

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	1	14/478020	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2016/02/21 17:47
L2	2	("7496211").PN.	US-PGPUB; USPAT; USOCR; DERWENT	OR	OFF	2016/02/21 17:48
L3	2	("20070019083").PN.	US-PGPUB; USPAT; USOCR; DERWENT	OR	OFF	2016/02/21 17:48
L4	2	("7496211").PN.	US-PGPUB; USPAT; USOCR; DERWENT	OR	OFF	2016/02/21 18:21
L5	2	("7634662").PN.	US-PGPUB; USPAT; USOCR; DERWENT	OR	OFF	2016/02/21 18:21
L6	2	("20080019665").PN.	US-PGPUB; USPAT; USOCR; DERWENT	OR	OFF	2016/02/21 18:21
L7	2	("20090016575").PN.	US-PGPUB; USPAT; USOCR; DERWENT	OR	OFF	2016/02/21 18:22
L8	2	("20080256450").PN.	US-PGPUB; USPAT; USOCR; DERWENT	OR	OFF	2016/02/21 18:22
L9	2	("20070019083").PN.	US-PGPUB; USPAT; USOCR; DERWENT	OR	OFF	2016/02/21 18:22

2/ 21/ 2016 6:28:04 PM

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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. 6527

SERIAL NUMBER 14/478,020	FILING or 371(c) DATE 09/05/2014 RULE	CLASS 386	GROUP ART UNIT 2484	ATTORNEY DOCKET NO. ASA-9940-02		
APPLICANTS HITACHI MAXELL, LTD., Osaka, JAPAN; INVENTORS Mari YOSHIDA, Yokohama, JAPAN; ** CONTINUING DATA ***** This application is a CON of 12/430,185 04/27/2009 PAT 9159368 ** FOREIGN APPLICATIONS ***** JAPAN 2008-130678 05/19/2008 ** IF REQUIRED, FOREIGN FILING LICENSE GRANTED ** 09/11/2014						
Foreign Priority claimed ☒ Yes ☐ No 35 USC 119(a-d) conditions met ☒ Yes ☐ No Verified and Acknowledged <u>/SYED Y HASAN/</u> Examiner's Signature		☐ Met after Allowance Initials	STATE OR COUNTRY JAPAN	SHEETS DRAWINGS 12	TOTAL CLAIMS 1	INDEPENDENT CLAIMS 1
ADDRESS MATTINGLY & MALUR, PC 1800 DIAGONAL ROAD SUITE 210 ALEXANDRIA, VA 22314 UNITED STATES						
TITLE RECORDING AND REPRODUCING APPARATUS AND METHOD THEREOF						
FILING FEE RECEIVED 1740	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			

<i>Index of Claims</i> 	Application/Control No. 14478020	Applicant(s)/Patent Under Reexamination YOSHIDA, MARI
	Examiner SYED HASAN	Art Unit 2484

✓	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	02/21/2016							
	1	✓							



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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
14/478,020	09/05/2014	Mari YOSHIDA	072388.0730

21003
BAKER BOTTS L.L.P.
30 ROCKEFELLER PLAZA
44TH FLOOR
NEW YORK, NY 10112-4498

CONFIRMATION NO. 6527
POWER OF ATTORNEY NOTICE



Date Mailed: 07/10/2015

NOTICE REGARDING CHANGE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 07/01/2015.

- The Power of Attorney to you in this application has been revoked by the applicant. Future correspondence will be mailed to the new address of record(37 CFR 1.33).

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at (571) 272-4000 or (571) 272-4200 or 1-888-786-0101.

/sleutchit/



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UNITED STATES DEPARTMENT OF COMMERCE
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www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
14/478,020	09/05/2014	Mari YOSHIDA	072388.0730

24956
MATTINGLY & MALUR, PC
1800 DIAGONAL ROAD
SUITE 210
ALEXANDRIA, VA 22314

CONFIRMATION NO. 6527
POA ACCEPTANCE LETTER



Date Mailed: 07/10/2015

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 07/01/2015.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at (571) 272-4000 or (571) 272-4200 or 1-888-786-0101.

/sleutchit/

STATEMENT UNDER 37 CFR 3.73(c)Applicant/Patent Owner: YOSHIDA, M.Application No./Patent No.: 14/478,020 Filed/Issue Date: September 5, 2014Titled: RECORDING AND REPRODUCING APPARATUS AND METHOD THEREOFHITACHI MAXELL, LTD., a CORPORATION

(Name of Assignee)

(Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

states that, for the patent application/patent identified above, it is (choose one of options 1, 2, 3 or 4 below):

1. ☒ The assignee of the entire right, title, and interest.
2. ☐ An assignee of less than the entire right, title, and interest (check applicable box):
- ☐ The extent (by percentage) of its ownership interest is _____%. Additional Statement(s) by the owners holding the balance of the interest must be submitted to account for 100% of the ownership interest.
- ☐ There are unspecified percentages of ownership. The other parties, including inventors, who together own the entire right, title and interest are:

Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

3. ☐ The assignee of an undivided interest in the entirety (a complete assignment from one of the joint inventors was made). The other parties, including inventors, who together own the entire right, title, and interest are:

Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

4. ☐ The recipient, via a court proceeding or the like (e.g., bankruptcy, probate), of an undivided interest in the entirety (a complete transfer of ownership interest was made). The certified document(s) showing the transfer is attached.

The interest identified in option 1, 2 or 3 above (not option 4) is evidenced by either (choose one of options A or B below):

- A. ☐ An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the United States Patent and Trademark Office at Reel _____, Frame _____, or for which a copy thereof is attached.
- B. ☒ A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as follows:

1. From: YOSHIDA, M. To: HITACHI, LTD.The document was recorded in the United States Patent and Trademark Office at
Reel 22596, Frame 0595, or for which a copy thereof is attached.2. From: HITACHI, LTD. To: HITACHI CONSUMER ELECTRONICS CO., LTD.The document was recorded in the United States Patent and Trademark Office at
Reel 30622, Frame 0001, or for which a copy thereof is attached.

[Page 1 of 2]

This collection of information is required by 37 CFR 3.73(b). 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.

STATEMENT UNDER 37 CFR 3.73(c)3. From: HITACHI CONSUMER ELECTRONICS CO., LTD. To: HITACHI MAXELL, LTD.

The document was recorded in the United States Patent and Trademark Office at
 Reel 33685, Frame 0883, or for which a copy thereof is attached.

4. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at
 Reel _____, Frame _____, or for which a copy thereof is attached.

5. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at
 Reel _____, Frame _____, or for which a copy thereof is attached.

6. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at
 Reel _____, Frame _____, or for which a copy thereof is attached.

☐ Additional documents in the chain of title are listed on a supplemental sheet(s).

☒ As required by 37 CFR 3.73(c)(1)(i), the documentary evidence of the chain of title from the original owner to the assignee was, or concurrently is being, submitted for recordation pursuant to 37 CFR 3.11.

[NOTE: A separate copy (i.e., a true copy of the original assignment document(s)) must be submitted to Assignment Division in accordance with 37 CFR Part 3, to record the assignment in the records of the USPTO. See MPEP 302.08]

The undersigned (whose title is supplied below) is authorized to act on behalf of the assignee.

/John R. Mattingly/

2015-07-01

Signature

Date

John R. Mattingly

30,293

Printed or Typed Name

Title or Registration 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.

Electronic Acknowledgement Receipt

EFS ID:	22797997
Application Number:	14478020
International Application Number:	
Confirmation Number:	6527
Title of Invention:	RECORDING AND REPRODUCING APPARATUS AND METHOD THEREOF
First Named Inventor/Applicant Name:	Mari YOSHIDA
Customer Number:	21003
Filer:	John Roberts Mattingly/Emily Scotti
Filer Authorized By:	John Roberts Mattingly
Attorney Docket Number:	072388.0730
Receipt Date:	01-JUL-2015
Filing Date:	05-SEP-2014
Time Stamp:	14:42:09
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Power of Attorney	9940-02-POA-HitachiMaxell-80.pdf	42979 bbb785ce9a13fc69f871c8ad17c5f9c950eb4661	no	1

Warnings:

Information:

2	Power of Attorney	9940-02-HitachiMaxell-373c.pdf	135744 70de7eaec978d211b12da5b090de8e3ca4dffe	no	3
Warnings:					
Information:					
Total Files Size (in bytes):				178723	
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.					

POWER OF ATTORNEY TO PROSECUTE APPLICATIONS BEFORE THE USPTO

I hereby revoke all previous powers of attorney given in the application identified in the attached statement under 37 CFR 3.73(c).

I hereby appoint:



Practitioners associated with Customer Number:

24956

OR



Practitioner(s) named below (if more than ten patent practitioners are to be named, then a customer number must be used):

Name	Registration Number

Name	Registration Number

As attorney(s) or agent(s) to represent the undersigned before the United States Patent and Trademark Office (USPTO) in connection with any and all patent applications assigned only to the undersigned according to the USPTO assignment records or assignments documents attached to this form in accordance with 37 CFR 3.73(c).

Please change the correspondence address for the application identified in the attached statement under 37 CFR 3.73(c) to:



The address associated with Customer Number:

24956

OR

☐	Firm or Individual Name		
	Address		
	City		
	Country		
	Telephone		Email

Assignee Name and Address: HITACHI MAXELL, LTD.
1-88, Ushitora 1-chome, Ibaraki-shi, Osaka 567-8567, Japan

A copy of this form, together with a statement under 37 CFR 3.73(c) (Form PTO/SB/96 or equivalent) is required to be Filed in each application in which this form is used. The statement under 37 CFR 3.73(c) may be completed by one of The practitioners appointed in this form, and must identify the application in which this Power of Attorney is to be filed.

SIGNATURE of Assignee of Record

The individual whose signature and title is supplied below is authorized to act on behalf of the assignee

Signature		Date	27/08/2014
Name	Yoshihiro SENZAI	Telephone	
Title	President & Chief Executive Officer, HITACHI MAXELL, LTD.		

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.

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
14/478,020	09/05/2014	Mari YOSHIDA	072388.0730

21003
BAKER BOTTS L.L.P.
30 ROCKEFELLER PLAZA
44TH FLOOR
NEW YORK, NY 10112-4498

CONFIRMATION NO. 6527
POA ACCEPTANCE LETTER



Date Mailed: 04/27/2015

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 04/20/2015.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

/qtran/

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



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UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY. DOCKET NO	TOT CLAIMS	IND CLAIMS
14/478,020	09/05/2014	2484	1740	072388.0730	1	1

CONFIRMATION NO. 6527

REPLACEMENT FILING RECEIPT



21003
BAKER BOTTS L.L.P.
30 ROCKEFELLER PLAZA
44TH FLOOR
NEW YORK, NY 10112-4498

Date Mailed: 04/27/2015

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)

Mari YOSHIDA, Yokohama, JAPAN;

Applicant(s)

HITACHI MAXELL, LTD., Osaka, JAPAN

Assignment For Published Patent Application

HITACHI MAXELL, LTD., Osaka, JAPAN

Power of Attorney: The patent practitioners associated with Customer Number 21003

Domestic Priority data as claimed by applicant

This application is a CON of 12/430,185 04/27/2009

Foreign Applications (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see <http://www.uspto.gov> for more information.)
JAPAN 2008-130678 05/19/2008

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.

Request to Retrieve - This application either claims priority to one or more applications filed in an intellectual property Office that participates in the Priority Document Exchange (PDX) program or contains a proper **Request to Retrieve Electronic Priority Application(s)** (PTO/SB/38 or its equivalent). Consequently, the USPTO will attempt to electronically retrieve these priority documents.

If Required, Foreign Filing License Granted: 09/11/2014

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 14/478,020**

Projected Publication Date: Not Applicable

Non-Publication Request: No

Early Publication Request: No

Title

RECORDING AND REPRODUCING APPARATUS AND METHOD THEREOF

Preliminary Class

386

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).

LICENSE FOR FOREIGN FILING UNDER
Title 35, United States Code, Section 184
Title 37, Code of Federal Regulations, 5.11 & 5.15

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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 Assets Control, 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.

POWER OF ATTORNEY TO PROSECUTE APPLICATIONS BEFORE THE USPTO

I hereby revoke all previous powers of attorney given in the application identified in the attached statement under 37 CFR 3.73(c).

I hereby appoint:

☒ Practitioners associated with Customer Number:

21003

OR

☐ Practitioner(s) named below (if more than ten patent practitioners are to be named, then a customer number must be used):

Name	Registration Number

Name	Registration Number

As attorney(s) or agent(s) to represent the undersigned before the United States Patent and Trademark Office (USPTO) in connection with any and all patent applications assigned only to the undersigned according to the USPTO assignment records or assignments documents attached to this form in accordance with 37 CFR 3.73(c).

Please change the correspondence address for the application identified in the attached statement under 37 CFR 3.73(c) to:

☒ The address associated with Customer Number:

21003

OR

☐ Firm or Individual Name			
Address			
City	State	Zip	
Country			
Telephone			Email

Assignee Name and Address: HITACHI MAXELL, LTD.
1-88, USHITORA 1-CHOME, IBARAKI-SHI,
OSAKA, JAPAN

A copy of this form, together with a statement under 37 CFR 3.73(c) (Form PTO/AIA/96 or equivalent) is required to be filed in each application in which this form is used. The statement under 37 CFR 3.73(c) may be completed by one of the practitioners appointed in this form, and must identify the application in which this Power of Attorney is to be filed.

SIGNATURE of Assignee of Record

The individual whose signature and title is supplied below is authorized to act on behalf of the assignee

Signature		Date	01/14/2015
Name	Yoshihiro SENZAI	Telephone	
Title	President & Chief Executive Officer		

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.

STATEMENT UNDER 37 CFR 3.73(c)

Applicant/Patent Owner: Hitachi Maxell, Ltd.

Application No./Patent No.: 14/478,020

Filed/Issue Date: 09/05/14

Titled: Recording And Reproducing Apparatus And Method Thereof

Hitachi Maxell, Ltd., a Corporation

(Name of Assignee)

(Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

states that, for the patent application/patent identified above, it is (choose one of options 1, 2, 3 or 4 below):

1. ☒ The assignee of the entire right, title, and interest.

2. ☐ An assignee of less than the entire right, title, and interest (check applicable box):

☐ The extent (by percentage) of its ownership interest is ____%. Additional Statement(s) by the owners holding the balance of the interest must be submitted to account for 100% of the ownership interest.

☐ There are unspecified percentages of ownership. The other parties, including inventors, who together own the entire right, title and interest are:

Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

3. ☐ The assignee of an undivided interest in the entirety (a complete assignment from one of the joint inventors was made). The other parties, including inventors, who together own the entire right, title, and interest are:

Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

4. ☐ The recipient, via a court proceeding or the like (e.g., bankruptcy, probate), of an undivided interest in the entirety (a complete transfer of ownership interest was made). The certified document(s) showing the transfer is attached.

The interest identified in option 1, 2 or 3 above (not option 4) is evidenced by either (choose one of options A or B below):

A. ☐ An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the United States Patent and Trademark Office at Reel _____, Frame _____, or for which a copy thereof is attached.

B. ☒ A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as follows:

1. From: Mari Yoshida To: Hitachi, Ltd.

The document was recorded in the United States Patent and Trademark Office at

Reel 022596, Frame 0595, or for which a copy thereof is attached.

2. From: Hitachi, Ltd. To: Hitachi Consumer Electronics Co., Ltd.

The document was recorded in the United States Patent and Trademark Office at

Reel 030622, Frame 0001, or for which a copy thereof is attached.

[Page 1 of 2]

This collection of information is required by 37 CFR 3.73(b). 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.

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.

STATEMENT UNDER 37 CFR 3.73(c)3. From: Hitachi Consumer Electronics Co., Ltd. To: Hitachi Maxell, Ltd.The document was recorded in the United States Patent and Trademark Office at
Reel 033685, Frame 0883, or for which a copy thereof is attached.

4. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at
Reel _____, Frame _____, or for which a copy thereof is attached.

5. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at
Reel _____, Frame _____, or for which a copy thereof is attached.

6. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at
Reel _____, Frame _____, or for which a copy thereof is attached.☐ Additional documents in the chain of title are listed on a supplemental sheet(s).☒ As required by 37 CFR 3.73(c)(1)(i), the documentary evidence of the chain of title from the original owner to the assignee was, or concurrently is being, submitted for recordation pursuant to 37 CFR 3.11.

[NOTE: A separate copy (i.e., a true copy of the original assignment document(s)) must be submitted to Assignment Division in accordance with 37 CFR Part 3, to record the assignment in the records of the USPTO. See MPEP 302.08]

The undersigned (whose title is supplied below) is authorized to act on behalf of the assignee.

/Robert C. Scheinfeld/

Signature

Robert C. Scheinfeld

Printed or Typed Name

March 13, 2015

Date

31,300

Title or Registration Number

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	500.49882CX1 072388.0730
		Application Number	14/478,020
Title of Invention	RECORDING AND REPRODUCING APPARATUS AND METHOD THEREOF		
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
	Mari		YOSHIDA	
Residence Information (Select One) ☐ US Residency ☒ Non US Residency ☐ Active US Military Service				
City	Yokohama	Country of Residence ⁱ	JP	
Mailing Address of Inventor:				
Address 1		c/o Hitachi, Ltd., Intellectual Property Group		
Address 2		6-1, Marunouchi 1-chome, Chiyoda-ku		
City	Tokyo	State/Province		
Postal Code	100-8220	Country ⁱ	JP	
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	20457 21003			
Email Address	email@antonelli.com	Add Email	Remove Email	

Application Information:

Title of the Invention	RECORDING AND REPRODUCING APPARATUS AND METHOD THEREOF			
Attorney Docket Number	500.49882CX1 072388.0730	Small Entity Status Claimed ☐		
Application Type	Nonprovisional			
Subject Matter	Utility			
Total Number of Drawing Sheets (if any)	12	Suggested Figure for Publication (if any)		

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	600-49882CX1 072388.0730
		Application Number	14/478,020
Title of Invention	RECORDING AND REPRODUCING APPARATUS AND METHOD THEREOF		

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	20457 21003		

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	Pending	Remove	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
	Continuation of	12430185	2009-04-27
Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the Add button.			Add

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)¹ 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 ¹	Filing Date (YYYY-MM-DD)	Access Code ¹ (if applicable)
2008-130678	JP	2008-05-19	

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	500.49882CX4 072388.0730
		Application Number	14/478,020
Title of Invention	RECORDING AND REPRODUCING APPARATUS AND METHOD THEREOF		

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

Add

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

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 of 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.

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	500-49882CX1 072388.0730
	Application Number	14/478,020
Title of Invention RECORDING AND REPRODUCING APPARATUS AND METHOD THEREOF		

Applicant 1		Remove	
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	
☐ 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	HITACHI CONSUMER ELECTRONICS CO., LTD. HITACHI MAXELL LTD.		
Mailing Address Information For Applicant:			
Address 1	2-1, OTEMACHI 2-CHOME, CHIYODA-KU 1-88, USHITORA 1-CHOME, IBARAKI-SHI		
Address 2			
City	TOKYO OSAKA	State/Province	
Country	JP	Postal Code	400-0004 567-8567
Phone Number		Fax Number	
Email Address			
Additional Applicant Data may be generated within this form by selecting the Add button. Add			

Assignee Information including Non-Applicant Assignee 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.

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

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	500-49882CX1 072388.0730
		Application Number	14/478,020
Title of Invention	RECORDING AND REPRODUCING APPARATUS AND METHOD THEREOF		

Organization Name	HITACHI MAXELL, LTD.
-------------------	----------------------

Mailing Address Information For Assignee including Non-Applicant Assignee:

Address 1		1-88, USHITORA 1-CHOME, IBARAKI-SHI	
Address 2			
City		OSAKA	State/Province
Country i	JP	Postal Code	567-8567
Phone Number		Fax Number	
Email Address			

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

Add

Signature:

Remove

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

Signature	/Robert C. Scheinfeld		Date (YYYY-MM-DD)	2015-04-16
First Name	Robert	Last Name	Scheinfeld	Registration Number
			31300	

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

Add

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.**

Electronic Acknowledgement Receipt

EFS ID:	22113959
Application Number:	14478020
International Application Number:	
Confirmation Number:	6527
Title of Invention:	RECORDING AND REPRODUCING APPARATUS AND METHOD THEREOF
First Named Inventor/Applicant Name:	Mari YOSHIDA
Customer Number:	20457
Filer:	Robert C. Scheinfeld
Filer Authorized By:	
Attorney Docket Number:	500.49882CX1
Receipt Date:	20-APR-2015
Filing Date:	05-SEP-2014
Time Stamp:	17:38:50
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
------------------------	----

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		0730.pdf	417705 4f5991ac355210577bb604f6f5cdcaf82283c0a7	yes	8

	Multipart Description/PDF files in .zip description		
	Document Description	Start	End
	Power of Attorney	1	1
	Assignee showing of ownership per 37 CFR 3.73	2	3
	Application Data Sheet	4	8
Warnings:			
Information:			
Total Files Size (in bytes):		417705	
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	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
14/478,020	09/05/2014	Mari YOSHIDA	500.49882CX1

CONFIRMATION NO. 6527

MISCELLANEOUS NOTICE



20457
ANTONELLI, TERRY, STOUT & KRAUS, LLP
1300 NORTH SEVENTEENTH STREET
SUITE 550
ARLINGTON, VA 22209-3873

Date Mailed: 03/20/2015

A communication which cannot be delivered in electronic form has been mailed to the applicant.



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 DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
14/478,020	09/05/2014	Mari YOSHIDA	500.49882CX1

CONFIRMATION NO. 6527

20457
 ANTONELLI, TERRY, STOUT & KRAUS, LLP
 1300 NORTH SEVENTEENTH STREET
 SUITE 550
 ARLINGTON, VA 22209-3873



OC000000074124879

Cc: BAKER BOTTS L.L.P.
 30 ROCKEFELLER PLAZA
 44TH FLOOR
 NEW YORK, NY 10112-4498

Date Mailed: 03/20/2015

DENIAL OF REQUEST FOR POWER OF ATTORNEY

The request for Power of Attorney filed 03/13/2015 is acknowledged. However, the request cannot be granted at this time for the reason stated below.

- ☐ The Power of Attorney you provided did not comply with the new Power of Attorney rules that became effective on June 25, 2004. See 37 CFR 1.32.
- ☐ The revocation is not signed by the applicant, the assignee of the entire interest, or one particular principal attorney having the authority to revoke.
- ☐ The Power of Attorney is from an assignee and the Certificate required by 37 CFR 3.73(c) has not been received.
- ☐ The person signing for the assignee has omitted their empowerment to sign on behalf of the assignee.
- ☐ The inventor(s) is without authority to appoint attorneys since the assignee has intervened as provided by 37 CFR 3.71.
- ☐ The signature(s) of _____, a co-inventor in this application, has been omitted. The Power of Attorney will be entered upon receipt of confirmation signed by said co-inventor(s).
- ☐ The person(s) appointed in the Power of Attorney is not registered to practice before the U.S. Patent and Trademark Office.
- ☐ Only one Customer Number can be designated for the Power of Attorney in an application. The Customer Number that was captured is the first Customer Number provided on the Power of Attorney document.



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

- ☐ A request under 37 CFR 1.48 to add an inventor was granted in this application, however, no power of attorney consistent with the power of attorney granted by the originally named inventive entity has been received. Thus, the addition of the inventor has resulted in the loss of power of attorney in the application. See 37 CFR 1.32(e).
- ☒ The power of attorney has not been accepted because the party who is giving power of attorney has not been identified. Power of attorney may only be signed by the applicant for patent (37 CFR 1.42) or the patent owner. A patent owner who was not the applicant must appoint any power of attorney in compliance with 37 CFR 3.71 and 3.73. See 37 CFR 1.32(b)(4).
- ☐ The power of attorney from the inventors has not been accepted because it is a copy from a prior national application for which benefit is claimed and the continuing application names an inventor who was not named as an inventor in the prior application.
- ☐ The power of attorney from the inventors has not been accepted because the power of attorney must be signed by the applicant for patent. See 37 CFR 1.32(b)(4).
- ☒ Any request to correct or update the name of the applicant must include an application data sheet (ADS) in compliance with 37 CFR 1.76 specifying the correct or updated name of the applicant in the applicant information section. Any request to change the applicant after an original applicant has been specified under 37 CFR 1.46(b) must include a new ADS in compliance with 37 CFR 1.76 specifying the applicant in the applicant information section and comply with 37 CFR 3.71 and 3.73. See 37 CFR 1.46(c).

Any inquiries regarding this notice should be directed to the Application Assistance Unit at 571-272-4200.



Application Assistance Unit
571-272-4200

POWER OF ATTORNEY TO PROSECUTE APPLICATIONS BEFORE THE USPTO

I hereby revoke all previous powers of attorney given in the application identified in the attached statement under 37 CFR 3.73(c).

I hereby appoint:

☒ Practitioners associated with Customer Number:

21003

OR

☐ Practitioner(s) named below (if more than ten patent practitioners are to be named, then a customer number must be used):

Name	Registration Number

Name	Registration Number

As attorney(s) or agent(s) to represent the undersigned before the United States Patent and Trademark Office (USPTO) in connection with any and all patent applications assigned only to the undersigned, according to the USPTO assignment records or assignments documents attached to this form in accordance with 37 CFR 3.73(c).

Please change the correspondence address for the application identified in the attached statement under 37 CFR 3.73(c) to:

☒ The address associated with Customer Number:

21003

OR

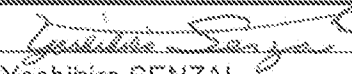
☐ Firm or Individual Name			
Address			
City	State	Zip	
Country			
Telephone	Email		

Assignee Name and Address: HITACHI MAXELL, LTD.
1-88, USHITORA 1-CHOME, IBARAKI-SHI,
OSAKA, JAPAN

A copy of this form, together with a statement under 37 CFR 3.73(c) (Form PTO/AIA/96 or equivalent) is required to be filed in each application in which this form is used. The statement under 37 CFR 3.73(c) may be completed by one of The practitioners appointed in this form, and must identify the application in which this Power of Attorney is to be filed.

SIGNATURE of Assignee of Record

The individual whose signature and title is supplied below is authorized to act on behalf of the assignee.

Signature		Date	01/14/2015
Name	Yoshihiro SENZAI	Telephone	
Title	President & Chief Executive Officer		

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.

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STATEMENT UNDER 37 CFR 3.73(c)Applicant/Patent Owner: Hitachi Maxell, Ltd.Application No./Patent No.: 14/478,020 Filed/Issue Date: 09/05/14Titled: Recording And Reproducing Apparatus And Method ThereofHitachi Maxell, Ltd., a Corporation

(Name of Assignee)

(Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

states that, for the patent application/patent identified above, it is (choose one of options 1, 2, 3 or 4 below):

1. ☒ The assignee of the entire right, title, and interest.
2. ☐ An assignee of less than the entire right, title, and interest (check applicable box):
- ☐ The extent (by percentage) of its ownership interest is _____%. Additional Statement(s) by the owners holding the balance of the interest must be submitted to account for 100% of the ownership interest.
- ☐ There are unspecified percentages of ownership. The other parties, including inventors, who together own the entire right, title and interest are:

Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

3. ☐ The assignee of an undivided interest in the entirety (a complete assignment from one of the joint inventors was made). The other parties, including inventors, who together own the entire right, title, and interest are:

Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

4. ☐ The recipient, via a court proceeding or the like (e.g., bankruptcy, probate), of an undivided interest in the entirety (a complete transfer of ownership interest was made). The certified document(s) showing the transfer is attached.

