させた状態で、前記両筐体１，２の折畳・展開方向へ回動自在に連結した構成となっている。その連結手段として、特徴的構造のヒンジ機構１１（図３および図４参照）を用いるが、このヒンジ機構１１の具体的構成については後述する。

【0012】

前記第１，第２の筐体１，２において、第２の筐体２のヒンジ部４側には撮影用のカメラ８が搭載されている。このカメラ８は撮影方向が前記メイン表示部５の表示方向と同一方向を向くように組み付けられている。また、第１の筐体１のヒンジ部７には、第１の筐体１における操作キー３の実装面（以下、操作キー実装面３ともいう）と第２の筐体２のメイン表示部５とが向かい合う折畳位置で、前記カメラ８の正面に対向して当該カメラ８による撮影を可能とする窓穴９が設けられている。さらに、前記第１の筐体１の側面には、前記カメラ８のシャッターキー１０が取り付けられている。

【0013】

次に、第１の筐体１と第２の筐体２とを両者の折畳・展開方向に回動可能に連結しているヒンジ機構１１の具体的構成を図３および図４に基づいて説明する。このヒンジ機構１１は、前記両筐体１，２のヒンジ部４，７に組み付けられて前記両筐体１，２の相互を伸縮屈曲回動可能に連結しているもので、図４に示すように、第１の筐体１のヒンジ部４側に組み付けられた第１のヒンジリンク１２と、第２の筐体２のヒンジ部７側に組み付けられた第２のヒンジリンク１３と、前記第１のヒンジリンク１２と第２のヒンジリンク１３とに跨ってそれらのヒンジリンク１２，１３に両端部が屈曲回動自在にピン連結された第３のヒンジリンク１４とからなっている。このようなリンク機構からなるヒンジ機構１１において、少なくとも第１のヒンジリンク１２は第１のヒンジ部４の内部に引き出し可能に収納されるようになっている。すなわち、第１，第２の筐体１，２をほぼ水平方向に開いた展開状態では、それらの筐体１，２のヒンジ部４，７側の端部間に隙間が生じないように、前記ヒンジ機構１１は前記両筐体１，２の少なくとも一方の内部に収納可能な取り付け構成となっている。また、前記ヒンジ機構１１の内部には、電源・ＧＮＤ・データ信号等の制御線１５（図４（Ｂ）参照）が挿通されている。この制御線１５は、第１の筐体１側の機構と第２の筐体２側の機構とを電気的に接続しているもので、これにより、カメラ８が撮らえた被写体の画像をメイン表示部５もしくはサブ表示部６に映し出すことができるようになっている。

【0014】

次に動作について説明する。

図１に示すように、第１の筐体１のメイン表示部５と第２の筐体２の操作キー３実装面とが向かい合うように前記両筐体１，２を折り畳んだ状態では、図１（Ｂ）に示すように、第２の筐体２に組み付けられたカメラ８は、その正面に第１の筐体１の窓穴９が対向した状態に保持され、かつ、第２の筐体２のサブ表示部６が表出した状態となる。したがって、このような筐体１，２の折畳状態では、前記サブ表示部６を見ながら使用者以外の被写体をカメラ８で撮らえて前記サブ表示部６に表示させ、その表示画像を確認しながら前記被写体を撮影することができる。ここで、撮影したい被写体が決定したならば、シャッターキー１０を押すことにより、携帯機器もしくは携帯機器に搭載した外部メモリに保存することができる。

【0015】

前記折畳状態の筐体１，２を、図２および図３に示すように、ほぼ水平方向に開いた展

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000632

開状態では、メイン表示部５の表示方向とカメラ８の撮影方向が同一方向となっているため、そのカメラ８を使用者（自分）に向ければ、大画面の前記メイン表示部５に自分の画像が映し出されるので、その表示画像を確認しながら撮影したいポーズ等を決めて撮影することができる。また、このような展開状態の筐体１，２を相反する方向に引っ張ると、ヒンジ機構１１の各ヒンジリンク１２～１４が前記筐体１，２の内部から引き出されるので、その引き出し後には、第１の筐体１における操作キー実装面３の反対面と第２の筐体２のサブ表示部６とが向かい合うように前記両筐体１，２を折り畳むことができる。その折畳状態においても、図４に示すように、第２の筐体２のメイン表示部５が表出し、このメイン表示部５の表示方向とカメラ８の撮影方向が同一方向を向いているので、そのカメラ８を自分に向ければ、大画面の前記メイン表示部５に自分の画像が映し出されることにより、その表示画像を確認しながら撮影したいポーズ等を決めて撮影することができる。

【0016】

以上説明した実施の形態１によれば、片面に操作キー３が実装され、かつ側面にシャッターキー１０が取り付けられた第１の筐体１と、片面にメイン表示部５を有し、その反対面にサブ表示部６を有する第２の筐体２とを、第１の筐体１の操作キー実装面３と第２のメイン表示部５とが向かい合う第１の折畳位置、および第１の筐体における操作キー実装面３の反対面と第２の筐体２のサブ表示部６とが向かい合う第２の折畳位置へ３６０度回動可能に連結し、前記第２の筐体２のヒンジ部７にメイン表示部５の表示方向と同一方向を向くカメラ８を組み付けると共に、第１の筐体１のヒンジ部４側には、前記第１の折畳位置で前記カメラ８の正面に対向する窓穴９を設けるように構成したので、前記両筐体１，２を前記第１の折畳位置もしくは第２の折畳位置のいずれに折り畳んだ状態においても前記カメラ８で被写体を撮らえることができ、その被写体の画像が表出状態のメイン表示部５もしくはサブ表示部６に表示されるため、前記両筐体１，２の折畳状態でメイン表示部５もしくはサブ表示部６の表示画像を確認しながら被写体を撮影できるという効果がある。

【0017】

特に、前記実施の形態１によれば、カメラが組み付けられた第２の筐体２が備えるメイン表示部５の表示方向と前記カメラ８の撮影方向が同一方向となっているので、第１，第２の両筐体１，２を、前記メイン表示部５が表出する第２の折畳位置に折り畳んだ状態では、そのメイン表示部５と共にカメラ８を使用者に向けることにより、大画面の前記メイン表示部５に映し出された使用者自らの画像を確認しながら使用者自身を撮影できるという効果がある。また、前記両筐体１，２を連結しているヒンジ機構１１を筐体内部から引き出して屈曲回動させることができるように構成したので、前記両筐体１，２を前記第１の折畳位置および第２の折畳位置のいずれにも容易に折り畳むことができるという効果がある。

【0018】

実施の形態２．

図５（Ａ）はこの発明の実施の形態２による折畳式携帯機器の折畳状態を示す斜視図、図５（Ｂ）は図５（Ａ）の折畳式携帯機器を反対側から見た斜視図、図５（Ｃ）は図５（Ａ）の折畳式携帯機器を反対側に折り畳んだ状態を示す斜視図、図６（Ａ）は図５（Ａ）の展開状態を示す斜視図、図６（Ｂ）は図６（Ａ）を反対側から見た斜視図であり、図７（Ａ）は図５および図６中のヒンジ機構の要部を示す拡大断面図、図７（Ｂ）は図７（Ａ）中の摺動子を矢印Ｙ方向から見た図であり、図１～図４と同一部分には同一符号を付して重複説明を省略する。

この実施の形態２では、第１の筐体１と第２の筐体２とを、所定の開閉角度に保持する構造のヒンジ機構１６によって回動可能に連結したものである。そのヒンジ機構１６は、第１，第２の筐体１，２相互を、第１の筐体１の操作キー実装面３と第２のメイン表示部５とが向かい合う第１の折畳位置および第１の筐体における操作キー実装面３の反対面と第２の筐体２のサブ表示部６とが向かい合う第２の折畳位置へ３６０度回動可能に連結しているヒンジリンク１７と、このヒンジリンク１７の内部に設けられた軸固定ヒンジ１８

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000633

（図７参照）とを備えている。

【0019】

図７において、前記軸固定ヒンジ１８は、第２の筐体２との摺接面部に凹部１９を有しており、この凹部１９内には軸固定ヒンジ１８と一体の軸２０を介して係合子２１が摺動自在に嵌合してある。この係合子２１は前記凹部１９の内周面にスプライン係合されて第２の筐体２との係合方向にスプリング２２で付勢されている。ここで、前記係合子２１の前面偏心位置に尖鋭状の係合爪２１ａが一体突設され、第２の筐体２側には、当該筐体２の所定の開閉角度位置で前記係合爪２１ａを係脱可能に係合させる複数の係合穴２３が設けられている。その係合穴２３は、前記係合爪１２ａの導入端側がテーパ状に形成されている。なお、図７では、第２の筐体２とヒンジリンク１７との連結部の断面構造を示して説明したが、第１の筐体１とヒンジリンク１７との連結部も同様の構造となっているものである。

【0020】

次に動作について説明する。なお、図８は動作説明図である。

第１の筐体１の操作キー３実装面と第２のメイン表示部５とが向かい合う第１の折畳位置に前記両筐体１，２を折り畳んだ図８（Ａ）の状態では、図７（Ａ）に示すように、ヒンジ機構１６の係合子２１の係合爪２１ａがスプリング２２の付勢力で第２の筐体２側の係合穴２３に進入係合して第２の筐体２とヒンジリンク１７とが位置決め固定され、これと同様にして、第１の筐体１と前記ヒンジリンク１７とが位置決め固定された状態にある。この状態から第２の筐体２の開き操作を行うと、係合穴２３に嵌入していた係合爪２１ａが前記係合穴２３のテーパ面に沿って当該係合穴２３内から押し出される。そして、前記第２の筐体２が所定の開き角度（例えば、図８（Ｂ）に示す傾斜角度）まで開かれることにより、前記係合爪２１ａと別の係合穴２３とが対向すると、その時点でスプリング２２の付勢力により係合子２１が前進して係合爪２１ａが係合穴２３に嵌入係合し、第２の筐体２とヒンジリンク１７とが位置決め固定され、これと同様にして第１の筐体１とヒンジリンク１７とが位置決め固定される。したがって、前記第２の筐体２は図８（Ｂ）に示すような所定の開き角度で保持固定される。さらに、図８（Ｂ）の状態から第１の筐体における操作キー３実装面の反対面と第２の筐体２のサブ表示部６とが向かい合う第２の折畳位置に前記両筐体１，２を折り畳むと、前記第１の折畳位置の場合と同様にヒンジリンク１７両端側の係合爪２１ａがスプリング２２の付勢力で係合穴２３内に進入係合して前記両筐体１，２が第２の折畳位置で位置決め固定される。

【0021】

以上説明した実施の形態２によれば、第１，第２の筐体１，２を折畳・展開方向へ回動可能に連結しているヒンジ機構１６が前記両筐体１，２を所定の開閉角度で位置決め固定する保持機能を有するように構成したので、第１の筐体１の操作キー３実装面とその反対面のいずれかに第２の筐体２を選択的に折り畳むことができる構成とした折畳式携帯機器を所定の開閉角度に保持でき、使い勝手がよくなるという効果がある。

【0022】

実施の形態３．

図９はこの発明の実施の形態３による折畳式携帯機器の動作説明を兼ねた要部構成説明図、図１０は図５（Ａ）のＸ線矢視図であり、図１図８と同一部分には同一符号を付して重複説明を省略する。

この実施の形態３では、前記実施の形態２のヒンジ機構１６におけるヒンジリンク１７の肉壁内部に制御線挿通孔１７ａを設け、この制御線挿通孔１７ａに制御線１５を挿通し、前記制御線挿通孔１７ａの両端開口部から前記制御線１５を引き出して第１の筐体１と第２の筐体２の制御系統にそれぞれ接続する構成としたものである。

【0023】

以上説明した実施の形態３によれば、ヒンジリンク１７の肉壁内部の制御線挿通孔１７ａに制御線１５が挿通されて第１，第２の筐体１，２の制御系統に引き回されているので、前記制御線１５が露出するようなことがなく、当該制御線１５を外部から保護できると

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000634

共に折畳式携帯機器の意匠的美観が得られるという効果がある。

【0024】

実施の形態４．

前記各実施の形態では、液晶側筐体となる第２の筐体２にカメラ８を組み付け、本体側（操作キー３実装側）筐体となる第１の筐体１側に前記カメラ８の窓穴９を設けた折畳式携帯機器について説明したが、前記カメラ８は第１の筐体１側に組み付け、第２の筐体２側に前記窓穴９を設けてもよい。この場合、前記両筐体１，２をメイン表示部５が表出するように折り畳んだ状態では、カメラ８の撮影方向がメイン表示部５の表示方向と同一方向となるので、使用者自らを撮影する際に、前記両筐体１，２を折り畳んだままの状態で大画面のメイン表示部５の映し出された画像を確認しながら撮影できるという効果がある。また、前記両筐体１，２を開いてメイン表示部５を使用者側に向ければ、そのメイン表示部５に映し出された使用者以外の被写体を確認しながらその被写体を撮影できるという効果がある。

【図面の簡単な説明】

【0025】

【図1】図１（Ａ）はこの発明の実施の形態１による折畳式携帯機器の折畳状態を示す概略的な外観斜視図、図１（Ｂ）は図１（Ａ）を反対側から見た斜視図である。

【図2】図２（Ａ）は図１（Ａ）の展開状態を示す概略的な斜視図、図２（Ｂ）は図２（Ａ）を反対側から見た斜視図である。

【図3】図３は図１の折畳式携帯機器の具体的な要部構造を示す展開斜視図である。

【図4】図４（Ａ）は図３の折畳式携帯機器を反対側に折り畳んだ状態を示す側面図、図４（Ｂ）は図４（Ｂ）の斜視図である。

【図5】図５（Ａ）はこの発明の実施の形態２による折畳式携帯機器の折畳状態を示す斜視図、図５（Ｂ）は図５（Ａ）の折畳式携帯機器を反対側から見た斜視図、図５（Ｃ）は図５（Ａ）の折畳式携帯機器を反対側に折り畳んだ状態を示す斜視図である。

【図6】図６（Ａ）は図５（Ａ）の展開状態を示す斜視図、図６（Ｂ）は図６（Ａ）を反対側から見た斜視図である。

【図7】図７（Ａ）は図５および図６中のヒンジ機構の要部を示す拡大断面図、図７（Ｂ）は図７（Ａ）中の摺動子を矢印Ｙ方向から見た図である。

【図8】この発明の実施の形態２による折畳式携帯機器の動作説明図である。

【図9】図９はこの発明の実施の形態３による折畳式携帯機器の動作説明を兼ねた要部構成説明図である。

【図10】図５（Ａ）のＸ線矢視図である。

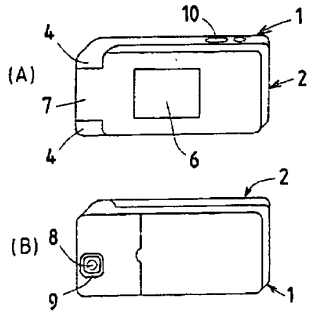
【符号の説明】

【0026】

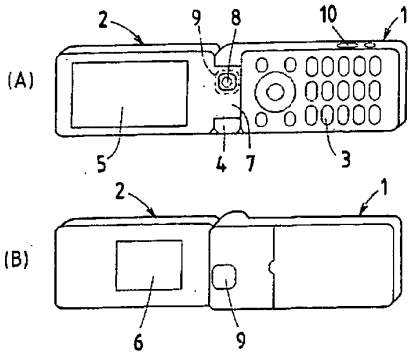
１　第１の筐体、２　第２の筐体、３　操作キー、４　ヒンジ部、５　メイン表示部、６　サブ表示部、７　ヒンジ部、８　カメラ、９　窓穴、１０　シャッターキー、１１　ヒンジ機構、１２　第１のヒンジリンク、１３　第２のヒンジリンク、１４　第３のヒンジリンク、１５　制御線、１６　リンク機構、１７　ヒンジリンク、１７ａ　制御線挿通孔、１８　軸固定ヒンジ、１９　凹部、２０　軸、２１　係合子、２１ａ　係合爪、２２　スプリング、２３　係合穴。

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000635

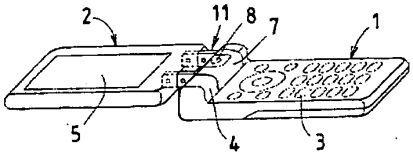
【図1】



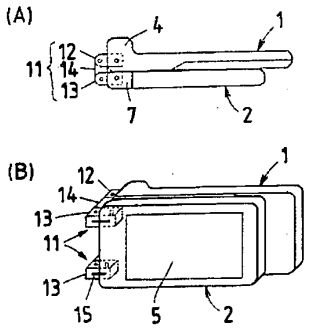
【図2】



【図3】

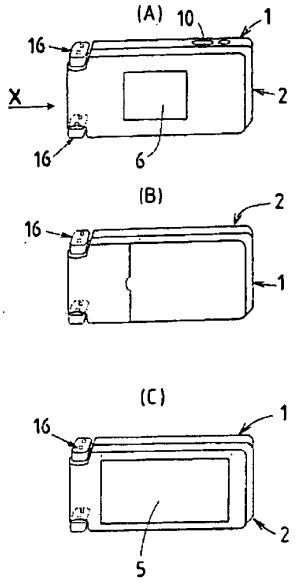


【図4】

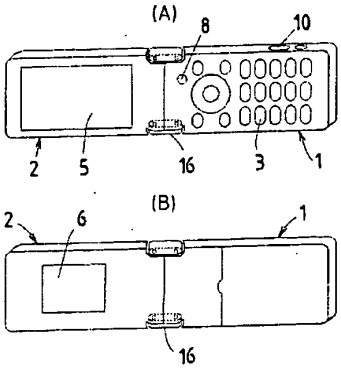


Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000636

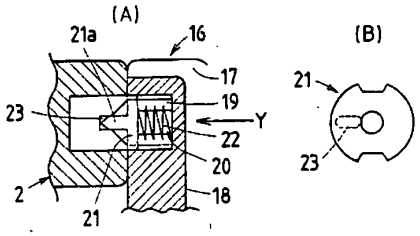
【図5】



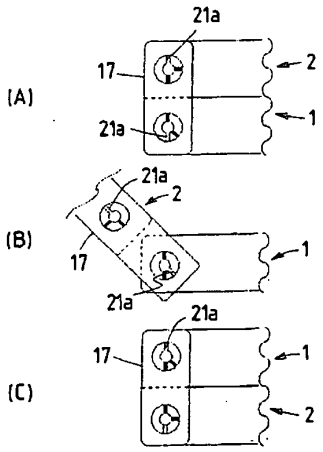
【図6】



【図7】

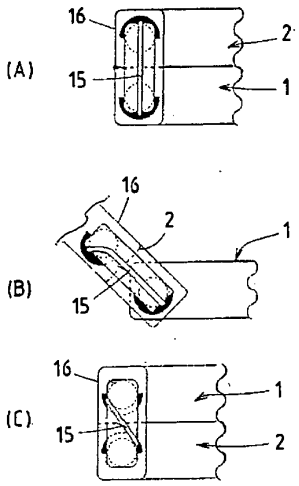


【図8】

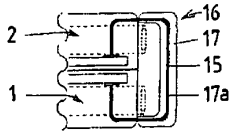


Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000637

【図9】



【図10】



Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000638

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000639

2005-341047

(11)Publication number 2005-341047
(43)Date of publication of application 08.12.2005
(51)Int.Cl.
H04M 1/00
H04M 1/02

(21)Application number 2004-154935
(22)Date of filing 25.05.2004
(71)Applicant MITSUBISHI ELECTRIC CORP
(72)Inventor EMURA TAISUKE
(54)FOLDING TYPE PORTABLE APPARATUS
(57)Abstract
PROBLEM TO BE SOLVED: To obtain a folding type portable apparatus capable of photographing an object with checking the object, even in a folded state and also the object of the user himself or other than the user with checking the object on a large screen.
SOLUTION: The folding type portable apparatus has a first frame 1, having an operating key 3 mounted thereon and a second frame 2, having a main display 5 on one side and a sub-display 6 on the opposite side. The second frame 2 is linked with one end of the first frame 1 turnably, in the folding or developing direction, mounts a camera 8 for showing a taken image on the main or sub display 5, 6, and is linked to the front and back sides of the first frame 1 foldably with both frames 1, 2 made turnable. The camera 8 is mounted so as to photograph at either of the folding position of the second frame 2, on the front or back side of the first frame 1.

CLAIMS

[Claim(s)]

[Claim 1]

In a folding portable device which mounted a camera which images an image which is provided with the following and displayed on the aforementioned main display or the aforementioned sub display, connect said second housing with the rear surface both-sides side of said first housing so that **** is possible, and. A folding portable device mounting the aforementioned camera that any folding position of said second housing on the surface [of said first housing] and back surface side can be photoed.

A first housing in which an operation key was mounted.

The 2nd housing that has a main display on one side, has a sub display in the opposite surface, and was connected with one side end of said first housing rotatable.

[Claim 2]

The folding portable device according to claim 1, wherein a camera is mounted on the same surface side as this housing main display.

[Claim 3]

The folding portable device according to claim 1 or 2, wherein a window hole which is mounted on a housing, opposes to a transverse plane of the aforementioned camera at a housing of another side at the time of **** to a one-way surface of both housings, and enables [in / in a camera / the 1st and a second housing] photographing with the camera concerned is provided.