The interest identified in option 1, 2 or 3 above (not option 4) is evidenced by either (choose one of options A or B below):

- A. ☐ An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the United States Patent and Trademark Office at Reel _____, Frame _____, or for which a copy thereof is attached.
- B. ☒ A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as follows:

1. From: Mari Yoshida To: Hitachi, Ltd.The document was recorded in the United States Patent and Trademark Office at
Reel 022596, Frame 0595, or for which a copy thereof is attached.2. From: Hitachi, Ltd. To: Hitachi Consumer Electronics Co., Ltd.The document was recorded in the United States Patent and Trademark Office at
Reel 030622, Frame 0001, or for which a copy thereof is attached.

[Page 1 of 2]

This collection of information is required by 37 CFR 3.73(b). 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.**

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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.

STATEMENT UNDER 37 CFR 3.73(c)3. From: Hitachi Consumer Electronics Co., Ltd. To: Hitachi Maxell, Ltd.The document was recorded in the United States Patent and Trademark Office at
Reel 033685, Frame 0883, or for which a copy thereof is attached.

4. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at
Reel _____, Frame _____, or for which a copy thereof is attached.

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The document was recorded in the United States Patent and Trademark Office at
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6. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at
Reel _____, Frame _____, or for which a copy thereof is attached.☐ Additional documents in the chain of title are listed on a supplemental sheet(s).☒ As required by 37 CFR 3.73(c)(1)(i), the documentary evidence of the chain of title from the original owner to the assignee was, or concurrently is being, submitted for recordation pursuant to 37 CFR 3.11.

[NOTE: A separate copy (i.e., a true copy of the original assignment document(s)) must be submitted to Assignment Division in accordance with 37 CFR Part 3, to record the assignment in the records of the USPTO. See MPEP 302.08]

The undersigned (whose title is supplied below) is authorized to act on behalf of the assignee.

/Robert C. Scheinfeld/March 13, 2015

Signature

Date

Robert C. Scheinfeld31,300

Printed or Typed Name

Title or Registration Number

Electronic Acknowledgement Receipt

EFS ID:	21770358
Application Number:	14478020
International Application Number:	
Confirmation Number:	6527
Title of Invention:	RECORDING AND REPRODUCING APPARATUS AND METHOD THEREOF
First Named Inventor/Applicant Name:	Mari YOSHIDA
Customer Number:	20457
Filer:	Robert C. Scheinfeld/Denise Walker
Filer Authorized By:	Robert C. Scheinfeld
Attorney Docket Number:	500.49882CX1
Receipt Date:	13-MAR-2015
Filing Date:	05-SEP-2014
Time Stamp:	20:42:27
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		Statement_730.pdf	651778 0422d94a733125088788d05575205b7af0f7ac4b	yes	3

	Multipart Description/PDF files in .zip description		
	Document Description	Start	End
	Power of Attorney	1	1
	Assignee showing of ownership per 37 CFR 3.73.	2	3
Warnings:			
Information:			
Total Files Size (in bytes):		651778	
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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
14/478,020	09/05/2014	Mari YOSHIDA	500.49882CX1

CONFIRMATION NO. 6527

PUBLICATION NOTICE



OC000000072574485

20457
ANTONELLI, TERRY, STOUT & KRAUS, LLP
1300 NORTH SEVENTEENTH STREET
SUITE 550
ARLINGTON, VA 22209-3873

Title:RECORDING AND REPRODUCING APPARATUS AND METHOD THEREOF

Publication No.US-2014-0376879-A1

Publication Date:12/25/2014

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 Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s): Mari YOSHIDA
Application No.: 14/478,020
Filed: September 4, 2014
For: RECORDING AND REPRODUCING APPARATUS AND
METHOD THEREOF
Conf. No.: 6527

REPLY TO INFORMATIONAL NOTICE TO APPLICANT

Mail Stop:
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

December 3, 2014

Sir:

In response to the Informational Notice to Applicant dated September 12, 2014, in connection with the above-identified application, submitted herewith is an executed declaration for the above-identified patent application, in compliance with 37 CFR 1.63.

Please charge any shortages in the fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account No. 01-2135 (Docket No. 500.49882CX1) and please credit any excess fees to such deposit account.

Respectfully submitted,

/Inna S. Shestul/ IS
Inna S. Shestul
Registration No. 55,616

ISS/rp
(703) 312-6600

申請データシート(37 CFR 1.76)を使った実用及び意匠登録出願宣言書(37 CFR 1.63)

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

発明の名称

Title of Invention

RECORDING AND REPRODUCING APPARATUS AND METHOD THEREOF

下記発明者である私は、つぎのことがらを宣言します。

As the below named inventor, I hereby declare that:

本宣言は

This declaration is directed to:



添付されている、あるいは

The attached application, or

_____に、米国出願あるいは PCT 国際出願番号 _____として出願されているものに
宛てられています。



United States application or PCT international application

number 14 / 478020 filed on September 5, 2014

上記の出願は私自身、あるいは私が権限を譲与したものによって行われたものです。

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

私は本出願書中にあらわれるもとの発明者、あるいはもとの共同発明者です。

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

私は本宣言書において故意に虚偽の申し立てを行った場合は 18 U.S.C. 1001 により、罰金あるいは最高五(5)年の禁固刑、あるいはその両方による罰則の対象となることを認めます。

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.

私は、特許請求の範囲を含む上記の明細書を確認し内容を理解しています。

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

私は、連邦規則法典第 37 編規則 1.56 に定義されている、特許性について重要な情報を開示する義務があることを認めます。

I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, Section 1.56.

発明者の正式氏名:

LEGAL NAME OF INVENTOR:

Mari YOSHIDA

署名:

Signature:

Mari Yoshida

日付(任意):

Date (Optional):

Nov. 9, 2014

備考: 出願データシート(PTO/AIA/14 あるいはその同等用紙)は、発明の自主独立体全体の命名を含め、本用紙に添付すること。
なお残余の発明者ごとにこの用紙の写しを使用する。

Note: An application data sheet (PTO/AIA/14 or equivalent), including naming the entire inventive entity, must accompany this form. Use an additional copy of the present form for each additional inventor.

Electronic Acknowledgement Receipt

EFS ID:	20850273
Application Number:	14478020
International Application Number:	
Confirmation Number:	6527
Title of Invention:	RECORDING AND REPRODUCING APPARATUS AND METHOD THEREOF
First Named Inventor/Applicant Name:	Mari YOSHIDA
Customer Number:	20457
Filer:	Inna S. Shestul/Ricardo Perez
Filer Authorized By:	Inna S. Shestul
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Time Stamp:	11:32:25
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Submitted with Payment	no
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal Letter	Letter.pdf	68331 56f55ade9906014bfb586dbca052e655f0ac4b03	no	1

Warnings:

Information:

2	Oath or Declaration filed	Declaration.pdf	164178 7cf0fb9d56e576b1c4f44015f0982efdfac7d9b4	no	1
Warnings:					
Information:					
Total Files Size (in bytes):				232509	
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日 本 国 特 許 庁
JAPAN PATENT OFFICE

別紙添付の書類に記載されている事項は下記の出願書類に記載されている事項と同一であることを証明する。

This is to certify that the annexed is a true copy of the following application as filed with this Office.

出 願 年 月 日 2 0 0 8 年 5 月 1 9 日
Date of Application:

出 願 番 号 特 願 2 0 0 8 - 1 3 0 6 7 8
Application Number:

パリ条約による外国への出願
に用いる優先権の主張の基礎
となる出願の国コードと出願
番号
The country code and number
of your priority application,
to be used for filing abroad
under the Paris Convention, is

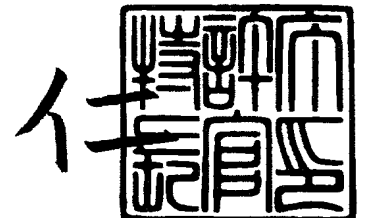
J P 2 0 0 8 - 1 3 0 6 7 8

出 願 人 株式会社日立製作所
Applicant(s):

2 0 1 4 年 9 月 1 6 日

特許庁長官
Commissioner,
Japan Patent Office

伊 藤



【書類名】	特許願
【整理番号】	210850255
【あて先】	特許庁長官殿
【国際特許分類】	H04N 5/225
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【手数料の表示】	
【予納台帳番号】	011903
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【物件名】	要約書 1
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【包括委任状番号】	0418192

【書類名】特許請求の範囲

【請求項 1】

シーンごとに 1 又は複数のチャプタを設定可能な記録再生装置において、
撮影により得られた前記シーンの映像情報を所定の第 1 の記録媒体に記録再生する記録再生部と、

前記映像情報に基づく撮影映像に対して顔認識処理を実行する顔認識実行部と、

ユーザにより設定された重要人物に対する前記顔認識処理の処理結果に基づいて前記チャプタごとの重要度を設定する重要度設定部と、

前記チャプタごとの重要度に基づいて、対応する前記重要度のチャプタを選択的に再生するように前記記録再生部を制御する制御部と

を備えることを特徴とする記録再生装置。

【請求項 2】

再生モードとして複数の再生モードが設けられ、

各前記再生モードには、それぞれ異なる閾値が設定され、

前記制御部は、

ユーザにより指定された前記再生モードの閾値と各前記チャプタの重要度とを比較し、
前記重要度が当該再生モードの閾値と同じ又は当該閾値よりも高い前記チャプタを選択的に再生するように前記記録再生部を制御する

ことを特徴とする請求項 1 に記載の記録再生装置。

【請求項 3】

前記シーンの撮影時に前記顔認識部が認識した顔の画像を一覧表示する表示部と、

前記一覧表示された前記顔の画像のうち、ユーザにより選択された前記顔の画像に対応する被写体を前記重要人物として設定する重要人物設定部と

を備えることを特徴とする請求項 1 に記載の記録再生装置。

【請求項 4】

前記重要人物は、

前記シーンの撮影前に顔が登録された人物である

ことを特徴とする請求項 1 に記載の記録再生装置。

【請求項 5】

前記重要度設定部は、

前記チャプタ内における前記重要人物の登場回数に基づいて当該チャプタの重要度を設定する

ことを特徴とする請求項 1 に記載の記録再生装置。

【請求項 6】

前記制御部は、

前記第 1 の記録媒体に前記映像情報が記録された前記シーンごとに、当該シーン内に設定された各前記チャプタの重要度を管理し、

ユーザからの要求に応じて、当該シーンごとに、各前記チャプタの前記重要度が設定されているか否かを前記ユーザに提示する

ことを特徴とする請求項 1 に記載の記録再生装置。

【請求項 7】

撮影により得られたシーンの映像情報を所定の第 1 の記録媒体に記録再生すると共に、
前記シーンごとに 1 又は複数のチャプタを設定可能な記録再生装置における記録再生方法において、

前記映像情報に基づく撮影映像に対して顔認識処理を実行する第 1 のステップと、

ユーザにより設定された重要人物に対する前記顔認識処理の処理結果に基づいて前記チャプタごとの重要度を設定する第 2 のステップと、

前記チャプタごとの重要度に基づいて、対応する前記重要度のチャプタを選択的に再生する第 3 のステップと

を備えることを特徴とする記録再生方法。

【請求項 8】

再生モードとして複数の再生モードが設けられ、
各前記再生モードには、それぞれ異なる閾値が設定され、
前記第 3 のステップでは、
ユーザにより指定された前記再生モードの閾値と各前記チャプタの重要度とを比較し、
前記重要度が当該再生モードの閾値と同じ又は当該閾値よりも高い前記チャプタを選択的に再生する

ことを特徴とする請求項 7 に記載の記録再生方法。

【請求項 9】

前記第 2 のステップでは、
前記シーンの撮影時に認識した顔の画像を一覧表示し、
前記一覧表示した前記顔の画像のうち、ユーザにより選択された前記顔の画像に対応する被写体を前記重要人物として設定する
を備えることを特徴とする請求項 7 に記載の記録再生方法。

【請求項 10】

前記重要人物は、
前記シーンの撮影前に顔が登録された人物である
ことを特徴とする請求項 7 に記載の記録再生方法。

【請求項 11】

前記第 2 のステップでは、
前記チャプタ内における前記重要人物の登場回数に基づいて当該チャプタの重要度を設定する
ことを特徴とする請求項 7 に記載の記録再生方法。

【請求項 12】

前記第 1 の記録媒体に前記映像情報が記録された前記シーンごとに、当該シーン内に設定された各前記チャプタの重要度をそれぞれ管理し、
ユーザからの要求に応じて、当該シーンごとに、各前記チャプタの前記重要度が設定されているか否かを前記ユーザに提示する
ことを特徴とする請求項 7 に記載の記録再生方法。

【書類名】明細書

【発明の名称】記録再生装置及び方法

【技術分野】

【0001】

本発明は、記録再生装置及び方法に関し、例えばビデオカメラに適用して好適なものである。

【背景技術】

【0002】

近年、DVD (Digital Versatile Disc)、半導体メモリ及び又はハードディスク装置 (HDD: Hard Disc Drive) などのランダムアクセスが可能な記録媒体に対応した記録再生装置が普及しつつある。このような記録再生装置では、記録媒体に記録した撮影映像の頭出しを容易かつ迅速に行うことができる。

【0003】

この種の記録再生装置のうち、例えば汎用のビデオカメラでは、通常、撮影映像の映像情報をシーン単位で管理しており、かかるシーンごとの管理情報を用いて各シーンの頭出しを行うことができるようになされている。また、この種のビデオカメラでは、1つのシーン内に複数のチャプタを設定でき、これらチャプタごとの頭出しを行うこともできる。

【0004】

ここでシーンとは、ユーザが記録ボタンを押下して撮影を開始してからもう一度記録ボタンを押下して撮影を終えるまでに記録された一連の映像をいう。記録ボタンを押下して撮影を行うたびに、シーン数は増加する。またチャプタとは、1つのシーン内における映像の区切りのことをいう。

【0005】

従って、かかるビデオカメラでは、各チャプタの頭出しを順次行いながら記録媒体に記録された映像情報を再生することによって、ユーザが素早くシーンの内容を把握することができる。

【0006】

しかしながら、かかるビデオカメラにおいては、シーン内に設定されたチャプタの数が多い場合、シーンの最後まで内容を確認するためには、ユーザはシーン内に設定したチャプタ数だけチャプタごとの頭出し操作をしなければならず、その分の労力及び時間を要する問題があった。

【0007】

なお、特許文献1には、撮影時のボタン操作の種類からフレームの優先度を算出し、再生を行う際に優先度の高いフレームを再生して効率良くシーンの内容を把握するための技術が開示されている。

【特許文献1】特開平6-165009号公報

【発明の開示】

【発明が解決しようとする課題】

【0008】

近年、ビデオカメラの記録媒体が大容量化し、一度に長時間の撮影を行ったり、複数回に分けて撮影したシーンをまとめて記録媒体に保存したりできるようになった。そのため、ユーザが記録媒体に記録された膨大なシーンから目的のシーンを素早く見つけることが困難になってきた。

【0009】

従来の記録再生装置の中には、シーンごとのサムネイル画像を一覧表示する機能が搭載されたものもあるが、かかる機能では1つのシーンに対して1つのサムネイル画像しか対応させることができず、ユーザが1つのサムネイル画像から長時間のシーンの全容を思い出すことが困難な場合もあった。また、撮影から長時間経過した場合、シーンに対応付けられた1つのサムネイル画像からだけではシーンの全容をユーザが思い出すことは困難であった。

【0010】

さらに、通常、サムネイル画像を見てもシーンの内容が把握できない場合、ユーザはシーンを再生してシーンの内容を確認する。そのため、長時間のシーンの内容を確認する場合は、チャプタの頭出しを行いながら素早くシーン全体の内容を確認できる機能が必要となるが、現在はそのような機能は提案されていない。

【0011】

上記特許文献1には、撮影時のボタン操作の種類からフレームの優先度を算出し、シーンの内容を把握するためのダイジェスト再生を行う際に優先度の高いフレームを再生する技術が開示されているものの、この技術によると、ユーザがボタン操作を行わずに撮影したシーンに対して優先度を設定することができず、使い勝手が良いとはいえない。

【0012】

本発明は以上の点を考慮してなされたもので、ユーザが目的のチャプタやシーンを素早く、かつ容易に見つけ出すことができる記録再生装置及び方法を提案しようとするものである。

【課題を解決するための手段】

【0013】

かかる課題を解決するため本発明においては、シーンごとに1又は複数のチャプタを設定可能な記録再生装置において、撮影により得られた前記シーンの映像情報を所定の第1の記録媒体に記録再生する記録再生部と、前記映像情報に基づく撮影映像に対して顔認識処理を実行する顔認識実行部と、ユーザにより設定された重要人物に対する前記顔認識処理の処理結果に基づいて前記チャプタごとの重要度を設定する重要度設定部と、前記チャプタごとの重要度に基づいて、対応する前記重要度のチャプタを選択的に再生するように前記記録再生部を制御する制御部とを備えることを特徴とする。

【0014】

この結果、本発明による記録再生装置では、例えば重要人物が多く登場するチャプタといった、ユーザの設定に応じた特定のチャプタを選択的に再生させることができる。

【0015】

また本発明においては、撮影により得られたシーンの映像情報を所定の第1の記録媒体に記録再生すると共に、前記シーンごとに1又は複数のチャプタを設定可能な記録再生装置における記録再生方法において、前記映像情報に基づく撮影映像に対して顔認識処理を実行する第1のステップと、重要人物に対する前記顔認識処理の処理結果に基づいて前記チャプタごとの重要度を設定する第2のステップと、前記チャプタごとの重要度に基づいて、対応する前記重要度のチャプタを選択的に再生する第3のステップとを備えることを特徴とする。

【0016】

この結果、本発明による記録再生方法によれば、例えば重要人物が多く登場するチャプタといった、ユーザの設定に応じた特定のチャプタを選択的に再生させることができる。

【発明の効果】

【0017】

本発明によれば、ユーザが目的のチャプタやシーンを素早く、かつ容易に見つけ出すことができる記録再生装置及び方法を提供することができる。

【発明を実施するための最良の形態】

【0018】

以下図面について、本発明の一実施の形態を詳述する。

【0019】

(1) 第1の実施の形態

(1-1) 記録再生装置の構成

図1において、1は全体として本実施の形態によるビデオカメラを示す。このビデオカメラ1は、図示しないDVDドライブと内蔵型のハードディスク装置2とを備えたハイブリッドビデオカメラである。DVDドライブに装着されるDVD3には、DVD-R、D

V D-RW、DVD-RAM、DVD+R、DVD+RW及びHD (High Definition) -DVDのように複数の種類が存在するが、本ビデオカメラ1に適用可能なDVD3の種類は、特に限定されない。

【0020】

ビデオカメラ1においては、各種操作ボタンや後述する表示部6の表示面に貼着されたタッチパネルなどからユーザインタフェース部4が構成される。そしてこのユーザインタフェース部4を介して入力されたユーザの操作指令に応じてシステム制御部5が対応する制御処理を実行することにより、ハードディスク装置2や、DVDドライブに装着されたDVD3に撮影映像を記録したり、ハードディスク装置2やDVD3に記録された撮影映像を再生して表示部6に表示させることができるようになっている。

【0021】

實際上、システム制御部5は、CPU (Central Processing Unit) 及び内部メモリ等を備えるマイクロコンピュータとして構成される。そしてシステム制御部5は、ユーザインタフェース部4が操作されて記録モードが選択された後、ユーザインタフェース部4内の記録ボタンが押下されると、CCD (Charge Coupled Device) やCMOS (Complementary Metal Oxide Semiconductor) などから構成されるイメージセンサ7を駆動する。

【0022】

このときイメージセンサ7の受光面には、レンズ8により被写体の光学像が集光される。かくしてイメージセンサ7は、この光学像を光電変換し、得られた撮影映像信号をアナログ/デジタル変換部9に送出する。またアナログ/デジタル変換部9は、供給される撮影映像信号をアナログ/デジタル変換処理し、得られた映像情報をCODEC (Compressor/Decompressor) 部10に送出する。

【0023】

CODEC部10は、供給される映像情報をそのままバス11を介して表示部6に転送する。表示部6は、例えば液晶ディスプレイや有機ELディスプレイなどから構成され、供給される映像情報に基づく撮影映像 (スルー映像) を表示する。

【0024】

またCODEC部10は、供給される映像情報に対してMPEG (Moving Picture Expert Group) 方式などの所定の圧縮符号化方式で符号化処理を施し、得られた符号化映像情報と、当該符号化処理を施していない映像情報とをバス11を介してRAM (Random Access Memory) 12に格納する。

【0025】

そしてRAM12に格納された符号化映像情報は、この後、システム制御部5の制御のもとに、ハードディスク装置制御部13又はDVDドライブ制御部14によりRAM12から読み出されてハードディスク装置2又はDVD3に記録される。

【0026】

またRAM12に格納された映像情報は、顔認識実行部15により読み出される。そして顔認識実行部15は、この映像情報に基づく撮影映像に対して所定の顔認識処理を行い、その認識結果を後述の顔認識管理情報としてそのとき符号化映像情報が格納されたハードディスク装置制御部2又はDVDドライブ制御部14に与える。かくしてこの顔認識管理情報がかかる符号化映像情報と対応付けられてハードディスク装置2又はDVD3に記録される。

【0027】

一方、システム制御部5は、ユーザインタフェース部4が操作されて再生モードが選択された後、ユーザインタフェース部4内の再生ボタンが押下されると、対応するハードディスク装置制御部13又はDVDドライブ制御部14を制御することにより、ハードディスク装置2又はDVD3から符号化映像情報を読み出させ、これをバス11を介してCODEC部10に送信させる。

【0028】

CODEC部10は、システム制御部5の制御のもとに、ハードディスク装置制御部1

3又はDVDドライブ制御部14から供給される符号化映像情報に対して所定の復号処理を施し、得られた再生映像情報をバス11を介して表示部6に送信する。かくしてこの再生映像情報に基づく再生映像が表示部6に表示される。

【0029】

なおバス11には画像サイズ変換部16も接続されている。そして画像サイズ変換部16は、例えば撮影動作中などに、システム制御部5の制御のもとに、RAM12に格納された映像情報や、ハードディスク装置2又はDVD3から読み出されてCODEC部10において復号された映像情報の中から各シーンの先頭フレームの映像情報や、各チャプタの先頭フレームの映像情報を抽出する。そして画像サイズ変換部16は、これら抽出した映像情報をそれぞれ所定サイズのサムネイル画像の画像情報に変換し、かくして得られたシーンの先頭フレームや、各チャプタの先頭フレームのサムネイル画像の画像情報をそのシーンと対応付けて、当該シーンの符号化映像情報が格納されたハードディスク装置2又はDVD3に格納する。

【0030】

またビデオカメラ1には、電源投入中や、充電中、ハードディスク装置2又はDVD3へのアクセス時などに点灯するLED (Light Emitting Diode) や各回路等に電源電力を供給するバッテリーなどの他の一般的なビデオカメラのハードウェアや機能がすべて搭載されているものとする。

【0031】

さらに以下においては、撮影中はハードディスク装置2に撮影映像を記録し、撮影後にこの撮影映像をDVD3にダビングするという使用方法を想定して説明するが、撮影中はDVD3に撮影映像を記録し、撮影後にこの撮影映像をハードディスク装置2にダビングするという使用方法でも構わない。

【0032】

(1-2) シーン管理情報

本ビデオカメラ1の場合、ハードディスク装置2には、撮影の際に符号化映像情報と併せてシーン毎の管理情報(以下、これをシーン管理情報と呼ぶ)も記録される。このシーン管理情報は、チャプタ管理情報や顔認識管理情報など、シーンを管理するための情報から構成される。チャプタ管理情報には、チャプタごとの先頭フレームの位置、長さ、重要度及び概要などの情報が含まれる。また顔認識管理情報には、撮影中に顔認識実行部が認識した顔が登場するフレームの位置や、そのフレームにおけるその顔の表情及びそのフレームにおけるその顔の大きさなどの情報が含まれる。

【0033】

図2に、チャプタ管理情報の一例を示す。この図2に示すチャプタ管理情報20は、そのシーン内に設定されたチャプタごとのチャプタID情報21、開始フレーム位置情報22及びチャプタ重要度情報23から構成される。

【0034】

チャプタID情報21は、各チャプタにそれぞれ付与された固有のID(以下、これをチャプタIDと呼ぶ)を表す情報であり、開始フレーム位置情報22は、対応するチャプタの開始フレームの位置(時、分、秒及びフレーム番号)を表す情報である。またチャプタ重要度情報23は、対応するチャプタに設定された重要度(以下、これをチャプタ重要度と呼ぶ)を表す情報である。チャプタ重要度の詳細については、後述する。このチャプタ管理情報20は、システム制御部5により、そのシーンの符号化映像情報と対応付けてハードディスク装置2に格納される。

【0035】

また図3に、顔認識管理情報の一例を示す。この図3に示す顔認識管理情報24は、対応するシーン内で認識された顔ごとの顔ID情報25、パス/ファイル名情報26及びフレーム位置情報27から構成される。

【0036】

顔ID情報25は、顔認識実行部15により認識された個々の顔にそれぞれ付与された

固有のID（以下、これを顔IDと呼ぶ）を表す情報であり、パス／ファイル名情報26は、対応する顔の画像（以下、これを顔画像と呼ぶ）の画像ファイルへのパス又はその画像ファイルのファイル名を表す情報である。かかる画像ファイルに格納される顔画像は、フレーム内で初めてその人物を認識した際にキャプチャした画像でも良いし、顔認識処理の際に笑顔などの良い表情を識別しておき、シーン内でその人物の一番良い表情をキャプチャした画像でも良い。

【0037】

またフレーム位置情報27は、対応する顔を認識したフレーム位置（時、分、秒及びフレーム番号）を表す情報である。このフレーム位置情報27は、対応する顔が登場したすべてのフレーム位置を含む。従って、そのシーンの中で登場する回数の多い顔（人物）ほどフレーム位置情報27に含まれるフレーム位置の数が多くなる。なお、かかる各フレーム位置とそれぞれ対応させて、そのフレームにおけるその顔の表情の種類も記録しておくようにしても良い。

【0038】

この顔認識管理情報24は、上述のように顔認識実行部15により、そのとき記録している撮影映像の符号化映像情報と対応付けてハードディスク装置2に格納される。

【0039】

（1-3）チャプタ重要度の設定方法

図4は、顔認識機能を「有効」に設定して撮影を行うときに表示部6に表示される撮影映像の一例を示す。本ビデオカメラ1においては、顔認識機能を「有効」に設定した場合、表示部6に表示される撮影映像30内に、顔認識機能により検出された人間の顔を囲むように四角形状の枠31が表示される。なお、顔認識機能を「無効」に設定した場合には、この枠31は表示されない。

【0040】

図5は、顔認識機能を「有効」に設定して撮影を行った場合における、撮影映像をハードディスク装置2に記録する処理（以下、これを撮影映像記録処理と呼ぶ）に関するシステム制御部5の処理内容を示している。システム制御部5は、この図5に示す撮影映像記録処理を、内部メモリに格納された対応する制御プログラムに基づいて実行する。

【0041】

すなわちシステム制御部5は、記録モードが選択された後、ユーザインタフェース部4の記録ボタンが押下されると、この撮影映像記録処理を開始し、まず、アナログ／デジタル変換器9及びCODEC部10をそれぞれ制御することにより、撮影映像の映像情報及びこれを符号化した符号化映像情報をRAM12に格納させると共に、ハードディスク装置制御部13を制御することにより、1フレーム分の符号化映像情報をRAM12から読み出させ、これをハードディスク装置2に記録させる（SP1）。