[Claim 4]

By a hinge mechanism, a first housing and a second housing are connected and this hinge mechanism, The folding portable device according to claim 1 consisting of a link mechanism in which bend rotation is free in the **** direction which the **** direction which an operation key component side of a first housing and a main display of a second housing face, and the opposite surface of an operation key component side of a first housing and a sub display of a second housing face.

[Claim 5]

The folding portable device according to claim 4, wherein a hinge mechanism is provided with an engagement means which holds the 1st and a second housing at a predetermined angle.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000641

DETAILED DESCRIPTION

[Detailed Description of the Invention]

[Field of the Invention]

[0001]

This invention relates to the folding portable device with a camera which can be photoed while recognizing objects other than a user and a user visually.

[Background of the Invention]

[0002]

The first housing that has an operation key in a folding portable device with the conventional camera, Connect with **** and an expanding direction the second housing which has a display part rotatable via a hinge region, attach the camera for photographing to the hinge region of the above-mentioned first housing, and by rotation of the 1st [above-mentioned] and a second housing, What was constituted so that the aforementioned camera might be selectively turned to either one of a uniform direction or a counter direction to the display direction of the aforementioned display part is already known (for example, Patent document 1). Namely, when it is made to rotate 90 degree and the 1st [above-mentioned] and a second housing are opened from the folded state which those operation key component sides and display parts face, the display direction of the aforementioned display part and the photography direction of the aforementioned camera serve as reverse, It constitutes so that the display direction of the aforementioned display part and the photography direction of the aforementioned camera may turn into a uniform direction, when it is made to rotate 270 degree and both the aforementioned housings are opened from a folded state.

[0003]

According to the conventional folding portable device with a camera constituted in this way, by opening the 1st and a second housing to the rotation angle of 90 degree, Since the display direction of a display part and the photography direction of a camera serve as reverse and objects other than a ******** user are displayed on the aforementioned display part with a camera, Since the display direction of a display part and the photography direction of a camera will turn to a uniform direction if the aforementioned object can be photoed and the 1st [above-mentioned] and a second housing are opened from a folded state to the rotation angle of 270 degree, checking the display image, The user itself can be photoed, while displaying the user itself on a ******** display part with a camera and checking the display image.

[0004]

[Patent document 1] JP,2003-101619,A (the 3rd page, Fig.2)

[Description of the Invention]

[Problem to be solved by the invention]

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000642

[0005]

Since the folding portable device with the conventional camera was constituted as mentioned above, only where the 1st and a second housing are opened, while checking the image of the object, a photograph could not be taken, but where both the aforementioned housings are folded up, the problem that a photograph could not be taken while checking an object by a display part occurred. And the problem that a photograph could not be taken if it maintains at the state where both the aforementioned housings were opened to the rotation angle of 90 degree in photoing the user itself as an object, and it does not maintain at the state where both the aforementioned housings were opened to the rotation angle of 270 degree in photoing objects other than a user occurred.

[0006]

There is also a folding portable device with a camera which connected the first housing in which the operation key was mounted in one side, and the second housing which has a main display of a big screen on one side, and has a sub display of a small screen in the opposite surface as other conventional cases so that **** and deployment were possible, and was considered as double fold composition. Thus, although a sub display is made to express by the folded state of the 1st and a second housing and there is also a thing of composition of having enabled the display of a user's own image at the sub display in the folding portable device of the double fold composition which provided the main display and the sub display to the second housing, In this case, both the aforementioned housings could be folded up only in the direction which the component side of an operation key and the main display of a big screen face, but, for this reason, the problem that images other than the user itself and a user could not be displayed on the main display of a big screen occurred by the folded state of both the aforementioned housings.

[0007]

This invention was made in order to solve the above problems, while checking an object also by a folded state, it can be photoed, and it aims at obtaining the folding portable device of the composition which can moreover take a photograph while checking objects other than the user itself and a user by a big screen.

[Means for solving problem]

[0008]

The first housing in which the operation key was mounted as for the folding portable device concerning this invention, Have a main display on one side, have a sub display in the opposite surface, and it has the second housing connected with one side end of the above-mentioned first housing rotatable to **** and an expanding direction, In the folding portable device which mounted the camera which displays imaging on the aforementioned main display or the aforementioned sub display, to the rear surface both-sides side of the above-mentioned first

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000643

housing, connect those housings rotatable and the above-mentioned second housing so that **** is possible. The aforementioned camera is mounted that any folding position of the above-mentioned second housing on the surface [of the above-mentioned first housing] and back surface side can be photoed.

[Effect of the Invention]

[0009]

The folded state which the operation key component side of a first housing and the main display of a second housing face in the 1st and a second housing according to this invention, Since it constituted so that it could fold up to the folded state toward which the opposite surface of the operation key component side in a first housing and the sub display of a second housing tend and photographing with a camera might be attained by any of the folded state, In a folded state, imaging (object) according both the aforementioned housings to the aforementioned camera is displayed on the display part of a big screen, and it is effective in the ability to photo an object, checking the display image.

[Best Mode of Carrying Out the Invention]

[0010]

Embodiment 1.

Fig.1 (A) is a rough appearance perspective view showing the folded state of the folding portable device by this embodiment of the invention 1. Fig.1 (B) is the perspective view which looked at Fig.1 (A) from the opposite side, and Fig.2 (A) is a rough perspective view of Fig.1 (A) showing an expanded state. Fig.2 (B) is the perspective view which looked at Fig.2 (A) from the opposite side, Fig.3 is a side view showing the state of Fig.1 where the deployment perspective view showing a specific essential part structure of a folding portable device and Fig.4 (A) folded up the folding portable device of Fig.3 to the opposite side, and Fig.4 (B) is a perspective view of Fig.4 (B).

The folding portable device shown in Fig.1 and Fig.2 serves as basic constitution which connected the first housing 1 and the second housing 2 rotatable 360 degree from the folded state, and it describes it below about the detailed specific constitution.

[0011]

The first housing 1 turns into a body side casing in which a plurality of operation keys 3 were mounted in one side, and has the concave hinge region (hinge wall part) 4 in the connecting end section with the second housing 2. The second housing 2 turns into the liquid crystal side housing in which the main display 5 was provided by one side, and the sub display 6 was provided by the opposite surface, and has the convex hinge region (hinge wall part) 7 in the connecting end section with the first housing 1. Such the 1st and the second housings 1 and 2 are in the state to which concavo-convex fitting of both both hinge regions 4 and 7 was carried out, and have composition which connected with **** and the expanding direction of both the aforementioned housings 1

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000644

and 2 enabling free rotation. Although the hinge mechanism 11 (refer to Fig.3 and Fig.4) of characteristic structure is used as that connection means, specific constitution of this hinge mechanism 11 is mentioned below.

[0012]

In the 1st [above-mentioned] and the second housings 1 and 2, the camera 8 for photographing is mounted on the hinge region 4 side of the second housing 2. This camera 8 is attached so that photography direction may turn to the display direction and uniform direction of the aforementioned main display 5. By the folding position by which the component side (henceforth the operation key component side 3) of the operation key 3 in the first housing 1 and the main display 5 of the second housing 2 face the hinge region 7 of the first housing 1, The window hole 9 which opposes to the transverse plane of the aforementioned camera 8, and enables photographing with the camera 8 concerned is provided. The shutter key 10 of the aforementioned camera 8 is attached to the side surface of the above-mentioned first housing 1.

[0013]

Next, specific constitution of the hinge mechanism 11 which has connected the first housing 1 and the second housing 2 with both **** and expanding direction rotatable is described based on Fig.3 and Fig.4. this hinge mechanism 11 is attached to the hinge regions 4 and 7 of both the aforementioned housings 1 and 2 -- both the aforementioned housings 1 and 2 of both -- elastic bend -- it having connected rotatable and, The first hinge links 12 attached to the hinge region 4 side of the first housing 1 as shown in Fig.4, It consists of the 3rd hinge links 14 by which both ends were connected by pins with those hinge links 12 and 13 ranging over the second hinge links 13 attached to the hinge region 7 side of the second housing 2, and the above-mentioned first hinge links 12 and the second hinge links 13 enabling free bend rotation. In the hinge mechanism 11 which consists of such a link mechanism, the first hinge links 12 at least is stored withdrawal inside the first hinge region 4. That is, in the expanded state open [the 1st and the second housings 1 and 2] substantially horizontally, the aforementioned hinge mechanism 11 serves as mounting structure which can be stored inside at least 1 side of both the aforementioned housings 1 and 2 so that a gap may not arise between the ends on the hinge region 4 and 7 side of those housings 1 and 2. The control lines 15 (refer to Fig.4 (B)), such as a power supply, GND, and a data signal, are inserted in the inside of the aforementioned hinge mechanism 11. This control line 15 has electrically connected the mechanism on the first housing 1 side, and the mechanism on the second housing 2 side, and, thereby, the camera 8 can project the image of a ******** object now on the main display 5 or the sub display 6.

[0014]

Next, it describes about operation.

Where both the aforementioned housings 1 and 2 are folded up so that the main display 5 of the

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000645

first housing 1 and operation key 3 component side of the second housing 2 may face each other as shown in Fig.1, As shown in Fig.1 (B), the camera 8 attached to the second housing 2 will be in the state where it was held at the state where the window hole 9 of the first housing 1 opposed to the transverse plane, and the sub display 6 of the second housing 2 expressed. Therefore, in the folded state of such housings 1 and 2, objects other than a user are displayed on the ******** aforementioned sub display 6 with the camera 8, looking at the aforementioned sub display 6, and the aforementioned object can be photoed, checking the display image. Here, if an object to photo determines, it can save by pressing the shutter key 10 at the external memory mounted on the portable device or the portable device.

[0015]

As shown in Fig.2 and Fig.3, by the expanded state open substantially horizontally, the housings 1 and 2 of the aforementioned folded state, Since the display direction of the main display 5 and the photography direction of the camera 8 are a uniform direction and its image will project on the aforementioned main display 5 of a big screen if the camera 8 is turned to a user (itself), a pause [checking the display image] to photo etc. can be decided and photoed. Since each hinge links 12-14 of the hinge mechanism 11 will be pulled out from the inside of the aforementioned housings 1 and 2 if the housings 1 and 2 of such an expanded state are pulled in the opposite direction, After the drawer, both the aforementioned housings 1 and 2 are foldable so that the opposite surface of the operation key component side 3 in the first housing 1 and the sub display 6 of the second housing 2 may face each other. Since the main display 5 of the second housing 2 expressed and the display direction of this main display 5 and the photography direction of the camera 8 have turned to the uniform direction also in that folded state as shown in Fig.4, If the camera 8 is turned to itself, when its image projects on the aforementioned main display 5 of a big screen, a pause [checking the display image] to photo etc. can be decided and photoed.

[0016]

The first housing 1 in which according to the embodiment 1 described above the operation key 3 was mounted in one side, and the shutter key 10 was attached to the side surface, The second housing 2 which has the main display 5 on one side, and has the sub display 6 in the opposite surface, The first folding position that the operation key component side 3 and the second main display 5 of the first housing 1 face, And it connects with the second folding position which the opposite surface of the operation key component side 3 in a first housing and the sub display 6 of the second housing 2 face rotatable 360 degree, Attach the camera 8 which turns to the display direction and uniform direction of the main display 5 to the hinge region 7 of the above-mentioned second housing 2, and to the hinge region 4 side of the first housing 1, Since it constituted so that the window hole 9 which opposes to the transverse plane of the aforementioned camera 8 by the above-mentioned first folding position might be provided, in the state where both the

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000646

aforementioned housings 1 and 2 were folded up to any of the above-mentioned first folding position or the second folding position -- the aforementioned camera 8 -- an object -- ******** -- things by the ability to do. Since the image of the object is displayed on the main display 5 or the sub display 6 of an expressional state, it is effective in the ability to photo an object, checking the display image of the main display 5 or the sub display 6 by the folded state of both the aforementioned housings 1 and 2.

[0017]

Since the display direction of the main display 5 and the photography direction of the aforementioned camera 8 with which the second housing 2 in which the camera was attached is provided are a uniform direction especially according to the aforementioned embodiment 1, Where the 1st and both the second housings 1 and 2 are folded up to the second folding position which the aforementioned main display 5 expresses, By turning the camera 8 to a user with the main display 5, it is effective in the ability to photo the user itself, checking the user's himself image projected on the aforementioned main display 5 of a big screen. Since it constituted so that the hinge mechanism 11 which has connected both the aforementioned housings 1 and 2 could be pulled out from the inside of a housing and bend rotation could be carried out, it is effective in both the aforementioned housings 1 and 2 being easily foldable to both the above-mentioned first folding position and a second folding position.

[0018]

Embodiment 2.

Fig.5 (A) is a perspective view showing the folded state of the folding portable device by this embodiment of the invention 2. Fig.5 (B) is the perspective view which looked at the folding portable device of Fig.5 (A) from the opposite side. Fig.5 (C) is a perspective view showing the state where the folding portable device of Fig.5 (A) was folded up to the opposite side. Fig.6 (A) is a perspective view showing the expanded state of Fig.5 (A), and Fig.6 (B) is the perspective view which looked at Fig.6 (A) from the opposite side, Fig.7 (A) is an expanded sectional view showing the essential part of the hinge mechanism in Fig.5 and Fig.6, Fig.7 (B) is the figure which looked at the slider in Fig.7 (A) from arrow Y-direction, identical codes are given to Fig.1 - Fig.4 and identical parts, and a duplication description is omitted.

In this embodiment 2, the first housing 1 and the second housing 2 are connected rotatable according to the hinge mechanism 16 of the structure held at a predetermined opening-and-closing angle. The hinge mechanism 16 is provided with the following.

The 1st, the second housing 1, and both 2. Hinge links 17 connected with a second folding position which the opposite surface of the operation key component side 3 in a first folding position that the operation key component side 3 and the second main display 5 of the first housing 1 face, and a first housing, and the sub display 6 of the second housing 2 face rotatable 360 degree.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000647

The axial fixed hinge 18 (refer to Fig.7) provided inside this hinge links 17.

[0019]

In Fig.7, the aforementioned axial fixed hinge 18 has the concave part 19 in the sliding contact surface part with the second housing 2, and the engagement child 21 has fitted in slidably via the axis 20 integrated with the axial fixed hinge 18 in this concave part 19. Spline engagement of this engagement child 21 is carried out to the inner peripheral surface of the aforementioned concave part 19, and he is energized by the spring 22 by the engaging direction with the second housing 2. Here, the acute-like engaging pawl 21a really protrudes on the aforementioned engagement child's 21 front eccentric position, and a plurality of engagement holes 23 which carry out engagement of the aforementioned engaging pawl 21a removablely by the predetermined opening-and-closing angular position of the housing 2 concerned are provided at the second housing 2 side. In the engagement hole 23, the introducing end side of the aforementioned engaging pawl 12a is formed in tapered shape. Although the section structure of the connection part of the second housing 2 and the hinge links 17 was shown and described in Fig.7, the connection part of the first housing 1 and the hinge links 17 also has same structure.

[0020]

Next, it describes about operation. Fig.8 is an explanatory view of operation.

In the state of the Fig.8 (A) which folded up both the aforementioned housings 1 and 2 to the first folding position that operation key 3 component side and the second main display 5 of the first housing 1 face, The engaging pawl 21a of the engagement child 21 of the hinge mechanism 16 carries out penetration engagement by the energization force of the spring 22 in the engagement hole 23 on the second housing 2 side, and the second housing 2 and the hinge links 17 are positioned and fixed, and as shown in Fig.7 (A), it is made to be the same as that of this, It is in the state where the first housing 1 and the aforementioned hinge links 17 were positioned and fixed. If difference operation of the second housing 2 is performed from this state, the engaging pawl 21a which was being inserted in the engagement hole 23 will be extruded out of the engagement hole 23 concerned along the tapered surface of the aforementioned engagement hole 23. And by opening the above-mentioned second housing 2 to a predetermined difference angle (for example, angle of gradient shown in Fig.8 (B)), If the engagement hole 23 different from the aforementioned engaging pawl 21a opposes, the engagement child 21 will move forward according to the energization force of the spring 22 at the time, and the engaging pawl 21a will carry out insertion engagement in the engagement hole 23, The second housing 2 and the hinge links 17 are positioned and fixed, and the first housing 1 and the hinge links 17 are positioned and fixed like this. Therefore, holding fixing of the above-mentioned second housing 2 is carried out at a predetermined difference angle as shown in Fig.8 (B). If both the aforementioned housings 1 and 2

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000648

are folded up to the second folding position which the opposite surface of operation key 3 component side in a first housing and the sub display 6 of the second housing 2 face from the state of Fig.8 (B), The engaging pawl 21a of 17 hinge links one end carries out penetration engagement into the engagement hole 23 by the energization force of the spring 22 like the case of the above-mentioned first folding position, and both the aforementioned housings 1 and 2 are positioned and fixed by a second folding position.

[0021]

Since according to the embodiment 2 described above it constituted so that it might have a retaining function to which the hinge mechanism 16 which has connected the 1st and the second housings 1 and 2 with **** and an expanding direction rotatable positions and fixes both the aforementioned housings 1 and 2 at a predetermined opening-and-closing angle, The folding portable device considered as the composition which can fold up the second housing 2 selectively to either of operation key 3 component sides and the opposite surfaces of the first housing 1 can be held at a predetermined opening-and-closing angle, and it is effective in usability becoming good.

[0022]

Embodiment 3.

The essential part composition explanatory view and Fig.10 which served as the description of the folding portable device according [Fig.9] to this embodiment of the invention 3 of operation are an X ray arrow view of Fig.5 (A), identical codes are given to Fig.1 Fig.8 and identical parts, and a duplication description is omitted.

In this embodiment 3, the control-line insertion hole 17a is provided inside the solid wall of the hinge links 17 in the hinge mechanism 16 of the aforementioned embodiment 2, The control line 15 is inserted in this control-line insertion hole 17a, and it has composition which pulls out the aforementioned control line 15 from the both-ends opening of the aforementioned control-line insertion hole 17a, and it connects to the control system of the first housing 1 and the second housing 2, respectively.

[0023]

Since according to the embodiment 3 described above the control line 15 is inserted in the control-line insertion hole 17a inside the solid wall of the hinge links 17 and the control system of the 1st and the second housings 1 and 2 takes about, The aforementioned control line 15 is not exposed, and the control line 15 concerned can be protected from outside, and it is effective in the design fine sight of a folding portable device being obtained.

[0024]

Embodiment 4.

Although the camera 8 was attached to the liquid crystal side housing and the becoming second housing 2 and being described in each aforementioned embodiment about the folding portable

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000649

device as for which the main part side (operation key 3 mounting side) provided the window hole 9 of the aforementioned camera 8 to the becoming first housing and housing 1 side, The aforementioned camera 8 may be attached to the first housing 1 side, and may provide the aforementioned window hole 9 to the second housing 2 side. In this case, in the state where it folded up so that the main display 5 might express both the aforementioned housings 1 and 2, Since the photography direction of the camera 8 turns into a display direction of the main display 5, and a uniform direction, when photoing the user himself, it is effective in the ability to take a photograph while checking the image which the main display 5 of the big screen projected in the state which has folded up both the aforementioned housings 1 and 2. If both the aforementioned housings 1 and 2 are opened and the main display 5 is turned to the user side, it is effective in the ability to photo the object, checking objects other than the user who projected on the main display 5.

[Brief Description of the Drawings]

[0025]

[Drawing 1]The rough appearance perspective view showing the folded state of the folding portable device according [Fig.1 (A)] to this embodiment of the invention 1 and Fig.1 (B) are the perspective views which looked at Fig.1 (A) from the opposite side.

[Drawing 2]Fig.2 (A) is a rough perspective view of Fig.1 (A) showing an expanded state, and Fig.2 (B) is the perspective view which looked at Fig.2 (A) from the opposite side.

[Drawing 3]Fig.3 is a deployment perspective view showing a specific essential part structure of the folding portable device of Fig.1.

[Drawing 4]Fig.4 (A) is a side view showing the state of Fig.3 where the folding portable device was folded up to the opposite side, and Fig.4 (B) is a perspective view of Fig.4 (B).

[Drawing 5]Fig.5 -- (-- A --) -- this -- an embodiment of the invention -- two -- depending -- a folding type -- a portable device -- a folded state -- being shown -- a perspective view -- Fig.5 -- (-- B --) -- Fig.5 -- (-- A --) -- a folding type -- a portable device -- an opposite side -- from -- having seen -- a perspective view -- Fig.5 -- (-- C --) -- Fig.5 -- (-- A --) -- a folding type -- a portable device -- an opposite side -- having folded up -- a state -- being shown -- a perspective view -- it is .

[Drawing 6]Fig.6 (A) is a perspective view showing the expanded state of Fig.5 (A), and Fig.6 (B) is the perspective view which looked at Fig.6 (A) from the opposite side.

[Drawing 7]Fig.7 (A) is an expanded sectional view showing the essential part of the hinge mechanism in Fig.5 and Fig.6, and Fig.7 (B) is the figure which looked at the slider in Fig.7 (A) from arrow Y-direction.

[Drawing 8]It is an explanatory view of the folding portable device by this embodiment of the invention 2 of operation.

[Drawing 9]Fig.9 is the essential part composition explanatory view which served as the description

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000650

of the folding portable device by this embodiment of the invention 3 of operation.

[Drawing 10]It is an X ray arrow view of Fig.5 (A).

[Explanations of letters or numerals]

[0026]

1 A first housing and 2 The 2nd housing, 3 operation keys, 4 hinge regions, 5 main displays, 6 A sub display, 7 hinge regions, and 8 A camera and 9 A window hole and 10 Shutter key, 11 A hinge mechanism and 12 The 1st hinge links and 13 The 2nd hinge links, 14 The 3rd hinge links and 15 [An axial fixed hinge and 19 / A concave part and 20 / An axis and 21 / An engagement child and 21a / An engaging pawl and 22 / A spring and 23 / Engagement hole.] The control line, 16 link mechanisms, and 17 Hinge links and 17a A control-line insertion hole and 18

A High-Impedance Ground Plane Applied to a Cellphone Handset Geometry

Romulo F. Jimenez Broas, Daniel F. Sievenpiper, *Member, IEEE*, and Eli Yablonovitch, *Fellow, IEEE*

Abstract—**A high-impedance electromagnetic surface is a new type of metallic structure exhibiting high surface impedance and the suppression of propagating surface currents at a particular frequency band. We experimentally characterize such a high-impedance surface designed near 2.4 GHz. We describe an antenna built on such a surface, integrated into a printed circuit board that was designed for the form factor of a portable handset. Measurement shows high radiation efficiency near 2.4 GHz.**

Index Terms—**Antennas, bandgap, coupling, handset communications, surface impedance, surface waves.**

I. Introduction

RECENTLY, a new kind of ground plane has been developed that is capable of suppressing the propagation of radio-frequency surface currents [1]. This new surface is important for antenna applications because it is has the property of partially isolating the radiating elements from the nearby electromagnetic surroundings. For example, the property of surface current suppression can be very useful to portable telephony, where current handset telephone designs radiate nearly one-half of the emitted power into the user's head [2]. While the biological implications of this are yet to be determined, the absorption by the user's head decreases the radiation efficiency by roughly 3 dB. By shielding the antenna from the user, this radiation efficiency can be greatly increased, resulting in greater battery life, which, in turn, affects the weight of the phone.

The new surface also provides a high electromagnetic surface impedance, which allows the antenna to lie directly adjacent to the ground plane without being shorted out. This allows compact antenna designs where the radiating elements are confined to limited spaces. Hence, the two properties described above result in a low-profile antenna that can fit into the small form factor of a cordless handset, while also partially shielding the antenna from the effects of the user. As an example, we have built an antenna using a high-impedance electromagnetic surface as a ground plane, and integrated it into the circuit board of a portable handset. Measurement shows the antenna achieves high radiation efficiency, even in the presence of a lossy dielectric body.

Manuscript received June 12, 2000.

R. F. Jimenez Broas is with the Electromagnetic Systems Laboratory, Raytheon Systems Company, El Segundo, CA 90245 USA.

D. F. Sievenpiper is with HRL Laboratories LLC, Malibu, CA 90265 USA.

E. Yablonovitch is with the Department of Electrical Engineering, University of California at Los Angeles, Los Angeles, CA 90032 USA.

Publisher Item Identifier S 0018-9480(01)05051-7.

II. High-Impedance Electromagnetic Surface

The high-impedance electromagnetic surface is made of continuous metal, and it conducts dc currents, but it does not conduct ac currents within a forbidden frequency band. The physical geometry consists of a metal sheet, textured with a two-dimensional lattice of resonant elements, which act as a two-dimensional filter to prevent the propagation of electric currents [3].

The high-impedance properties occur near the resonance frequency of the surface $\omega = 1/\sqrt{LC}$, where L is the effective sheet inductance and C is the effective sheet capacitance. The high-impedance electromagnetic surface studied is shown in Fig. 1. It consists of a three-layer printed circuit board, in which the lowest layer is solid metal and the top two layers contain nearly hexagonal metal patches. The inductance of the surface is related to the thickness of the circuit board by $L = \mu t$, where μ is the magnetic permeability and t is the thickness of the board. For a standard 1.6-mm circuit board, the sheet inductance is 2.01 nH/square. To produce a bandgap in the 2.4-GHz frequency range, a capacitance of 2.19 pF · square is needed. This high capacitance is obtained by using two parallel metal plates with a thin insulating layer between them. The patches are roughly 5-mm wide, and are connected to the ground plane by plated metal vias. The two layers of patches are separated by 0.05 mm of polyimide insulator ($\varepsilon \approx 3.25$). The patches in the lower layer are separated from the solid metal layer by a 1.6-mm substrate made of standard fiberglass printed-circuit-board material, commonly known as FR4 ($\varepsilon \approx 4.5$). The overlap between neighboring patches provides a sheet capacitance of about 2.13 pF · square. The structure shown in Fig. 1 has a resonance frequency of $f = 1/2\pi\sqrt{LC} = 2.43$ GHz.

The width of the bandgap can be shown to be $\Delta f/f = \sqrt{LC}/\sqrt{\mu_0/\varepsilon_0} = 8.14\%$, which translates to a bandgap frequency range of 2.33–2.53 GHz. In this frequency range, the electromagnetic surface exhibits high surface impedance, does not conduct ac currents, and suppresses the propagation of radio-frequency surface waves. For portable communications, the suppression of surface waves can improve performance by effectively confining antenna radiation to only one hemisphere, acting as a shield between the antenna and the user.

A TE surface-wave measurement using current loop probe antennas was performed [3]. In TE surface waves, the electric field is parallel to the surface, and the magnetic field forms vertical loops that arc out of the surface. They can be measured using small loop antennas, as shown in Fig. 2. This type of probe

0018–9480/01$10.00 © 2001 IEEE

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000652

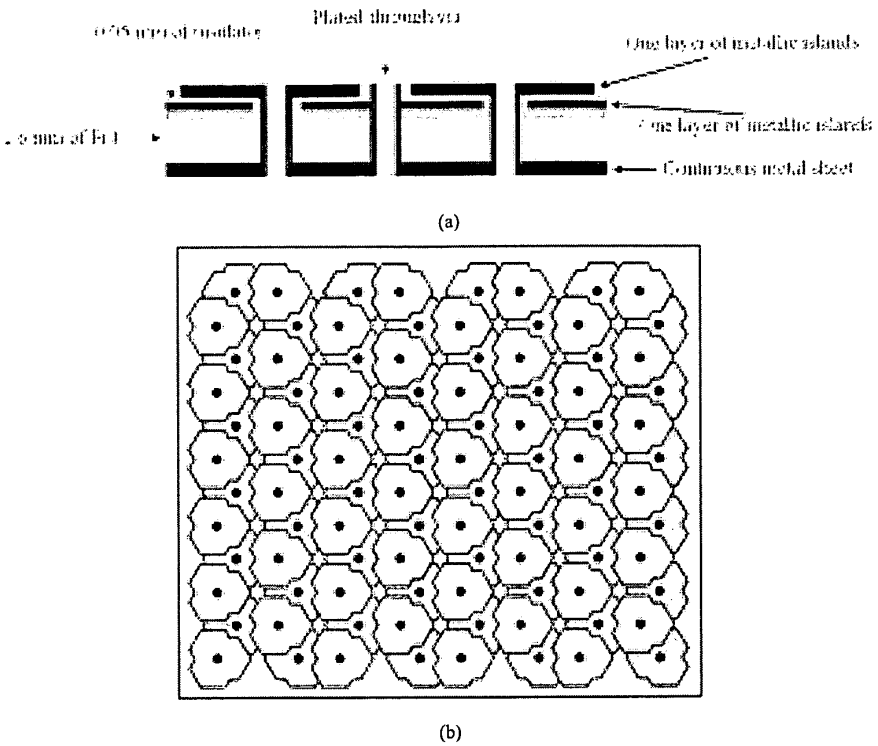


Fig. 1. (a) Side view of the high-impedance electromagnetic surface. (b) Top view of the high-impedance electromagnetic surface.

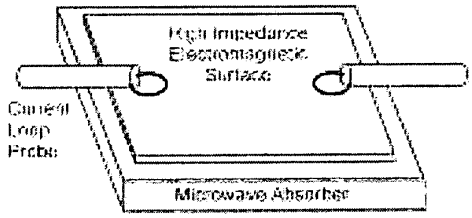


Fig. 2. Experimental setup to measure the transmission of TE surface waves.

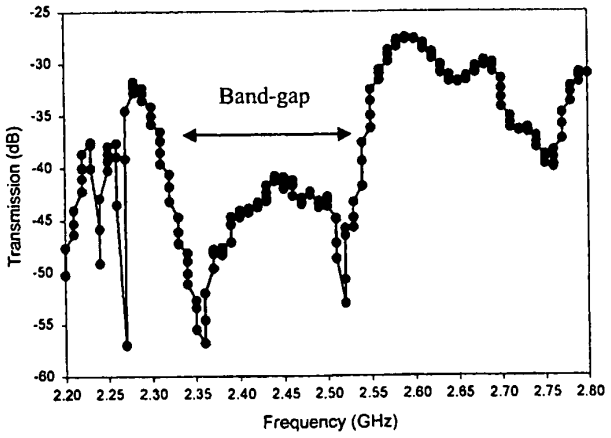


Fig. 3. Measurement of the transmission of TE surface waves.

can be constructed as a small wire loop connecting the two conductors of a coaxial cable. The plane of the loop is parallel to the surface, creating a vertical magnetic field that couples to the magnetic field of the TE surface waves.

The result of the measurement is shown in Fig. 3, confirming the bandgap. A sharp jump in transmission of about 20 dB occurs at 2.53 GHz, indicating the TE band edge. Beyond this frequency, transmission is much higher compared to the bandgap frequency band, with only small fluctuations due to speckle. Since the probe used in this experiment can also couple to TM waves, the TM band edge is also visible in this measurement at about 2.3 GHz.

III. Cordless Handset Prototype—Measurement and Analysis

The antenna geometry that we studied consisted of a horizontal copper wire etched on a piece of FR4 board. This antenna geometry was a bent-wire horizontal antenna fabricated as an additional printed circuit layer. An impedance-matching pattern was employed on the end near the feed point to ensure low reflection (S_{11}) over a wide band.

The high-impedance electromagnetic surface with the attached antenna was soldered to a 5 cm × 15 cm FR4 circuit board to simulate the presence of the phone circuitry. This prototype simulates a design in which the antenna is integrated into the circuit board of the phone to minimize cost. One side of the circuit board was solid copper, and the other side etched clean to reveal bare FR4. The solid metal back side of the antenna ground plane was soldered to the copper side of the blank circuit board. The addition of real circuit traces and components may tend to increase absorption into the board, thus, this may be considered a best-case situation. The antenna

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000653

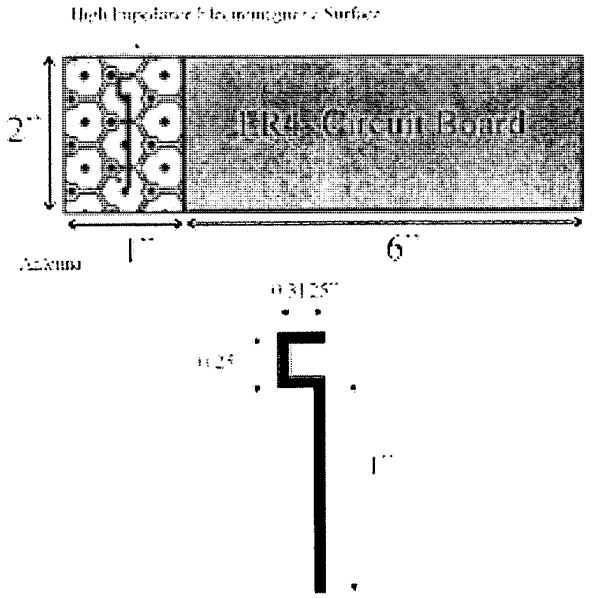


Fig. 4. Portable handset prototype with an antenna using a high-impedance electromagnetic surface as a ground plane.

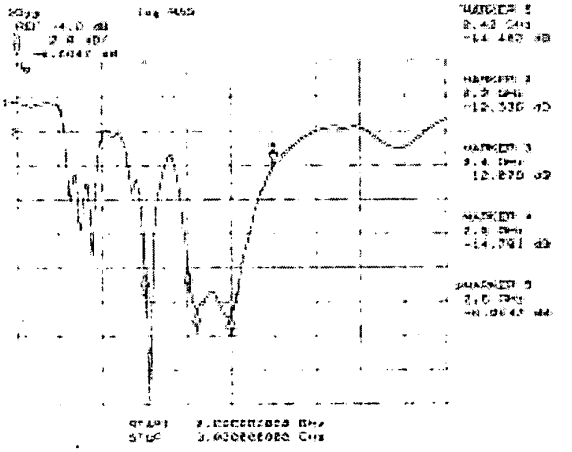


Fig. 5. Measured $S11$ plot of the antenna using a high-impedance electromagnetic surface as a ground plane.

geometry along with the prototype is shown in Fig. 4. The $S11$ of the antenna and prototype is shown in Fig. 5.

The radiation pattern of the antenna on a high-impedance electromagnetic surface is shown in Fig. 6. The frequency shown is 2.44 GHz, which is inside the bandgap. At the 0° polar angle, the cordless telephone prototype has its antenna facing the horn and its attached FR4 Circuit Board pointing toward the 270° polar angle. Note that the front-to-back ratio is approximately 10 dB. Antenna measurements were performed from 2.2 to 2.8 GHz. Since the designed bandgap is from 2.33 to 2.53 GHz, frequencies both inside and outside the bandgap were analyzed.

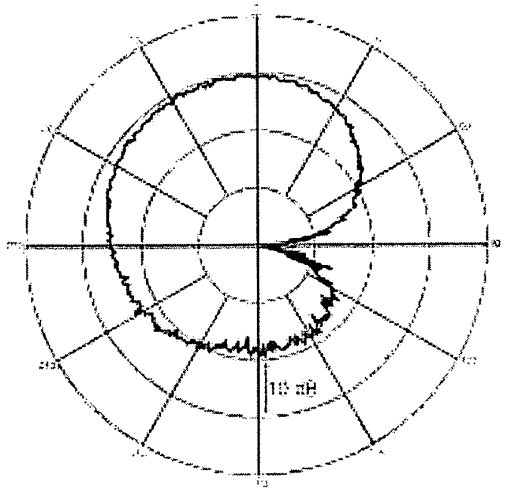


Fig. 6. Radiation pattern of an antenna on a high-impedance electromagnetic surface. The frequency is 2.44 GHz.

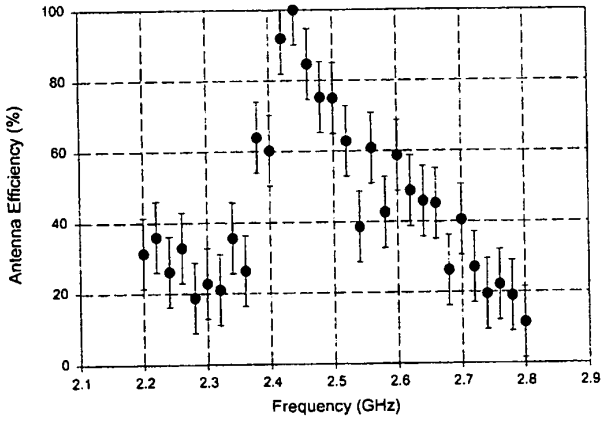


Fig. 7. Radiation efficiency versus frequency.

The radiation efficiency as a function of frequency shown in Fig. 7 was obtained by comparing the radiation pattern of the antenna on a high-impedance electromagnetic surface to a standard gain horn whose radiation properties were well documented [4]. The radiation transmissions of both the antenna on a high-impedance electromagnetic surface and the standard gain horn were measured. The first steps in the calculation are obtaining the cross sections associated with the full-width at half-maximum (FWHM) values for both radiation transmissions. If Ω_H is the standard gain horn's cross section and Ω_A is the cross section of the antenna on a high-impedance electromagnetic surface, then antenna efficiency η is defined as follows:

$$\eta = \frac{\Omega_A}{\Omega_H}\left(10^{-\Delta/10}\right)$$

where Δ is the absolute value difference between the peak transmission values of the horn and antenna. The antenna efficiency definition above compares the efficiency of the antenna on a high-impedance electromagnetic surface to the efficiency of the horn.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000654

The peak antenna efficiency occurs at 2.44 GHz, which is also the near the center of the designed bandgap of the high-impedance ground plane. For frequencies near the center of the bandgap, the antenna efficiencies are quite high (above 80%). For frequencies outside the bandgap, however, the antenna efficiencies decrease below 50%.

This result can be explained as follows. Within the bandgap, the suppression of surface currents tends to confine the radiation to the forward hemisphere and limit the interaction of the antenna with its electromagnetic surroundings. For frequencies outside the bandgap, the antenna couples strongly to the nearby electromagnetic surroundings, including the attached circuit board. Significant energy leaks away as induced currents in the circuit board, and is then absorbed. Hence, it eventually becomes lost radiation and decreases the antenna efficiency.

IV. Conclusion

High-impedance electromagnetic surfaces have two noteworthy characteristics over a designed frequency band that makes it an ideal choice for antenna ground planes. Its ability to suppress the propagation of surface currents allows it to partially isolate the radiating elements from the nearby electromagnetic surroundings. The surface also has a high electromagnetic surface impedance that allows the radiating elements to be placed very close to the ground plane. These two properties were utilized when we built a compact low-profile antenna integrated to a small cordless handset while the antenna itself was shielded from the user. The peak antenna efficiencies were inside the bandgap of the high-impedance electromagnetic surface.

Acknowledgment

The work described in this paper was performed when all of the authors were with the Department of Electrical Engineering, University of California at Los Angeles (UCLA).

References

[1] D. Sievenpiper, L. Zhang, R. F. Jimenez Broas, N. Alexopolous, and E. Yablonovitch, "High-impedance electromagnetic surfaces with a forbidden frequency band," *IEEE Trans. Microwave Theory Tech.*, vol. 47, pp. 2059–2074, Nov. 1999.

[2] M. Jensen and Y. Rahmat-Samii, "EM interaction of handset antennas and a human in personal communications," *Proc. IEEE*, vol. 83, pp. 7–17, Jan. 1995.

[3] D. Sievenpiper, "High-impedance electromagnetic surfaces," Ph.D. dissertation, Dept. Elect. Eng., Univ. California at Los Angeles, Los Angeles, CA, 1999.

[4] R. F. Jimenez Broas, "Experimental characterization of high impedance electromagnetic surfaces in the microwave frequency regime," M.S. thesis, Dept. Elect. Eng., Univ. California at Los Angeles, Los Angeles, CA, 1999.



Romulo F. Jimenez Broas received the A.B. degree in physics from the University of California at Berkeley, in 1996 and the M.S. degree in electrical engineering from the University of California at Los Angeles, in 1999.

He is currently an Electrical Engineer with the Electromagnetic Systems Laboratory, Raytheon Systems Company, El Segundo, CA. His current interests are in semiconductor devices, antennas, guided waves, and scanning arrays.



Daniel F. Sievenpiper (S'95–M'98) received the B.S. and Ph.D. degrees in electrical engineering from the University of California at Los Angeles, in 1994 and 1999, respectively.

He is currently a Research Staff Member at HRL Laboratories LLC, Malibu, CA. He has authored eight journal publications. He has ten pending U.S. patents. His research included photonic crystals, high-impedance electromagnetic surfaces, and novel antennas.



Eli Yablonovitch (M'75–SM'90–F'92) received the Ph.D. degree in applied physics from Harvard University, Cambridge, MA, in 1972.

He was with Bell Telephone Laboratories for two years. He then became a Professor of applied physics at Harvard University. In 1979, he joined the Exxon Corporation to perform research on photovoltaic solar energy. In 1984, he joined Bell Communications Research, where he was a Distinguished Member of Staff and Director of Solid-State Physics Research. In 1992, he joined the University of California, Los Angeles, where he is currently a Professor of electrical engineering. His research has covered a broad range of topics including nonlinear optics, laser–plasma interaction, infrared laser chemistry, photovoltaic energy conversion, strained-quantum-well lasers, and chemical modification of semiconductor surfaces. His current main interests are in optoelectronics, high-speed optical communications, high-efficiency light-emitting diodes and nanocavity lasers, photonic crystals at optical and microwave frequencies, quantum computing, and quantum communication.

Dr. Yablonovitch is a member of Eta Kappa Nu and a Fellow of the American Physical Society and the Optical Society of America. He chaired the 1979 Gordon Conference on Nonlinear Optics and Lasers. He was the recipient of the Alfred P. Sloan Fellowship (1978–1979), the Adolf Lomb Medal of the Optical Society of America (1978), an Research and Development 100 Award (1990), the W. Streifer Scientific Achievement Award of the IEEE/Lasers and Electro-Optics Society (LEOS) (1993), and the R. W. Wood Prize of the Optical Society of America (1996).