【0042】

続いてシステム制御部5は、顔認識実行部15を制御することにより、ステップSP1においてハードディスク装置制御部13によりRAM12から符号化映像情報が読み出されたフレームと同じフレームの映像情報をRAM12から読み出させ、当該映像情報に基づく撮影映像に対する顔認識処理を実行させる（SP2）。

【0043】

この際、顔認識実行部15は、例えば平均顔を用いたテンプレートマッチングなどの手法により顔認識処理を実行する。ただし、ユーザが撮影前にあらかじめ重要人物が登録された重要人物リストを作成していた場合は、当該重要人物リストを使ったテンプレートマッチングにより顔認識処理を行うようにしても良い。そして顔認識実行部15は、この顔認識処理が終了すると、当該顔認識処理の処理結果を図3について上述した顔認識管理情報に反映（顔認識管理情報を更新）する。

【0044】

次いでシステム制御部5は、撮影により得られたすべてのフレームの符号化映像情報をハードディスク装置2に記録し終えたか否かを判断する（SP3）。そしてシステム制御

部5は、この判断において否定結果を得ると、ステップSP1に戻り、この後同様の処理を繰り返す（SP1～SP3－SP1）。

【0045】

そしてシステム制御部5は、やがて撮影により得られたすべてのフレームの符号化映像情報をハードディスク装置2に記録し終えることによりステップSP3において肯定結果を得ると、この撮影映像記録処理を終了する。

【0046】

なお、この撮影映像記録処理のステップSP2における顔認識処理は、上述のようにフレームごとに行うようにしても、また数フレームに1回の割合で行うようにしても良い。数フレームに1回の割合で行うようにすることによって、顔認識実行部15の処理負荷を軽減することができる。

【0047】

また顔認識機能を「無効」に設定して撮影を行った場合においても、撮影後にメニュー操作などによって記録済みのシーンに対して顔認識処理を行える機能（以下、これを撮影後顔認識機能と呼ぶ）ようにするようにしても良く、このようにしても図3と同様の顔認識管理情報を作成することができる。この撮影後顔認識機能により、顔認識機能が無い他のビデオカメラで撮影したシーンに対しても、後述のような顔認識機能を用いたチャプタ重要度の設定を行うことができるため、ユーザにとって非常に便利である。

【0048】

次に、上述のようにして得られた顔認識処理の処理結果（顔認識管理情報24（図3））に基づいて1つのシーン内の各チャプタにチャプタ重要度をそれぞれ決定する方法について説明する。

【0049】

なお、以下においては、1つのシーン内に少なくとも1つのチャプタが設定されているものとする。チャプタの作成には、ユーザが手動でチャプタの位置を決めて作成する方法や、シーン内の輝度変化の大きいところに自動的にチャプタを作成する方法、及び自動的に数分から数十分ごとに等間隔にチャプタを作成する方法などがあるが、本実施の形態ではチャプタがどのような方法により設定されていても構わない。

【0050】

図6は、1つのシーン内の各チャプタにチャプタ重要度をそれぞれ設定するチャプタ重要度設定機能に関するシステム制御部5の処理内容を示している。システム制御部5は、ユーザインタフェース部4が操作されて第1の画面表示要求が入力されると、図示しない内部メモリに格納された対応する制御プログラムに従ってこの図6に示すチャプタ重要度設定処理を実行する。

【0051】

すなわちシステム制御部5は、かかる第1の画面表示要求が与えられると、まず、ハードディスク装置2に格納された、そのとき対象としているシーン（以下、これを対象シーンと呼ぶ）のチャプタ管理情報20（図2）及び顔認識管理情報24（図3）を読み出し、これらチャプタ管理情報20及び顔認識管理情報24を用いて図7に示す重要人物決定画面40を表示部6に表示させる（SP10）。

【0052】

この重要人物決定画面40は、対象シーン内の重要人物をユーザが決定するための画面である。この重要人物決定画面40には、対象シーンの撮影時に顔認識が成功したすべての人物の顔画像41が表示される。個々の顔画像41は、図3について上述した顔認識管理情報24に含まれる対応するパス／ファイル名情報26（図3）により特定される画像ファイルから読み出された画像データに基づいて表示されたものである。

【0053】

そしてユーザは、この重要人物決定画面40に表示された各人物の顔画像41に基づいて、これらの人物の中から重要人物とすべき人物を選択することができる。重要人物として、複数の人物を選択することも可能である。また、家族などの被写体となる頻度が高い

人物の顔を予め重要人物リストとしてビデオカメラ1に登録しておき、重要人物決定画面40では登録された人物の顔のみを表示するようにしても良い。このようにすることによって、背景に写り込んだ被写体とは関係の無い人物の顔を表示しなくなるため、ユーザが重要人物の決定を行い易くなる。

【0054】

そしてユーザは、重要人物として設定したい人物の顔画像41を所定操作により選択した後に、「決定」ボタン42を押下するようにする。この結果、このとき選択された人物が重要人物として登録される。なお、チャプタ重要度を決定する操作を中止したい場合は、「キャンセル」ボタン43を押下すれば良い。また、かかる重要人物リストを常に使用するか否かをユーザが設定できるようにすることで、ビデオカメラ1の使い勝手を向上させることができる。

【0055】

続いてシステム制御部5は、かかる重要人物決定画面40を用いて重要人物が決定されるのを待ち受け（SP11）、やがてユーザにより重要人物が決定されると、当該決定結果に基づいて対象シーン内の各チャプタのチャプタ重要度をそれぞれ決定する（SP12）。

【0056】

そしてシステム制御部5は、ステップSP11において決定したチャプタごとのチャプタ重要度を図2について上述したチャプタ管理情報20に反映させ（SP13）、この後、このチャプタ重要度設定処理を終了する。

【0057】

図8は、かかるチャプタ重要度設定処理のステップSP12におけるシステム制御部5の具体的な処理内容を示している。

【0058】

システム制御部5は、チャプタ重要度設定処理のステップSP12に進むと、この重要度決定処理を開始し、まず、上述の重要人物決定画面40（図7）を用いてユーザが決定した重要人物の登場回数を対象シーンのチャプタごとにカウントする（SP14）。

【0059】

具体的にシステム制御部5は、システム内部にシーン内に存在するチャプタの数だけカウンタを内部メモリ上に用意する。そしてシステム制御部5は、重要人物決定画面40を用いてユーザが決定した重要人物の顔IDから、その重要人物が登場するすべてのフレームのフレーム位置を顔認識管理情報24（図3）から読み出し、これらのフレームがどのチャプタに属するかを、チャプタ管理情報20（図2）を参照してかかるフレームごとに判定する。そしてシステム制御部5は、この判定結果に基づいて、かかる重要人物が登場するフレームごとに、そのフレームが属するチャプタと対応付けられたカウンタのカウント値を1ずつカウントアップする。システム制御部5は、重要人物決定画面40を用いてユーザが決定したすべての重要人物についてこの処理を行う。

【0060】

続いてシステム制御部5は、各カウンタのカウント値を1から5の範囲に正規化し（SP15）、かかる正規化により得られた数値を6から減算した値を、それぞれそのカウンタに対応するチャプタのチャプタ重要度として決定する（SP16）。

【0061】

以上の処理により、重要人物が最も多く登場するチャプタには最も高いチャプタ重要度である「1」が設定され、重要人物の登場が最も少ないチャプタには最も低いチャプタ重要度である「5」が設定される。そしてシステム制御部5は、この後、この重要度決定処理を終了して、チャプタ重要度設定処理に戻る。

【0062】

なお、重要人物決定画面40上でユーザが重要人物を複数人選択した場合には、チャプタ重要度の重み付けをするなどして、より重視したい人物を設定できるようにすればさらにビデオカメラ1の使い勝手が向上する。

【0063】

(1-4) チャプタ重要度を使った再生方法

次に、上述のようにして設定されたチャプタごとのチャプタ重要度に基づく対象シーンの再生方法について説明する。なお、以下の説明においては、チャプタ重要度は5段階で設定され、「1」が最もチャプタ重要度が高く、「5」が最もチャプタ重要度が低いものとする。また以下においては、便宜上、チャプタ重要度が「1」を特急、チャプタ重要度が「3」を急行、チャプタ重要度が「5」を鈍行と呼んで区別する。

【0064】

図9は、対象シーンにおけるチャプタ構成及び各チャプタにそれぞれ設定されたチャプタ重要度の一例を示す。この図9の場合、対象シーンは、それぞれチャプタIDが「001」～「009」である9個のチャプタに分けられている。そしてチャプタIDが「002」及び「005」である2つのチャプタについてはチャプタ重要度が「1」にそれぞれ設定され、チャプタIDが「004」及び「009」である2つのチャプタについてはチャプタ重要度が「3」にそれぞれ設定され、残りのチャプタ（チャプタIDが「001」、「003」、「006」～「008」のチャプタ）についてはチャプタ重要度がそれぞれ「5」に設定されている。

【0065】

ところで本ビデオカメラ1の場合、このような状況下において、再生モードとしてメニューから「鈍行再生モード」を選択してから再生を行うと、各チャプタにそれぞれ設定されたチャプタ重要度に関わらず、すべてのチャプタがチャプタIDの小さいものから順番に順次再生される。つまり「鈍行再生モード」では、チャプタ重要度が「5」以下のチャプタ（チャプタ重要度が「1」～「5」のチャプタであり、本実施の形態においてはすべてのチャプタ）が再生される。

【0066】

これに対して、ユーザが再生モードとして「急行再生モード」を選択してからシーン再生を開始すると、ビデオカメラ1は、まずチャプタ重要度が「1」に設定されたチャプタIDが「002」のチャプタを再生し、次にチャプタ重要度が「3」に設定されたチャプタIDが「004」のチャプタを再生し、次にチャプタ重要度が「1」に設定されたチャプタIDが「005」のチャプタを再生する。その後、ビデオカメラ1は、チャプタIDが「009」のチャプタを再生し、当該チャプタの再生が完了するとシーン再生を終了する。つまり「急行再生モード」では、チャプタ重要度が「3」以下のチャプタ（チャプタ重要度が「1」～「3」のチャプタ）のみが再生される。従って、この「急行再生モード」で再生中に頭出しスキップを行えば、チャプタ重要度が「3」以下の次のチャプタの先頭から再生が開始される。

【0067】

一方、ユーザが再生モードとして「特急再生モード」を選択してからシーン再生を開始すると、ビデオカメラ1は、まずチャプタ重要度が「1」に設定されたチャプタIDが「002」のチャプタから再生が開始し、次にチャプタIDが「005」のチャプタを再生した後にシーン再生を終了する。つまり「特急再生モード」では、チャプタ重要度が「1」以下のチャプタ（チャプタ重要度が「1」のチャプタ）が再生される。

【0068】

従って、本ビデオカメラ1では、チャプタ重要度が「1」に設定されたチャプタはどの再生モードが選択されても必ず再生され、その他のチャプタは、そのチャプタに設定されたチャプタ重要度と同じ又はそれよりも小さいチャプタ重要度のチャプタを再生する再生モードが選択されたときにしか再生されない。

【0069】

この機能（以下、これをチャプタ選択再生機能と呼ぶ）を用いて、対象シーンの大まかな内容の確認を特急モード再生で行い、より詳細に内容を確認したい映像部分に近づいた段階で鈍行再生モードに切り替えることによって、効率良く対象シーンの内容を確認することができるため便利である。また、特急モード再生は、より短時間でシーンの内容を把

握したいユーザにとって非常に使い勝手が良い。

【0070】

図10は、このようなチャプタ選択再生機能に関するシステム制御部5の具体的な処理内容を示している。システム制御部5は、内部メモリに格納された制御プログラムに基づいて、この図10に示すチャプタ選択再生処理を実行する。

【0071】

すなわちシステム制御部5は、再生モードとして「鈍行再生モード」、「急行再生モード」又は「特急再生モード」が選択されて再生動作の開始命令が入力されると、このチャプタ選択再生処理を開始し、まず、対応するハードディスク装置2又はDVD3から対象シーンのチャプタ管理情報を読み出す（SP20）。

【0072】

続いてシステム制御部5は、かかるチャプタ管理情報に含まれるチャプタID情報に基づいて、最初のチャプタ（例えばチャプタIDが最も小さいチャプタ）を選択（SP21）し、そのチャプタのチャプタ重要度が、そのとき設定された再生モードに応じて予め定められた閾値以下であるか否かを判断する（SP22）。かかる閾値の値は、再生モードとして「鈍行再生モード」が設定されているときには「5」、再生モードとして「急行再生モード」が設定されているときには「3」、再生モードとして「特急再生モード」が設定されているときには「1」である。

【0073】

そしてシステム制御部5は、かかるステップSP22の判断において否定結果を得るとステップSP24に進み、これに対して肯定結果を得ると、CODEC部10を制御することにより、そのチャプタを再生させてその再生映像を表示部に表示させる（SP23）。

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【0074】

次いでシステム制御部5は、チャプタ管理情報を参照して、ステップSP21において選択したチャプタの次のチャプタが存在するか否かを判断する（SP24）。そしてシステム制御部5は、この判断において肯定結果を得るとステップSP21に戻り、この後、ステップSP21において選択するチャプタを順次次のチャプタに切り換えながら、同様の処理を繰り返す（SP21～SP24→SP21）。

【0075】

そしてシステム制御部5は、やがてすべてのチャプタについてステップSP21～ステップSP24の処理を終えることによりステップSP24において否定結果を得ると、このチャプタ選択再生処理を終了する。

【0076】

次に、シーン内のチャプタごとに設定されたチャプタ重要度をユーザが容易に確認するための手段について説明する。

【0077】

図11は、ユーザがメニュー操作によって表示部6に表示させることができるチャプタ一覧画面50を示す。このチャプタ一覧画面50では、対象シーン内の各チャプタにそれぞれ設定されたサムネイル画像51と、各チャプタのシーン先頭からの経過時間及びチャプタ重要度などのそのチャプタの管理情報52とが表示される。

【0078】

實際上、システム制御部5は、ユーザインタフェース部4が操作されてかかるチャプタ一覧画面50の表示命令が入力された場合、対応するハードディスク装置制御部13又はDVDドライブ制御部14を制御することにより、対象シーンのチャプタ管理情報20（図2）と、対象シーンと対応付けて格納された各チャプタの先頭フレームのサムネイル画像51の画像情報とをハードディスク装置2又はDVD3から読み出す。そしてシステム制御部5は、かかる画像情報に基づく各チャプタの先頭フレームのサムネイル画像51をチャプタ一覧画面50上に表示させる一方、これらサムネイル画像51とそれぞれ対応させて、チャプタ管理情報20に基づく各チャプタの管理情報52をチャプタ一覧画面50

上に表示させる。

【0079】

これにより、ユーザはこのチャプター一覧画面50に基づいてチャプタ重要度の高いチャプタを知ることができるため、素早く重要な部分を探し出すことができる。

【0080】

次に、チャプタ重要度が設定されているシーンをユーザが容易に確認するための手段について説明する。

【0081】

図12は、ユーザがメニュー操作によって表示部に表示させることができるシーン一覧画面53を示す。このシーン一覧画面53では、ハードディスク装置2やDVD3に記録された各シーンのサムネイル画像54が表示される。

【0082】

實際上、システム制御部5は、ユーザインタフェース部4が操作されてかかるシーン一覧画面53の表示命令が入力された場合、ハードディスク装置制御部13又はDVDドライブ制御部14を制御することにより、ユーザにより指定されたハードディスク装置2又はDVD3に格納されたすべてのシーンについて、当該シーンの先頭フレームのサムネイル画像54の画像情報をハードディスク装置2又はDVD3から読み出す。そしてシステム制御部5は、かかる画像情報に基づく各シーンの先頭フレームのサムネイル画像54をシーン一覧画面53上に表示させる。

【0083】

この際、システム制御部5は、各シーンのチャプタ管理情報20（図2）を参照して、チャプタ重要度が設定されているシーンについては、そのシーンのサムネイル画像54上に所定形状のアイコン55を表示する。

【0084】

これにより、例えば再生しようとするシーンにチャプタ重要度が設定されているか否かをアイコン55の有無によってユーザが判断できるため、アイコン55が表示されたシーンについては直ちに上述のようなチャプタ重要度を使った再生方法での再生操作を行うことによって、そのシーンの内容を効率良く確認することができる。またアイコンが表示されていないシーンについては、再生操作の前にチャプタ重要度を設定する操作を行うことによって、上述のような再生方法による再生を行うことができる。

【0085】

（1-5）シーンのダビング時の処理

次に、ハードディスク装置2に記録されている符号化映像情報をDVD3にダビングする際の処理について説明する。

【0086】

本ビデオカメラ1の場合、システム制御部5は、チャプタ重要度が設定されているシーンをハードディスク装置2からDVD3にダビングする際には、該当シーンの符号化映像情報及びシーン管理情報（チャプタ管理情報20（図2）及び顔認識管理情報24（図3））だけでなく、シーン管理情報に含まれる顔認識管理情報24に登録された顔の顔画像の画像ファイルもDVD3にコピーする。これにより、ハードディスク装置2内の符号化映像情報を消去した後でも、DVD3を使用してチャプタ重要度を用いた再生やチャプタ重要度の再設定をすぐに行うことができる。

【0087】

（1-6）本実施の形態の効果

以上のように本実施の形態によるビデオカメラでは、撮影時に行った顔認識処理の処理結果に基づいてチャプタのチャプタ重要度を設定することができるため、ユーザが、目的とする人物（重要人物）が多く登場するチャプタを素早く見つけ出すことが可能となる。またチャプタのチャプタ優先度に応じて、対応するチャプタ重要度のチャプタを選択的に再生するため、ユーザがシーン全体の内容を短時間でかつ容易に把握し、目的とするシーンを素早く見つけ出すことができる。かくするにつき、ビデオカメラ1の使い勝手を格段

的に向上させることができる。

【0088】

(2) 第2の実施の形態

図1において、60は第2の実施の形態によるビデオカメラを示す。この第2の実施の形態によるビデオカメラ60は、チャプタ重要度の設定方法が異なる点を除いて第1の実施の形態によるビデオカメラ1と同様に構成されている。

【0089】

すなわち、第1の実施の形態では、撮影を行った後でユーザが重要人物決定画面40（図7）を用いて重要人物を決定し、この決定結果に基づいて各チャプタのチャプタ重要度を設定していた。これに対して第2の実施の形態では、撮影前にユーザが決定しておいた重要人物に対してのみ顔認識処理を行い、この顔認識処理の処理結果に基づいて各チャプタのチャプタ重要度を設定する。

【0090】

図13は、このような第2の実施の形態によるチャプタ重要度の設定方法のうち、撮影前にユーザが重要人物を設定する重要人物設定処理に関するシステム制御部61の処理内容を示している。システム制御部61は、図示しない内部メモリに格納された制御プログラムに基づいて、この重要人物設定処理を実行する。

【0091】

すなわちシステム制御部61は、ユーザインタフェース部4が操作されて重要人物設定モードが選択されると、この重要人物設定処理を開始し、まず、図14に示すような撮影前重要人物設定画面70を表示部6に表示させる（SP30）。

【0092】

続いてシステム制御部61は、かかる撮影前重要人物設定画面70に表示された第1及び第2の重要人物決定方法選択ボタン71、72のいずれかが押下されるのを待ち受ける（SP31）。ここで、第1の重要人物決定方法選択ボタン71は、重要人物を今から撮影するモードに対応したボタンであり、第2の重要人物決定方法選択ボタン72は、第1の実施の形態と同様に既に行われた撮影において認識された人物の中から重要人物を決定するモードに対応したボタンである。

【0093】

そしてシステム制御部61は、かかる第1及び第2の重要人物決定方法選択ボタン71、72のいずれかが押下されると、押下されたボタンが第1の重要人物決定方法選択ボタン71であるか否かを判断する（SP32）。

【0094】

システム制御部61は、この判断において肯定結果を得ると、イメージセンサ7、アナログ／デジタル変換部7及びCODEC部10を駆動させて、図15に示すようなそのときの撮影映像を表示部6に表示させる（SP34）。かくして、このときユーザは、登録しようとする重要人物をビデオカメラ60で撮影するようにする。

【0095】

次いでシステム制御部61は、かかる重要人物の撮影中に顔認識処理部15を駆動させて、そのとき撮影されている重要人物に対する顔認識処理を実行させる（SP35）。またはシステム制御部61は、この顔認識処理が終了すると、その顔認識処理結果に基づく顔認識管理情報24（図3）を顔認識実行部15に作成させてハードディスク装置2に格納させる（SP38）。そしてシステム制御部61は、この後、この重要人物設定処理を終了する。

【0096】

これに対してシステム制御部61は、ステップSP32の判断において否定結果を得ると（つまり第2の重要人物決定方法選択ボタン72が押下されたときには）、図7について上述した重要人物表示画面40を表示部6に表示させる（SP36）。

【0097】

続いてシステム制御部61は、この重要人物表示画面40を用いて重要人物が選択され

るのを待ち受け（S P 3 7）、やがて重要人物が選択されると、このとき選択された重要人物に関する情報のみが登録された図3に示す顔認識管理情報24を顔認識処理部15に作成させる（S P 3 8）。そしてシステム制御部61は、この後、この重要人物設定処理を終了する。

【0098】

そしてシステム制御部61は、この後、撮影時には、顔認識実行部15を制御して、上述のようにして登録された重要人物に関する顔認識処理の処理結果のみを顔認識管理情報24（図3）に反映させる。またシステム制御部61は、シーンの撮影が終了するごとに、図8について上述した重要度設定処理を実行することによりそのシーン内に設定された各チャプタのチャプタ重要度を決定し、決定結果に基づいてチャプタ管理情報20（図3）を更新する。

【0099】

以上のように本実施の形態によるビデオカメラ60では、動画撮影前にユーザが決定しておいた重要人物に対してのみ顔認識処理を行い、この顔認識処理の処理結果に基づいて各チャプタのチャプタ重要度を設定するため、チャプタのチャプタ重要度の設定を容易化させることができる。またビデオカメラ60では、上述のように重要人物を事前登録するため、顔認識を利用した自動焦点や自動露光を行う際に、たまたま一緒に映りこんだ他人の顔を認識したためにその人物に最適な焦点・露光設定を行ってしまい、撮影したかった目的の人物が上手く映らないという現象を回避することができる。

【0100】

（3）他の実施の形態

なお上述の第1及び第2の実施の形態においては、本発明を図1のように構成されたビデオカメラ1，60に適用するようにした場合について述べたが、本発明はこれに限らず、この他種々の構成を有するビデオカメラや、ビデオカメラ以外の例えばDVDレコーダや、動画撮影機能が搭載された電子スチルカメラ又は携帯電話機などにも広く適用することができる。

【0101】

また上述の第1及び第2の実施の形態においては、撮影映像を記録する記録媒体としてハードディスク装置2及びDVD3を適用した場合について述べたが、本発明はこれに限らず、DVD及びハードディスク装置以外の例えばBD（Blu-ray Disc）、CD（Compact Disc）、MD（Mini Disc）及び又は半導体メモリなどの他の記録媒体を広く適用することができる。

【0102】

さらに上述の第1及び第2の実施の形態においては、撮影により得られたシーンの映像情報を記録媒体に記録再生する記録再生部としてのハードディスク装置2及びDVDドライブをビデオカメラ1，60が内蔵する場合について述べたが、本発明はこれに限らず、これらの記録再生部としてUSB（Universal Serial Bus）やeSATA（External Serial Advanced Technology Attachment）などで接続された外付タイプのドライブを適用するようにしても良い。

【0103】

さらに上述の第1及び第2の実施の形態においては、ユーザにより設定された重要人物に対する顔認識処理の処理結果に基づいてチャプタごとのチャプタ重要度を設定する重要度設定部と、チャプタごとのチャプタ重要度に基づいて、対応するチャプタ重要度のチャプタを選択的に再生するようにハードディスク装置2及びDVDドライブを制御する制御部と、表示部6に一覧表示された顔画像のうち、ユーザにより選択された顔画像に対応する被写体を重要人物として設定する重要人物設定部とを1つのシステム制御部5，61により構成するようにした場合について述べたが、本発明はこれに限らず、これら重要度設定部、制御部及び重要人物設定部をそれぞれ別個に構成するようにしても良い。

【0104】

本発明は、ビデオカメラのほか、DVDレコーダなどの種々の記録再生装置に広く適用

することができる。

【0105】

以上、本発明の好適な実施例を図面を用いて説明した。本発明によれば、ユーザ設定に応じた特定のチャプタを選択的に再生させることができるため、所望する人物が登場するチャプタをユーザが素早く見つけ出すことができる。またユーザの設定に応じた特定のチャプタを選択的に再生させることができるため、シーン全体の内容をユーザが短時間でかつ容易に把握することができる。