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000655

PSCC-QI-7.5-01-06-19
国家级科技检索单位

编号 G1512261

授权专利检索报告

项目名称 便携式电子设备

专 利 号 ZL201210281567.1

委 托 方 北京罗杰律师事务所

委托日期 2015 年 10 月 19 日

国家知识产权局专利检索咨询中心

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000656

A. 检索种类 ☐查新 ☒无效 ☐评奖 ☐立项 ☐其它：____

B. 检索依据的技术材料（见附件）

C. 检索确定的主题分类（IPC 第 8 版）

H04M 1/02(2006.01) I, H05K 5/00(2006.01) I, H04B1/00(2006.01) I

D. 检索的专利分类领域

IPC：（IPC 第 8 版）

H04M, H05K, H04B

E. 检索工具：

检索用专利文献

☒ 国际专利文献数据库（INPADOC）
☒ 德温特世界专利索引数据库（DWPI）
☒ 中国专利文摘数据库（CNABS/CPRSABS）
☒ 世界专利文摘库（SIPOABS）
☒ 中国香港文摘数据库（HKABS）
☒ 中国台湾文摘库（TWABS）
☐ 化学物质登记数据库（REGISTRY）
☒ 专利全文数据库（CN/EP/US/WO/JP）
☐ 美国化学文摘（CA/CAPlus）
☐ 基因序列数据库（DGENE/USGENE/PCTGENE）
☐ 其它：_____

检索用非专利文献

☐ 中国知网系列数据库（CNKI）
☐ 万方数据知识服务平台
☐ 汤森路透 ISI Web of Knowledge 平台
☐ 国家图书馆非专利期刊
☐ 荷兰医学文摘库（EMBASE）
☐ 互联网
☐ 美国工程索引库（EI）
☐ 中国药物数据库
☐ 英国科学文摘库（INSPEC）
☐ 知识产权网（IP.COM）
☐ 其它：_____

F. 使用的中文与外文检索关键词

手机，电话，翻盖，折叠，蛤壳，移动,通讯终端，通信终端，笔记本电脑，便携，电池，电路板,处理器，存储器，键盘，照相机，镜头，壳，盖，一体，管状，phone，communication terminal，pda，laptop，flip，clam，battery，circuit，PCB，processor，engine，memory，keyboard，camera，housing，cover，casing，shell，one piece，unibody

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000657

G. 相关专利文献

类型*	公开号/公告号	公开/公告日期	分类号	相关部分	涉及的权利要求编号※
Y	US2005/0282593 A1	2005-12-22	H04B 1/00	说明书第 16-32 段，附图 1-7	1-8，10-12
Y	TW488610 U	2002-05-21	H05K 5/04	参见说明书第 5 页倒数第 1-2 段，第 7 页倒数第 2 段，图 1-5	1-8，10-12
Y	EP1209880 A2	2002-05-29	H04M 1/02	说明书第 5 段，第 26-27 段、图 1-2	8
A	GB2360972 A	2001-10-10	H05K 5/00	全文	1-12
A	CN1507735 A	2004-06-23	H04M 1/02	全文	1-12
A	CN1464716 A	2003-12-31	H04M 1/02	全文	1-12
A	CN2747799 Y	2005-12-21	H04M 1/02	全文	1-12

H. 相关非专利文献

类型*	书名、期刊或文摘名称（包括卷号或期刊号）	文章标题	相关部分	涉及的权利要求编号※

* 引用文件的专用类型：
(仅针对含有权利要求的检索文本)

"X" 单独影响权利要求的新颖性或创造性的文件；

"Y" 与该检索报告中其它 Y 类文件组合影响权利要求创造性的文件；

"R" 在申请日或申请日后公开的同一申请人的属于同样的发明创造的专利或专利申请文件以及他人在申请日向专利局提交的、属于同样的发明创造的专利申请文件；

"A" 背景技术文件，即反映权利要求的部分技术特征或者有关的现有技术的一部分的文件；

"E" 单独影响权利要求新颖性的抵触申请文件；

"P" 中间文件，其公开日在申请的申请日与所要求的优先权日之间的文件，或者会导致需要核实该申请优先权的文件。

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000658

I. 关于是否具有新颖性、创造性的结论：

一、事实认定：

1）本检索项目所涉及的专利

本检索项目涉及国家知识产权局于 2015 年 7 月 1 日授权公告的名称为“便携式电子设备”的“ZL201210281567.1”号发明专利（以下简称为本专利），其申请日为 2007 年 3 月 29 日，优先权日为 2006 年 3 月 29 日，授权公告的权利要求书如下：

1. 一种便携式电子设备，包括：

一体壳，形成封闭的外部侧面和后侧以及前面的至少一部分；

引擎部分，包括印刷电路板、收发器、处理器和存储器；

电池，与所述引擎部分相邻设置；以及用户输入部分，位于所述引擎部分和所述电池之上，其中所述用户输入部分直接位于所述电池的对面，而所述引擎部分的一部分不在这两者之间；

其中所述电池和所述引擎部分容纳在所述壳中，并且所述用户输入被配置成位于通过所述壳的前侧的孔中，并且形成所述便携式电子设备的所述前面的一部分。

2. 根据权利要求 1 所述的便携式电子设备，其中所述便携式电子设备包括第一部分和可移动地连接至所述第一部分的第二部分，以及所述引擎部分位于所述第一部分中。

3. 根据权利要求 2 所述的便携式电子设备，其中所述第二部分具有显示器和/或照相机。

4. 根据权利要求 1 所述的便携式电子设备，其中所述电池位于所述引擎部分的侧面。

5. 根据权利要求 1 所述的便携式电子设备，其中所述引擎部分位于所述电池的相对侧。

6. 根据权利要求 5 所述的便携式电子设备，其中所述电池位于所述引擎部分的两个部分之间。

7. 根据权利要求 5 所述的便携式电子设备，其中所述电池以并排布置的方式位于所述引擎部分的两个部分之间。

8. 根据权利要求 1 所述的便携式电子设备，其中所述便携式电子设备包括枢转地连接至第一部分的第二部分，其中所述第二部分包括具有一般管状形状并且形成所述第二部分的相对外部侧面的第二一体壳部件。

9. 根据权利要求 1 所述的便携式电子设备，其中所述便携式电子设备包括第一部分，该第一部分通过铰链枢转地连接至第二部分，其中所述铰链包括连接至所述第一部分的第一铰链部件以及连接至所述第二部分的第二铰链部件；以及所述便携式电子设备进一步包括照相机，该照相机连接至所述第二部分，其中所述照相机通过所述第二铰链部件的一部分和所述第二部分的一体第二管状壳部件的一部分的接合被容纳于所述便携式电子设备的外侧，其中所述第二管状壳部件形成所述第二部分的相对外部侧面。

10. 根据权利要求 1-9 中任一项所述的便携式电子设备，其中所述用户输入部分包括小键盘。

11. 根据权利要求 1-9 中任一项所述的便携式电子设备，其中所述便携式电子设备是 PDA、游戏机或移动电话中的任一种。

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000659

12. 根据权利要求 1-9 中任一项所述的便携式电子设备，其中所述一体壳部件由金属制成。

2）引用的对比文件及对比文件中的相关内容：

对比文件 1：US2005/0282593A1，公开日为 2005 年 12 月 22 日

对比文件 1 为本专利的现有技术。

对比文件 1 中的相关内容(说明书第 16-32 段，附图 1-7)：

一种蛤壳式电话，两部分式的机壳，该机壳通过铰链组件以可旋转方式接合在一起的上机壳 102 和下机壳 104，装置 100 具有显示器以及照相机，装置 100 的主显示装置 114 位于翻盖 102 的内表面 110。辅助显示装置 204 位于翻盖 102 的外表面 202。主显示装置 114 和辅助显示装置 204 用于显示控制（相当于权利要求中的第二部分具有显示器）所述下机壳 104 具有：电池 342 和包含了通信和控制电路的组装印刷电路板 348，其中收发器 402、处理器 404 和可选的其它块体现在装配的印刷电路板 348 中，从附图 7 可知，还包括程序存储器 416 和工作区存储器 418，下部 104 包括下部内机壳部分 330 和下部外机壳部分 332，其用螺钉(未示出)接合在一起，键盘 124 位于下部的内表面 112 上，电池室 336 限定在下部内机壳部分 330 和位于邻近下部外机壳部分 332 的电池室盖 338 之间。电池室 336 位于紧接着下部分 104 的顶端 340，电池 342 基本上布置在电池室 336 中，组装印刷电路板 348 位于底端 346 和电池室 336 之间，电池 342 和组装印刷电路板 348 位于长度为 L 的公共平面 362(图 4）内，而且在深度 D 的方向上不重叠，以此方式，该装置的整体厚度能够减小，而不需要将印刷电路板加到包括了电池 342、键盘 124 以及显示组件 316 的叠层中。

对比文件 2：TW488610U，公开日为 2002 年 5 月 21 日。

对比文件 2 为本专利的现有技术。

对比文件 2 中的相关内容(参见说明书第 5 页倒数第 1-2 段，第 7 页倒数第 2 段，图 1-5)：

公开了一种手机，包括一整体式金属外壳 5，其外壳系利用金属挤压成型技术以一次性挤压成型出所述手机外壳，该中空外壳 5 由主面板 51、底板 54 及三侧壁 53 所组成，在其底端 52 开设有一通道 57，用于组装内部组件。底盖 4、按键 6、显示屏 7、集成电路模块 8 及塑料支架 9，按键 6 用以输入指令，显示屏 7 用以显示信息，集成电路模块 8 用来接收与处理信号，而底盖 4 则包括上下表面，且设置在外壳 5 之底端通道 57 处以封闭整体式外壳 5。其中在外壳 5 之主面板 51 上设置有供安装显示屏 7 及按键 6 之矩形孔 511 及复数键孔 512。该整体式外壳设计亦可应用于如 PDA 等手持装置达到美观实用之功效

对比文件 3：EP1209880A2，公开日为 2002 年 5 月 29 日。

对比文件 3 为本专利的现有技术。

对比文件 3 中的相关内容(说明书第[0005]段，第[0026]段-第[0027]段、图 1-2)：

一种用于电子设备的具有一体管状部分的外壳 1，其顶部 2 是开放的且可以插入电子组件，结合图 1、2 可知，该一体管状外壳形成电子设备的大部分相对外部侧面；且一体管状外壳容纳键盘罩 10 和键盘 9 印刷电路板 15 以及其他的电子组件 16 例如液晶显示屏。

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000660

二、有关检索项目的新颖性和/或创造性的评述：

1、权利要求 1 请求保护一种便携式电子设备。对比文件 1(US2005/0282593A1)公开了一种蛤壳式电话，并具体公开了如下内容(参见说明书第 16-32 段，图 1-7)：一种蛤壳式电话，两部分式的机壳，该机壳通过铰链组件以可旋转方式接合在一起的上机壳 102 和下机壳 104，所述下机壳 104 具有：电池 342 和包含了通信和控制电路的组装印刷电路板 348（相当于权利要求中的引擎部分），其中收发器 402、处理器 404 和可选的其它块体现在装配的印刷电路板 348 中，从附图 7 可知，还包括程序存储器 416 和工作区存储器 418（相当于权利要求中的引擎部分，包括印刷电路板、收发器、处理器和存储器），下部 104 包括下部内机壳部分 330 和下部外机壳部分 332，其用螺钉(未示出)接合在一起，键盘 124 位于下部的内表面 112 上（相当于权利要求中的用户输入部分，形成所述便携式电子设备的所述前面的一部分），电池室 336 限定在下部内机壳部分 330 和位于邻近下部外机壳部分 332 的电池室盖 338 之间。电池室 336 位于紧接着下部分 104 的顶端 340，电池 342 基本上布置在电池室 336 中，组装印刷电路板 348 位于底端 346 和电池室 336 之间，电池 342 和组装印刷电路板 348 位于长度为 L 的公共平面 362（图 4）内，而且在深度 D 的方向上不重叠，以此方式，该装置的整体厚度能够减小，而不需要将印刷电路板加到包括了电池 342、键盘 124 以及显示组件 316 的叠层中。（相当于权利要求中的用户输入部分直接位于所述电池的对面，而所述引擎部分的一部分不在这两者之间）。

其与对比文件 1 的区别技术特征为：（1）一体壳，形成封闭的外部侧面和后侧以及前面的至少一部分，（2）所述用户输入被配置成位于通过所述壳的前侧的孔中。

由于对比文件 1 没有公开权利要求 1 的全部技术特征，因此权利要求 1 具有中华人民共和国专利法第二十二条第二款规定的新颖性。

基于区别技术特征（1），该发明创造实际解决的技术问题为提供壳的具体形式；基于区别技术特征（2），该发明创造实际解决的技术问题为提供一种键盘放置位置。对比文件 2（TW488610U）（参见说明书第 5 页倒数第 1-2 段，图 1-5）：公开了一种手机，包括一整体式金属外壳 5，其外壳系利用金属挤压成型技术以一次性挤压成型出所述手机外壳（相当于权利要求中的一体壳），该中空外壳 5 由主面板 51（相当于权利要求中的前面的至少一部分）、底板 54（相当于权利要求中的封闭的后侧）及三侧壁 53（相当于权利要求中的封闭的外部侧面）所组成，在其底端 52 开设有一通道 57，用于组装内部组件。底盖 4、按键 6（相当于权利要求中的用户输入）、显示屏 7、集成电路模块 8 及塑料支架 9，按键 6 用以输入指令，显示屏 7 用以显示信息，集成电路模块 8 用来接收与处理信号，而底盖 4 则包括上下表面，且设置在外壳 5 之底端通道 57 处以封闭整体式外壳 5。其中在外壳 5 之主面板 51 上设置有供安装显示屏 7 及按键 6 之矩形孔 511 及复数键孔 512（相当于权利要求中的用户输入被配置成位于通过所述壳的前侧的孔中，并且形成所述便携式电子设备的所述前面的一部分）。可见，其区别技术特征已经被对比文件 2 完全公开，而且该特征在对比文件 2 中所起的作用与其在本发明中为解决其技术问题所起的作用相同。因此，在对比文件 1 的基础上结合对比文件 2 得到该权利要求所要求保护的技术方案对本领域技术人员来说是显而易见的，该权利要求不具有突出的实质性特点和显著的进步，不符合中华人民共和国专利法第二十二条第三款规定的创造性。

2、权利要求 2 对权利要求 1 进一步限定。作为权利要求 1 的从属权利要求，权利要求

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000661

2 也具有中华人民共和国专利法第二十二条二款规定的新颖性。

对比文件 1 还公开了以下技术特征（参见说明书第 16-32 段，附图 1-7）：参见附图 1-2，装置 100 包括也被称为翻盖的上部 102（相当于权利要求中的第二部分）和下部 104（相当于权利要求中的第一部分），翻盖 102 和下部 104 通过旋转接合件相接合（相当于便携式电子设备包括第一部分和可移动地连接至所述第一部分的第二部分），具体为铰链 106；电池室 336 限定在下部内机壳部分 330 和位于邻近下部外机壳部分 332 的电池室盖 338 之间。电池室 336 位于紧接着下部分 104 的顶端 340，电池 342 基本上布置在电池室 336 中，组装印刷电路板 348 位于底端 346 和电池室 336 之间（相当于权利要求中的引擎部分位于所述第一部分中）。可见，权利要求 2 的附加技术特征已被对比文件 1 完全公开。因此，在其引用的权利要求不具备创造性的情况下，该权利要求所要求保护的技术方案也不符合中华人民共和国专利法第二十二条第三款规定的创造性。

3、权利要求 3 对权利要求 2 进一步限定。作为权利要求 2 的从属权利要求，权利要求 3 也具有中华人民共和国专利法第二十二条二款规定的新颖性。

对比文件 1 还公开了以下技术特征（参见说明书第 16-32 段，附图 1-7）：装置 100 具有显示器以及照相机，装置 100 的主显示装置 114 位于翻盖 102（相当于权利要求中的第二部分）的内表面 110。辅助显示装置 204 位于翻盖 102 的外表面 202。主显示装置 114 和辅助显示装置 204 用于显示控制（相当于权利要求中的第二部分具有显示器）。可见，权利要求 3 的附加技术特征已被对比文件 1 完全公开。因此，在其引用的权利要求不具备创造性的情况下，该权利要求所要求保护的技术方案也不符合中华人民共和国专利法第二十二条第三款规定的创造性。

对于该权利要求的并列技术方案，对比文件 1 还公开了以下技术特征（参见说明书第 16-32 段，附图 1-7）：照相机 318 作为手持式通信装置 100 的一部分结合在由铰链 106 占据的空间内，由附图 3 可知，翻盖 102 外机壳部分 312 包含通孔，用以容纳通过照相机 318 的镜头。对于本领域技术人员而言，翻盖手机的照相机镜头通常位于上盖，因而将照相机本体也置于翻盖手机的上部壳体中是本领域的公知常识。因此，在对比文件 1 的基础上结合公知常识得出上述并列技术方案是显而易见的。该权利要求不具备突出的实质性特点和显著的进步，不符合中华人民共和国专利法第二十二条第三款规定的创造性。

4、权利要求 4 对权利要求 1 进一步限定。作为权利要求 1 的从属权利要求，权利要求 4 也具有中华人民共和国专利法第二十二条二款规定的新颖性。

对比文件 1 还公开了以下技术特征（参见说明书第 16-32 段，附图 1-7）：参见附图 4，电池 342 与印刷电路板 348 处于长度为 L 的公共平面 362（图 4）内，而且在深度 D 的方向上不重叠（相当于权利要求中的电池位于所述引擎部分的侧面），以此方式，该装置的整体厚度能够减小，而不需要将印刷电路板加到包括了电池 342、键盘 124 以及显示组件 316 的叠层中。可见，权利要求 4 的附加技术特征已被对比文件 1 完全公开。因此，在其引用的权利要求不具备创造性的情况下，该权利要求所要求保护的技术方案也不符合中华人民共和国专利法第二十二条第三款规定的创造性。

5、权利要求 5 对权利要求 1 进一步限定。作为权利要求 1 的从属权利要求，权利要求 5 也具有中华人民共和国专利法第二十二条二款规定的新颖性。

对比文件 1 还公开了以下技术特征（参见说明书第 16-32 段，附图 1-7）：参见附图 4，

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000662

电池 342 与印刷电路板 348 处于同一水平平面内（相当于引擎部分位于所述电池的相对侧）。可见，权利要求 5 的附加技术特征已被对比文件 1 完全公开。因此，在其引用的权利要求不具备创造性的情况下，该权利要求所要求保护的技术方案也不符合中华人民共和国专利法第二十二条第三款规定的创造性。

6、权利要求 6 对权利要求 5 进一步限定。作为权利要求 5 的从属权利要求，权利要求 6 也具有中华人民共和国专利法第二十二条二款规定的新颖性。

对比文件 1 和 2 虽然没有公开其附加技术特征，然而，对于本领域技术人员而言，将电池设置于引擎的两个部分之间是本领域的惯用手段，属于公知常识。因此，在对比文件 1 和 2 的基础上结合公知常识以获得该权利要求所要求保护的技术方案，对所属技术领域的技术人员来说是显而易见的，因此该权利要求所要求保护的技术方案不具备突出的实质性特点和显著的进步，不符合中华人民共和国专利法第二十二条第三款规定的创造性。

7、权利要求 7 对权利要求 5 进一步限定。作为权利要求 5 的从属权利要求，权利要求 7 也具有中华人民共和国专利法第二十二条二款规定的新颖性。

权利要求 7 的部分附加技术特征被对比文件 1 公开（参见说明书第 16-32 段，附图 1-7）：参见附图 4，电池 342 与印刷电路板 348 处于长度为 L 的公共平面 362（图 4）内，而且在深度 D 的方向上不重叠（相当于权利要求中的电池与引擎部分并排布置）。但没有公开，电池位于所述引擎部分的两个部分之间。然而，对于本领域技术人员而言，将电池设置于引擎的两个部分之间是本领域的惯用手段，属于公知常识。因此，在对比文件 1 和 2 的基础上结合公知常识以获得该权利要求所要求保护的技术方案，对所属技术领域的技术人员来说是显而易见的，因此该权利要求所要求保护的技术方案不具备突出的实质性特点和显著的进步，不符合中华人民共和国专利法第二十二条第三款规定的创造性。

8、权利要求 8 对权利要求 1 进一步限定。作为权利要求 1 的从属权利要求，权利要求 8 也具有中华人民共和国专利法第二十二条二款规定的新颖性。

权利要求 8 的部分附加技术特征被对比文件 1 公开（参见说明书第 16-32 段，附图 1-7）：参见附图 1-2，装置 100 包括也被称为翻盖的上部 102 和下部 104，翻盖 102 和下部 104 通过旋转接合件相接合，具体为铰链 106（相当于权利要求中的所述便携式电子设备包括枢转地连接至第一部分的第二部分），翻盖 102 包括翻盖外机壳部分 312 和翻盖内机壳部分 314，其用螺钉（未示出）接合在一起。但没有公开：其中所述第二部分包括具有一般管状形状并且形成所述第二部分相对外部侧面的第二一体壳部件。对比文件 3（EP1209880A2）公开了一种电子设备及其外壳，并具体公开了以下技术特征（参见说明书第[0005]段,第[0026]段-第[0027]段、图 1-2）：对比文件 3 提供了一种用于电子设备的具有一体管状部分的外壳 1（相当于权利要求中的一体管状壳部件），其顶部 2 是开放的且可以插入电子组件，结合图 1、2 可知，该一体管状外壳形成电子设备的大部分相对外部侧面；且一体管状外壳容纳键盘罩 10 和键盘 9 印刷电路板 15 以及其他的电子组件 16 例如液晶显示屏。可见，其区别技术特征已经被对比文件 3 完全公开，而且该特征在对比文件 3 中所起的作用为采用一体管状结构，形成手机壳，相对于分体手机壳而言提高了壳体硬度且管状结构更便于内部组件与手机壳体的装配。这与其在本发明中为解决其技术问题所起的作用相同。因此，在对比文件 1 的基础上结合对比文件 2 和 3 以获得该权利要求所要求保护的技术方案，对所属技术领域的技术人员来说是显而易见的，因此该权利要求所要求保护的技术方案不具备突出的实质性特点和显