【図面の簡単な説明】

【0106】

【図1】第1及び第2の実施の形態によるビデオカメラの構成を示すブロック図である。

【図2】チャプタ管理情報の一例を示す概念図である。

【図3】顔認識管理情報の一例を示す図概念図である。

【図4】顔認識を有効にした場合の撮影映像の一例を示す概念図である。

【図5】撮影映像記録処理の処理手順を示すフローチャートである。

【図6】チャプタ重要度設定処理の処理手順を示すフローチャートである。

【図7】重要人物決定画面の画面構成例を示す略線図である。

【図8】重要度決定処理の処理手順を示すフローチャートである。

【図9】対象シーンにおけるチャプタ構成及び各チャプタにそれぞれ設定されたチャプタ重要度の一例を示す図表である。

【図10】チャプタ選択再生処理の処理手順を示すフローチャートである。

【図11】チャプター一覧画面の画面構成例を示す略線図である。

【図12】シーン一覧画面の画面構成例を示す略線図である。

【図13】重要人物設定処理の処理手順を示すフローチャートである。

【図14】撮影前重要人物設定画面の画面構成例を示す略線図である。

【図15】重要人物撮影画面の画面構成例を示す略線図である。

【符号の説明】

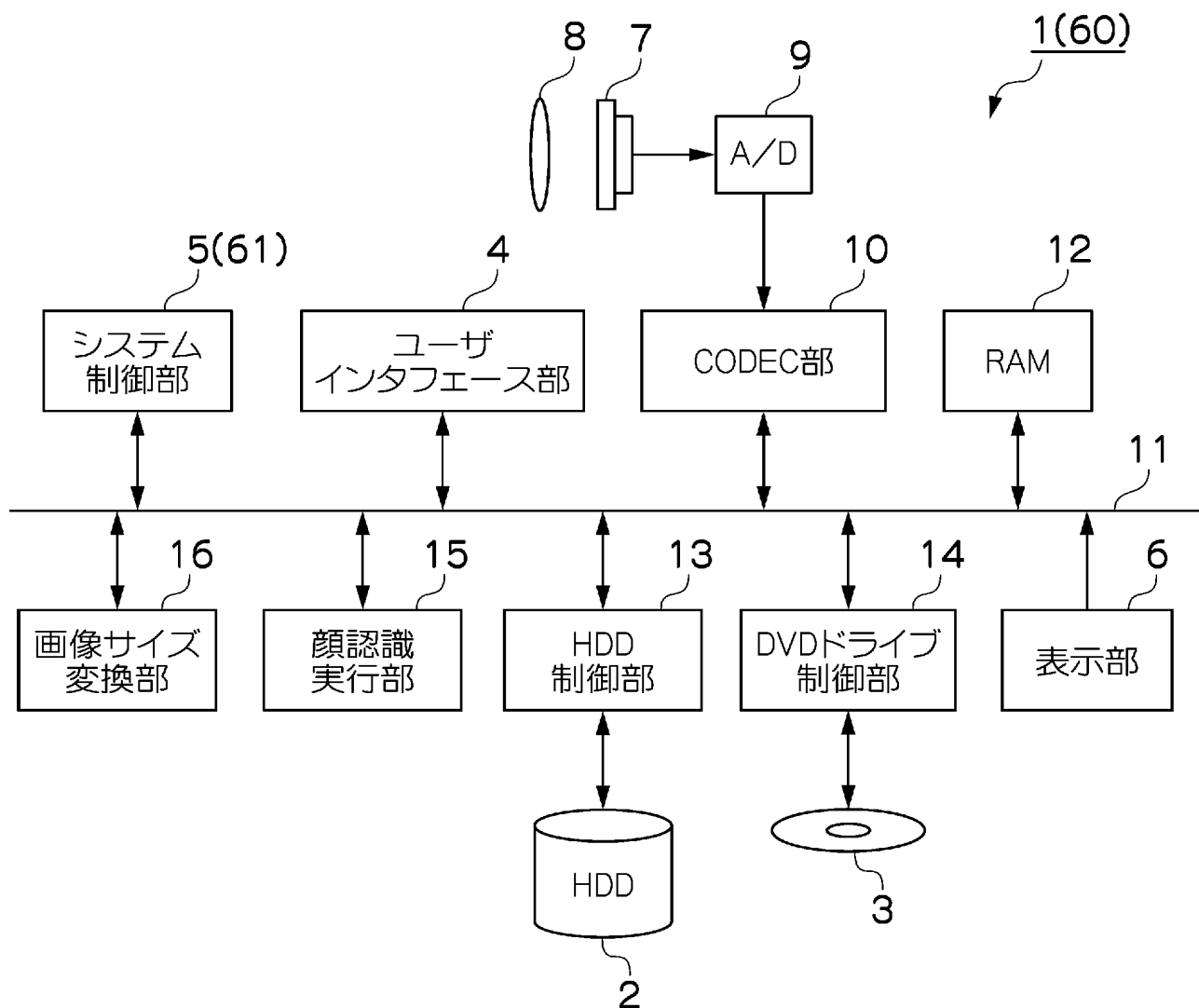
【0107】

1, 60……ビデオカメラ、2……ハードディスク装置、3……DVD、4……ユーザインタフェース部、5, 61……システム制御部、6……表示部、15……顔認識実行部、20……チャプタ管理情報、24……顔認識管理情報、30……撮影映像、31……枠、40……重要人物決定画面、41……顔画像、50……チャプター一覧画面、51, 54……サムネイル画像、53……シーン一覧画面、55……アイコン、70……撮影前重要人物設定画面。

【書類名】 図面

【図 1】

図 1



【圖 2】

圖 2

21	22	23
001	hh:mm:ss:ff	2
002	hh:mm:ss:ff	1
003	hh:mm:ss:ff	3
⋮	⋮	⋮

20

【圖 3】

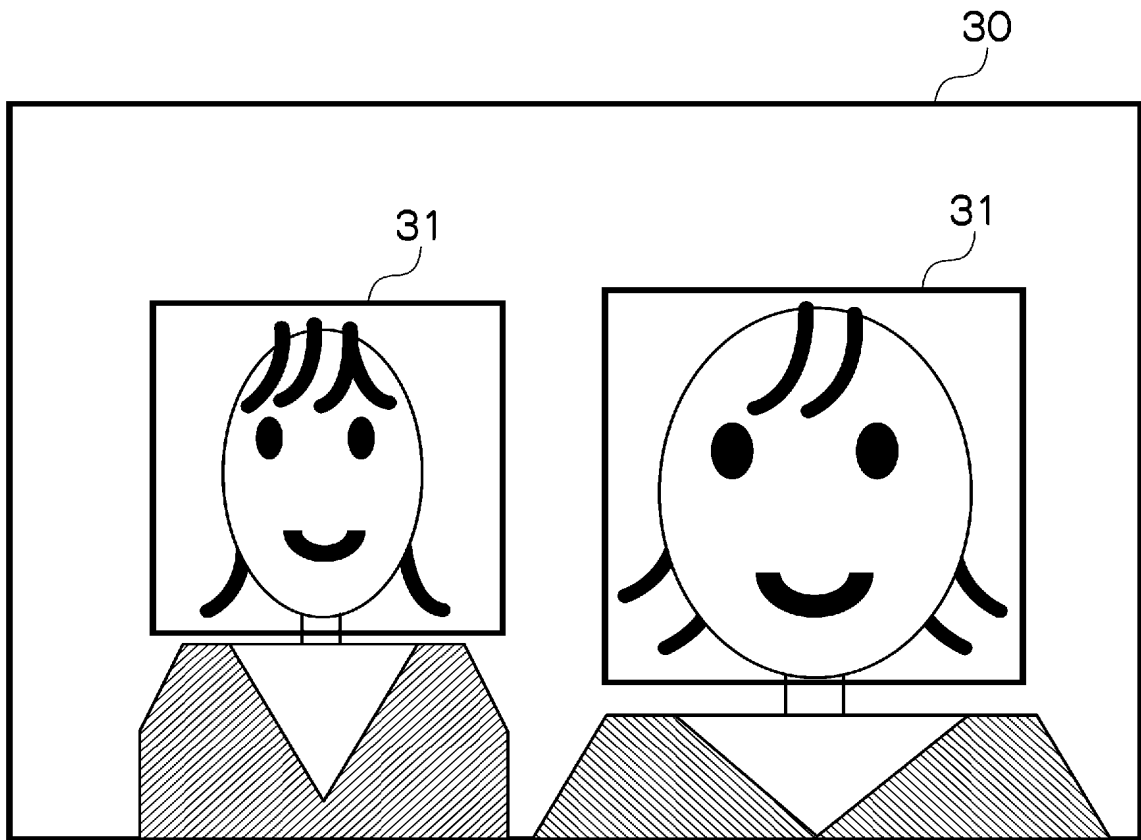
圖 3

25	26	27
001	filepath/file.jpg	hh:mm:ss:ff ...
002	filepath/file.jpg	
003	filepath/file.jpg	hh:mm:ss:ff ...
⋮	⋮	

24

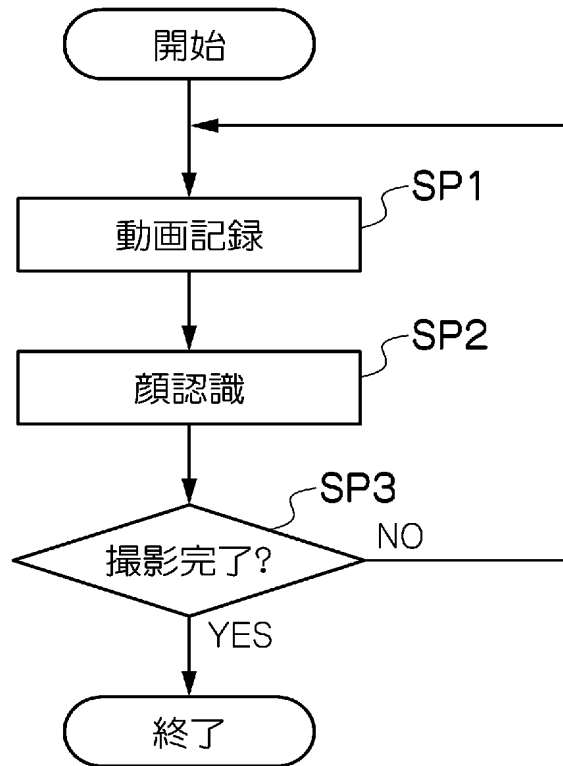
【图4】

图4



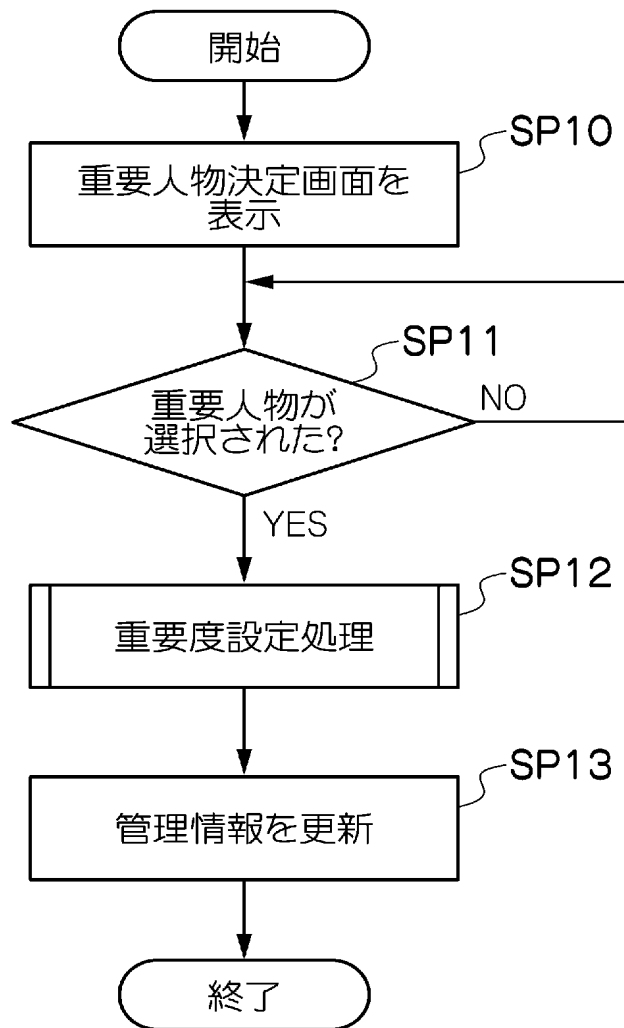
【図5】

図5



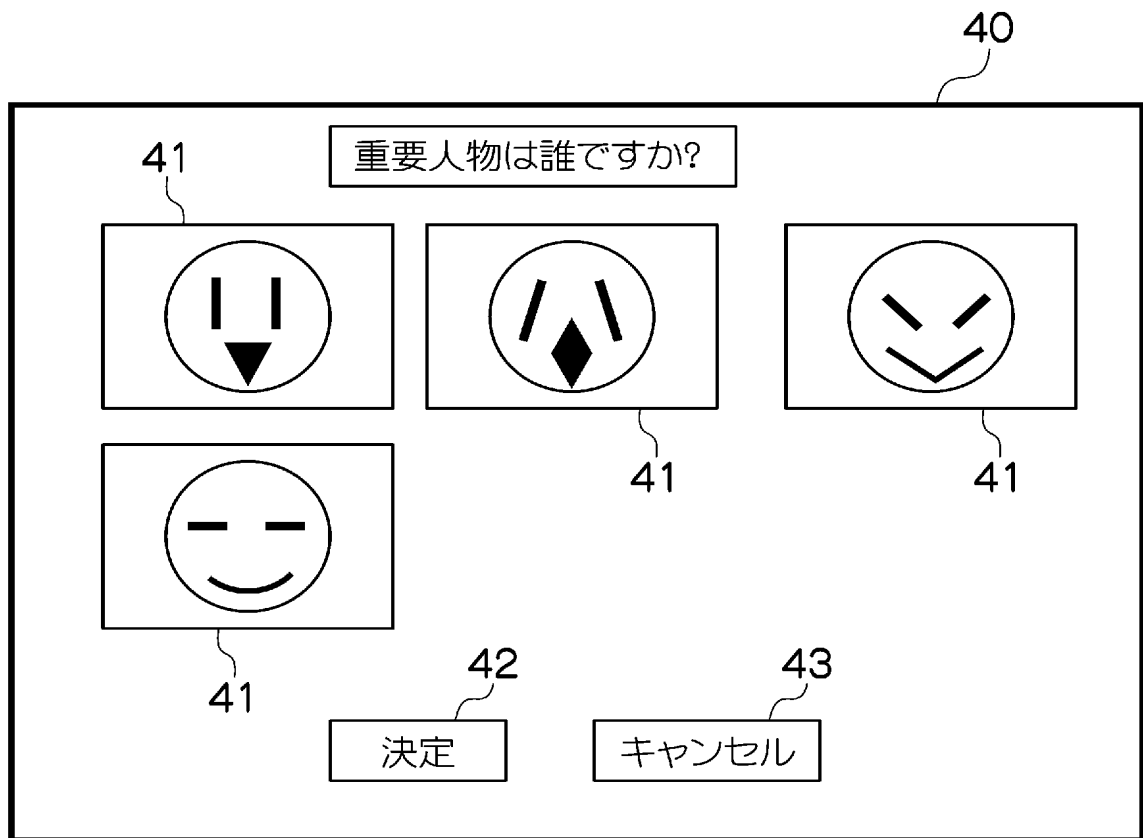
【図6】

図6



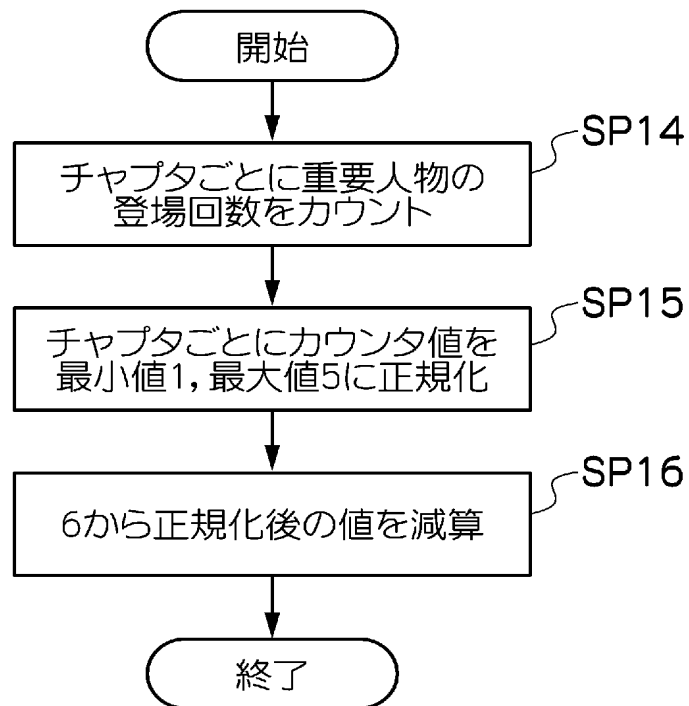
【図7】

図7



【図8】

図8



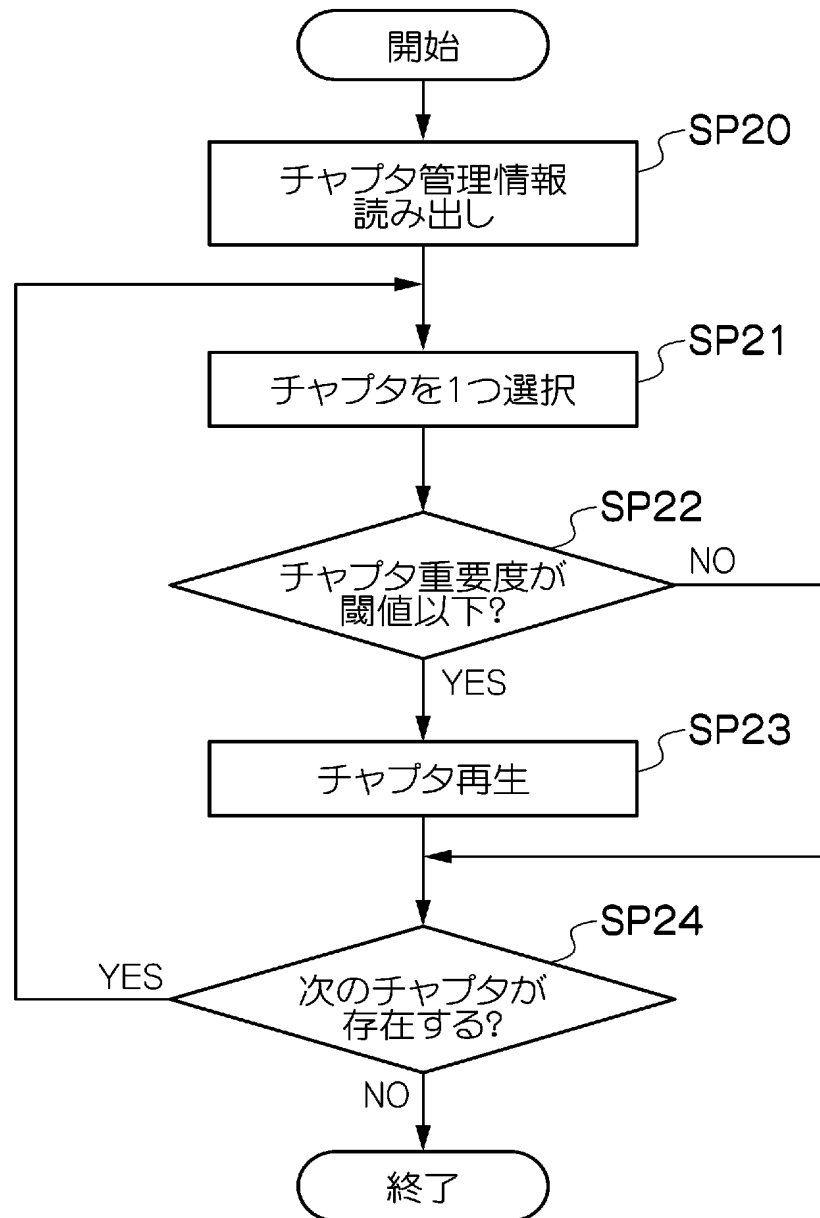
【図9】

図9

チャプタID	チャプタ重要度
001	5
002	1
003	5
004	3
005	1
006	5
007	5
008	5
009	3

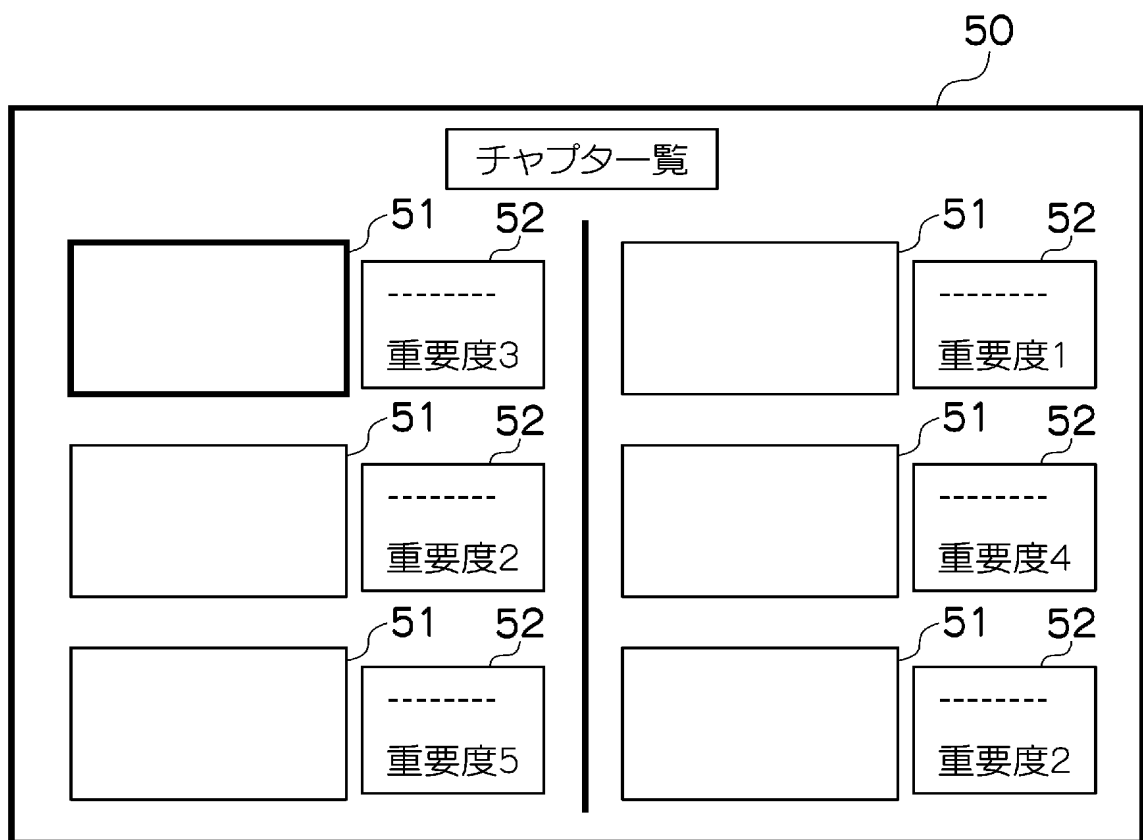
【図10】

図10



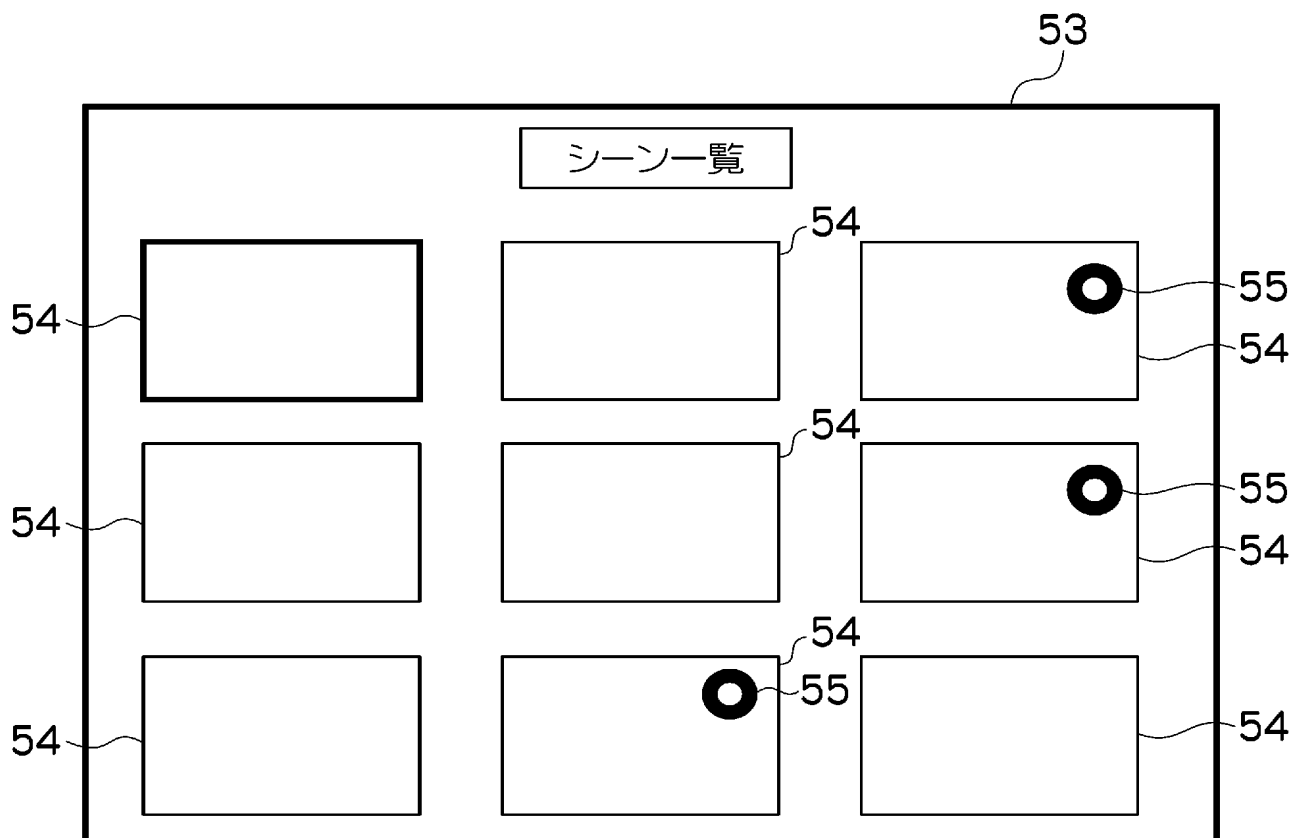
【図 11】

図 11



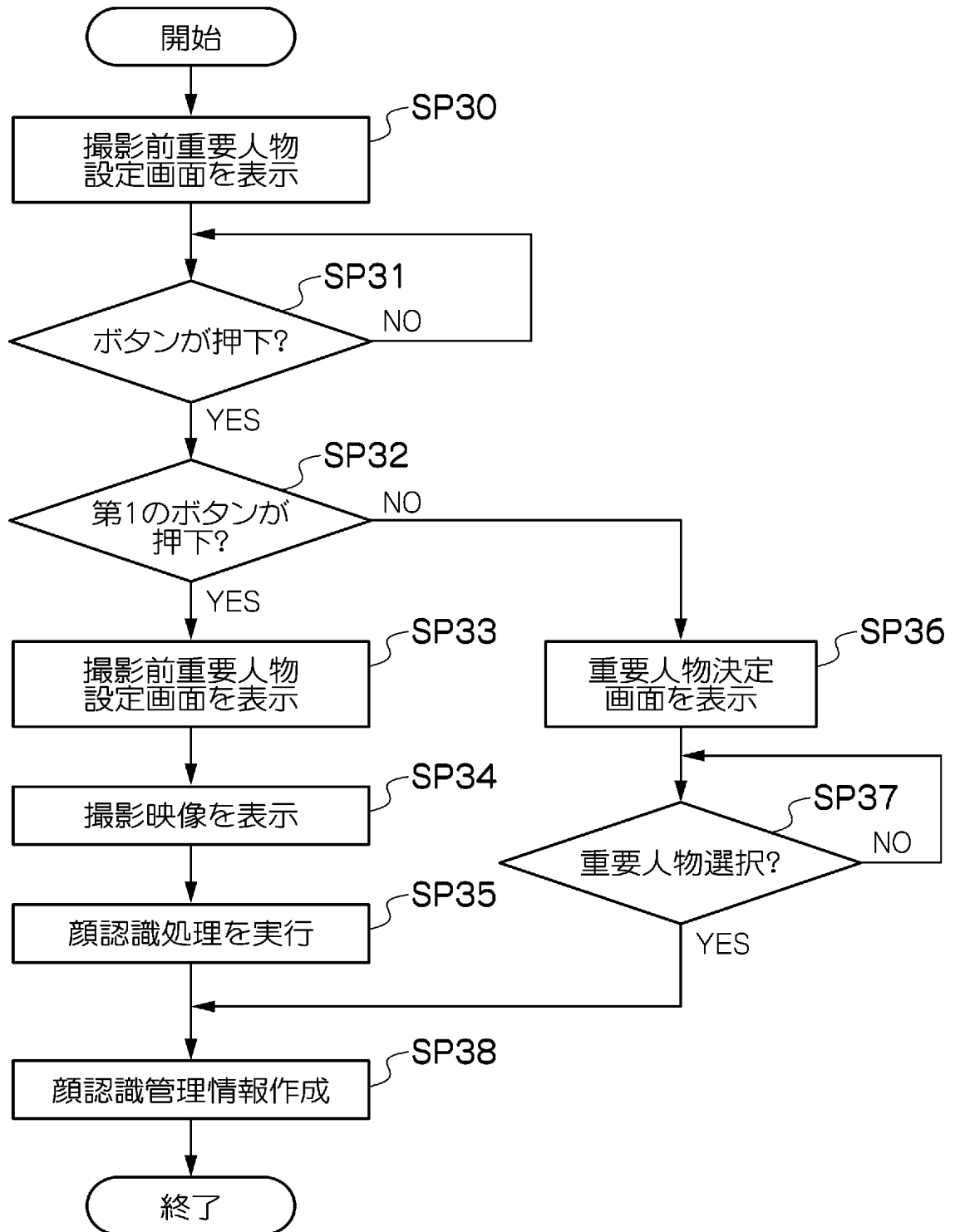
【図12】

図12



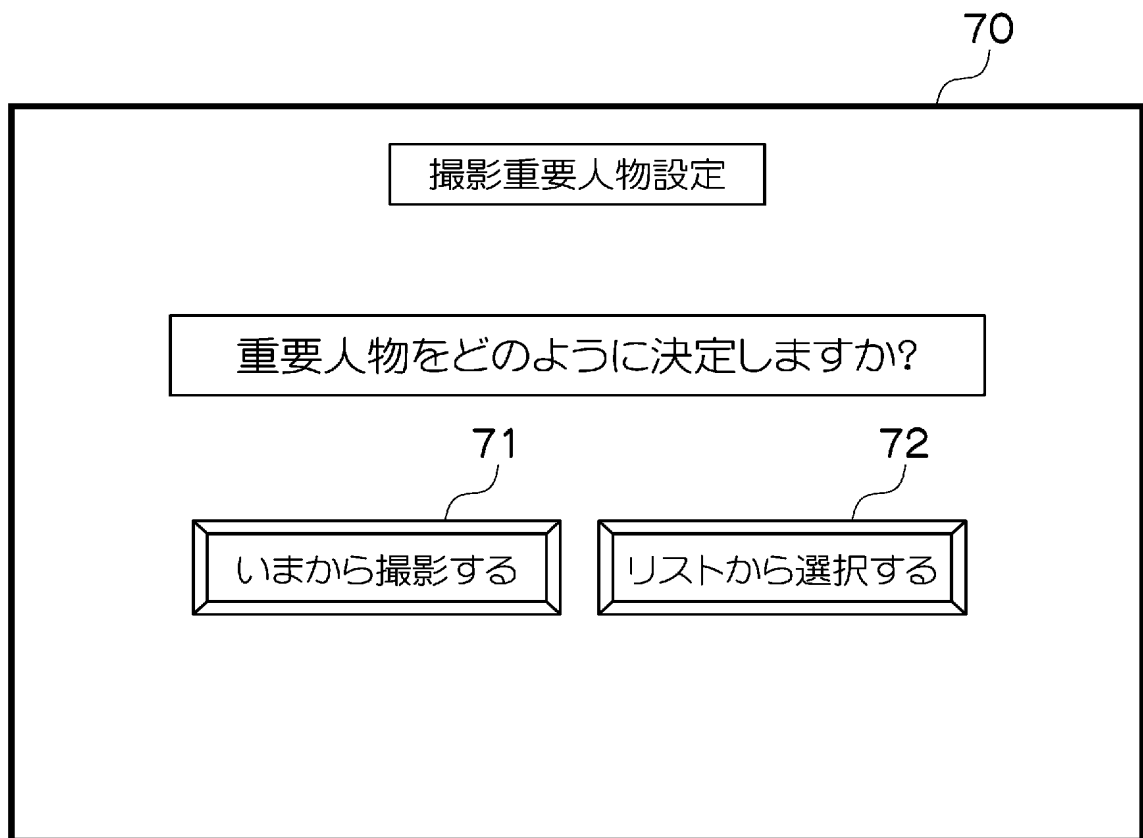
【図13】

図13



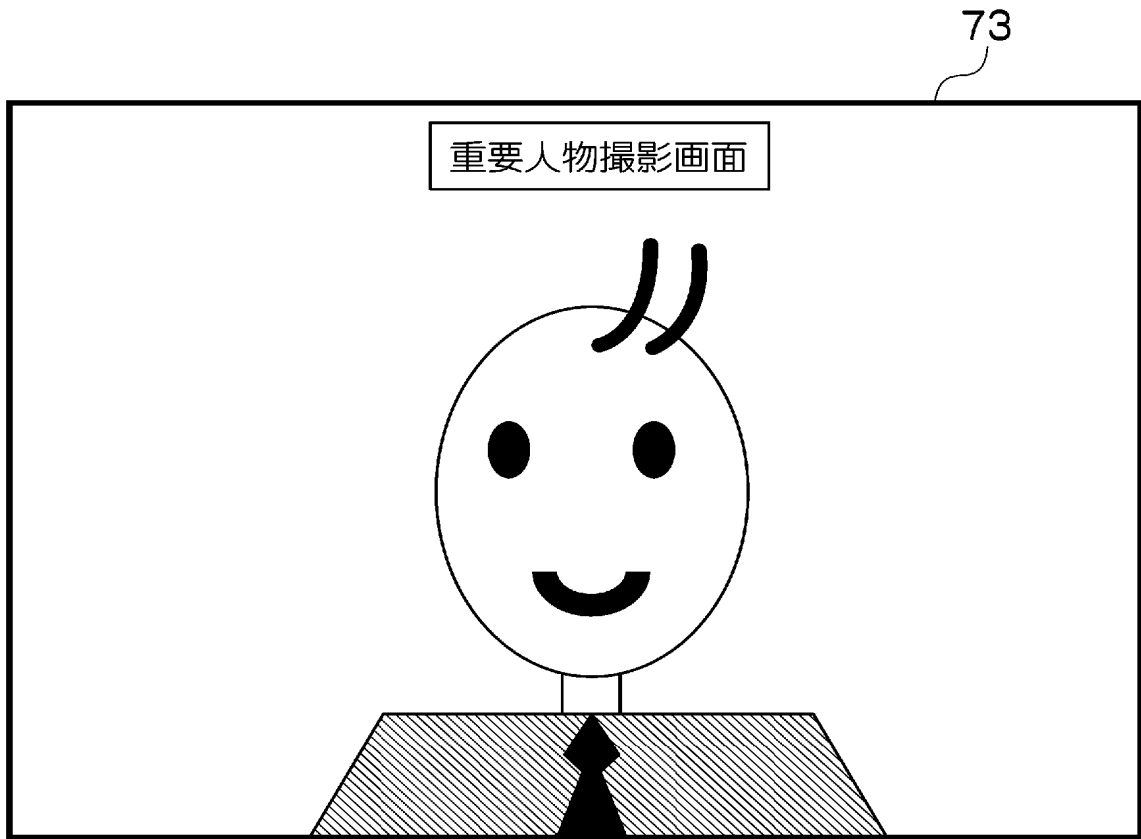
【図 14】

図14



【図15】

図15



【書類名】 要約書

【要約】

【課題】 ユーザが目的のチャプタやシーンを素早く、かつ容易に見つけ出すことができる記録再生装置及び方法を提案する。

【解決手段】 撮影により得られたシーンの映像情報を所定の第 1 の記録媒体に記録再生すると共に、シーンごとに 1 又は複数のチャプタを設定可能な記録再生装置及び当該記録再生装置における記録再生方法において、映像情報に基づく撮影映像に対して顔認識処理を実行し、重要人物に対する顔認識処理の処理結果に基づいてチャプタごとの重要度を設定し、チャプタごとの重要度に基づいて、対応する重要度のチャプタを選択的に再生するようにした。

【選択図】 図 6

【書類名】 手続補正書
【整理番号】 210850255
【あて先】 特許庁長官殿
【事件の表示】
【出願番号】 特願2008-130678
【補正をする者】
【識別番号】 000005108
【氏名又は名称】 株式会社日立製作所
【代理人】
【識別番号】 100093861
【弁理士】
【氏名又は名称】 大賀 眞司

【手続補正1】
【補正対象書類名】 特許請求の範囲
【補正対象項目名】 全文
【補正方法】 変更
【補正の内容】

【書類名】 特許請求の範囲

【請求項1】

シーンごとに1又は複数のチャプタを設定可能な記録再生装置において、
撮影により得られた前記シーンの映像情報を記録媒体に記録する記録部と、
前記記録部により前記記録媒体に記録された映像情報を再生する再生部と、
前記映像情報に基づく撮影映像に対して顔認識処理を実行する顔認識実行部と、
予めユーザにより登録された人物の顔画像を一覧表示する表示部と、
前記表示部に一覧表示された前記顔画像の中からユーザにより選択された前記顔画像に
対応する人物を重要人物として設定する重要人物設定部と、

前記顔認識実行部の前記顔認識処理に基づいて、前記重要人物設定部により設定された
重要人物が含まれるチャプタを前記記録媒体から選択的に再生するように前記再生部を制
御する制御部と

を備えることを特徴とする記録再生装置。

【請求項2】

再生モードとして複数の再生モードが設けられ、
各前記再生モードには、それぞれ異なる閾値が設定され、
前記制御部は、
ユーザにより指定された前記再生モードの閾値と各前記チャプタの重要度とを比較し、
前記重要度が当該再生モードの閾値と同じ又は当該閾値よりも高い前記チャプタを選択的
に再生するように前記記録再生部を制御する

ことを特徴とする請求項1に記載の記録再生装置。

【請求項3】

前記重要人物設定部により設定された重要人物に対する前記顔認識実行部の前記顔認識
処理に基づいて、前記記録媒体に記録された映像情報の前記チャプタごとの重要度を設定
する重要度設定部を備え、

前記制御部は、前記重要度設定部により設定された前記チャプタごとの重要度に基づい
て、対応する前記重要度のチャプタを前記記録媒体から選択的に再生するように前記再生
部を制御する

ことを特徴とする請求項1に記載の記録再生装置。

【請求項4】

前記重要度設定部は、
前記チャプタ内における前記重要人物の登場回数に基づいて当該チャプタの重要度を設
定する

ことを特徴とする請求項3に記載の記録再生装置。

【請求項 5】

前記制御部は、

前記第 1 の記録媒体に前記映像情報が記録された前記シーンごとに、当該シーン内に設定された各前記チャプタの重要度を管理し、

ユーザからの要求に応じて、当該シーンごとに、各前記チャプタの前記重要度が設定されているか否かを前記ユーザに提示する

ことを特徴とする請求項3に記載の記録再生装置。

【請求項 6】

撮影により得られたシーンの映像情報を記録媒体に対して記録再生すると共に、前記シーンごとに 1 又は複数のチャプタを設定可能な記録再生装置における記録再生方法において、

前記映像情報に基づく撮影映像に対して顔認識処理を実行する第 1 のステップと、

予めユーザにより登録された人物の顔画像を一覧表示する第 2 のステップと、

前記第 2 のステップで一覧表示された前記顔画像の中からユーザにより選択された前記顔画像に対応する人物を重要人物として設定する第 3 のステップと、

前記第 1 のステップの前記顔認識処理に基づいて、前記第 3 のステップで設定した重要人物が含まれるチャプタを前記記録媒体から選択的に再生する第 4 のステップと
を備えることを特徴とする記録再生方法。

【請求項 7】

再生モードとして複数の再生モードが設けられ、

各前記再生モードには、それぞれ異なる閾値が設定され、

ユーザにより指定された前記再生モードの閾値と各前記チャプタの重要度とを比較し、前記重要度が当該再生モードの閾値と同じ又は当該閾値よりも高い前記チャプタを選択的に再生する

ことを特徴とする請求項 6 に記載の記録再生方法。

【請求項 8】

前記第 3 のステップで設定した重要人物に対する前記第 1 のステップの前記顔認識処理に基づいて、前記記録媒体に記録された映像情報の前記チャプタごとの重要度を設定する第 5 のステップを備え、

前記第 4 のステップにおいて、前記第 5 のステップで設定した前記チャプタごとの重要度に基づいて、対応する前記重要度のチャプタを前記記録媒体から選択的に再生する

ことを特徴とする請求項 6 に記載の記録再生方法。

【請求項 9】

前記第 5 のステップでは、

前記チャプタ内における前記重要人物の登場回数に基づいて当該チャプタの重要度を設定する

ことを特徴とする請求項 8 に記載の記録再生方法。

【請求項 10】

前記記録媒体に前記映像情報が記録された前記シーンごとに、当該シーン内に設定された各前記チャプタの重要度をそれぞれ管理し、

ユーザからの要求に応じて、当該シーンごとに、各前記チャプタの前記重要度が設定されているか否かを前記ユーザに提示する

ことを特徴とする請求項 8 に記載の記録再生方法。

【手続補正2】

【補正対象書類名】 明細書

【補正対象項目名】 0013

【補正方法】 変更

【補正の内容】

【0013】

かかる課題を解決するため本発明においては、シーンごとに1又は複数のチャプタを設定可能な記録再生装置において、撮影により得られた前記シーンの映像情報を記録媒体に記録する記録部と、前記記録部により前記記録媒体に記録された映像情報を再生する再生部と、前記映像情報に基づく撮影映像に対して顔認識処理を実行する顔認識実行部と、予めユーザにより登録された人物の顔画像を一覧表示する表示部と、前記表示部に一覧表示された前記顔画像の中からユーザにより選択された前記顔画像に対応する人物を重要人物として設定する重要人物設定部と、前記顔認識実行部の前記顔認識処理に基づいて、前記重要人物設定部により設定された重要人物が含まれるチャプタを前記記録媒体から選択的に再生するように前記再生部を制御する制御部とを備えることを特徴とする。

【手続補正3】

【補正対象書類名】 明細書
【補正対象項目名】 0015
【補正方法】 変更
【補正の内容】

【0015】

また本発明においては、撮影により得られたシーンの映像情報を記録媒体に対して記録再生すると共に、前記シーンごとに1又は複数のチャプタを設定可能な記録再生装置における記録再生方法において、前記映像情報に基づく撮影映像に対して顔認識処理を実行する第1のステップと、予めユーザにより登録された人物の顔画像を一覧表示する第2のステップと、前記第2のステップで一覧表示された前記顔画像の中からユーザにより選択された前記顔画像に対応する人物を重要人物として設定する第3のステップと、前記第1のステップの前記顔認識処理に基づいて、前記第3のステップで設定した重要人物が含まれるチャプタを前記記録媒体から選択的に再生する第4のステップとを備えることを特徴とする。

出願人履歴

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20040908

住所変更

5 0 8 2 7 7 8 7 4

東京都千代田区丸の内一丁目6番6号
株式会社日立製作所



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
14/478,020	09/05/2014	2484	1740	500.49882CX1	1	1

CONFIRMATION NO. 6527

FILING RECEIPT



20457
ANTONELLI, TERRY, STOUT & KRAUS, LLP
1300 NORTH SEVENTEENTH STREET
SUITE 1800
ARLINGTON, VA 22209-3873

Date Mailed: 09/12/2014

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)

Mari YOSHIDA, Yokohama, JAPAN;

Applicant(s)

HITACHI CONSUMER ELECTRONICS CO., LTD., Tokyo, JAPAN

Power of Attorney: The patent practitioners associated with Customer Number 020457

Domestic Priority data as claimed by applicant

This application is a CON of 12/430,185 04/27/2009

Foreign Applications (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see <http://www.uspto.gov> for more information.)
JAPAN 2008-130678 05/19/2008

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.

Request to Retrieve - This application either claims priority to one or more applications filed in an intellectual property Office that participates in the Priority Document Exchange (PDX) program or contains a proper **Request to Retrieve Electronic Priority Application(s)** (PTO/SB/38 or its equivalent). Consequently, the USPTO will attempt to electronically retrieve these priority documents.

If Required, Foreign Filing License Granted: 09/11/2014

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 14/478,020**

Projected Publication Date: 12/25/2014

Non-Publication Request: No

Early Publication Request: No

Title

RECORDING AND REPRODUCING APPARATUS AND METHOD THEREOF

Preliminary Class

386

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).

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www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
14/478,020	09/05/2014	Mari YOSHIDA	500.49882CX1

CONFIRMATION NO. 6527

20457
ANTONELLI, TERRY, STOUT & KRAUS, LLP
1300 NORTH SEVENTEENTH STREET
SUITE 1800
ARLINGTON, VA 22209-3873

NOTICE



Date Mailed: 09/12/2014

INFORMATIONAL NOTICE TO APPLICANT

Applicant is notified that the above-identified application contains the deficiencies noted below. No period for reply is set forth in this notice for correction of these deficiencies. However, if a deficiency relates to the inventor's oath or declaration, the applicant must file an oath or declaration in compliance with 37 CFR 1.63, or a substitute statement in compliance with 37 CFR 1.64, executed by or with respect to each actual inventor no later than the expiration of the time period set in the "Notice of Allowability" to avoid abandonment. See 37 CFR 1.53(f).

The item(s) indicated below are also required and should be submitted with any reply to this notice to avoid further processing delays.

- A properly executed inventor's oath or declaration has not been received for the following inventor(s):
Mari YOSHIDA

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875						Application or Docket Number 14/478,020	
APPLICATION AS FILED - PART I							
(Column 1)		(Column 2)		SMALL ENTITY		OTHER THAN SMALL ENTITY	
FOR	NUMBER FILED	NUMBER EXTRA	RATE(\$)	FEE(\$)		RATE(\$)	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), (l), 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(j))	1	minus 20 = *			OR	x 80 =	0.00
INDEPENDENT CLAIMS (37 CFR 1.16(h))	1	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
			TOTAL			TOTAL	1600
* If the difference in column 1 is less than zero, enter "0" in column 2.							
APPLICATION AS AMENDED - PART II							
(Column 1)		(Column 2)		(Column 3)		SMALL ENTITY	
AMENDMENT A	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE(\$)	ADDITIONAL FEE(\$)		RATE(\$)
	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))					OR	
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))					OR	
			TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	
(Column 1)		(Column 2)		(Column 3)		SMALL ENTITY	
AMENDMENT B	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE(\$)	ADDITIONAL FEE(\$)		RATE(\$)
	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))					OR	
	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.							

ATSK/SB/08A INFORMATION DISCLOSURE STATEMENT BY APPLICANT <i>(use as many sheets as necessary)</i>			Complete if Known		
			Application Number	Not yet assigned	
			Filing Date	September 5, 2014	
			First Named Inventor	Mari YOSHIDA	
			Art Unit	2484 (expected)	
			Examiner Name	Syed Y. Hasan (expected)	
Sheet	2	of	3	Attorney Docket Number	500.49882CX1

FOREIGN PATENT DOCUMENTS						
Examiner Initials'	Cite No. ¹	Foreign Patent Document	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T ⁶
		Country Code ³ –Number ⁴ –Kind Code ⁵ <i>(if known)</i>				
		JP 2003-046911	02-14-2003	Matsushita Electric		
		JP 2007-150603	06-14-2007	Nikon Corp		
		JP 2007-150604	06-14-2007	Nikon Corp		
		JP 2007-281680	10-25-2007	Sony Corp		
		JP 2008-017041	01-24-2008	Sony Corp		
		JP 2012-054948	03-15-2012	Sony Corp		
		JP 2008-228134	09-25-2008	Sony Corp		
		JP 2009-059445	03-19-2009	Sony Corp		
		JP 2006-074463	03-16-2006	Sony Corp		
		JP 2008-017042	01-24-2008	Sony Corp		
		JP 2003-150603	05-23-2003	Olympus Optical		
		JP 2006-101325	04-13-2006	Toshiba Corp		
		JP 2007-049332	02-22-2007	Sony Corp		
		JP 2006-033659	02-02-2006	Sony Corp		
		JP 2006-101324	04-13-2006	Toshiba Corp		
		JP 2008-283486	11-20-2008	Sony Corp		
		JP 2009-033351	02-12-2009	Canon Inc		
		JP 2003-283993	10-03-2003	Sanyo Electric		
		JP 2001-045395	02-16-2001	Minolta Co Ltd		
		JP 2004-207842	07-22-2004	Casio Computer Co Ltd		
		JP 2006-166408	06-22-2006	Canon KK		
		JP 2007-281858	10-25-2007			
		JP 2007-281680	10-25-2007			See P1
		JP 2007-026493	02-01-2007			See P2
		JP 2007-049332	02-22-2007	SONY CORP		Abs
		JP 06-165009	06-10-1994			See P3

Examiner Signature		Date Considered	
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ATSK/SB/08B INFORMATION DISCLOSURE STATEMENT BY APPLICANT <i>(use as many sheets as necessary)</i>				Complete if Known	
				Application Number	Not yet assigned
				Filing Date	September 5, 2014
				First Named Inventor	Mari YOSHIDA
				Group Art Unit	2484 (expected)
				Examiner Name	Syed Y. Hasan (expected)
Sheet	3	of	3	Attorney Docket Number	500.49882CX1

NON PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T ²
		JP Office Action for Japanese Patent Application No. 2012-063504, issued on April 2, 2013	
		JP Office Action for Japanese Patent Application No. 2012-063504, issued on October 30, 2012	

Examiner Signature		Date Considered	
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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) to identify the application to which the Power of Attorney is directed, in accordance with 37 CFR 1.5, unless the application number and filing date are identified in the Power of Attorney by Applicant form. If neither form PTO/AIA/82A nor form PTO/AIA82B identifies the application to which the Power of Attorney is directed, the Power of Attorney will not be recognized in the application.

Application Number	Not yet assigned
Filing Date	September 5, 2014
First Named Inventor	Mari YOSHIDA
Title	RECORDING AND REPRODUCING APPARATUS AND METHOD THEREOF
Art Unit	2484 (expected)
Examiner Name	Syed Y. Hasan (expected)
Attorney Docket Number	500.49882CX1

SIGNATURE of Applicant or Patent Practitioner

Signature	/Inna S. Shestul/	Date (Optional)	September 5, 2014
Name	Inna S. Shestul	Registration Number	55,616
Title (if Applicant is a juristic entity)	Attorney		
Applicant Name (if Applicant is a juristic entity)	HITACHI CONSUMER ELECTRONICS CO., LTD.		

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



*Total of 1 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.**

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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 the Freedom of Information Act requires disclosure of these records.
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.
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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 inspections 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.

出願者による委任状 POWER OF ATTORNEY BY APPLICANT

私はここもと、添付の伝送書式中に同定されている出願書中の、以前のすべての委任状はこれを破棄する。

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

私は下記の顧客番号に関した特許弁護士を、私/私たちの弁護士あるいは代理人と指名し、添付の伝送書 ((書式PTO/AIA/82A あるいはその同等書類)に記載されている出願に関連した米国特許商標局に対するすべての必要事項を遂行なさしめる。

☒ I hereby appoint 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 equivalent):

あるいは
OR

020457

私は下記の特許弁護士を、私/私たちの弁護士あるいは代理人と指名し、添付の伝送書 ((書式PTO/AIA/82A あるいはその同等書類)に記載されている出願に関連した米国特許商標局に対するすべての必要事項を遂行なさしめる。

☐ I hereby appoint Practitioner(s) named below 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 equivalent):

登録名 Name Registration	番号 Number	登録名 Name Registration	番号 Number

上記に同定された特許の住所を認め、あるいは必要に応じて変更を行ってください。

Please recognize or change the correspondence address for the above-identified patent to:

☒ 上記顧客番号に関連した住所。
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あるいは
OR

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または
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☐ 事務所または個人名 Firm or Individual Name				
住所 Address				
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国名 Country				
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[1/2]

[Page 1 of 2]

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

出願者による委任状 POWER OF ATTORNEY BY APPLICANT

私は出願者であり:

I am the Applicant:

- ☐ 発明者あるいは共同発明者である
Inventor or Joint Inventor
- ☐ 死亡、あるいは禁治産者とされた発明者の法的代理人である
Legal Representative of a Deceased or Legally Incapacitated Inventor
- ☒ 被譲渡人あるいは発明者が譲渡する義務を負う人物である
Assignee or Person to Whom the Inventor is Under an Obligation to Assign
- ☐ 別面において十分な独占的所有権 (たとえば出願のなかで 37 CFR 1.46(b)(2) のもとにおける請願が出願のなかで受理された、あるいは本書類とともに申請がなされた場合) を有することを示した人物である
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)

特許出願人の署名

SIGNATURE of Applicant for Patent

署名 Signature		日付 Date	September 14, 2012
姓名 Name	Shutoku WATANABE	電話 Telephone	
肩書きおよび会社 Title and Company	President and Representative Director Hitachi Consumer Electronics Co., Ltd.		

注記: 署名: 本書式は 37 CFR 1.33 にのっとり、出願者あるいは出願者の代理人の署名がなされていなければならない。署名およびその証明必要条件については 37 CFR 1.4 を参照のこと。署名がひとつ以上ある場合はその数の書式を提出すること。下記参照*。

NOTE: Signature - This form must be signed by the applicant or applicant's representative in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. Submit multiple forms for more than one signature, see below*.

- ☐ *提出書式の合計数は _____ である。
- ☐ *Total of _____ forms are submitted.

[2/2]

[Page 2 of 2]

プライバシー保護法声明書

1974 年プライバシー保護法 (P.L. 93-579) は、特許出願あるいは特許に関する添付種類の提出に関連して、特定情報があなたに与えられるよう規定しています。したがって、同法規の規定にしたがい、下記のことがらを銘記してください。

(1) 本情報の収集を律する法規は 35 U.S.C. 2(b)(2) です。(2) 求められた情報の提供は本人の任意です。さらには、(3) 米国特許商標庁がこの情報を使用する主目的は、特許出願または特許の提出を処理し、あるいは審査するためです。求められた情報を提供しなかった場合、米国特許商標庁は提出されたものを処理、審査できなくなる場合がありますので、その結果として、処理の打ち切り、あるいは出願の破棄、あるいは特許失効に帰結することがあります。

本用紙に記載された情報は、下記の通常使用目的に従います。

1. 本用紙に記載されている情報は、情報公開法 (5 U.S.C. 552) およびプライバシー保護法 (5 U.S.C. 552a) が許容する範囲において極秘扱いとなります。本記録システムの記録は、本記録の開示が情報公開法で要求されているか否かを判断するために、司法省に開示される場合があります。
2. 本記録システムの記録は通常使用目的として、示談交渉手順における反対側弁護士への開示を含め、証拠の提示として法廷、予審判事、あるいは行政裁判所に開示される場合があります。
3. 本記録システム中の記録は通常使用目的として、記録に関する個人が該当する記録に関して、米国会議員に支援を要請する場合、個人の関与を要請する米国会議員に開示される場合があります。
4. 本記録システム中の記録は通常使用目的として、契約を執行するためにその情報を必要とする、本庁の契約業者に開示される場合があります。情報の受取者は 5 U.S.C. 552a(m) に基づき、1974 プライバシー法の規定要件を順守しなければなりません。
5. 特許協力条約のもとで出願された国際出願に関する本記録システム内の記録は、通常使用目的として、特許協力条約に基づき、世界知的所有権機関に開示される場合があります。
6. 本記録システムの記録は通常使用目的として、国家安全保障 (35 U.S.C. 181) による再審理、および原子力法 (42 U.S.C. 218(c)) にもとづく再審理の目的において、他の連邦政府機関に開示される場合があります。
7. 本記録システムの記録は通常使用目的として、44 U.S.C. 2904 及び 2906 に基づく記録管理慣行及びプログラムの改善を推奨するために、米一般調達局長官 (GSA) により、当機関の責任の一部として行われる記録の検査機関中に、GSA、またはその被指名人に開示される場合があります。上記の開示は、本目的のための記録検査を規定する GSA 規定、及び関連 (GSA あるいは商務省) の指令に準拠して行われます。かかる開示は、個人を特定する目的のもとに使用されてはなりません。
8. 本記録システムの記録は通常使用目的として、35 U.S.C. 122(b) に基づく出願公開後あるいは 35 U.S.C. 151 に基づく特許発行後に、一般に開示される場合があります。さらに記録は通常使用目的として、37 CFR 1.14 の制限のなかで、出願がなされても放棄され、またはその処理が終決しており、なおかつそれが公開出願で参照されている、特許出願が一般審査のために公開されている、または特許が発行されている場合は、一般に公開されることがあります。
9. 本記録システムの記録は、通常使用目的として、米国特許商標庁が、法律や法規の違反した、あるいは潜在的に違反があると判断した場合は、連邦、州、または地方自治体の警察等を開示される場合があります。

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	500.49882CX1
		Application Number	
Title of Invention	RECORDING AND REPRODUCING APPARATUS AND METHOD THEREOF		
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	
	Mari		YOSHIDA		
Residence Information (Select One) ☐ US Residency ☒ Non US Residency ☐ Active US Military Service					
City	Yokohama	Country of Residence i	JP		
Mailing Address of Inventor:					
Address 1	c/o Hitachi, Ltd., Intellectual Property Group				
Address 2	6-1, Marunouchi 1-chome, Chiyoda-ku				
City	Tokyo	State/Province			
Postal Code	100-8220	Country i	JP		
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	20457		
Email Address	email@antonelli.com	Add Email	Remove Email

Application Information:

Title of the Invention	RECORDING AND REPRODUCING APPARATUS AND METHOD THEREOF		
Attorney Docket Number	500.49882CX1	Small Entity Status Claimed	☐
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	12	Suggested Figure for Publication (if any)	

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	500.49882CX1
		Application Number	
Title of Invention	RECORDING AND REPRODUCING APPARATUS AND METHOD THEREOF		

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	20457		

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	Pending	Remove	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
	Continuation of	12430185	2009-04-27
Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the Add button.			Add

Foreign Priority Information:

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	500.49882CX1
		Application Number	
Title of Invention	RECORDING AND REPRODUCING APPARATUS AND METHOD THEREOF		

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) 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 ^j (if applicable)
2008-130678	JP	2008-05-19	
Additional Foreign Priority Data may be generated within this form by selecting the Add button.			