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000663

著的进步，不符合中华人民共和国专利法第二十二条第三款规定的创造性。

9、权利要求 9 对权利要求 1 进一步限定。作为权利要求 1 的从属权利要求，权利要求 9 也具有中华人民共和国专利法第二十二条二款规定的新颖性。

权利要求 9 的部分附加技术特征被对比文件 1 公开（参见说明书第 16-32 段，附图 1-7）：参见附图 1-2，装置 100 包括也被称为翻盖的上部 102 和下部 104，翻盖 102 和下部 104 通过旋转接合件相接合，具体为铰链 106（相当于权利要求中的便携式电子设备包括第一部分，该第一部分通过铰链枢转地连接至第二部分）；参见附图 3，铰链 106 包括分别连接于翻盖 102 和下部 104 的两部分（相当于所述铰链包括连接至所述第一部分的第一铰链部件以及连接至所述第二部分的第二铰链部件）；照相机 318 作为手持式通信装置 100 的一部分结合在由铰链 106 占据的空间内，由附图 3 可知，翻盖 102 外机壳部分 312 包含通孔，用以容纳通过照相机 318 的镜头（相当于权利要求中的便携式电子设备进一步包括照相机，该照相机连接至所述第二部分）。但没有公开：照相机通过所述第二铰链部件的一部分和所述第二部分的一体第二管状壳部件的一部分的接合被容纳于所述便携式电子设备的外侧，其中所述第二管状壳部件形成所述第二部分的相对外部侧面。基于上述区别特征可以确定，权利要求 9 所要求保护的技术方案实际要解决的技术问题是如何设置照相机的位置，从而允许电话支架具有更小的厚度。可见，对比文件 1 没有公开该区别技术特征。同样，检索报告中所列其他对比文件也没有公开上述区别技术特征，上述技术特征也不属于所属技术领域的公知常识。因此权利要求 9 具备突出的实质性特点和显著的进步，具有中华人民共和国专利法第二十二条第三款规定的创造性。

10、权利要求 10 对权利要求 1-9 进一步限定。作为权利要求 1-9 的从属权利要求，权利要求 10 也具有中华人民共和国专利法第二十二条二款规定的新颖性。

对比文件 1 公开了（参见说明书第 16-32 段，附图 1-7）：键盘 124 位于下部的内表面 112 上（相当于权利要求中的用户输入部分包括小键盘）。可见，权利要求 10 的附加技术特征已被对比文件 1 完全公开。因此，在其引用的权利要求 1-8 不具备创造性的情况下，该权利要求所要求保护的技术方案不符合中华人民共和国专利法第二十二条第三款规定的创造性。而在其引用的权利要求 9 具备创造性的情况下，该权利要求所要求保护的技术方案具有突出的实质性特点和显著的进步，具有中华人民共和国专利法第二十二条第三款规定的创造性。

11、权利要求 11 对权利要求 1-9 进一步限定。作为权利要求 1-9 的从属权利要求，权利要求 11 也具有中华人民共和国专利法第二十二条二款规定的新颖性。

对比文件 2 公开了（参见说明书第 7 页倒数第 2 段）：该便携式电子设备为手机，该整体式外壳设计亦可应用于如 PDA 等手持装置达到美观实用之功效。但没有公开：便携式电子设备是游戏机。然而，游戏机是本领域常见便携式电子设备。因此，在其引用的权利要求 1-8 不具备创造性的情况下，该权利要求所要求保护的技术方案不具有突出的实质性特点和显著的进步，不符合中华人民共和国专利法第二十二条第三款规定的创造性。而在其引用的权利要求 9 具备创造性的情况下，该权利要求所要求保护的技术方案具有突出的实质性特点和显著的进步，具有中华人民共和国专利法第二十二条第三款规定的创造性。

12、权利要求 12 对权利要求 1-9 进一步限定。作为权利要求 1-9 的从属权利要求，权利要求 12 也具有中华人民共和国专利法第二十二条二款规定的新颖性。

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000664

对比文件 2 公开了（参见说明书第 5 页倒数第 1-2 段）：公开了一种手机，包括一整体式金属外壳 5，其外壳系利用金属挤压成型技术以一次性挤压成型出所述手机外壳（相当于权利要求中的所述一体壳部件由金属制成）。可见，权利要求 12 的附加技术特征已被对比文件 2 完全公开。因此，在其引用的权利要求 1-8 不具备创造性的情况下，该权利要求所要求保护的技术方案不具有突出的实质性特点和显著的进步，不符合中华人民共和国专利法第二十二条第三款规定的创造性。而在其引用的权利要求 9 具备创造性的情况下，该权利要求所要求保护的技术方案具有突出的实质性特点和显著的进步，具有中华人民共和国专利法第二十二条第三款规定的创造性。

三、检索结论：

权利要求 1-12 具有新颖性，符合中华人民共和国专利法第二十二条第二款的规定。

权利要求 9、10-12（引用权利要求 9 时）具有创造性，符合中华人民共和国专利法第二十二条第三款的规定。

权利要求 1-8、10-12（引用权利要求 1-8 时）不具有创造性，不符合中华人民共和国专利法第二十二条第三款的规定。

国家知识产权局专利检索咨询中心

检索单位　　（盖章）

2015 年 10 月 29 日

注：该检索报告仅供参考。

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000665

PTO/SB/06 (09-11)
Approved for use through 1/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 14/612,712	Filing Date 02/03/2015	☐ To be Mailed

ENTITY: ☒ LARGE ☐ SMALL ☐ MICRO

APPLICATION AS FILED – PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	

APPLICATION AS AMENDED – PART II

AMENDMENT 12/28/2015	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	* 36	Minus	** 20	= 16	X $80 =	1280
Independent (37 CFR 1.16(h))	* 3	Minus	***3	= 0	X $420 =	0
☐ Application Size Fee (37 CFR 1.16(s))						
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
					TOTAL ADD'L FEE	**1280**

AMENDMENT	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =	
Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =	
☐ Application Size Fee (37 CFR 1.16(s))						
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
					TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

LIE
/DAWN BREWER/

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**
If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/612,712	02/03/2015	Claus H. Jorgensen	891.0013.U5(US)	4999

10948 7590 03/31/2016

Harrington & Smith, Attorneys At Law, LLC
4 Research Drive, Suite 202
Shelton, CT 06484

EXAMINER	
NGUYEN, TUAN DUC	

ART UNIT	PAPER NUMBER
2656	

NOTIFICATION DATE	DELIVERY MODE
03/31/2016	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

USPTO@hspatent.com
Nokia.IPR@nokia.com

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000667

Office Action Summary	Application No. 14/612,712	Applicant(s) JORGENSEN, CLAUS H.	
	Examiner TUAN D. NGUYEN	Art Unit 2656	AIA (First Inventor to File) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTHS FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims*

5)☒ Claim(s) *25-60* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *25-60* is/are rejected.

8)☐ Claim(s) _____ is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a)☐ All b)☐ Some** c)☐ None of the:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

** See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☒ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date *01/04/2016*.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

4) ☐ Other: _____.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000668

The present application is being examined under the pre-AIA first to invent provisions.

DETAILED ACTION

Double Patenting

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

   A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 C.F.R.1.130(b).

   Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

2. Claims 25-60 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-18 of U.S. Patent No. 8,953,780. Although the conflicting claims are not identical, they are not patentably distinct from each other because claims 1-18 of U.S. Patent No. 8,953,780 are similar in scope to claim 25-60 of the US patent application 14/612,712 with obvious wording variations.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of pre-AIA 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 36, 37 and 40 are rejected under pre-AIA 35 U.S.C. 102(b) as being anticipated by the applicant's cited reference US 2004/0252220 (Oda et al hereinafter Oda).

Regarding claim 36, Oda discloses a housing for a portable electronic device (figs. 1-6) comprising: a one piece housing forming enclosed exterior lateral sides and a rear side (figs. 2, 3, 5 and 6); a cut out in the rear side of said housing (figs. 4-6 item 2), said cut out configured to receive at least part of a camera (item 2); wherein the housing is

configured to receive a battery (para. 27, 28, 34, 35), and an engine section (inherent), wherein the battery and engine section are housed in the housing (fig. 4), and wherein a user input (para. 26, 35 item 4) is located in an opening between said exterior lateral sides of said one piece housing of the portable electronic device.

Regarding claim 37, Oda also shows a front side extending between the lateral edges, said lateral sides and front side forming a aperture configured to receive the user input wherein the user input and the front side of the housing form a continuous front surface of the portable electronic device (see figs. 1-3, 5, and 6).

Regarding claim 40, Oda also shows wherein the housing has substantially at least one of an open top or bottom aperture (figs. 1-6).

5. Claims 36, 37, 40 and 41 are rejected under pre-AIA 35 U.S.C. 102(b) as being anticipated by the applicant's cited reference JP 2002-125031 (Hiroshi).

Regarding claim 36, Hiroshi discloses a housing for a portable electronic device (figs. 1, 3, 5, 6, 9, and 11) comprising: a one piece housing forming enclosed exterior lateral sides and a rear side (figs. 1, 3, 5, 6, 9, and 11); a

cut out in the rear side of said housing (figs. 8, 9, para. 47-50 item 11b), said cut out configured to receive at least part of a camera (items 91 and 51); wherein the housing is configured to receive a battery (inherent, all cell phone have a rechargeable battery), and an engine section (fig. 2), wherein the battery and engine section are housed in the housing (figs. 1-2, para. 23-29), and wherein a user input (fig. 1 para. 30 item 14) is located in an opening between said exterior lateral sides of said one piece housing of the portable electronic device.

Regarding claim 37, Hiroshi also shows a front side extending between the lateral edges, said lateral sides and front side forming a aperture configured to receive the user input wherein the user input and the front side of the housing form a continuous front surface of the portable electronic device (see figs. 1 and 11).

Regarding claim 40, Oda also shows wherein the housing has substantially at least one of an open top or bottom aperture (figs. 1, 3, 8, 5, 6. 9 and 11, an open for an antenna 17).

Regarding claim 41, Hiroshi also shows wherein a antenna module is located at a aperture in the housing (figs. 1, 3, 8, 5, 6. 9 and 11, an antenna 17)

Claim Rejections - 35 USC § 103

6. The following is a quotation of pre-AIA 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 38, 39, and 42 are rejected under pre-AIA 35 U.S.C. 103(a) as being unpatentable over Oda or Hiroshi.

Regarding claim 38, Oda or Hiroshi does not explicitly disclose wherein the one piece housing has been extruded. However, this claimed limitation is a mere design choice. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify Oda or Hiroshi to have the one piece housing has been extruded for an easily assembly.

Regarding claim 39, Oda or Hiroshi does not explicitly disclose wherein the one piece housing comprises a metal. However, the metal material is well known in the art. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to use the well-known metal in Oda or Hiroshi for strengthening a phone housing.

Regarding claim 42, Hiroshi does not explicitly disclose wherein the antenna module is enclosed by a antenna cover. However, the antenna cover is also well known in the art. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to use the well-known cover in Hiroshi for protecting the antenna.

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to TUAN D. NGUYEN whose telephone

number is (571)272-8163. The examiner can normally be reached on M-F 7:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Curt Kuntz can be reached on (571) 272-7499.

The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/TUAN D NGUYEN/
Primary Examiner, Art Unit 2656

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14612712	JORGENSEN, CLAUS H.
	Examiner	Art Unit
	TUAN D NGUYEN	2656

CPC- SEARCHED		
Symbol	Date	Examiner
H04M1/0214, 1/0266, 1/04, 1/0264, 1/0262, 1/0277, 1/0216	9/18/15	TN
updated same as above	3/21/16, 3/22/16	TN

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner

SEARCH NOTES		
Search Notes	Date	Examiner
PLUS and inventor search	9/18/15	TN
EAST	9/18/15	TN
EAST	3/22/16	TN

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner

	/TUAN D NGUYEN/ Primary Examiner.Art Unit 2656

OPAP JAN 04 2016 PATENT & TRADEMARK OFFICE

IFW

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.: 14/612,712 Confirmation No.: 4999
Applicant(s): Jorgensen, Claus H.
Filed: 02/03/2015
Art Unit: 2656
Examiner: Nguyen, Tuan Duc
Title: Portable Electronic Device

Attorney Docket No.: 891.0013.U5(US)
Customer No.: 10,948

Commissioner For Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Information Disclosure Statement

(37 C.F.R. §1.97(c))

Sir:

The following information is being disclosed to the U.S. Patent and Trademark Office as information that may be material to the examination of the above-identified patent application.

Applicant's Attorney is aware of the art listed on the enclosed Form PTO-1449. Copies of the non-U.S. patent art are enclosed with the Form PTO-1449 for the Examiner's use.

Also enclosed is a copy of a search report issued in regard to a Chinese counterpart application.

01/12/2016 MBLANCO 00000009 501924 14612712
01 FC:1806 180.00 DA

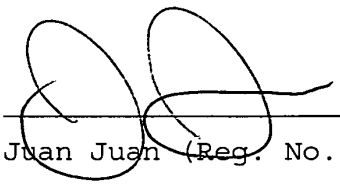
ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /T.N./

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000677

Please charge deposit account 50-1924 the amount of $180.00 as payment of the fee under 37 C.F.R. §1.17(p). Please charge deposit account 50-1924 for any fee deficiency.

The filing of this Statement is not to be construed as a representation that a search has been made regarding the claimed invention (37 C.F.R. §1.97(g)) or that no other possible material information exists. In addition, the filing of this Statement is not to be construed to be an admission that the information cited in the Statement is, or is considered to be, material to Patentability (37 C.F.R. §1.97(h)).

Respectfully submitted,



12/30/15

Juan Juan (~~Reg.~~ No. 60,564) Date

Customer No.: 10948
Harrington & Smith,
Attorneys At Law, LLC
4 Research Drive
Shelton, CT 06484-6212
203-925-9400

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail on the date shown below in an envelope addressed to: Commissioner For Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

12/30/2015 Claire F. Mian

Date Name of Person Making Deposit

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /T.N./

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000678

INFORMATION DISCLOSURE CITATION FORM FOR PATENT APPLICATION (FORM PTO-1449) (Substitute)	Docket No. 891.0013.U5(US)	Serial No.: 14/612,712
	Applicant(s): Jorgensen, Claus H.	
	Filing Date: February 3, 2015	Group: 2656

OPAP AKIMA-10 JAN 04 2016 & TRADEMARK OFFICE

U.S. PATENT DOCUMENTS

Examiner Initials	Document Number (Number-Kind Code)	Publication Date (MM-DD-YYYY)	Name of Patentee or Applicant	Class	Sub-class
	US-6,600,662 B1	07-29-2003	Emmert et al.	361	814
	US-6,011,699	01-04-2000	Murray et al.	361	814
	US-7,414,855 B1	08-19-2008	Arnold	361	752
	US-6,978,165 B2	12-20-2005	Martinez et al.	455	575.7
	US-7,738,656 B2	06-15-2010	Yoda	379	433.01
	US-5,410,141	04-25-1995	Koenck et al.	235	472
	US-6,285,327 B1	09-04-2001	See	343	702
	US-6,594,472 B1	07-15-2003	Curtis et al.	455	90
	US-6,967,280 B1	11-22-2005	Boatwright et al.	174	35 GC
	US-6,321,070 B1	11-20-2001	Clark et al.	455	90
	US-6,496,685 B2	12-17-2002	Peterzell et al.	455	90
	US-6,959,210 B2	10-25-2005	Nakamura	455	575.3
	US-7,283,853 B2	10-16-2007	Kanazawa et al.	455	575.1
	US-2006/0160585 A1	07-20-2006	Miyagawa et al.	455	575.7
	US-2006/0050169 A1	03-09-2006	Misawa	348	333.06
	US-7,711,400 B2	05-05-2010	Nuovo	455	575.8

FOREIGN PATENT DOCUMENTS

Examiner Initials	Document Number (Country Code-Number-Kind Code)	Publication Date (MM-DD-YYYY)	Name Of Patentee of Applicant	Translation? Yes/No/n/a
	WO-02/054722-A1	07-11-2002	Vertu Ltd.	
	WO-02/054727-A1	07-11-2002	Nokia Mobile Developments Limited	
	CN-1464716-A	12-31-2003	Quanta Computer Inc.	Abstract only
	CN-2747799-Y	12-21-2005	Guangda Computer Co.	Abstract only
	CN-1507735-A	06-23-2004	Matsushita Electric Ind. Co., Ltd.	Abstract only
	GB-2 360 972-A	10-10-2001	Nokia Mobile Phones Limited	
	TW-488610-U	05-21-2002	Yang, Chang-Ke	Abstract only

OTHER DOCUMENTS (Author (Capitalize), Title, Date, Pages, Etc., if known)

	"A high-impedance ground plane applied to a cellphone handset geometry", Broas, R.F.J.,et al., IEEE, Vol. 49, Issue 7, July 2001, pp. 1262-1265

Examiner's Signature: /Tuan Nguyen/	Date Considered: 03/21/2016

Initial if reference was considered, whether or not citation is in conformance with MPEP. Mark through citation if not considered. Include a copy of this citation form with your next correspondence to the Applicant(s).

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /T.N./

INFORMATION DISCLOSURE CITATION FORM FOR PATENT APPLICATION (FORM PTO-1449) (Substitute)	Docket No. 891.0013.U5(US) Serial No.: 14/612,712 Applicant(s): Jorgensen, Claus H. Filing Date: February 3, 2015 Group: 2656

U.S. PATENT DOCUMENTS

Examiner Initials	Document Number (Number-Kind Code)	Publication Date (MM-DD-YYYY)	Name of Patentee or Applicant	Class	Sub-class
	US-6,112,077	08-29-2000	Spitaletta et al.	455	407
	US-6,181,954 B1	01-30-2001	Monroe et al.	455	557
	US-6,352,434 B1	03-05-2002	Emmert	439	65
	US-7,324,152	01-29-2008	Yoon	348	360
	US-7,353,003 B2	04-01-2008	Boman et al.	455	90.3
	US-7,388,616 B2	06-17-2008	Yamazaki	348	373
	US-7,724,532 B2	05-25-2010	Zadesky et al.	361	752
	US-2004/0125947 A1	07-01-2004	Charlier et al.	379	433.07
	US-2006/0197863 A1	07-07-2006	Kim	348	335
	US-2005/0282594 A1	12-22-2005	Oldham	455	575.3
	US-5,164,542	11-17-1992	Hart	174	35 MS
	US-6,625,030 B1	09-23-2003	Haixiong	361	737
	US-6,490,439 B1	12-03-2002	Croft et al.	455	90
	US-2003/0092468 A1	05-15-2003	North	455	556
	US-2006/0062624 A1	03-23-2006	Choi	400	481
	US-2005/0140778 A1	06-30-2005	Kim et al.	348	14.02
	US-2004/0252220 A1	12-16-2004	Oda et al.	348	333.06

FOREIGN PATENT DOCUMENTS

Examiner Initials	Document Number (Country Code-Number-Kind Code)	Publication Date (MM-DD-YYYY)	Name Of Patentee of Applicant	Translation? Yes/No/n/a
	CN-2660807-Y	12-01-2004	Xianxin Electronics Co. Ltd.	Abstract only
	CN-1725783-A	01-25-2006	LG Electronics (China) Research & Development Center Co., Ltd.	Bibl. data only
	JPH-06-026339-U	01-17-1990		Yes
	JP-2000-156135-	06-06-2000	Kenwood Corp.	Yes
	JP-2002-125031-	04-26-2002	Sony Corp.	Yes
	JP-2002-271664-	09-20-2002	Sanyo Electric Co. Ltd.	Yes
	JP-2003-274234-	09-26-2003	Casio Comput. Co. Ltd.	Yes

OTHER DOCUMENTS (Author (Capitalize), Title, Date, Pages, Etc., if known)

Examiner's Signature: /Tuan Nguyen/ Date Considered: 03/21/2016

Initial if reference was considered, whether or not citation is in conformance with MPEP. Mark through citation if not considered. Include a copy of this citation form with your next correspondence to the Applicant(s).

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /T.N./

INFORMATION DISCLOSURE CITATION FORM FOR PATENT APPLICATION (FORM PTO-1449) (Substitute)	Docket No. 891.0013.U5(US) Serial No.: 14/612,712 Applicant(s): Jorgensen, Claus H. Filing Date: February 3, 2015 Group: 2656

U.S. PATENT DOCUMENTS

Examiner Initials	Document Number (Number-Kind Code)	Publication Date (MM-DD-YYYY)	Name of Patentee or Applicant	Class	Sub-class
	US-				
	US-				
	US-				
	US-				
	US-				
	US-				
	US-				
	US-				
	US-				
	US-				
	US-				
	US-				
	US-				
	US-				
	US-				

FOREIGN PATENT DOCUMENTS

Examiner Initials	Document Number (Country Code-Number-Kind Code)	Publication Date (MM-DD-YYYY)	Name Of Patentee of Applicant	Translation? Yes/No/n/a
	JP-2003-289358-	10-10-2003	Matsushita Electric Ind. Co. Ltd.	Yes
	JPH-07-273685-	10-20-1995	Canon Inc.	Yes
	JP-2004-187134-	07-02-2004	Nidec Copal Corp.	Yes
	JP-2004-222193-	08-05-2004	Mitsubishi Electric Corp.	Yes
	JP-2004-312300-	11-04-2004	NEC Corp.	Yes
	JP-2005-026881-	01-27-2005	Kyocera Corp.	Yes
	JP-2005-286430-	10-13-2005	Sharp Corp.	Yes
	JP-2005-341047	12-08-2005	Mitsubishi Electric Corp.	Yes

OTHER DOCUMENTS (Author (Capitalize), Title, Date, Pages, Etc., if known)

Examiner's Signature: /Tuan Nguyen/ Date Considered: 03/21/2016

Initial if reference was considered, whether or not citation is in conformance with MPEP. Mark through citation if not considered. Include a copy of this citation form with your next correspondence to the Applicant(s).

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /T.N./

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S1	28	((Claus) near2 (Jorgensen)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2015/09/18 08:31
S2	10054	H04M1/0214.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2015/09/18 08:32
S3	4454	H04M1/0266.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2015/09/18 08:33
S4	6236	H04M1/04.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2015/09/18 08:33
S5	2994	H04M1/0264.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2015/09/18 08:33
S6	4261	H04M1/0262.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2015/09/18 08:33
S7	1309	H04M1/0277.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2015/09/18 08:33
S8	6624	H04M1/0216.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2015/09/18 08:33

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000682

			DERWENT; IBM_TDB			
S9	32404	S2 S3 S4 S5 S6 S7 S8	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2015/09/18 08:34
S10	508	S9 and camera and printed adj circuit adj board and battery	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2015/09/18 08:35
S11	235	camera and printed adj circuit adj board and battery and one adj piece same housing	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2015/09/18 08:51
S12	12654	camera and printed adj circuit adj board and battery	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2015/09/18 08:52
S13	1013	S12 and (cut adj out hole) same rear	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2015/09/18 08:53
S14	918	S13 not S10	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2015/09/18 08:53
S15	390	S14 and @ad<"20060329"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2015/09/18 08:55
S16	70	S11 and @ad<"20060329"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2015/09/18 08:55
S17	448	S15 S16	US-PGPUB; USPAT; USOCR;	OR	OFF	2015/09/18 08:55

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000683

			FPRS; EPO; JPO; DERWENT; IBM_TDB			
S18	748	"4262733" "4275625" "4276763" "4281859" "4283278" "4290471" "4293273" "4353190" "4358125" "4376541" "4385846" "4410865" "4420037" "4429507" "4447854" "4471821" "4480467" "4482305" "4501973" "4534532" "4549420" "4559141" "4586697" "4594734" "4619131" "4625531" "4630855" "4754843" "4795347" "4843858" "4903823" "4909011" "4911627" "4957372" "4967463" "4986367" "5022524" "5215374" "5304054" "5421650" "5509587" "5511355" "5516013" "5826600" "5937468" "5957182" "5969332" "6116072" "6205834" RE36873	US-PGPUB; USPAT; USOCR	OR	OFF	2015/09/18 08:59
S19	50	(("4262733") or ("4275625") or ("4276763") or ("4281859") or ("4283278") or ("4290471") or ("4293273") or ("4353190") or ("4358125") or ("4376541") or ("4385846") or ("4410865") or ("4420037") or ("4429507") or ("4447854") or ("4471821") or ("4480467") or ("4482305") or ("4501973") or ("4534532") or ("4549420") or ("4559141") or ("4586697") or ("4594734") or ("4619131") or ("4625531") or ("4630855") or ("4754843") or ("4795347") or ("4843858") or ("4903823") or ("4909011") or ("4911627") or ("4957372") or ("4967463") or ("4986367") or ("5022524") or ("5215374") or ("5304054") or ("5421650") or ("5509587") or ("5511355") or ("5516013") or ("5826600") or ("5937468") or ("5957182") or ("5969332") or ("6116072") or ("6205834") or ("RE36873")).PN.	USPAT; USOCR	OR	OFF	2015/09/18 09:00
S20	1	("8953780").PN.	USPAT; USOCR	OR	OFF	2015/09/18 13:48
S21	2	(("8953780") or ("8615077")).PN.	USPAT; USOCR	OR	OFF	2015/09/18 14:05
S22	10271	H04M1/0214.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/03/21 14:47
S23	5034	H04M1/0266.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2016/03/21 14:47

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000684

			DERWENT; IBM_TDB			
S24	6824	H04M1/04.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/03/21 14:47
S25	3237	H04M1/0264.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/03/21 14:47
S26	4411	H04M1/0262.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/03/21 14:47
S27	1430	H04M1/0277.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/03/21 14:47
S28	6799	H04M1/0216.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/03/21 14:47
S29	34263	S22 S23 S24 S25 S26 S27 S28	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/03/21 14:47
S30	562	S29 and camera and printed adj circuit adj board and battery	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/03/21 14:47
S31	13950	camera and printed adj circuit adj board and battery	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/03/21 14:47
S32	1061	S31 and (cut adj out hole) same rear	US-PGPUB; USPAT; USOCR;	OR	OFF	2016/03/21 14:47

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000685

			FPRS; EPO; JPO; DERWENT; IBM_TDB			
S33	955	S32 not S30	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/03/21 14:47
S34	390	S33 and @ad<"20060329"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/03/21 14:47
S35	247	camera and printed adj circuit adj board and battery and one adj piece same housing	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/03/21 14:47
S36	70	S35 and @ad<"20060329"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/03/21 14:47
S37	33	("20030092468" | "20040125947" | "20040252220" | "20050140778" | "20050282594" | "20060050169" | "20060062624" | "20060160585" | "20060197863" | "5164542" | "5410141" | "6011699" | "6112077" | "6181954" | "6285327" | "6321070" | "6352434" | "6490439" | "6496685" | "6594472" | "6600662" | "6625030" | "6959210" | "6967280" | "6978165" | "7283853" | "7324152" | "7353003" | "7388616" | "7414855" | "7711400" | "7724532" | "7738656").PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2016/03/21 14:48
S38	10	S37 and camera	US-PGPUB; USPAT; USOCR	OR	OFF	2016/03/21 14:49
S39	1	("20150148099").PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2016/03/21 15:25
S40	1	("6453050").PN.	USPAT; USOCR	OR	OFF	2016/03/22 08:24
S41	1	("20080249744").PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2016/03/22 09:52
S42	1	("8953780").PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2016/03/22 11:30
S43	4	(("8953780") or ("8615077") or	US-PGPUB;	OR	OFF	2016/03/22

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000686

		("8363824") or ("7787618")).PN.	USPAT; USOCR			11:32

EAST Search History (Interference)

< This search history is empty>

3/ 22/ 2016 4:49:24 PM
C:\ Users\ tnguyen27\ Documents\ EAST\ Workspaces\ 14612712.wsp

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000687

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14612712	JORGENSEN, CLAUS H.
	Examiner	Art Unit
	TUAN D NGUYEN	2656

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	09/18/2015	03/22/2016							
	1	-	-							
	2	-	-							
	3	-	-							
	4	-	-							
	5	-	-							
	6	-	-							
	7	-	-							
	8	-	-							
	9	-	-							
	10	-	-							
	11	-	-							
	12	-	-							
	13	-	-							
	14	-	-							
	15	-	-							
	16	-	-							
	17	-	-							
	18	-	-							
	19	-	-							
	20	-	-							
	21	-	-							
	22	-	-							
	23	-	-							
	24	-	-							
	25	✓	✓							
	26	✓	✓							
	27	✓	✓							
	28	✓	✓							
	29	✓	✓							
	30	✓	✓							
	31	✓	✓							
	32	✓	✓							
	33	✓	✓							
	34	✓	✓							
	35	✓	✓							
	36	✓	✓							

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000688

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14612712	JORGENSEN, CLAUS H.
	Examiner	Art Unit
	TUAN D NGUYEN	2656

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	09/18/2015	03/22/2016							
	37	✓	✓							
	38	✓	✓							
	39	✓	✓							
	40	✓	✓							
	41	✓	✓							
	42	✓	✓							
	43		✓							
	44		✓							
	45		✓							
	46		✓							
	47		✓							
	48		✓							
	49		✓							
	50		✓							
	51		✓							
	52		✓							
	53		✓							
	54		✓							
	55		✓							
	56		✓							
	57		✓							
	58		✓							
	59		✓							
	60		✓							

To: USPTO@hspatent.com,Nokia.IPR@nokia.com,
From: PAIR_eOfficeAction@uspto.gov
Cc: PAIR_eOfficeAction@uspto.gov
Subject: Private PAIR Correspondence Notification for Customer Number 10948

Mar 31, 2016 05:36:24 AM

Dear PAIR Customer:

Harrington & Smith, Attorneys At Law, LLC
4 Research Drive, Suite 202
Shelton, CT 06484
UNITED STATES

The following USPTO patent application(s) associated with your Customer Number, 10948 , have new outgoing correspondence. This correspondence is now available for viewing in Private PAIR.

The official date of notification of the outgoing correspondence will be indicated on the form PTOL-90 accompanying the correspondence.

Disclaimer:
The list of documents shown below is provided as a courtesy and is not part of the official file wrapper. The content of the images shown in PAIR is the official record.

Application	Document	Mailroom Date	Attorney Docket No.
14612712	CTFR	03/31/2016	891.0013.U5(US)
	1449	03/31/2016	891.0013.U5(US)

To view your correspondence online or update your email addresses, please visit us anytime at https://sportal.uspto.gov/secure/myportal/privatepair.

If you have any questions, please email the Electronic Business Center (EBC) at EBC@uspto.gov with 'e-Office Action' on the subject line or call 1-866-217-9197 during the following hours:

Monday - Friday 6:00 a.m. to 12:00 a.m.

Thank you for prompt attention to this notice,

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENT APPLICATION INFORMATION RETRIEVAL SYSTEM

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.: 14/612,712 Confirmation No.: 4999
Applicant(s): Jorgensen, Claus H.
Filed: 02/03/2015
Art Unit: 2656
Examiner: Nguyen, Tuan Duc
Title: Portable Electronic Device

Attorney Docket No.: 891.0013.U5(US)
Customer No.: 10,948

Commissioner For Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Amendment

Sir:

This is in response to the Office Action mailed 03/31/2016 in regard to the above-identified patent application. Please amend the Application as indicated on the following pages.

Amendments to the Claims are reflected in the listing of claims which begin on page 2 of this paper.

Remarks begin on page 9 of this paper.

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1-24. (Canceled)

25. (Previously presented) A portable electronic device comprising:

a one piece housing forming enclosed exterior lateral sides and a rear side;

a cut out in the rear side of said housing;

a camera located in said housing and extending to said cut out at said rear side;

an engine section comprising a printed circuit board, a transceiver, a processor and a memory;

a user input section located above the engine section and a battery, wherein the user input section is located adjacent the battery and the engine section;

wherein the battery and engine section are housed in the housing and the user input is located in an opening between said exterior lateral sides of said one piece housing of the portable electronic device.

26. (Previously presented) A portable electronic device according to claim 25 wherein said one piece housing has a front side extending from and between the lateral sides.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000692

27. (Previously presented) A portable electronic device according to claim 26 wherein the front side extends parallel to the lateral edges.

28. (Previously presented) A portable electronic device according to claim 27 wherein the front side forms at least a side of the opening through which the input device is located.

29. (Previously presented) A portable electronic device according to claim 25 wherein the user input and a front side of the housing lie in a side by side arrangement.

30. (Previously presented) A portable electronic device according to claim 25 wherein the one piece housing and the user input form a continuous surface of the portable electronic device.

31. (Previously presented) A portable electronic device to claim 25 wherein the battery is located adjacent the engine section in a side by side arrangement.

32. (Previously presented) A portable electronic device according to claim 25 further comprising a cut out portion wherein the cut out portion projects from the rear side of the housing.

33. (Previously presented) A portable electronic device according to claim 32 where the camera is partially located in the cut out portion.

34. (Previously presented) A portable electronic device according to claim 25 further comprising a door configured to support an electronic module.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000693

35. (Previously presented) A portable electronic device according to claim 34 wherein the electronic module is configured to interface to the engine section.

36. (Currently amended) A housing for a portable electronic device comprising:

a one piece housing forming enclosed exterior lateral sides and a rear side;

a cut out in the rear side of said housing, said cut out configured to receive at least part of a camera;

wherein the housing is configured to receive a battery and an engine section, ~~wherein the battery and engine section are housed in the housing, and~~ wherein a user input is located in an opening between said exterior lateral sides of said one piece housing of the portable electronic device, wherein the battery and engine section are configured to be housed in the housing such that the user input section is located above the engine section and the battery, and wherein the user input section is located adjacent the battery and the engine section.

37. (Previously presented) A housing for a portable electronic device according to claim 36 further comprising:

a front side extending between the lateral edges, said lateral sides and front side forming a aperture configured to receive the user input wherein the user input and the front side of the housing form a continuous front surface of the portable electronic device.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000694

38. (Previously presented) A housing according to claim 36 wherein the one piece housing has been extruded.

39. (Previously presented) A housing according to claim 36 wherein the one piece housing comprises a metal.

40. (Previously presented) A housing according to claim 36 wherein the housing has substantially at least one of an open top or bottom aperture.

41. (Previously presented) A housing according to claim 40 wherein a antenna module is located at a aperture in the housing.

42. (Previously presented) A housing according to claim 41 wherein the antenna module is enclosed by a antenna cover.

43. (Previously presented) A portable electronic device according to claim 30 further comprising a bracket wherein the user input section and the one piece housing define an interior volume and the bracket is configured to support said user input section.

44. (Previously presented) A portable electronic device according to claim 25 further comprising a second camera located on a front side of the portable electronic device.

45. (Previously presented) A portable electronic device according to claim 25 wherein the user input section is located directly adjacent the battery and the engine section.

46. (Previously presented) A mobile phone comprising:

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000695

a one piece housing of the mobile phone forming enclosed exterior lateral sides and a rear side of the mobile phone;

a cut out in the rear side of said housing;

a camera located in said housing and extending to said cut out at said rear side;

an engine section comprising a printed circuit board, a transceiver, a processor and a memory;

a user input section located above the engine section and a battery, wherein the user input section is located adjacent the battery and the engine section;

wherein the battery and engine section are housed in the housing and the user input is located in an opening between said exterior lateral sides of said one piece housing of the mobile phone.

47. (Previously presented) A mobile phone according to claim 46 wherein said one piece housing has a front side extending from and between the lateral sides.

48. (Previously presented) A mobile phone according to claim 47 wherein the front side extends parallel to the lateral edges.

49. (Previously presented) A mobile phone according to claim 48 wherein the front side forms at least a side of the opening through which the input device is located.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000696

50. (Previously presented) A mobile phone according to claim 46 wherein the user input and a front side of the housing lie in a side by side arrangement.

51. (Previously presented) A mobile phone according to claim 46 wherein the one piece housing and the user input form a continuous surface of the mobile phone.

52. (Previously presented) A mobile phone according to claim 51 further comprising a bracket wherein the user input section and the one piece housing define an interior volume and the bracket is configured to support said user input section.

53. (Previously presented) A mobile phone according to claim 46 wherein the battery is located adjacent the engine section in a side by side arrangement.

54. (Previously presented) A mobile phone according to claim 46 further comprising a cut out portion wherein the cut out portion projects from the rear side of the housing.

55. (Previously presented) A mobile phone according to claim 54 where the camera is partially located in the cut out portion.

56. (Previously presented) A mobile phone according to claim 46 further comprising a second camera on a front side of the mobile phone.

57. (Previously presented) A mobile phone according to claim 46 further comprising a door configured to support an electronic module.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000697

58. (Previously presented) A mobile phone according to claim 57 wherein the electronic module is configured to interface to the engine section.

59. (Previously presented) A mobile phone according to claim 46 wherein the user input section is located directly adjacent the battery and the engine section.

60. (Previously presented) A mobile phone according to claim 46 wherein the transceiver is a mobile phone transceiver.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000698

REMARKS

Claims 25-60 were rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-18 of US 8,953,780. The examiner is requested to reconsider this rejection. The examiner indicated that a terminal disclaimer could be used to overcome the rejection based on nonstatutory obviousness-type double patenting. Applicants include herewith terminal disclaimer (attached form PTO/AIA/26) in accordance with 37 CFR §1.321 to obviate the double patenting rejection over the "prior" patent). Please charge deposit account 50-1924 for the terminal disclaimer fee ($160.00) under 37 CFR §1.20(d).

Applicant notes that in view of the Terminal Disclaimer mentioned above, independent claims 25 and 46 should now be condition for allowance.

Claims 36, 37, and 40 were rejected under pre-AIA 35 U.S.C. §102(b) as being anticipated by Oda (US 2004/0252220). Claims 36, 37, 40 and 41 were rejected under pre-AIA 35 U.S.C. §102(b) as being anticipated by Hiroshi (JP 2002-125031). Claims 38, 39, and 42 were rejected under pre-AIA 35 U.S.C. §103(a) as being unpatentable over Oda (US 2004/0252220) or Hiroshi (JP 2002-125031). The examiner is requested to reconsider these rejections.

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." Verdegaal Bros. v. Union Oil Co. of California, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). It is submitted that Oda and/or

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000699

Hiroshi fail to teach each and every element as set forth in claim 36 for at least the reasons described below.

Applicant has amended claim 1 to recite, *inter alia*, "wherein the battery and engine section are configured to be housed in the housing such that the user input section is located above the engine section and the battery, and wherein the user input section is located adjacent the battery and the engine section". Support for this amendment may be found, for example, at paragraph [0028], and Figs. 7, 8.

Oda relates to a foldable portable instrument with camera, and more particularly to a foldable portable instrument with camera having a first housing and a second housing connected in a foldable manner. The foldable portable instrument with camera includes a first housing and a second housing connected in a foldable manner, a main display portion provided in the first housing, and a camera provided in the second housing. The camera is attached to the second housing such that a perpendicular direction with respect to a display surface of main display portion and an optical axis direction of the camera are identical when the first housing and the second housing are in an opened state. Accordingly, a foldable portable instrument with camera allowing natural image pick-up and directing the camera to a subject in a facilitated manner with a simplified configuration, when an image is picked up by the camera while it is monitored on the display portion, is obtained (see Abstract). However, there is no teaching or disclosure in Oda to provide the battery and engine section to be housed in the housing such that the user input section is located above the engine section and the battery, and wherein

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000700

the user input section is located adjacent the battery and the engine section.

Hiroshi relates to an information terminal including an image pick up means which may be structured in compact design by matching the looks of user during the display and image pick up operations. Hiroshi discloses an information terminal 10 provided with a display means 40 at the front surface of the body 11. The display means 40 has the transparency and the rear side of the front surface of the display means is provided with the image pick up means 51 with the light receiving surface 52a is directed toward the front surface of the display means (see Abstract). However, there is no teaching or disclosure in Hiroshi to provide the battery and engine section to be housed in the housing such that the user input section is located above the engine section and the battery, and wherein the user input section is located adjacent the battery and the engine section.

In the present case, there is no teaching, suggestion, or motivation, found in either the references themselves or in the knowledge generally available to one of ordinary skill in the art, to provide "wherein the battery and engine section are configured to be housed in the housing such that the user input section is located above the engine section and the battery, and wherein the user input section is located adjacent the battery and the engine section", as claimed in claim 36. The features of claim 36 are not disclosed or suggested in the art of record. Therefore, claim 36 is patentable and should be allowed.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000701

Though dependent claims 26-35, 37-45, and 47-60 contain their own allowable subject matter, these claims should at least be allowable due to their dependence from allowable claim 25, 36, 46. However, to expedite prosecution at this time, no further comment will be made.

For all of the foregoing reasons, it is respectfully submitted that all of the claims now present in the application are clearly novel and patentable over the prior art of record. Accordingly, favorable reconsideration and allowance is respectfully requested. If there are any additional charges with respect to this Amendment or otherwise, please charge deposit account 50-1924 for any fee deficiency. Should any unresolved issue remain, the examiner is invited to call applicant's attorney at the telephone number indicated below.

Respectfully submitted,



5/27/16

Juan Juan (Reg. No. 60,564) Date

Customer No.: 10948
Harrington & Smith,
Attorneys At Law, LLC
4 Research Drive
Shelton, CT 06484-6212
203-925-9400

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000702

PTO/AIA/26 (04-14)
Approved for use through 07/31/2016. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

TERMINAL DISCLAIMER TO OBVIATE A DOUBLE PATENTING REJECTION OVER A "PRIOR" PATENT	Docket Number (Optional) 891.0013.U5(US)

In re Application of: Jorgensen, Claus H.