Add

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
--

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	500.49882CX1
		Application Number	
Title of Invention	RECORDING AND REPRODUCING APPARATUS AND METHOD THEREOF		

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 of 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			Remove
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	HITACHI CONSUMER ELECTRONICS CO., LTD.		
Mailing Address Information:			
Address 1	2-1, OTEMACHI 2-CHOME, CHIYODA-KU		
Address 2			
City	TOKYO	State/Province	
Country ⁱ	JP	Postal Code	100-0004
Phone Number		Fax Number	

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	500.49882CX1
		Application Number	
Title of Invention	RECORDING AND REPRODUCING APPARATUS AND METHOD THEREOF		
Email Address			
Additional Applicant Data may be generated within this form by selecting the Add button.			Add

Assignee Information including Non-Applicant Assignee 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.

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.				
				Remove
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.				Add

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	/Inna S. Shestul/		Date (YYYY-MM-DD)	2014-09-05
First Name	Inna	Last Name	Shestul	Registration Number
				55616
Additional Signature may be generated within this form by selecting the Add button.				Add

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	500.49882CX1
		Application Number	
Title of Invention	RECORDING AND REPRODUCING APPARATUS AND METHOD THEREOF		

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.**

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 the Freedom of Information Act requires disclosure of these records.
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 inspections 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.

Electronic Patent Application Fee Transmittal				
Application Number:				
Filing Date:				
Title of Invention:		RECORDING AND REPRODUCING APPARATUS AND METHOD THEREOF		
First Named Inventor/Applicant Name:		Mari YOSHIDA		
Filer:		Inna S. Shestul/Karen Jones		
Attorney Docket Number:		500.49882CX1		
Filed as Large Entity				
Utility under 35 USC 111(a) Filing Fees				
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:				
Late Filing Fee for Oath or Declaration	1051	1	140	140
Petition:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				1740

Electronic Acknowledgement Receipt

EFS ID:	20055281
Application Number:	14478020
International Application Number:	
Confirmation Number:	6527
Title of Invention:	RECORDING AND REPRODUCING APPARATUS AND METHOD THEREOF
First Named Inventor/Applicant Name:	Mari YOSHIDA
Customer Number:	20457
Filer:	Inna S. Shestul/Karen Jones
Filer Authorized By:	Inna S. Shestul
Attorney Docket Number:	500.49882CX1
Receipt Date:	05-SEP-2014
Filing Date:	
Time Stamp:	11:16:43
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	\$ 1740
RAM confirmation Number	8895
Deposit Account	
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
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1		49882cx1-09-05-2014CA.pdf	1348078	yes	61
			e7c38bc6b2c8f61aff28b827f9ae6607fe1b3477		
	Multipart Description/PDF files in .zip description				
	Document Description		Start	End	
	Transmittal of New Application		1	1	
	Specification		2	36	
	Claims		37	38	
	Abstract		39	39	
	Drawings-only black and white line drawings		40	51	
	Transmittal Letter		52	53	
	Information Disclosure Statement (IDS) Form (SB08)		54	56	
	Power of Attorney		57	61	
Warnings:					
Information:					
2	Application Data Sheet	49882cx1ads.pdf	1561179	no	7
			1c6c1ad2b7b884f5d351c657e7b35d29670079ca		
Warnings:					
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	36684	no	2
			db605106096d588697d3c6b6811cb3f21cbaa38f		
Warnings:					
Information:					
Total Files Size (in bytes):			2945941		

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.

UTILITY PATENT APPLICATION TRANSMITTAL <i>(Only for new nonprovisional applications under 37 CFR 1.53(b))</i>	<i>Attorney Docket No.</i>	500.49882CX1	
	<i>First Inventor</i>	Mari YOSHIDA	
	<i>Title</i>	RECORDING AND REPRODUCING APPARATUS AND METHOD THEREOF	
	<i>Express Mail Label No.</i>		
APPLICATION ELEMENTS <i>SEE MPEP chapter 600 concerning utility patent application contents.</i>	Commissioner for Patents P.O. Box 1450 Alexandria VA 22313-1450		
1. ☐ Fee Transmittal Form (e.g., PTO/SB/17) <i>(Submit an original and a duplicate for fee processing)</i> 2. ☐ Applicant claims small entity status. See 37 CFR 1.27. 3. ☒ Specification [Total Pages <u>38</u>] Both the claims and abstract must start on a new page <i>(For information on the preferred arrangement, see MPEP 608 01(a))</i> 4. ☒ Drawing(s) (35 U.S.C. 113) [Total Sheets <u>12</u>] 5. Oath or Declaration [Total Sheets _____] a. ☐ Newly executed (original or copy) b. ☐ Copy from a prior application (37 CFR 1.63 (d)) <i>(for continuation/divisional with Box 18 completed)</i> i. ☐ DELETION OF INVENTOR(S) Signed statement attached deleting inventor(s) Named in the prior application, see 37 CFR 1.63(d)(2) and 1.33(b) 6. ☒ Application Data Sheet. See 37 CFR 1.76 7. ☐ CD-ROM or CD-R in duplicate, large table or Computer Program (<i>Appendix</i>) i. ☐ Landscape Table on CD 8. Nucleotide and/or Amino Acid Sequence Submission <i>(if applicable, all necessary)</i> a. ☐ Computer Readable Form (CRF) b. Specification Sequence Listing on: i. ☐ CD-ROM or CD-R (2 copies); or ii. ☐ Paper c. ☐ Statements verifying identity of above copies ACCOMPANYING APPLICATION PARTS 9. ☐ Assignment Papers (cover sheet & documents(s)) 10. ☐ 37 CFR 3.73(b) Statement ☐ Power of Attorney <i>(when there is an assignee)</i> 11. ☐ English Translation Document <i>(if applicable)</i> 12. ☒ Information Disclosure Statement (PTO/SB/08 OR PTO-1449) ☐ Copies of Citations attached 13. ☐ Preliminary Amendment 14. ☐ Return Receipt Postcard (MPEP 503) <i>(Should be specifically itemized)</i> 15. ☐ Certified Copy of Priority Document(s) <i>(if foreign priority is claimed)</i> 16. ☐ Nonpublication Request under 35 U.S.C. 122 (b)(2)(B)(i). Applicant must attach form PTO/SB/35 or equivalent. 17. ☒ Other: <u>Power of Attorney</u> _____ _____ _____			
18. If a CONTINUING APPLICATION, check appropriate box, and supply the requisite information below and in a preliminary amendment, or in an Application Data Sheet under 37 CFR 1.76: ☒ Continuation ☐ Divisional ☐ Continuation-in-part (CIP) of prior application No.: <u>12/430,185</u> <i>Prior application information:</i> Examiner: <u>Syed Y. Hasan</u> Art Unit: <u>2484</u>			
19. CORRESPONDENCE ADDRESS : THE ADDRESS ASSOCIATED WITH CUSTOMER NUMBER <u>020457</u>			
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<i>Name (Print/Type)</i>	Inna S. Shestul	<i>Registration No. (Attorney/Agent)</i>	55,616

This collection of information is required by 37 CFR 1.53(b). 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: Mail Stop Patent Application, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

RECORDING AND REPRODUCING APPARATUS
AND METHOD THEREOF

INCORPORATION BY REFERENCE

This application is a continuation of Application Serial No. 12/430,185, filed on April 27, 2009, now pending, which claims the benefit of Japanese Application No. JP 2008-130678 filed on May 19, 2008, 5 in the Japanese Patent Office, the disclosures of which are incorporated herein by reference.

BACKGROUND OF THE INVENTION

The present invention relates to a recording and reproducing apparatus and a recording and 10 reproducing method, suitable for application to, e.g., a video camera.

In recent years, recording and reproducing apparatus are in widespread use which apparatus are compatible with randomly accessible recording media 15 such as a digital versatile disc (DVD), a semiconductor memory and a hard disc drive (HDD). Such recording and reproducing apparatus can easily and quickly cue a photographed image recorded in a recording medium.

Of recording and reproducing apparatus of 20 this type, for example, a general video camera manages generally video information of photographed images in the unit of scene, and cues each scene by using

management information on each scene. A video camera of this type can set a plurality of chapters in one scene, and can cue each chapter.

A scene means a series of images recorded during a period from when a user depresses a record button to start photographing to when the user depresses again the record button to stop photographing. The number of scenes increases each time photographing is made upon depression of the record button. The chapter means a delimiter of images in one scene.

A user of a video camera can know quickly the contents of each scene by reproducing image information recorded in the recording medium by sequentially cuing each chapter.

However, if the number of chapters set in a scene is large, a user of the video camera is required to repeat a cue operation as many times as the number of chapters set in the scene, in order to confirm the contents to the last scene. There arises therefore a problem of much work and long time.

JP-A-06-165009 discloses techniques of efficiently knowing the contents of a scene by calculating a priority order of each frame from the type of button manipulation during photographing, and reproducing a frame having a higher priority order.

SUMMARY OF THE INVENTION

The capacity of a recording medium of a recent video camera is becoming large so that a scene photographed in a long time duration can be stored in the recording medium or scenes photographed a plurality
5 of times can be stored in the recording medium. It is therefore difficult for a user to quickly find a target scene from a number of scenes recorded in the recording medium.

Some conventional recording and reproducing
10 apparatus are equipped with a function of displaying a list of thumbnail images of scenes. However, this function displays only one thumbnail image per one scene so that a user feels difficult in some cases to know the whole contents of a scene photographed in a
15 long time duration from one thumbnail image. Further, after a lapse of long time after photographing, it is difficult for a user to remember the whole contents of a scene from one corresponding thumbnail image.

If a user cannot remember the contents of a
20 scene even if the thumbnail image is viewed, the user confirms the contents of the scene by reproducing the scene. If the contents of a long time scene is to be confirmed, it becomes necessary to provide a function of confirming quickly the whole contents of the scene
25 by cuing each chapter. However, this function has not been proposed yet.

JP-A-06-165009 discloses techniques of calculating a priority order of each frame from the

type of button manipulation during photographing, and when digest reproduction for knowing the contents of a scene is to be performed, reproducing a frame having a higher priority order. According to the techniques, however, a priority degree cannot be set to a scene photographed without button manipulation by a user. It cannot be said that the techniques are easy to use.

The present invention has been made in consideration of the above-described issues, and provides a recording and reproducing apparatus and a recording and reproducing method allowing a user to rapidly and easily find a target chapter or scene.

In order to settle these issues, the present invention provides a recording and reproducing apparatus capable of setting one or more chapters to each scene, comprising: a recording and reproducing unit for recording and reproducing image information on the scene obtained through photographing, relative to a predetermined first recording medium; a face recognizing execution unit for executing a face recognizing process for a photographed image based on the image information; an importance level setting unit for setting an importance level of each chapter in accordance with a result of the face recognizing process for a very important person (VIP) set by a user; and a control unit for controlling the recording and reproducing unit so as to selectively reproduce each chapter having a relevant importance level, among

importance levels of respective chapters.

Accordingly, the recording and reproducing apparatus of the present invention can selectively reproduce a particular chapter in accordance with user
5 settings, such as a chapter on which a VIP appears frequently.

The present invention provides further a recording and reproducing method for a recording and reproducing apparatus for recording and reproducing
10 image information on a scene obtained through photographing, relative to a predetermined first recording medium and being capable of setting one or more chapters to each scene, the method comprising: a first step of executing a face recognizing process for
15 a photographed image based on the image information; a second step of setting an importance level of each chapter in accordance with a result of the face recognizing process for a VIP set by a user; and a third step of selectively reproducing each chapter
20 having a relevant importance level, among importance levels of respective chapters.

Accordingly, the recording and reproducing method of the present invention can selectively reproduce a particular chapter in accordance with user
25 settings, such as a chapter on which a VIP appears frequently.

According to the present invention, a user can therefore find an object chapter and scene quickly

and easily.

Other objects, features and advantages of the invention will become apparent from the following description of the embodiments of the invention taken
5 in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a block diagram illustrating the structure of a video camera according to first and second embodiments.

10 Fig. 2 is a conceptual diagram illustrating an example of chapter management information.

Fig. 3 is a conceptual diagram illustrating an example of face recognizing management information.

15 Fig. 4 is a conceptual diagram illustrating an example of a photographed image when face recognizing is made valid.

Fig. 5 is a flow chart illustrating the sequence of a photographed image recording process.

20 Fig. 6 is a flow chart illustrating the sequence of a chapter importance level setting process.

Fig. 7 is a brief diagrammatic view illustrating an example of the layout of a VIP determining screen.

25 Fig. 8 is a flow chart illustrating the sequence of an importance level determining process.

Fig. 9 is a table illustrating an example of the chapter arrangement of an object scene and a

chapter importance level set to each chapter.

Fig. 10 is a flow chart illustrating the sequence of a chapter selecting and reproducing process.

5 Fig. 11 is a brief diagrammatic view illustrating an example of the layout of a chapter list screen.

 Fig. 12 is a brief diagrammatic view illustrating an example of the layout of a scene list
10 screen.

Fig. 13 is a flow chart illustrating the sequence of a VIP setting process.

Fig. 14 is a brief diagrammatic view illustrating an example of a layout of a pre-
15 photographing VIP setting screen.

Fig. 15 is a brief diagrammatic view illustrating an example of the layout of a VIP photographing screen.

DESCRIPTION OF THE EMBODIMENTS

20 Embodiments of the present invention will now be described with reference to the accompanying drawings.

(1) First Embodiment

(1-1) Structure of Recording and Reproducing Apparatus

25 In Fig. 1, reference numeral 1 represents a video camera of the embodiment. The video camera 1 is a hybrid video camera equipped with a DVD drive (not

shown) and a built-in hard disc drive 2. A DVD 3 to be mounted on the DVD drive includes a plurality of types such as DVD-R, DVD-RW, DVD-RAM, DVD + R, DVD + RW and HD (High Definition)-DVD. The type of DVD 3 applicable to the video camera 1 is not specifically limited.

In the video camera 1, a user interface 4 is constituted of various operation buttons, a touch panel adhered to a screen of a display 6 to be described later. In accordance with a user operation command input from the user interface 4, a system controller 5 executes a corresponding control process to record a photographed image in the hard disc drive 2 and DVD 3 loaded in the DVD drive and to reproduce a photographed image recorded in the hard disc drive 2 and DVD 3 and display the reproduced image on the display 6.

The system controller 5 is actually a microcomputer constituted of a central processing unit (CPU), an internal memory and the like. When a record button in the user interface 4 is depressed after a record mode is selected upon operation of the user interface 4, the system controller 5 drives an image sensor 7 constituted of a charge coupled device (CCD), complementary metal oxide semiconductor (CMOS) transistors and the like.

An optical image of an object is converged by a lens 8 on an optical reception plane of the image sensor 7. The image sensor 7 photoelectrically converts the optical image, and sends an obtained

photographed image signal to an analog/digital converter 9. The analog/digital converter 9 converts the analog photographed image signal into a digital image signal, and sends the obtained digital
5 information to a compressor/decompressor (CODEC) 10.

CODEC 10 transfers the supplied image information to the display 6 via a bus 11. The display 6 may be a liquid crystal display, an organic EL display or the like, and displays a photographed image
10 (through image) basing upon the supplied image information.

CODEC 10 encodes the supplied image information by a predetermined compression encoding method such as a Moving Picture Expert Group (MPEG)
15 method, and stores the obtained encoded image information, and the image information not subjected to encoding, in a random access memory (RAM) 12 via the bus 11.

Under control of the system controller 5, the
20 encoded image information stored in RAM 12 is thereafter read by a hard disc drive controller 13 or a DVD drive controller 14, and recorded in the hard disc drive 2 or DVD 3.

The image information stored in RAM 12 is
25 read by a face recognizing execution unit 15. The face recognizing execution unit 15 executes a predetermined face recognizing process for the photographed image corresponding to the image information, and supplies

the recognition results to the hard disc drive controller 13 or DVD drive controller 14 storing the encoded image information, as face recognizing management information to be described later. In this
5 manner, the face recognizing management information is recorded in the hard disc drive 2 or DVD 3, in correspondence with the encoded image information.

When a reproduction button of the user interface 4 is depressed after a reproduction mode is
10 selected upon operation of the user interface 4, the system controller 5 controls a corresponding one of the hard disc drive controller 13 and DVD drive controller 14 to make the hard disc drive controller 13 or DVD drive controller 14 read and transmit the encoded image
15 information to CODEC 10 via the bus 11.

Under control of the system controller 5, CODEC 10 executes a predetermined decoding process for the encoded image information supplied from the hard disc drive controller 13 or DVD drive controller 14,
20 and transmits the obtained reproduced image information to the display 6 via the bus 11. In this manner, a reproduced image corresponding reproduced image information is displayed on the display 6.

An image size converter 16 is also connected
25 to the bus 11. Under control of the system controller 5, the image size converter 16 extracts image information on a start frame of each scene and image information on a start frame of each chapter, from the

image information stored in RAM 12 and image
information read from the hard disk drive 2 or DVD 3
and decoded by CODEC 10, for example, during
photographing. The image size converter 16 converts
5 the extracted image information into image information
on thumbnail images of predetermined sizes, and stores
the image information on the thumbnail images of a
start frame of the scene and a start frame of each
chapter in the hard disc drive 2 or DVD 3 storing the
10 encoded image information on the scene, in
correspondence with the scene.

It is assumed that the video camera 1 has
other hardware and functions of a general video camera,
such as light emitting diodes (LED's) for turning on
15 during power-on, charging, access to the hard disc
drive 2 or DVD 3, or the like, and batteries for
supplying power to each circuit or the like.

In the following description, it is assumed
that a photographed image is recorded in the hard disc
20 drive 2 during photographing, and the photographed
image is dubbed in DVD 3 after photographing. However,
a photographed image may be recorded in DVD 3 during
photographing, and the photographed image is dubbed in
the hard disc drive 2 after photographing.

25 (1-2) Scene Management Information

During photographing with the video camera 1,
encoded image information as well as management
information of each scene (hereinafter called scene

management information) is recorded in the hard disc drive 2. The scene management information is constituted of information for managing a scene such as chapter management information and face recognizing management information. The chapter management information includes information on a position, length, importance level, summary and the like of a start frame of each chapter. The face recognizing management information includes information on a position of a frame on which a face recognized by the face recognizing execution unit appears during photographing, an expression and size of the face on the frame, and the like.

Fig. 2 illustrates an example of the chapter management information. The chapter management information 20 illustrated in Fig. 2 is constituted of chapter ID information 21, start frame position information 22 and chapter importance level information 23, respectively of each chapter set in a scene.

The chapter ID information 21 is information representative of a unique ID given to each chapter (hereinafter called a chapter ID), and the start frame position information 22 is information representative of a position (hour, minute, second and frame number) of a start frame of the corresponding chapter. The chapter importance level information 23 is information representative of an importance level set to the corresponding chapter (herein after called a chapter

importance level). The details of the chapter importance level will be described later. Under control of the system controller 5, the chapter management information 20 is stored in the hard disc drive 2 in correspondence with the encoded image information of the scene.

Fig. 3 illustrates an example of the face recognizing management information. The face recognizing management information 24 illustrated in Fig. 3 is constituted of face ID information 25 for each face recognized in the corresponding scene, path/file name information 26 and frame position information 27.

The face ID information 25 is information representative of a unique ID given to each face recognized by the face recognizing execution unit 15 (hereinafter called a face ID), and the path/file name information 26 is information representative of a path to the image file of an image of a corresponding face (hereinafter called a face image) or a file name of the image file. A face image to be stored in the image file may be an image captured when the person is recognized first in a frame, or an image capturing the best expression of the person in the scene after distinguishing a good expression such as smile during the face recognizing process.

The frame position information 27 is information representative of a frame position (hour,

minute, second and frame number) where a corresponding face is recognized. The frame position information 27 includes all frame positions on which a corresponding face appears. Therefore, the number of frame positions contained in the frame position information 27 becomes larger the larger the number of times when the face (person) appears on the scene. A type of a face expression in a frame may be recorded in correspondence with each frame position.

As described above, the face recognizing execution unit 15 stores the face recognizing management information 24 in the hard disc drive 2 in correspondence with the encoded image information of a photographed image recorded at that time.

(1-3) Chapter Importance Level Setting Method

Fig. 4 illustrates an example of an image photographed by setting a face recognizing function "valid" and displayed on the display 6. As the face recognizing function of the video camera 1 is set "valid", a rectangular frame 31 is displayed in a photographed image 30 displayed on the display 6, surrounding a face of a person detected by the face recognizing function. As the face recognizing function is set "invalid", this frame 31 is not displayed.

Fig. 5 illustrates the contents of a process (hereinafter called a photographed image recording process) of recording an image photographed by setting the face recognizing function "valid" in the hard disc

drive 2, to be executed by the system controller 5.
The system controller 5 executes the photographed image
recording process illustrated in Fig. 5 in accordance
with a corresponding control program stored in the
5 internal memory.

More specifically, as the record button of
the user interface 4 is depressed after the record mode
is selected, the system controller 5 starts the
photographed image recording process. First, the
10 analog/digital converter 9 and CODEC 10 are controlled
to store image information of the photographed image
and encoded image information in RAM 12, and the hard
disc drive controller 13 is controlled to read the
encoded image information of one frame from RAM 12 and
15 store the read encoded image information in the hard
disc drive 2 (Step SP1).

Next, the system controller 5 controls the
face recognizing execution unit 15 to read from RAM 12
the image information of the same frame as the frame
20 whose encoded image information was read from RAM 12 by
the hard disc drive controller 13 at Step SP1 and
execute the face recognizing process for the
photographed image corresponding to the image
information (Step SP2).

25 In this case, for example, the face
recognizing execution unit 15 executes the face
recognizing process by template matching, for example,
using an average face. However, if a user forms a VIP

list registering VIP's before photographing, the face recognizing process may be executed by template matching using the VIP list. After the face recognizing process is completed, the face recognizing execution unit 15 reflects the results of the face recognizing process upon the face recognizing management information described with reference to Fig. 3 (updating the face recognizing management information).

10 Next, the system controller 5 judges whether encoded image information of all frames obtained through photographing has been recorded in the hard disc drive 2 (Step SP3). If this judgment is negated, the flow returns to step SP1, and the system controller 15 5 repeats similar processes (SP1 to SP3, to SP1).

 If the judgment is affirmed at Step SP3 after the encoded image information of all frames obtained through photographing is recorded in the hard disc drive 2, the system controller 5 terminates the 20 photographed image recording process.

 The face recognizing process at Step SP2 of the photographed image recording process may be executed for each frame as described above, or may be executed once for several frames. As the face 25 recognizing process is executed once for several frames, a process load on the face recognizing execution unit 15 can be reduced.

 A function (hereinafter called a post-

photographing face recognizing function) may be provided allowing a face recognizing process to be executed for an image already photographed by setting the face recognizing function "invalid", through
5 operation of a menu or the like. The face recognizing management process similar to that illustrated in Fig. 3 can be obtained by this function. With this post-photographing face recognizing function, a chapter importance level can be set using the face recognizing
10 function as will be described later, even for a scene photographed with another video camera without the face recognizing function. This is very convenient for a user.

Next, description will be made on a method of
15 determining an importance level of each chapter in one scene in accordance with the results (face recognizing management information 24 (Fig. 3)) of the face recognizing process obtained in the manner described above.

20 It is assumed in the following that at least one chapter is set in each scene. A chapter forming method includes a method of making a user manually determine the position of each chapter, a method of automatically setting the position of each chapter
25 where a luminance change is large in the scene, a method of automatically setting chapters at equal pitch of several minutes to several ten minutes, and other methods. In this embodiment, a chapter may be set by

any one of these methods.

Fig. 6 illustrates the process contents of the system controller 5 regarding a chapter importance level setting function of setting an importance level of each chapter in a scene. As the user interface 4 is operated and a first screen display request is input, the system controller 5 executes a chapter importance level setting process illustrated in Fig. 6, in accordance with a corresponding program stored in the internal memory (not shown).

More specifically, upon input of the first screen display request, the system controller 5 reads first the chapter management information 20 (Fig.2) and face recognizing management information 24 (Fig. 3), stored in the hard disc drive 2, of a scene to be processed at that time (hereinafter called an object scene), and displays a VIP deciding screen 40 illustrated in Fig. 7 on the display 6, by using the chapter management information 20 and face recognizing management information 24 (Step SP10).

The VIP deciding screen 40 is a screen to be used for a user to decide a VIP in the object scene. The VIP deciding screen 40 displays face images 41 of all persons recognized during photographing the object scene. Each face image 41 is displayed in accordance with image data read from the image file identified by a corresponding path/file name information 26 (Fig. 3) in the face recognizing management information 24

described with reference to Fig. 3.

A user can select a VIP from the face images 41 of persons displayed on the VIP deciding screen 40. A plurality of VIP's may be selected. Faces of objects 5 having a high appearance frequency such as family members may be registered beforehand in the video camera 1 as a VIP list, and the faces of only the registered persons are displayed on the VIP deciding screen 40. In this manner, since the face of a person 10 not associated with the object and photographed in the background is not displayed, it becomes easy for a user to decide a VIP.

After the face image 41 of the person desired to be set as a VIP is selected by a predetermined 15 operation, the user depresses a "decide" button 42 to register the selected person as a VIP. If an operation of deciding the chapter importance level is desired to be terminated, a "cancel" button 43 is depressed. If it is arranged in such a manner that a user can set 20 whether such a VIP list is always used or not, user-friendliness of the video camera 1 can be improved.

Next, the system controller 5 stands by until a VIP is decided using the VIP deciding screen 40 (Step SP11). As the user decides a VIP, an importance level 25 of each chapter of the object scene is determined in accordance with the decided VIP (Step SP12).

The system controller 5 reflects the importance level of each chapter decided at Step SP12

upon the chapter management information 20 described with reference to Fig. 2 (Step SP13), to thereafter terminate the chapter importance level setting process.

Fig. 8 illustrates the specific process contents of the system controller 5 in the chapter importance level setting process at Step SP12.

In the chapter importance level setting process at Step SP12, the system controller 5 starts the importance level setting process. First, the number of appearance frequencies of the VIP decided by the user using the VIP deciding screen 40 (Fig. 7) is counted for each chapter of the object scene (Step SP14).

More specifically, the system controller 5 prepares counters corresponding in number to the number of chapters in the scene, on the inner memory of the system. The system controller 5 reads the positions of all frames on which the VIP decided by the user using the VIP deciding screen 40 appears, from the face recognizing management information 24 (Fig. 3), by using a face ID of the VIP, and judges to which chapter each frame belongs, by referring to the chapter management information 20 (Fig. 2). In accordance with the judgment results, the system controller 5 increments by "1" the count of the counter corresponding to the chapter to which the frame belongs, for each frame on which the VIP appears. The system controller 5 executes these processes for all

VIP's decided by the user using the VIP deciding screen 40.

Next, the system controller 5 normalizes the counts of the counters in a range from "1" to "5" (Step SP15), and decides a value obtained by subtracting each normalized value from "6", as an importance level of each chapter corresponding to the counter (Step SP16).

With these processes, the highest chapter importance level of "1" is set to the chapter on which the VIP appears most frequently, and the lowest chapter importance level of "5" is set to the chapter on which the VIP appears least frequently. Thereafter, the system controller 5 terminates this importance level deciding process and returns to the chapter importance level setting process.

If a user selects a plurality of VIP's on the VIP deciding screen 40, the chapter importance levels may be weighted to allow the user to set more important persons. User-friendliness of the video camera 1 can therefore be improved further.

(1-4) Reproducing Method Using Chapter Importance Level

Next, description will be made on an object scene reproducing method basing upon the chapter importance level of each chapter set in the manner described above. It is assumed in the following description that the chapter importance level is set in five steps, "1" being the highest chapter importance

level, and "5" being the lowest chapter importance level. In the following, the chapter importance levels are distinguished for the purposes of convenience by calling the chapter importance level "1" superexpress, the chapter importance level "3" express, and the chapter importance level "5" standard.

Fig. 9 illustrates an example of the chapter structure of an object scene and a chapter importance level set to each chapter. In the example illustrated in Fig. 9, the object scene is divided into nine chapters having chapter ID's of "001" to "009". The chapter importance level "1" is set to two chapters having the chapter ID's "002" and "005", the chapter importance level "3" is set to two chapters having the chapter ID's "004" and "009", and the chapter importance level "5" is set to the remaining chapters having the chapter ID's "001", "003", "006" to "008".

In this example, as reproduction is performed by selecting as a reproducing mode a "standard reproducing mode" from the menu, all chapters are sequentially reproduced in an order of smaller chapter ID, irrespective of the chapter importance level set to each chapter. Namely, in the "standard reproducing mode", the chapters having the chapter importance level "5" or smaller (the chapters having the chapter importance levels "1" to "5", i.e., all chapters) are reproduced in this mode of the embodiment.

Further, as a user starts reproducing by

selecting as the reproducing mode an "express reproducing mode", the video camera 1 reproduces first the chapter having the chapter importance level "1" and chapter ID "002", then the chapter having the chapter importance level "3" and the chapter ID "004", and next the chapter having the chapter importance level "1" and the chapter ID "005". Lastly, the video camera 1 reproduces the chapter having the importance level 3 and the chapter ID "009" to thereafter terminate scene reproducing. Namely, in the express reproducing mode", only the chapters having the chapter importance level "3" or smaller (only the chapters having the importance levels "1" to "3") are reproduced. Therefore, as cue skipping is performed during reproducing in the "express reproducing mode", reproducing starts from the start frame of the next chapter having the chapter importance level "3" or smaller.

Furthermore, as a user starts reproducing by selecting as the reproducing mode a "superexpress reproducing mode", the video camera 1 reproduces first the chapter having the chapter importance level "1" and chapter ID "002", then the chapter having the chapter importance level "1" and the chapter ID "005" to thereafter terminate scene reproducing. Namely, in the "super express reproducing mode", only the chapters having the chapter importance level "1" are reproduced.

Therefore, the video camera 1 reproduces always the chapter having the chapter importance level

"1" as any of the reproducing modes is selected, and each of other chapters is reproduced only when the reproducing mode is selected reproducing the chapter having the chapter importance level same as or smaller
5 than that set to each of other chapters.

By utilizing this function (hereinafter called a chapter select reproducing function), the superexpress reproducing mode is used for confirming roughly the contents of the object scene, and at the
10 stage when reproducing comes near the images whose contents are desired to be confirmed in detail, the reproducing mode is switched to the standard reproducing mode. In this manner, the contents of the object scene can be confirmed efficiently and
15 conveniently. The superexpress reproducing mode is very convenient for a user desiring to confirm the contents of a scene in short time.

Fig. 10 illustrates the process contents of the system controller 5 regarding the chapter select
20 reproducing function. The system controller 5 executes the chapter select reproducing process illustrated in Fig. 10 in accordance with a control program stored in the internal memory.

Namely, as a reproducing operation start
25 command is input after the "standard reproducing mode", "express reproducing mode" or "superexpress reproducing mode" is selected, the system controller 5 starts the chapter select reproducing process to first read the

chapter management information of the object scene from a corresponding hard disc drive 2 or DVD 3 (Step SP20).

Next, in accordance with the ID information contained in the chapter management information, the system controller 5 selects the first chapter (e.g., the chapter having the smallest chapter ID) (Step SP21), and judges whether the chapter importance level of the chapter is a predetermined threshold value or smaller set to the present reproducing mode (Step SP22). The threshold value is "5" if the "standard reproducing mode" is set, "3" if the "express reproducing mode" is set, and "1" if the "superexpress reproducing mode" is set.

If a judgment at Step SP22 is negated, the flow advances to Step S24, whereas if the judgment is affirmed, the system controller 5 controls CODEC 10 to reproduce the chapter and display the reproduced image on the display (Step SP23).

Next, the system controller 5 refers to the chapter management information to judge whether the chapter next to the chapter selected at Step SP21 exists (Step SP24). If this judgment is affirmed, the flow returns to Step SP21 to repeat similar processes by sequentially switching the chapter to be selected at Step SP21 (Steps SP21 to SP24, to SP21).

As the processes at Steps SP21 to SP24 are completed for all chapters and the judgment at Step SP24 is negated, the system controller 5 terminates the

chapter select reproducing process.

Next, description will be made on an approach to making a user to easily confirm the chapter importance level set to each chapter in a scene.

5 Fig. 11 illustrates a chapter list screen 50 displayed on the display 6 by a user menu operation. For each chapter of an object scene, a thumbnail image 51 set to the chapter, and chapter management information 52 such as a lapse time from the scene start, a chapter importance level and the like, are displayed on the chapter list screen 50.

More practically, when a display command for the chapter list screen 50 is input by operating the user interface 4, the system controller 5 controls a corresponding hard disc drive controller 13 or DVD drive controller 14 to read from the hard disc drive 2 or DVD 3 the chapter management information 20 (Fig. 2) of the object scene, and the image information on the thumbnail image 51 of the start frame of each chapter stored in correspondence with the object scene. Then, the system controller 5 operates to display the thumbnail image 51 of the start frame of each chapter on the chapter list screen 50 in accordance with the read image information, and display the management information 52 of each chapter based on the chapter management information 20, on the chapter list screen 50, in correspondence with the thumbnail image 51.

In this manner, a user can know the chapter

having a high chapter importance level from the chapter list screen 50, and can find an important image quickly.

Next, description will be made on an approach
5 to making a user easily confirm a scene set with a chapter importance level.

Fig. 12 illustrates a scene list screen displayed on the display by a user menu operation. A thumbnail image 54 of each scene stored in the hard
10 disc drive 2 or DVD 3 is displayed on the scene list screen 53.

More practically, when a display command for the scene list screen 53 is input by operating the user interface 4, the system controller 5 controls a
15 corresponding hard disc drive controller 13 or DVD drive controller 14 to read from the hard disc drive 2 or DVD 3 the image information on the thumbnail image 54 of the start frame of every scene stored in the hard disc drive 2 or DVD 3 designated by the user. Then,
20 the system controller 5 operates to display the thumbnail image 54 of the start frame of each scene on the scene list screen 53, in accordance with the read image information.

In this case, the system controller 5 refers
25 to the chapter management information 20 (Fig. 2) of each scene, and displays an icon 55 having a predetermined shape on the thumbnail image 54 of the scene set with the chapter importance level.

It is therefore possible for a user to judge from the icon 55 whether a chapter importance level is set to the scene, for example, to be reproduced. The contents of the scene displayed with the icon 55 can be confirmed efficiently by immediately performing a reproducing operation by the reproducing method using the chapter importance level as described above. For the scene not displayed with the icon, the chapter importance level setting process is executed before the reproduction operation so that the reproducing operation by the above-described reproducing method can be performed.

(1-5) Scene Dubbing Process

Next, description will be made on a process of dubbing encoded image information recorded in the hard disc drive 2 into DVD 3.

When the scene set with the chapter importance level is dubbed from the hard disc drive 2 into DVD 3 in the video camera 1, the system controller 5 copies not only the encoded image information and scene management information (chapter management information 20 (Fig. 2) and face recognizing management information 24 (Fig. 3) but also an image file of face images of faces registered in the face recognizing management information 24 contained in the scene management information, into DVD 3. Therefore, even if the encoded information in the hard disc drive 2 is erased, reproducing using a chapter importance level

and re-setting a chapter importance level can be performed immediately.

(1-6) Effects of the Embodiment

According to the video camera of the
5 embodiment described above, the chapter importance
level of each chapter can be set basing upon the
results of the face recognizing process executed during
photographing. It is therefore possible for a user to
quickly find a chapter on which an object person (VIP)
10 appears frequently. Further, a chapter having a
relevant chapter importance level is selectively
reproduced, among chapter importance levels of
respective chapters, so that a user can confirm the
whole contents of the scene easily and in short time
15 and can find an object scene quickly. In this manner,
user-friendliness of the video camera 1 can be improved
considerably.

(2) Second Embodiment

In Fig. 1, reference numeral 60 represents a
20 video camera of the second embodiment. The video
camera 60 of the second embodiment is configured like
the video camera 1 of the first embodiment, excepting
that the chapter importance level setting method is
different from that of the first embodiment.

25 Namely, in the first embodiment, a user
decides a VIP by using the VIP deciding screen 40 (Fig.
7) after photographing, and in accordance with the
decision, a chapter importance level of each chapter is

set. In contrast, in the second embodiment, the face recognizing process is executed only for a VIP decided by a user before photographing, and in accordance with the results of the face recognizing process, a chapter importance level of each chapter is set.

Fig. 13 illustrates the process contents of the system controller regarding a VIP setting process for a user to set a VIP before photographing, in the chapter importance setting method of the second embodiment. The system controller 61 executes the VIP setting process in accordance with a control program stored in the inner memory (not shown).

Namely, when a VIP setting mode is selected by operating the user interface 4, the system controller 61 starts the VIP setting process to first display a pre-photographing VIP setting screen 70 illustrated in Fig. 14 on the display 6 (Step SP30).

Next, the system controller 61 stands by until one of first and second VIP deciding method select buttons 71 and 72 displayed on the pre-photographing VIP setting screen 70 (Step SP31) is depressed. The first VIP deciding method select button 71 is a button corresponding to a mode of preparing for photographing a VIP, and the second VIP deciding method select button 72 is a button corresponding to a mode of deciding a VIP among persons recognized during photographing already performed, similar to the first embodiment.

As one of the first and second VIP deciding method select buttons 71 and 72 is depressed, the system controller 61 judges whether the depressed button is the first VIP deciding method select button
5 71 (Step SP32).

As this judgment is affirmed, the system controller 61 drives the image sensor 7, analog/digital converter 9 and CODEC 10 to display an image illustrated in Fig. 15 and photographed at that time by
10 a user, on the display 6 (Step SP34). In this case, the user photographs a VIP to be registered with the video camera 60.

Next, during photographing a VIP, the system controller 61 drives the face recognizing execution
15 unit 15 to execute the face recognizing process for the VIP under photographing (Step SP35). After completion of the face recognizing process, the system controller 61 makes the face recognizing execution unit 15 form the face recognizing management information 24 (Fig. 3)
20 based upon the face recognizing process results, and store this information in the hard disc drive 2 (Step SP38). Thereafter, the system controller 61 terminates the VIP setting process.

If the judgment at Step SP32 is negated
25 (i.e., if the second VIP deciding method select button 72 is depressed), the system controller 61 displays the VIP display screen 40 described with reference to Fig. 7 on the display 6 (Step SP36).

Next, the system controller 61 stands by until a VIP is selected from the VIP display screen 40 (Step SP37). As a VIP is selected, the face recognizing execution unit 15 is instructed to form the face recognizing management information 24 illustrated in Fig. 3 registering only information on the selected VIP (Step SP38). Thereafter, the system controller 61 terminates the VIP setting process.

With this arrangement, the system controller 61 controls the face recognizing execution unit 15 to reflect only the results of the face recognizing process for the VIP registered in the manner described above, upon the face recognizing management information 24 (Fig. 3), during photographing. Each time scene photographing is completed, the importance level setting process described with reference to Fig. 8 is executed to determine a chapter importance level of each chapter set in the scene, and in accordance with the determined chapter importance level, the chapter management information 20 (Fig. 2) is updated.

As described above, the video camera 60 of the embodiment executes the face recognizing process only for a VIP decided before moving image photographing, and in accordance with the results of the face recognizing process, a chapter importance level of each chapter is set. It is therefore possible to facilitate setting of the chapter importance level of each chapter. Further, since the video camera 60

registers a VIP in advance as described above, it is possible to avoid the following phenomenon. Namely, in performing autofocus and autoexposure utilizing face recognition, if the face of another person photographed together with a VIP is recognized by chance, the optimum focus and exposure are set to this other person, and the object VIP is not photographed well.

(3) Other Embodiments

In the first and second embodiments, the present invention is applied to the video camera 1, 60 configured as illustrated in Fig. 1. The present invention is not limited thereto, but is also applicable to video cameras having various structures, apparatus other than video cameras such as DVD recorders, electronic still cameras and mobile phones provided with a moving image photographing function.

Further, in the first and second embodiments, although the hard disc drive 2 and DVD 3 are adopted as recording media for recording photographed images, the present invention is not limited thereto, but recording media other than the DVD and hard disc drive may also be adopted including a Blu-ray disc (BD), a compact disc (CD), a mini disc (MD), a semiconductor memory and the like.

Furthermore, in the first and second embodiments, although the hard disc drive 2 and a DVD drive as the recording/reproducing unit for recording and reproducing image information on photographed

scenes relative to recording media are built in the video camera 1, 60, the present invention is not limited thereto, but may adopt an external mount type drive connected by USB (Universal Serial Bus), eSATA
5 (External Serial Advanced Technology Attachment) and the like as the recording and reproducing unit.

Still further, in the first and second embodiments, although one system controller 5, 61 is constituted of: an importance level setting unit for
10 setting a chapter importance level of each chapter in accordance with the results of a face recognizing process for a VIP set by a user; a controller for controlling the hard disc drive 2 and DVD drive so as to selectively reproduce a chapter having a relevant
15 importance level, among importance levels of respective chapters; and a VIP setting unit for setting as a VIP a person corresponding to a face image selected by a user from a list of face images displayed on the display, the present invention is not limited thereto, but the
20 importance level setting unit, control unit and VIP setting unit may be structured discretely.

The present invention is widely applicable to various recording and reproducing apparatus such as DVD recorders in addition to video cameras.

25 The preferred embodiments of the present invention have been described above. According to the present invention, a particular chapter can be selectively reproduced in accordance with user settings

so that a user can find quickly a chapter on which a
desired person appears. Further, since a particular
chapter based on user settings can be selectively
reproduced, a user can know the whole contents of a
5 scene in short time and easily.

It should be further understood by those
skilled in the art that although the foregoing
description has been made on embodiments of the
invention, the invention is not limited thereto and
10 various changes and modifications may be made without
departing from the spirit of the invention and the
scope of the appended claims.

CLAIMS:

1. A recording and reproducing apparatus comprising:
 - an imaging module for capturing image data on each scene,
 - a recording unit for recording said captured image data into a recording medium,
 - a face recognizing execution unit for executing a face recognizing process on said captured image data before recording into said recording medium,
 - a reproducing unit for reproducing said image data from said recording medium;
 - a display unit for displaying a list of face thumbnail images of persons registered beforehand by a user based upon said image data captured by said imaging module and executed by said face recognizing process, by said face recognizing unit in a person registering mode in which a person image is captured and registered;
 - a specific person setting unit for setting as a specific person, a person corresponding to a face thumbnail image selected by a user from said displayed list of face thumbnail images;
 - an importance level setting unit for setting an importance level of said recorded image data which

include said specific person set by the specific person setting unit; and

a control unit for controlling said reproducing unit so as to selectively reproduce said recorded image data which include said specific person based upon an importance level which set by said importance level setting unit.

ABSTRACT OF THE DISCLOSURE

In a recording and reproducing apparatus and a recording and reproducing method for the recording and reproducing apparatus for recording and reproducing image information on a scene obtained through photographing, relative to a predetermined first recording medium and being capable of setting one or more chapters to each scene, a face recognizing process is executed for a photographed image based on the image information, an importance level of each chapter is set in accordance with a result of the face recognizing process for a very important person (VIP) set by a user, and each chapter having a relevant importance level among importance levels of respective chapters is selectively reproduced. A user can therefore find an object chapter and scene quickly and easily.

FIG. 1

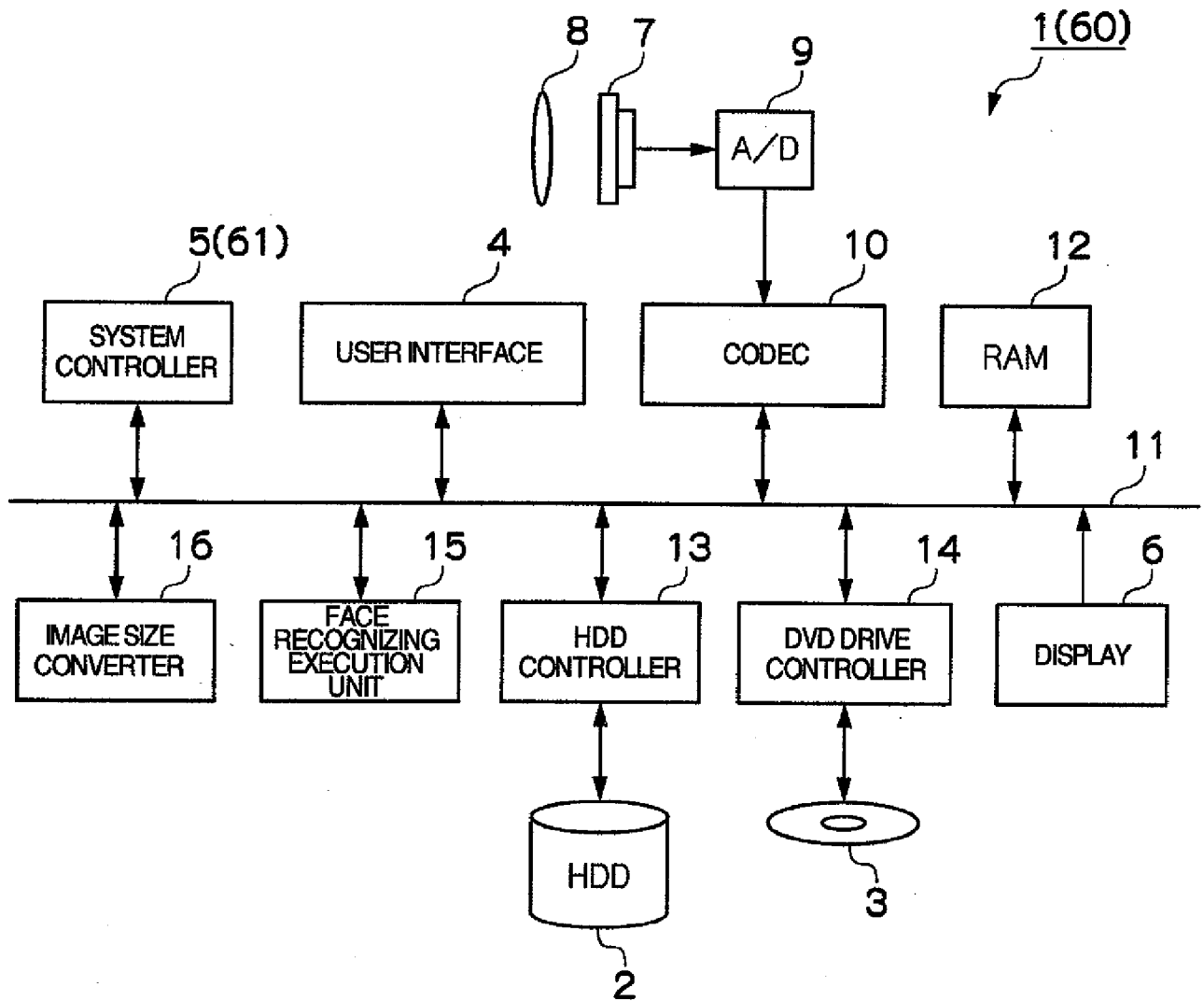


FIG. 2

21	22	23
001	hh:mm:ss:ff	2
002	hh:mm:ss:ff	1
003	hh:mm:ss:ff	3
⋮	⋮	⋮

20

FIG. 3

25	26	27
001	filepath/file. jpg	hh:mm:ss:ff ...
002	filepath/file. jpg	
003	filepath/file. jpg	hh:mm:ss:ff ...
⋮	⋮	