Application No.: 14/612,712

Filed: 02/03/2015

For: Portable Electronic Device

The applicant, Nokia Technologies Oy, owner of 100 percent interest in the instant application hereby disclaims, except as provided below, the terminal part of the statutory term of any patent granted on the instant application which would extend beyond the expiration date of the full statutory term of **prior patent** No. 8,953,780 as the term of said **prior patent** is presently shortened by any terminal disclaimer. The applicant hereby agrees that any patent so granted on the instant application shall be enforceable only for and during such period that it and the **prior patent** are commonly owned. This agreement runs with any patent granted on the instant application and is binding upon the grantee, its successors or assigns.

In making the above disclaimer, the applicant does not disclaim the terminal part of the term of any patent granted on the instant application that would extend to the expiration date of the full statutory term of the **prior patent**, "as the term of said **prior patent** is presently shortened by any terminal disclaimer," in the event that said **prior patent** later:

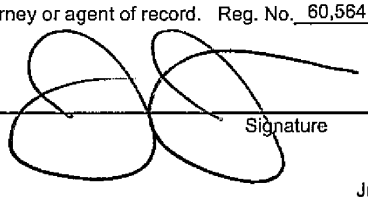
expires for failure to pay a maintenance fee;
is held unenforceable;
is found invalid by a court of competent jurisdiction;
is statutorily disclaimed in whole or terminally disclaimed under 37 CFR 1.321;
has all claims canceled by a reexamination certificate;
is reissued; or
is in any manner terminated prior to the expiration of its full statutory term as presently shortened by any terminal disclaimer.

Check either box 1 or 2 below, if appropriate.

1. ☐ The undersigned is the applicant. If the applicant is an assignee, the undersigned is authorized to act on behalf of the assignee.

I hereby acknowledge that any willful false statements made are punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

2. ☑ The undersigned is an attorney or agent of record. Reg. No. 60,564



Signature — 5/27/16 Date

Juan Juan
Typed or printed name

Attorney — Title

203-925-9400 — Telephone Number

☑ Terminal disclaimer fee under 37 CFR 1.20(d) included.

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

This collection of information is required by 37 CFR 1.321. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Electronic Patent Application Fee Transmittal

Application Number:	14612712
Filing Date:	03-Feb-2015
Title of Invention:	Portable Electronic Device
First Named Inventor/Applicant Name:	Claus H. Jorgensen
Filer:	Juan Juan/Elaine Mian
Attorney Docket Number:	891.0013.U5(US)

Filed as Large Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
Statutory or Terminal Disclaimer	1814	1	160	160
		Total in USD ($)		**160**

Electronic Acknowledgement Receipt

EFS ID:	25905576
Application Number:	14612712
International Application Number:	
Confirmation Number:	4999
Title of Invention:	Portable Electronic Device
First Named Inventor/Applicant Name:	Claus H. Jorgensen
Customer Number:	10948
Filer:	Juan Juan/Elaine Mian
Filer Authorized By:	Juan Juan
Attorney Docket Number:	891.0013.U5(US)
Receipt Date:	27-MAY-2016
Filing Date:	03-FEB-2015
Time Stamp:	11:23:43
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	$160
RAM confirmation Number	9097
Deposit Account	501924
Authorized User	HARRINGTON & SMITH, ATTORNEYS AT LAW, LLC
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Response After Final Action	Amendment-05-27-2016.pdf	265789 7061c5f673dc0a4ccbe2c3e931a0506a43e911a8	no	12
Warnings:					
Information:					
2	Terminal Disclaimer Filed	TerminalDisclaimer-05-27-2016.pdf	46309 3e5260eebeb34a2cfdbd5defb2b71e444770ecc8	no	1
Warnings:					
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	30096 c52d83cb8246b5bda6e768f0a2957e079bc583be	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	342194		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/SB/06 (09-11)
Approved for use through 1/31/2014. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 14/612,712	Filing Date 02/03/2015	☐ To be Mailed

ENTITY: ☒ LARGE ☐ SMALL ☐ MICRO

APPLICATION AS FILED – PART I

	(Column 1)	(Column 2)		
FOR	NUMBER FILED	NUMBER EXTRA	RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $310 ($155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	

APPLICATION AS AMENDED – PART II

AMENDMENT		(Column 1)		(Column 2)	(Column 3)		
		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =	
	☐ Application Size Fee (37 CFR 1.16(s))						
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
						TOTAL ADD'L FEE	

AMENDMENT	05/27/2016	(Column 1)		(Column 2)	(Column 3)		
		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 36	Minus	** 36	= 0	X $80 =	0
	Independent (37 CFR 1.16(h))	* 3	Minus	*** 3	= 0	X $420 =	0
	☐ Application Size Fee (37 CFR 1.16(s))						
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
						TOTAL ADD'L FEE	**0**

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

LIE
/Chantae Dessau/

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Application Number	Application/Control No.	Applicant(s)/Patent under Reexamination	
	14/612,712	JORGENSEN, CLAUS H.	

Document Code - DISQ	Internal Document – DO NOT MAIL

TERMINAL DISCLAIMER	☒ APPROVED	☐ DISAPPROVED
Date Filed : 27 May, 2016	This patent is subject to a Terminal Disclaimer	

Approved/Disapproved by:

/CHARRISSA BROWN/

Technology Center: PLRC

Telephone: (571)272-1558

U.S. Patent and Trademark Office

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

NOTICE OF ALLOWANCE AND FEE(S) DUE

10948 7590 06/15/2016

Harrington & Smith, Attorneys At Law, LLC
4 Research Drive, Suite 202
Shelton, CT 06484

EXAMINER
NGUYEN, TUAN DUC

ART UNIT	PAPER NUMBER
2656	

DATE MAILED: 06/15/2016

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/612,712	02/03/2015	Claus H. Jorgensen	891.0013.U5(US)	4999

TITLE OF INVENTION: Portable Electronic Device

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	$960	$0	$0	$960	09/15/2016

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the ENTITY STATUS shown above. If the ENTITY STATUS is shown as SMALL or MICRO, verify whether entitlement to that entity status still applies.

If the ENTITY STATUS is the same as shown above, pay the TOTAL FEE(S) DUE shown above.

If the ENTITY STATUS is changed from that shown above, on PART B - FEE(S) TRANSMITTAL, complete section number 5 titled "Change in Entity Status (from status indicated above)".

For purposes of this notice, small entity fees are 1/2 the amount of undiscounted fees, and micro entity fees are 1/2 the amount of small entity fees.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000710

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: Mail **Mail Stop ISSUE FEE**
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

10948 7590 06/15/2016
Harrington & Smith, Attorneys At Law, LLC
4 Research Drive, Suite 202
Shelton, CT 06484

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission
I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/612,712	02/03/2015	Claus H. Jorgensen	891.0013.U5(US)	4999

TITLE OF INVENTION: Portable Electronic Device

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	$960	$0	$0	$960	09/15/2016

EXAMINER	ART UNIT	CLASS-SUBCLASS
NGUYEN, TUAN DUC	2656	379-433080

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).
❑ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
❑ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list
(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,
(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.
1 _____
2 _____
3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE (B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ❑ Individual ❑ Corporation or other private group entity ❑ Government

4a. The following fee(s) are submitted:
❑ Issue Fee
❑ Publication Fee (No small entity discount permitted)
❑ Advance Order - # of Copies _____

4b. Payment of Fee(s): (**Please first reapply any previously paid issue fee shown above**)
❑ A check is enclosed.
❑ Payment by credit card. Form PTO-2038 is attached.
❑ The director is hereby authorized to charge the required fee(s), any deficiency, or credits any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)
❑ Applicant certifying micro entity status. See 37 CFR 1.29
NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.
❑ Applicant asserting small entity status. See 37 CFR 1.27
NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.
❑ Applicant changing to regular undiscounted fee status.
NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature _____ Date _____

Typed or printed name _____ Registration No. _____

PTOL-85 Part B (10-13) Approved for use through 10/31/2013. OMB 0651-0033 U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000711

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/612,712	02/03/2015	Claus H. Jorgensen	891.0013.U5(US)	4999

10948 7590 06/15/2016

Harrington & Smith, Attorneys At Law, LLC
4 Research Drive, Suite 202
Shelton, CT 06484

EXAMINER	
NGUYEN, TUAN DUC	

ART UNIT	PAPER NUMBER
2656	

DATE MAILED: 06/15/2016

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(Applications filed on or after May 29, 2000)

The Office has discontinued providing a Patent Term Adjustment (PTA) calculation with the Notice of Allowance.

Section 1(h)(2) of the AIA Technical Corrections Act amended 35 U.S.C. 154(b)(3)(B)(i) to eliminate the requirement that the Office provide a patent term adjustment determination with the notice of allowance. See Revisions to Patent Term Adjustment, 78 Fed. Reg. 19416, 19417 (Apr. 1, 2013). Therefore, the Office is no longer providing an initial patent term adjustment determination with the notice of allowance. The Office will continue to provide a patent term adjustment determination with the Issue Notification Letter that is mailed to applicant approximately three weeks prior to the issue date of the patent, and will include the patent term adjustment on the patent. Any request for reconsideration of the patent term adjustment determination (or reinstatement of patent term adjustment) should follow the process outlined in 37 CFR 1.705.

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

PTOL-85 (Rev. 02/11)

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000712

OMB Clearance and PRA Burden Statement for PTOL-85 Part B

The Paperwork Reduction Act (PRA) of 1995 requires Federal agencies to obtain Office of Management and Budget approval before requesting most types of information from the public. When OMB approves an agency request to collect information from the public, OMB (i) provides a valid OMB Control Number and expiration date for the agency to display on the instrument that will be used to collect the information and (ii) requires the agency to inform the public about the OMB Control Number's legal significance in accordance with 5 CFR 1320.5(b).

The information collected by PTOL-85 Part B is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450. Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Notice of Allowability	Application No. 14/612,712	Applicant(s) JORGENSEN, CLAUS H.	
	Examiner TUAN D. NGUYEN	Art Unit 2656	AIA (First Inventor to File) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *05/27/2016*.
   ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on_____.
2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.
3. ☒ The allowed claim(s) is/are *25-60 and renumbered as 1-36*. As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   Certified copies:

   a) ☐ All b) ☐ Some *c) ☐ None of the:
   1. ☐ Certified copies of the priority documents have been received.
   2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
   3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
4. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
5. ☐ Examiner's Amendment/Comment
6. ☒ Examiner's Statement of Reasons for Allowance
7. ☐ Other _____.

/TUAN D NGUYEN/
Primary Examiner, Art Unit 2656

The present application is being examined under the pre-AIA first to invent provisions.

Office Action

Examiner's Statement of Reasons for Allowance

1. Claims 25-60 are allowed.

The following is an examiner's statement of reasons for allowance: The prior art of record teaches various portable electronic devices thereon, for example US 2004/0252220. However, the prior art of record fails to show claim 25, a portable electronic device comprising: a one piece housing forming enclosed exterior lateral sides and a rear side; a cut out in the rear side of said housing; a camera located in said housing and extending to said cut out at said rear side; an engine section comprising a printed circuit board, a transceiver, a processor and a memory; a user input section located above the engine section and a battery, wherein the user input section is located adjacent the battery and the engine section; wherein the battery and engine section are housed in the housing and the user input is located in an opening between said exterior lateral sides of said one piece housing of the portable electronic device; claim 36, a housing for a portable electronic device comprising: a one piece housing forming enclosed exterior lateral sides and a rear side; a cut out in the rear side of said housing, said cut out configured to receive at least part of a

camera; wherein the housing is configured to receive a battery and an engine section, wherein a user input is located in an opening between said exterior lateral sides of said one piece housing of the portable electronic device, wherein the battery and engine section are configured to be housed in the housing such that the user input section is located above the engine section and the battery, and wherein the user input section is located adjacent the battery and the engine section; and claim 46, a mobile phone comprising: a one piece housing of the mobile phone forming enclosed exterior lateral sides and a rear side of the mobile phone; a cut out in the rear side of said housing; a camera located in said housing and extending to said cut out at said rear side; an engine section comprising a printed circuit board, a transceiver, a processor and a memory; a user input section located above the engine section and a battery, wherein the user input section is located adjacent the battery and the engine section; wherein the battery and engine section are housed in the housing and the user input is located in an opening between said exterior lateral sides of said one piece housing of the mobile phone

2. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

3. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays,

should preferably accompany the issue fee. Such submissions should be clearly labeled “Comments on Statement of Reasons for Allowance.”

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tuan D. Nguyen whose telephone number is (571) 272-8163. The examiner can normally be reached on M-F 6:30-3:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner’s supervisor, Curt Kuntz can be reached on (571) 272-7499. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/TUAN D NGUYEN/

Primary Examiner, Art Unit 2656

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14612712	JORGENSEN, CLAUS H.
	Examiner	Art Unit
	TUAN D NGUYEN	2656

CPC- SEARCHED		
Symbol	Date	Examiner
H04M1/0214, 1/0266, 1/04, 1/0264, 1/0262, 1/0277, 1/0216	9/18/15	TN
updated same as above	3/21/16, 3/22/16	TN
updated same as above	6/8/16	TN

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner

SEARCH NOTES		
Search Notes	Date	Examiner
PLUS and inventor search	9/18/15	TN
EAST	9/18/15	TN
EAST	3/22/16	TN
EAST	6/8/16	TN

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner
	updated same as above	6/8/16	TN

	/TUAN D NGUYEN/ Primary Examiner.Art Unit 2656

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14612712	JORGENSEN, CLAUS H.
	Examiner	**Art Unit**
	TUAN D NGUYEN	2656

CPC						
Symbol					**Type**	**Version**
H04M		1	/	0214	F	2013-01-01
H04M		1	/	0216	A	2013-01-01
H04M		1	/	0262	I	2013-01-01
H04M		1	/	0264	I	2013-01-01
H04M		1	/	0277	I	2013-01-01
H04M		1	/	0266	I	2013-01-01
H04M		1	/	04	I	2013-01-01
			/			
			/			
			/			
			/			
			/			
			/			
			/			
			/			

CPC Combination Sets							
Symbol					**Type**	**Set**	**Ranking**	**Version**
			/					
			/					

NONE (Assistant Examiner)	(Date)	**Total Claims Allowed:** 36	
/TUAN D NGUYEN/ Primary Examiner.Art Unit 2656 (Primary Examiner)	6/9/16 (Date)	O.G. Print Claim(s) 25	O.G. Print Figure 7

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14612712	JORGENSEN, CLAUS H.
	Examiner	**Art Unit**
	TUAN D NGUYEN	2656

US ORIGINAL CLASSIFICATION		INTERNATIONAL CLASSIFICATION	
CLASS	SUBCLASS	CLAIMED	NON-CLAIMED
379	433.08	H 0 4 M 1 / 00 (2006.01.01)	
CROSS REFERENCE(S)		H 0 4 M 9 / 00 (2006.01.01)	
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)		

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	36	
/TUAN D NGUYEN/ Primary Examiner.Art Unit 2656	6/9/16	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	25	7

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000721

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14612712	JORGENSEN, CLAUS H.
	Examiner	**Art Unit**
	TUAN D NGUYEN	2656

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☒ T.D. ☐ R.1.47

Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
1	25	20	41	33	57										
2	26	21	42	34	58										
3	27	7	43	35	59										
4	28	13	44	36	60										
5	29	14	45												
6	30	22	46												
8	31	23	47												
9	32	24	48												
10	33	25	49												
11	34	26	50												
12	35	27	51												
15	36	28	52												
16	37	29	53												
17	38	30	54												
18	39	31	55												
19	40	32	56												

NONE (Assistant Examiner)	(Date)	**Total Claims Allowed:** 36	
/TUAN D NGUYEN/ Primary Examiner.Art Unit 2656 (Primary Examiner)	6/9/16 (Date)	O.G. Print Claim(s) 25	O.G. Print Figure 7

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000722

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

BIB DATA SHEET

CONFIRMATION NO. 4999

SERIAL NUMBER	FILING or 371(c) DATE RULE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
14/612,712	02/03/2015	379	2656	891.0013.U5(US)

APPLICANTS
Nokia Technologies Oy, Espoo, FINLAND;

INVENTORS
Claus H. Jorgensen, Bronshoj, DENMARK;

**** CONTINUING DATA ***************************
This application is a CON of 14/067,249 10/30/2013 PAT 8953780
which is a CON of 13/741,781 01/15/2013 PAT 8615077
which is a CON of 12/860,234 08/20/2010 PAT 8363824
which is a CON of 11/393,510 03/29/2006 PAT 7787618

**** FOREIGN APPLICATIONS ***************************

**** IF REQUIRED, FOREIGN FILING LICENSE GRANTED ****
02/13/2015

Foreign Priority claimed ☐ Yes ☑ No 35 USC 119(a-d) conditions met ☐ Yes ☑ No Verified and Acknowledged /Tuan D. Nguyen/ Examiner's Signature	☐ Met after Allowance Initials	STATE OR COUNTRY	SHEETS DRAWINGS	TOTAL CLAIMS	INDEPENDENT CLAIMS
		DENMARK	6	18	2

ADDRESS
Harrington & Smith, Attorneys At Law, LLC
4 Research Drive, Suite 202
Shelton, CT 06484
UNITED STATES

TITLE
Portable Electronic Device

FILING FEE RECEIVED		
2880	FEES: Authority has been given in Paper No._____ to charge/credit DEPOSIT ACCOUNT No._____ for following:	☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time) ☐ 1.18 Fees (Issue) ☐ Other _____ ☐ Credit

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000723

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S1	28	((Claus) near2 (Jorgensen)).INV.	US-PGPUB; USPAT; USOCR	OR	OFF	2015/09/18 08:31
S2	10054	H04M1/0214.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2015/09/18 08:32
S3	4454	H04M1/0266.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2015/09/18 08:33
S4	6236	H04M1/04.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2015/09/18 08:33
S5	2994	H04M1/0264.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2015/09/18 08:33
S6	4261	H04M1/0262.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2015/09/18 08:33
S7	1309	H04M1/0277.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2015/09/18 08:33
S8	6624	H04M1/0216.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2015/09/18 08:33

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000724

			DERWENT; IBM_TDB			
S9	32404	S2 S3 S4 S5 S6 S7 S8	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2015/09/18 08:34
S10	508	S9 and camera and printed adj circuit adj board and battery	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2015/09/18 08:35
S11	235	camera and printed adj circuit adj board and battery and one adj piece same housing	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2015/09/18 08:51
S12	12654	camera and printed adj circuit adj board and battery	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2015/09/18 08:52
S13	1013	S12 and (cut adj out hole) same rear	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2015/09/18 08:53
S14	918	S13 not S10	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2015/09/18 08:53
S15	390	S14 and @ad<"20060329"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2015/09/18 08:55
S16	70	S11 and @ad<"20060329"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2015/09/18 08:55
S17	448	S15 S16	US-PGPUB; USPAT; USOCR;	OR	OFF	2015/09/18 08:55

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000725

			FPRS; EPO; JPO; DERWENT; IBM_TDB			
S18	748	"4262733" "4275625" "4276763" "4281859" "4283278" "4290471" "4293273" "4353190" "4358125" "4376541" "4385846" "4410865" "4420037" "4429507" "4447854" "4471821" "4480467" "4482305" "4501973" "4534532" "4549420" "4559141" "4586697" "4594734" "4619131" "4625531" "4630855" "4754843" "4795347" "4843858" "4903823" "4909011" "4911627" "4957372" "4967463" "4986367" "5022524" "5215374" "5304054" "5421650" "5509587" "5511355" "5516013" "5826600" "5937468" "5957182" "5969332" "6116072" "6205834" RE36873	US-PGPUB; USPAT; USOCR	OR	OFF	2015/09/18 08:59
S19	50	(("4262733") or ("4275625") or ("4276763") or ("4281859") or ("4283278") or ("4290471") or ("4293273") or ("4353190") or ("4358125") or ("4376541") or ("4385846") or ("4410865") or ("4420037") or ("4429507") or ("4447854") or ("4471821") or ("4480467") or ("4482305") or ("4501973") or ("4534532") or ("4549420") or ("4559141") or ("4586697") or ("4594734") or ("4619131") or ("4625531") or ("4630855") or ("4754843") or ("4795347") or ("4843858") or ("4903823") or ("4909011") or ("4911627") or ("4957372") or ("4967463") or ("4986367") or ("5022524") or ("5215374") or ("5304054") or ("5421650") or ("5509587") or ("5511355") or ("5516013") or ("5826600") or ("5937468") or ("5957182") or ("5969332") or ("6116072") or ("6205834") or ("RE36873")).PN.	USPAT; USOCR	OR	OFF	2015/09/18 09:00
S20	1	("8953780").PN.	USPAT; USOCR	OR	OFF	2015/09/18 13:48
S21	2	(("8953780") or ("8615077")).PN.	USPAT; USOCR	OR	OFF	2015/09/18 14:05
S22	10271	H04M1/0214.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/03/21 14:47
S23	5034	H04M1/0266.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	OFF	2016/03/21 14:47