24

FIG. 4

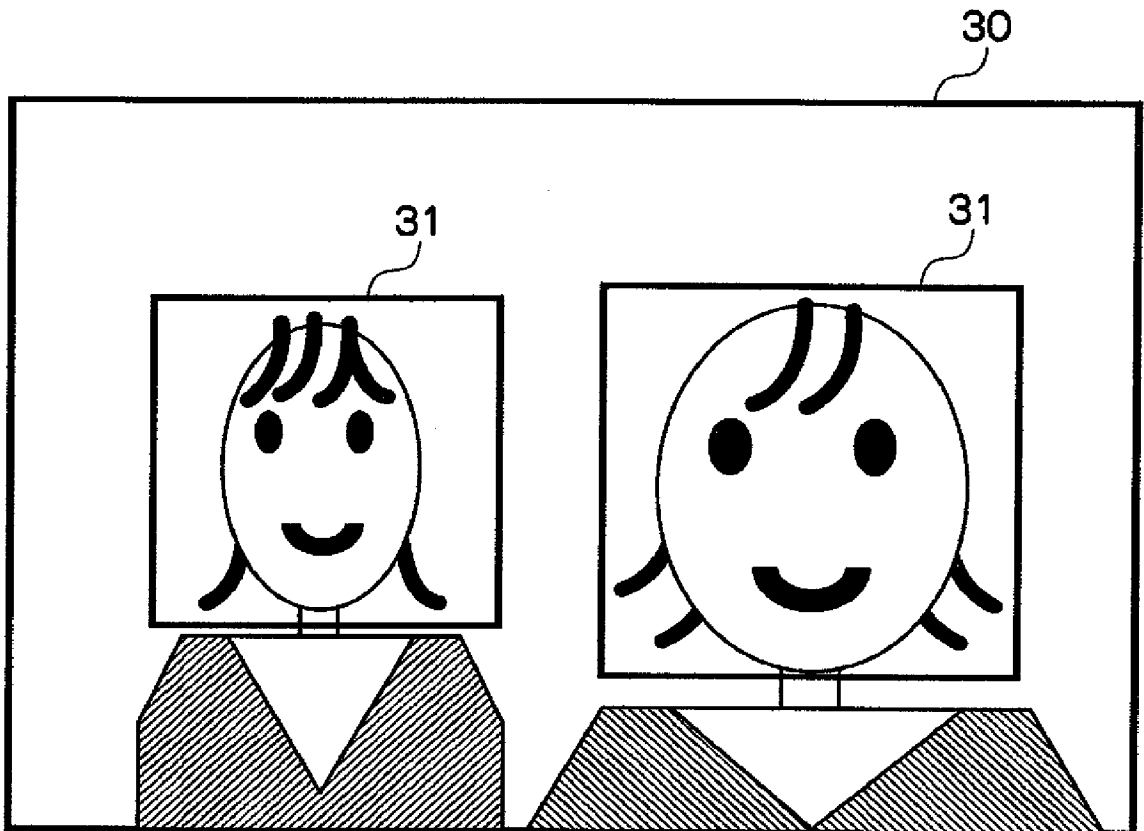


FIG. 5

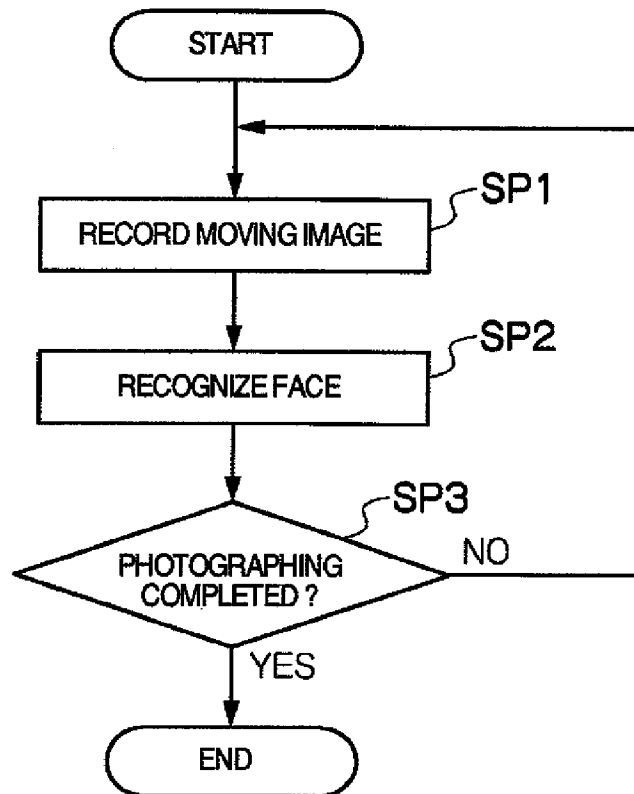


FIG. 6

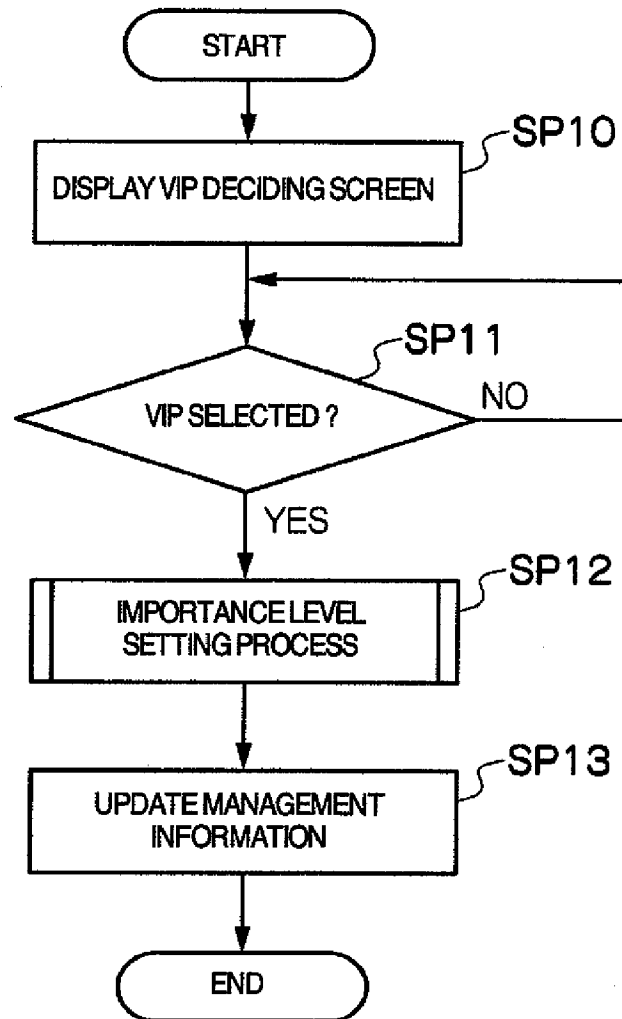


FIG. 7

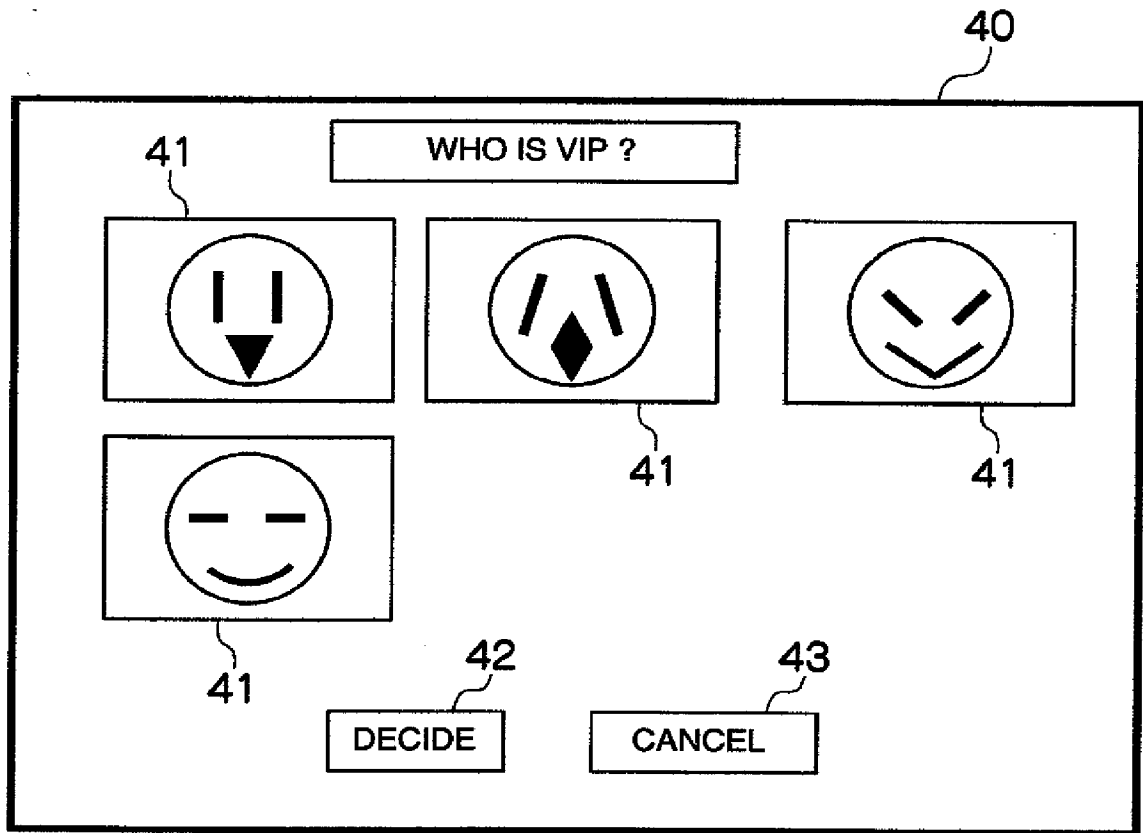


FIG. 8

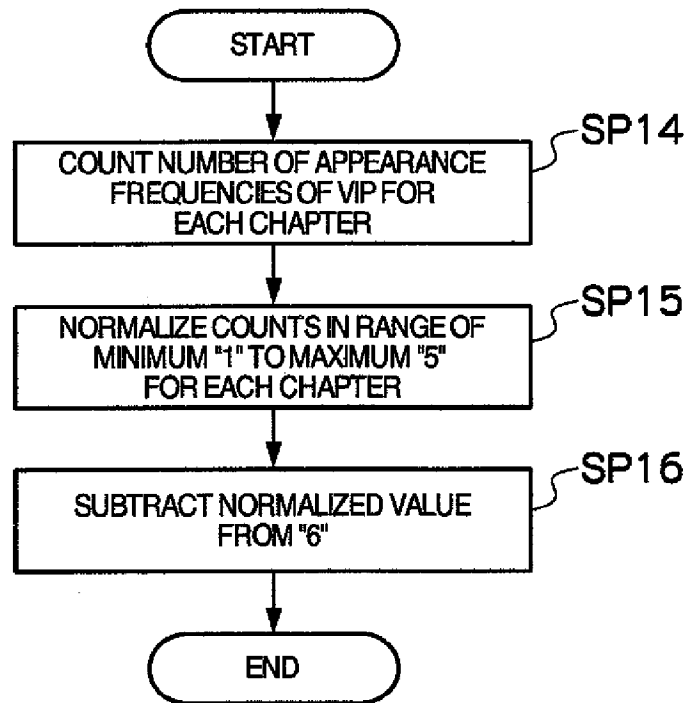


FIG. 9

CHAPTER ID	CHAPTER IMPORTANCE LEVEL
001	5
002	1
003	5
004	3
005	1
006	5
007	5
008	5
009	3

FIG. 10

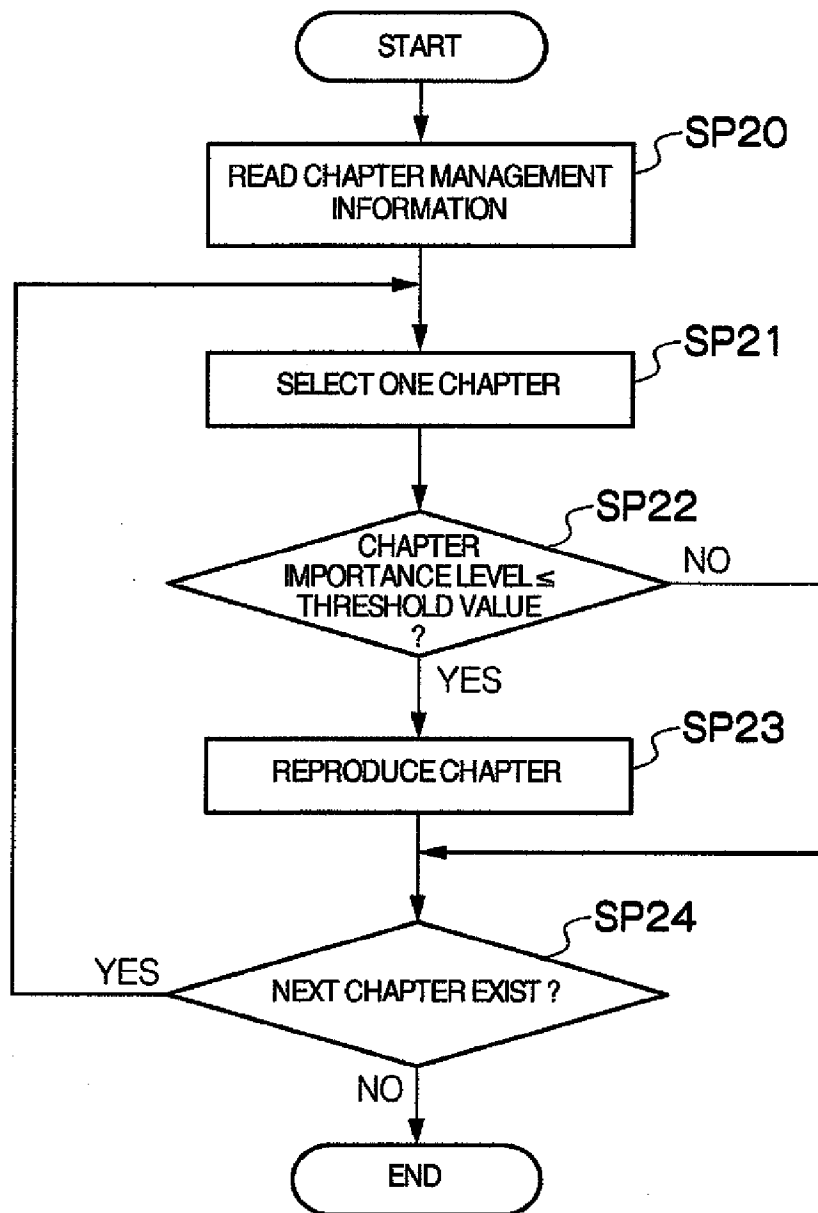


FIG. 11

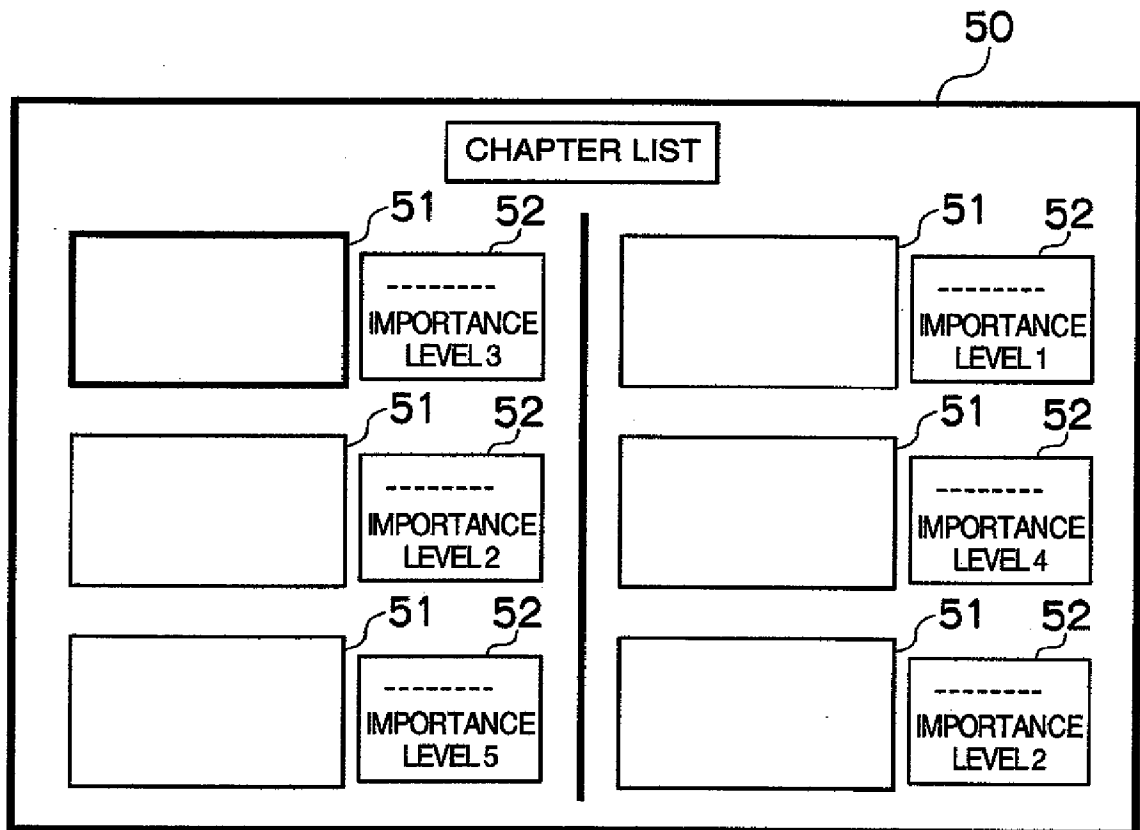


FIG. 12

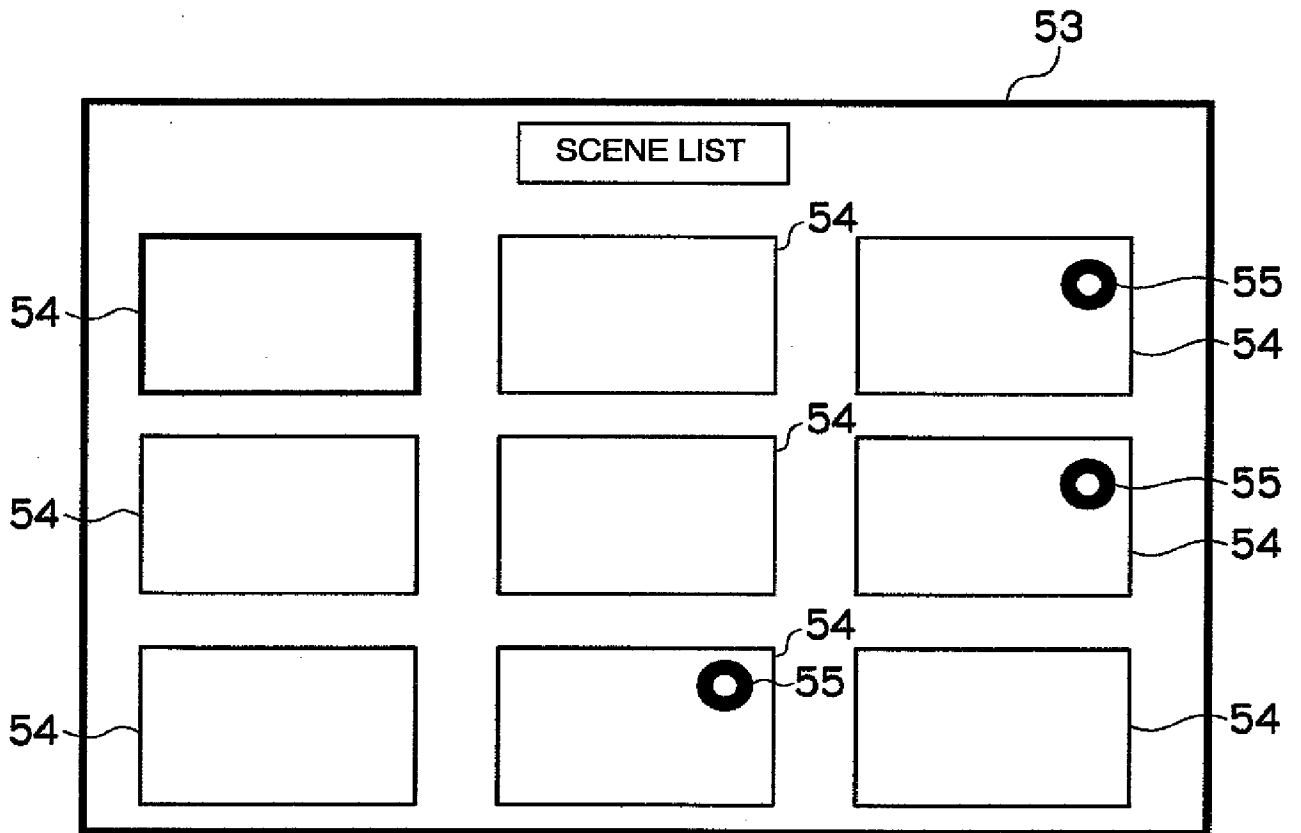


FIG. 13

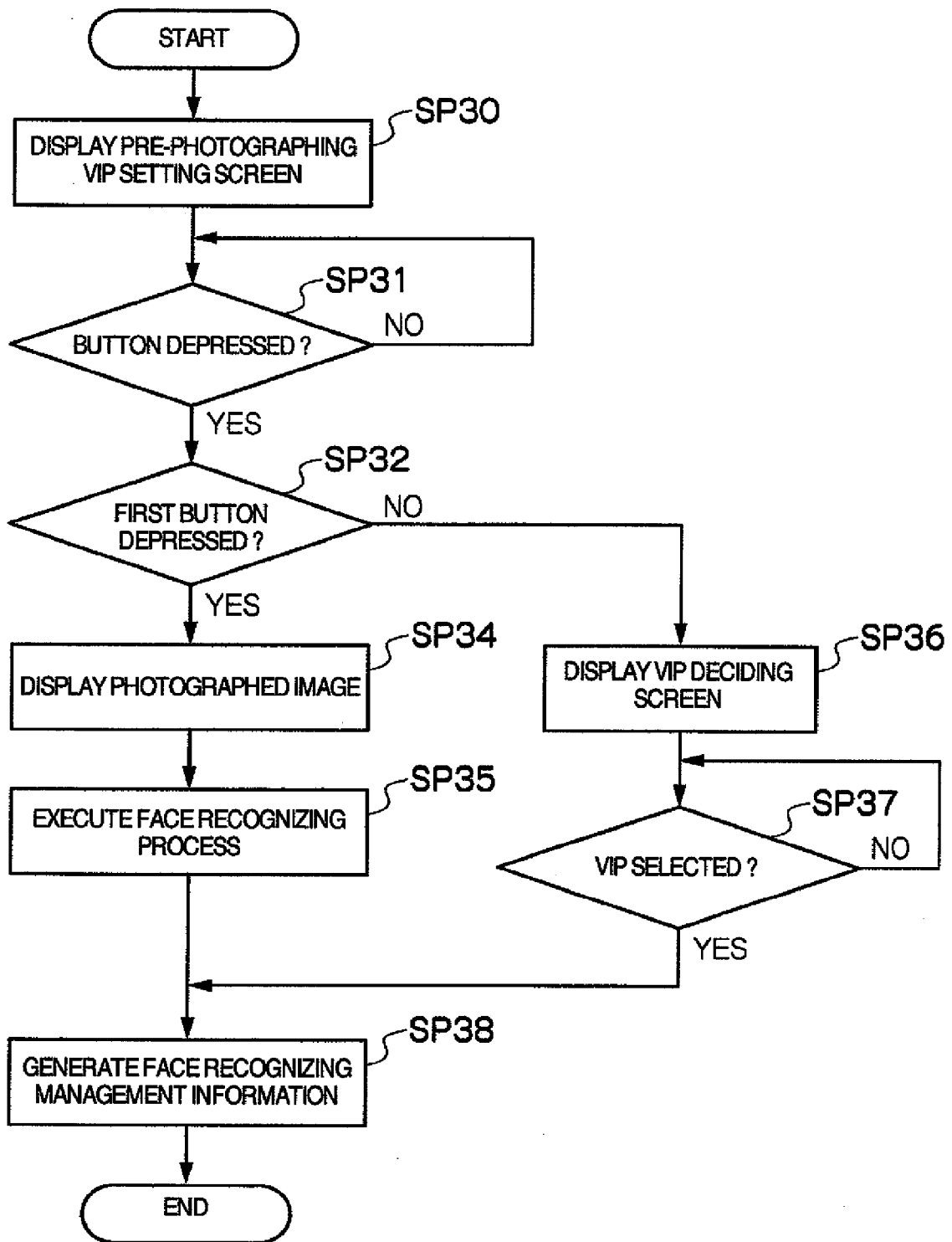


FIG. 14

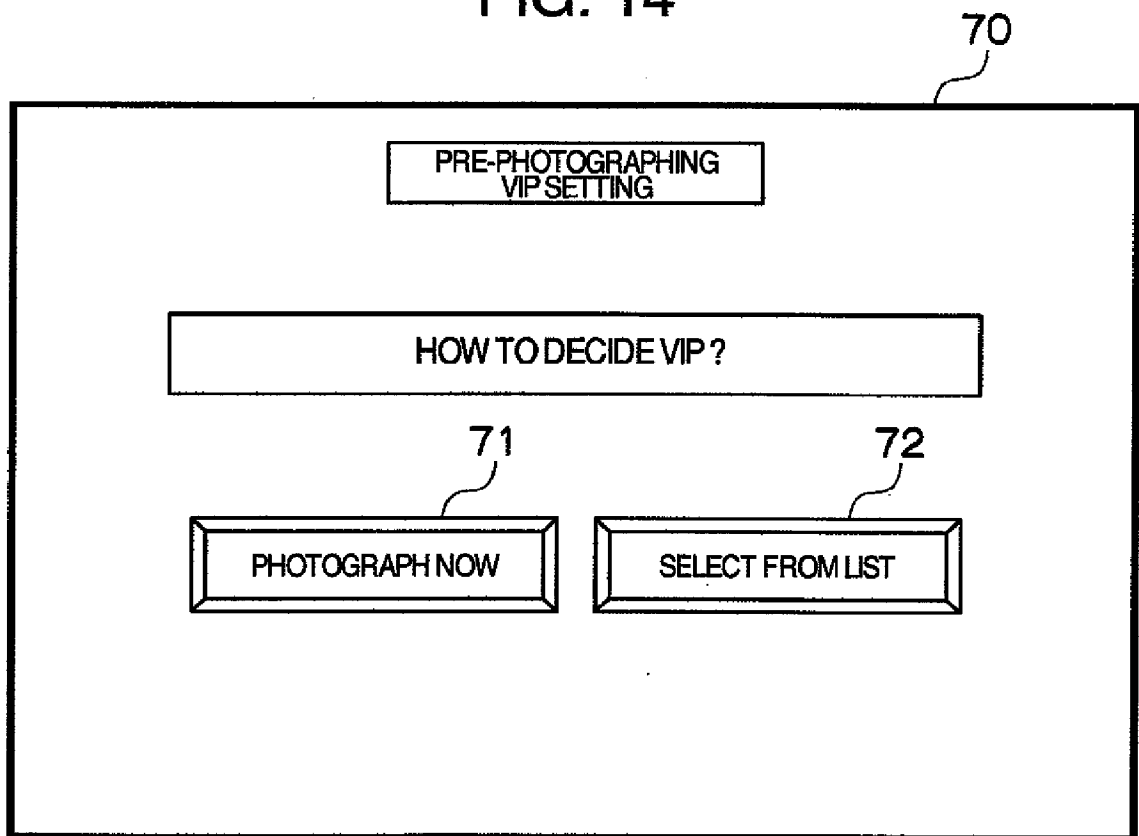
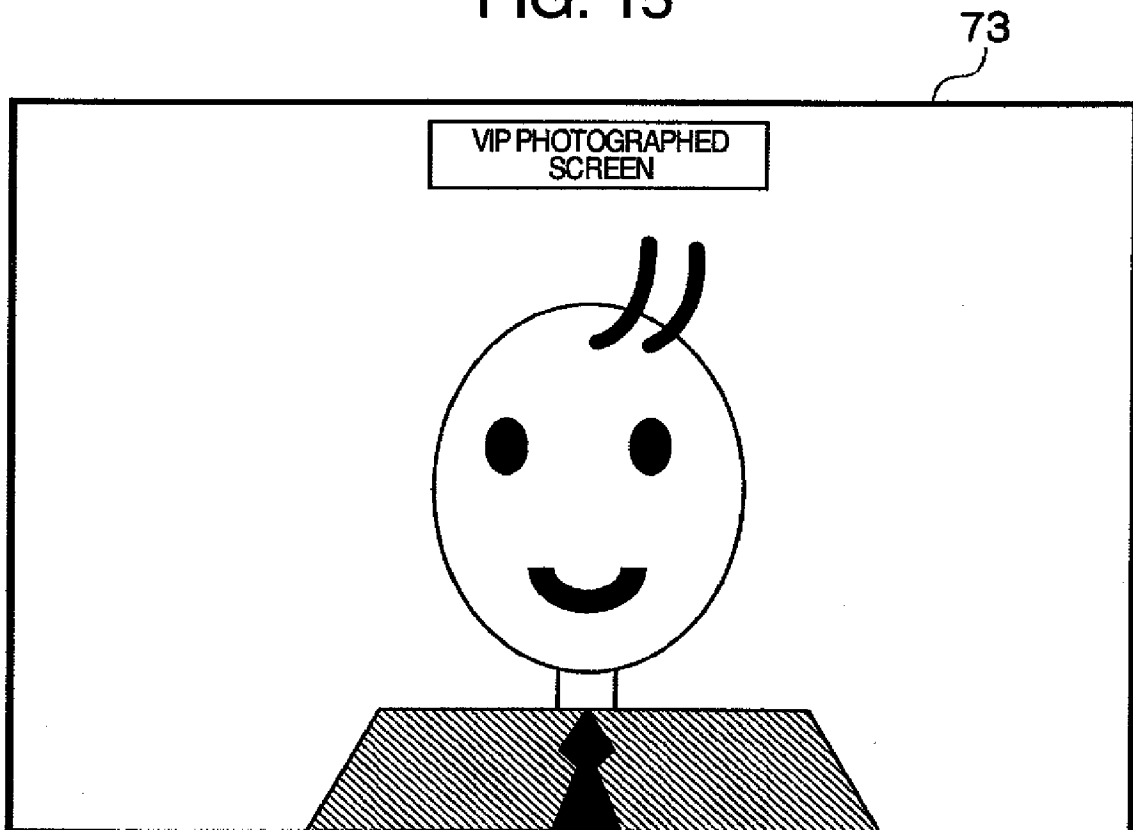


FIG. 15



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: YOSHIDA
Application No.: Not yet assigned
Filed: September 5, 2014
Title: RECORDING AND REPRODUCING APPARATUS AND
METHOD THEREOF
Art Unit: 2484 (expected)
Exr.: Syed Y. Hasan (expected)

INFORMATION DISCLOSURE STATEMENT
UNDER 37 CFR §§ 1.97 & 1.98

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

September 5, 2014

Sir:

In the matter of the above-identified application, applicant(s) is/are submitting herewith the attached form Form(s) ATSK/SB/08A or ATSK/SB/08B for the Examiner's consideration.

This information disclosure statement is being submitted within three months of the filing date.

Copies of any patent, publication, pending U.S. application, or other information listed in this information disclosure statement are not required to be provided since the information was previously cited by or submitted to, the Office in prior application(s) no(s). 12/430,185 and such prior application(s) is/are relied on for an earlier filing date under 35 U.S.C. 120; and since any information disclosure statement(s) submitted in the earlier application(s) complies/comply with 37 CFR 1.98(a)-(c).

It is respectfully requested that this Information Disclosure Statement be

considered by the Examiner.

Please charge any shortage in the fees due in connection with the filing of this paper, including extension of time fees, to the deposit account of Antonelli, Terry, Stout & Kraus, LLP, Deposit Account No. 01-2135 (Docket No. 500.49882CX1) and, please credit any excess fees to said deposit account.

Respectfully submitted,

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