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000726

			DERWENT; IBM_TDB			
S24	6824	H04M1/04.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/03/21 14:47
S25	3237	H04M1/0264.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/03/21 14:47
S26	4411	H04M1/0262.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/03/21 14:47
S27	1430	H04M1/0277.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/03/21 14:47
S28	6799	H04M1/0216.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/03/21 14:47
S29	34263	S22 S23 S24 S25 S26 S27 S28	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/03/21 14:47
S30	562	S29 and camera and printed adj circuit adj board and battery	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/03/21 14:47
S31	13950	camera and printed adj circuit adj board and battery	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/03/21 14:47
S32	1061	S31 and (cut adj out hole) same rear	US-PGPUB; USPAT; USOCR;	OR	OFF	2016/03/21 14:47

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000727

			FPRS; EPO; JPO; DERWENT; IBM_TDB			
S33	955	S32 not S30	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/03/21 14:47
S34	390	S33 and @ad<"20060329"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/03/21 14:47
S35	247	camera and printed adj circuit adj board and battery and one adj piece same housing	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/03/21 14:47
S36	70	S35 and @ad<"20060329"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/03/21 14:47
S37	33	("20030092468" | "20040125947" | "20040252220" | "20050140778" | "20050282594" | "20060050169" | "20060062624" | "20060160585" | "20060197863" | "5164542" | "5410141" | "6011699" | "6112077" | "6181954" | "6285327" | "6321070" | "6352434" | "6490439" | "6496685" | "6594472" | "6600662" | "6625030" | "6959210" | "6967280" | "6978165" | "7283853" | "7324152" | "7353003" | "7388616" | "7414855" | "7711400" | "7724532" | "7738656").PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2016/03/21 14:48
S38	10	S37 and camera	US-PGPUB; USPAT; USOCR	OR	OFF	2016/03/21 14:49
S39	1	("20150148099").PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2016/03/21 15:25
S40	1	("6453050").PN.	USPAT; USOCR	OR	OFF	2016/03/22 08:24
S41	1	("20080249744").PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2016/03/22 09:52
S42	1	("8953780").PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2016/03/22 11:30
S43	4	(("8953780") or ("8615077") or	US-PGPUB;	OR	OFF	2016/03/22

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000728

		("8363824") or ("7787618")).PN.	USPAT; USOCR			11:32
S44	10345	H04M1/0214.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/06/08 15:28
S45	5177	H04M1/0266.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/06/08 15:28
S46	7012	H04M1/04.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/06/08 15:28
S47	3303	H04M1/0264.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/06/08 15:28
S48	4457	H04M1/0262.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/06/08 15:28
S49	1461	H04M1/0277.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/06/08 15:28
S50	7023	H04M1/0216.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/06/08 15:28
S51	34814	S44 S45 S46 S47 S48 S49 S50	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/06/08 15:28
S52	585	S51 and camera and printed adj circuit adj board and battery	US-PGPUB; USPAT; USOCR;	OR	OFF	2016/06/08 15:28

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000729

			FPRS; EPO; JPO; DERWENT; IBM_TDB			
S53	14555	camera and printed adj circuit adj board and battery	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/06/08 15:28
S54	1085	S53 and (cut adj out hole) same rear	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/06/08 15:28
S55	971	S54 not S52	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/06/08 15:28
S56	390	S55 and @ad<"20060329"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/06/08 15:28
S57	256	camera and printed adj circuit adj board and battery and one adj piece same housing	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/06/08 15:29
S58	634	S56 S57	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/06/08 15:29
S59	244	S57 not S56	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/06/08 15:30

EAST Search History (Interference)

<This search history is empty>

6/9/2016 1:00:52 PM
C:\Users\tnguyen27\Documents\EAST\Workspaces\14612712.wsp

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000730

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000731

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14612712	JORGENSEN, CLAUS H.
	Examiner	Art Unit
	TUAN D NGUYEN	2656

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☒ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	09/18/2015	03/22/2016	06/09/2016						
	1	-	-	-						
	2	-	-	-						
	3	-	-	-						
	4	-	-	-						
	5	-	-	-						
	6	-	-	-						
	7	-	-	-						
	8	-	-	-						
	9	-	-	-						
	10	-	-	-						
	11	-	-	-						
	12	-	-	-						
	13	-	-	-						
	14	-	-	-						
	15	-	-	-						
	16	-	-	-						
	17	-	-	-						
	18	-	-	-						
	19	-	-	-						
	20	-	-	-						
	21	-	-	-						
	22	-	-	-						
	23	-	-	-						
	24	-	-	-						
1	25	✓	✓	=						
2	26	✓	✓	=						
3	27	✓	✓	=						
4	28	✓	✓	=						
5	29	✓	✓	=						
6	30	✓	✓	=						
8	31	✓	✓	=						
9	32	✓	✓	=						
10	33	✓	✓	=						
11	34	✓	✓	=						
12	35	✓	✓	=						
15	36	✓	✓	=						

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000732

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14612712	JORGENSEN, CLAUS H.
	Examiner	Art Unit
	TUAN D NGUYEN	2656

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☒ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	09/18/2015	03/22/2016	06/09/2016						
16	37	✓	✓	=						
17	38	✓	✓	=						
18	39	✓	✓	=						
19	40	✓	✓	=						
20	41	✓	✓	=						
21	42	✓	✓	=						
7	43		✓	=						
13	44		✓	=						
14	45		✓	=						
22	46		✓	=						
23	47		✓	=						
24	48		✓	=						
25	49		✓	=						
26	50		✓	=						
27	51		✓	=						
28	52		✓	=						
29	53		✓	=						
30	54		✓	=						
31	55		✓	=						
32	56		✓	=						
33	57		✓	=						
34	58		✓	=						
35	59		✓	=						
36	60		✓	=						

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000733

To: USPTO@hspatent.com,Nokia.IPR@nokia.com,
From: PAIR_eOfficeAction@uspto.gov
Cc: PAIR_eOfficeAction@uspto.gov
Subject: Private PAIR Correspondence Notification for Customer Number 10948

Jun 15, 2016 05:55:20 AM

Dear PAIR Customer:

Harrington & Smith, Attorneys At Law, LLC
4 Research Drive, Suite 202
Shelton, CT 06484
UNITED STATES

The following USPTO patent application(s) associated with your Customer Number, 10948 , have new outgoing correspondence. This correspondence is now available for viewing in Private PAIR.

The official date of notification of the outgoing correspondence will be indicated on the form PTOL-90 accompanying the correspondence.

Disclaimer:
The list of documents shown below is provided as a courtesy and is not part of the official file wrapper. The content of the images shown in PAIR is the official record.

Application	Document	Mailroom Date	Attorney Docket No.
14612712	NOA	06/15/2016	891.0013.U5(US)

To view your correspondence online or update your email addresses, please visit us anytime at https://sportal.uspto.gov/secure/myportal/privatepair.

If you have any questions, please email the Electronic Business Center (EBC) at EBC@uspto.gov with 'e-Office Action' on the subject line or call 1-866-217-9197 during the following hours:

Monday - Friday 6:00 a.m. to 12:00 a.m.

Thank you for prompt attention to this notice,

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENT APPLICATION INFORMATION RETRIEVAL SYSTEM

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: Mail **Mail Stop ISSUE FEE**
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

10948 7590 06/15/2016
Harrington & Smith, Attorneys At Law, LLC
4 Research Drive, Suite 202
Shelton, CT 06484

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission
I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

Jessica Capra	(Depositor's name)
[signature]	(Signature)
9.15.2016	(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/612,712	02/03/2015	Claus H. Jorgensen	891.0013.U5(US)	4999

TITLE OF INVENTION: Portable Electronic Device

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	$960	$0	$0	$960	09/15/2016

EXAMINER	ART UNIT	CLASS-SUBCLASS
NGUYEN, TUAN DUC	2656	379-433080

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).
- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
- ☒ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. Use of a **Customer Number is required.**

2. For printing on the patent front page, list
(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,
(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.
1 Harrington & Smith
2
3

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE: Nokia Technologies Oy
(B) RESIDENCE: (CITY and STATE OR COUNTRY): Espoo, Finland

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☒ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:
- ☒ Issue Fee
- ☐ Publication Fee (No small entity discount permitted)
- ☐ Advance Order - # of Copies _____

4b. Payment of Fee(s): **(Please first reapply any previously paid issue fee shown above)**
- ☐ A check is enclosed.
- ☐ Payment by credit card. Form PTO-2038 is attached.
- ☒ The director is hereby authorized to charge the required fee(s), any deficiency, or credits any overpayment, to Deposit Account Number 50-1924 (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)
- ☐ Applicant certifying micro entity status. See 37 CFR 1.29 — NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.
- ☐ Applicant asserting small entity status. See 37 CFR 1.27 — NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.
- ☐ Applicant changing to regular undiscounted fee status. — NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature [signature] Date 9/15/16
Typed or printed name Juan Juan Registration No. 60,564

PTOL-85 Part B (10-13) Approved for use through 10/31/2013. OMB 0651-0033 U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Amazon.com, Inc., Amazon.com Services LLC - Ex. 1002, Page 000735

PTO/SB/47 (03-09)
Approved for use through 05/31/2015. OMB 0651-0016
U.S. Patent and Trademark Office; U. S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

"FEE ADDRESS" INDICATION FORM

Address to:
Mail Stop M Correspondence
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

- OR -

Fax to:
571-273-6500

INSTRUCTIONS: The issue fee must have been paid for application(s) listed on this form. In addition, only an address represented by a Customer Number can be established as the fee address for maintenance fee purposes (hereafter, fee address). A fee address should be established when correspondence related to maintenance fees should be mailed to a different address than the correspondence address for the application. **When to check the first box below:** If you have a Customer Number to represent the fee address. **When to check the second box below:** If you have no Customer Number representing the desired fee address, in which case a completed Request for Customer Number (PTO/SB/125) must be attached to this form. For more information on Customer Numbers, see the Manual of Patent Examining Procedure (MPEP) § 403.

For the following listed application(s), please recognize as the "Fee Address" under the provisions of 37 CFR 1.363 the address associated with:

☑ Customer Number: 00197

OR

☐ The attached Request for Customer Number (PTO/SB/125) form.

PATENT NUMBER (if known)	APPLICATION NUMBER
	14/612,712

Completed by (check one):

☐ Applicant/Inventor

☑ Attorney or Agent of record 60,564 (Reg. No.)

☐ Assignee of record of the entire interest. See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96)

☐ Assignee recorded at Reel _____ Frame_____

Signature

Juan Juan
Typed or printed name

(203) 925-9400
Requester's telephone number

9/15/16
Date

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more that one signature is required, see below*.

☐ * Total of _____ forms are submitted.

This collection of information is required by 37 CFR 1.363. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1. 11 and 1.14. This collection is estimated to take 5 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313- 1450. DO NOT SEND COMPLETED FORMS TO THIS ADDRESS.
SEND TO: Mail Stop M Correspondence, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.
If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Electronic Patent Application Fee Transmittal

Application Number:	14612712
Filing Date:	03-Feb-2015
Title of Invention:	Portable Electronic Device
First Named Inventor/Applicant Name:	Claus H. Jorgensen
Filer:	Mark F. Harrington/Jessica Capra
Attorney Docket Number:	891.0013.U5(US)

Filed as Large Entity

Filing Fees for Utility under 35 USC 111(a)

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Utility Appl Issue Fee	1501	1	960	960

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
		Total in USD ($)		**960**

Electronic Acknowledgement Receipt

EFS ID:	26937146
Application Number:	14612712
International Application Number:	
Confirmation Number:	4999
Title of Invention:	Portable Electronic Device
First Named Inventor/Applicant Name:	Claus H. Jorgensen
Customer Number:	10948
Filer:	Mark F. Harrington/Jessica Capra
Filer Authorized By:	Mark F. Harrington
Attorney Docket Number:	891.0013.U5(US)
Receipt Date:	15-SEP-2016
Filing Date:	03-FEB-2015
Time Stamp:	14:51:26
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	$960
RAM confirmation Number	1269
Deposit Account	501924
Authorized User	JUAN, JUAN
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Issue Fee Payment (PTO-85B)	IssueFeeTransmittal.pdf	98762 b73d99b953b94571552bc7eefef40477285e8a8a	no	2
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	30351 9ed34585c02b87e1247cf8856a411897f89d17ca	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	129113		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

INFORMATION DISCLOSURE CITATION FORM FOR PATENT APPLICATION (FORM PTO-1449) (Substitute)	Docket No. 891.0013.U5(US) Serial No.: 14/612,712 Applicant(s): Jorgensen, Claus H. Filing Date: February 3, 2015 Group: 2656

U.S. PATENT DOCUMENTS

Examiner Initials	Document Number (Number-Kind Code)	Publication Date (MM-DD-YYYY)	Name of Patentee or Applicant	Class	Sub-class
	US-6,112,077	08-29-2000	Spitaletta et al.	455	407
	US-6,181,954 B1	01-30-2001	Monroe et al.	455	557
	US-6,352,434 B1	03-05-2002	Emmert	439	65
	US-7,324,152	01-29-2008	Yoon	348	360
	US-7,353,003 B2	04-01-2008	Boman et al.	455	90.3
	US-7,388,616 B2	06-17-2008	Yamazaki	348	373
	US-7,724,532 B2	05-25-2010	Zadesky et al.	361	752
	US-2004/0125947 A1	07-01-2004	Charlier et al.	379	433.07
Change(s) applied to document, /J.M./ 6/24/2016	US-2006/0197863 A1 09/2006	~~07-07-2006~~	Kim	348	335
	US-2005/0282594 A1	12-22-2005	Oldham	455	575.3
	US-5,164,542	11-17-1992	Hart	174	35 MS
	US-6,625,030 B1	09-23-2003	Haixiong	361	737
	US-6,490,439 B1	12-03-2002	Croft et al.	455	90
	US-2003/0092468 A1	05-15-2003	North	455	556
	US-2006/0062624 A1	03-23-2006	Choi	400	481
	US-2005/0140778 A1	06-30-2005	Kim et al.	348	14.02
	US-2004/0252220 A1	12-16-2004	Oda et al.	348	333.06

FOREIGN PATENT DOCUMENTS

Examiner Initials	Document Number (Country Code-Number-Kind Code)	Publication Date (MM-DD-YYYY)	Name Of Patentee of Applicant	Translation? Yes/No/n/a
	CN-2660807-Y	12-01-2004	Xianxin Electronics Co. Ltd.	Abstract only
	CN-1725783-A	01-25-2006	LG Electronics (China) Research & Development Center Co., Ltd.	Bibl. data only
	JPH-06-026339-U	01-17-1990		Yes
	JP-2000-156135-	06-06-2000	Kenwood Corp.	Yes
	JP-2002-125031-	04-26-2002	Sony Corp.	Yes
	JP-2002-271664-	09-20-2002	Sanyo Electric Co. Ltd.	Yes
	JP-2003-274234-	09-26-2003	Casio Comput. Co. Ltd.	Yes

OTHER DOCUMENTS (Author (Capitalize), Title, Date, Pages, Etc., if known)

Examiner's Signature: /Tuan Nguyen/ Date Considered: 03/21/2016

Initial if reference was considered, whether or not citation is in conformance with MPEP. Mark through citation if not considered. Include a copy of this citation form with your next correspondence to the Applicant(s).

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /T.N./

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/612,712	10/18/2016	9473602	891.0013.U5(US)	4999

10948 7590 09/28/2016

Harrington & Smith, Attorneys At Law, LLC
4 Research Drive, Suite 202
Shelton, CT 06484

ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(application filed on or after May 29, 2000)

The Patent Term Adjustment is 0 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (http://pair.uspto.gov).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Application Assistance Unit (AAU) of the Office of Data Management (ODM) at (571)-272-4200.

APPLICANT(s) (Please see PAIR WEB site http://pair.uspto.gov for additional applicants):

Claus H. Jorgensen, Bronshoj, DENMARK;
Nokia Technologies Oy, Espoo, FINLAND;

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The USA offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to encourage and facilitate business investment. To learn more about why the USA is the best country in the world to develop technology, manufacture products, and grow your business, visit SelectUSA.gov.

To: USPTO@hspatent.com,Nokia.IPR@nokia.com,
From: PAIR_eOfficeAction@uspto.gov
Cc: PAIR_eOfficeAction@uspto.gov
Subject: Private PAIR Correspondence Notification for Customer Number 10948

Sep 29, 2016 05:28:56 AM

Dear PAIR Customer:

Harrington & Smith, Attorneys At Law, LLC
4 Research Drive, Suite 202
Shelton, CT 06484
UNITED STATES

The following USPTO patent application(s) associated with your Customer Number, 10948 , have new outgoing correspondence. This correspondence is now available for viewing in Private PAIR.

The official date of notification of the outgoing correspondence will be indicated on the form PTOL-90 accompanying the correspondence.

Disclaimer:
The list of documents shown below is provided as a courtesy and is not part of the official file wrapper. The content of the images shown in PAIR is the official record.

Application	Document	Mailroom Date	Attorney Docket No.
14612712	ISSUE.NTF	09/28/2016	891.0013.U5(US)

To view your correspondence online or update your email addresses, please visit us anytime at https://sportal.uspto.gov/secure/myportal/privatepair.

If you have any questions, please email the Electronic Business Center (EBC) at EBC@uspto.gov with 'e-Office Action' on the subject line or call 1-866-217-9197 during the following hours:

Monday - Friday 6:00 a.m. to 12:00 a.m.

Thank you for prompt attention to this notice,

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENT APPLICATION INFORMATION RETRIEVAL SYSTEM

AO 120 (Rev. 08/10)

TO:	Mail Stop 8 Director of the U.S. Patent and Trademark Office P.O. Box 1450 Alexandria, VA 22313-1450	REPORT ON THE FILING OR DETERMINATION OF AN ACTION REGARDING A PATENT OR TRADEMARK

In Compliance with 35 U.S.C. § 290 and/or 15 U.S.C. § 1116 you are hereby advised that a court action has been filed in the U.S. District Court Eastern District of Texas on the following

☐ Trademarks or ☑ Patents. (☐ the patent action involves 35 U.S.C. § 292.):

DOCKET NO.	DATE FILED	U.S. DISTRICT COURT
2:16-cv-1441	12/21/2016	Eastern District of Texas

PLAINTIFF	DEFENDANT
Nokia Technologies Oy and Alcatel-Lucent USA Inc.	Apple Inc.

	PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1	US 6,393,260	5/21/2002	Nokia Technologies Oy
2	US6,480,700	11/12/2002	Nokia Technologies Oy
3	US6,826,391	11/30/2004	Nokia Technologies Oy
4	US7,415,247	8/19/2008	Nokia Technologies Oy
5	US7,653,366	1/26/2010	Nokia Technologies Oy

In the above—entitled case, the following patent(s)/ trademark(s) have been included:

DATE INCLUDED	INCLUDED BY ☐ Amendment ☐ Answer ☐ Cross Bill ☐ Other Pleading		
	PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1	US8,036,619	10/11/2011	Nokia Technologies Oy
2	US9,270,301	2/23/2016	Nokia Technologies Oy
3	US9,473,602	10/18/2016	Nokia Technologies Oy
4	US6,208,725	3/27/2001	Alcatel-Lucent USA Inc.
5	US6,701,294	3/2/2004	Alcatel-Lucent USA Inc.

In the above—entitled case, the following decision has been rendered or judgement issued:

DECISION/JUDGEMENT

CLERK	(BY) DEPUTY CLERK	DATE

Copy 1—Upon initiation of action, mail this copy to Director Copy 3—Upon termination of action, mail this copy to Director
Copy 2—Upon filing document adding patent(s), mail this copy to Director Copy 4—Case file copy

AO 120 (Rev. 08/10)

TO:	REPORT ON THE FILING OR DETERMINATION OF AN ACTION REGARDING A PATENT OR TRADEMARK
Mail Stop 8 Director of the U.S. Patent and Trademark Office P.O. Box 1450 Alexandria, VA 22313-1450	

In Compliance with 35 U.S.C. § 290 and/or 15 U.S.C. § 1116 you are hereby advised that a court action has been filed in the U.S. District Court Texas Eastern District Court -Marshall Div on the following

☐ Trademarks or ☑ Patents. (☐ the patent action involves 35 U.S.C. § 292.):

DOCKET NO.	DATE FILED	U.S. DISTRICT COURT
16cv1441	12/21/2016	Texas Eastern District Court -Marshall Div

PLAINTIFF	DEFENDANT
Nokia Tech.	Apple Inc.

	PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1	7,415,247		
2	9,270,301		
3	8,036,619		
4	6,393,260		
5	6,480,700		

In the above—entitled case, the following patent(s)/ trademark(s) have been included:

DATE INCLUDED	INCLUDED BY ☐ Amendment ☐ Answer ☐ Cross Bill ☐ Other Pleading	
PATENT OR TRADEMARK NO.	DATE OF PATENT OR TRADEMARK	HOLDER OF PATENT OR TRADEMARK
1 7,653,366		
2 6,826,391		
3 9,473,602		
4 6,208,725		
5 6,701,294		

In the above—entitled case, the following decision has been rendered or judgement issued:

DECISION/JUDGEMENT

CLERK	(BY) DEPUTY CLERK	DATE

Copy 1—Upon initiation of action, mail this copy to Director Copy 3—Upon termination of action, mail this copy to Director
Copy 2—Upon filing document adding patent(s), mail this copy to Director Copy 4—Case file copy