

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

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In re Application of:  
Patrick Buckley

Application No.: 14/801,606

Confirmation No.: 8439

Filed: July 17, 2015

Art Unit: 2621

For: VIRTUAL REALITY VIEWER AND INPUT  
MECHANISM

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Examiner: Pervan, Michael

**AMENDMENT AFTER NOTICE OF ALLOWANCE UNDER 37 CFR 1.312 AND  
RESPONSE TO NOTICE TO FILE CORRECTED APPLICATION PAPERS**

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

Dear Sir:

**INTRODUCTORY COMMENTS**

In response to the Notice of Allowance mailed April 6, 2016 and in response to the Notice to File Corrected Application Papers mailed May 2, 2016, please enter the following amendments to the claims, specification and drawings in the above-identified application:

**Amendments to the Specification** begin on page 2;

**Amendments to the Claim** begin on page 3;

**Amendments to the Drawings** begin on page 9; and

**Remarks** begin on page 10.

**AMENDMENT TO THE SPECIFICATION**

Please replace the specification with the substitute specification attached hereto with markings showing changes in compliance with 37 C.F.R. § 1.125(b) and (c). A clean copy of the specification is also attached and the amendments are explained in the Remarks. The substitute specification contains no new matter.

## AMENDMENT TO THE CLAIMS

### **In the claims:**

Upon entry of this Amendment, the listing of claims is as follows:

1. (Currently Amended) A virtual reality viewer for use with a mobile electronic device having a touch-screen, the viewer comprising:

a housing configured to receive the mobile electronic device ~~within a generally hollow interior of the housing~~, wherein the housing is configured to hold the mobile electronic device such that the touch-screen ~~such that it is~~ generally centered in a horizontal direction and directly in a user's field of view when looking into ~~the a generally hollow~~ interior of the housing through a side opposite the touch-screen;

an input mechanism that is accessible from an exterior of the housing and is moveable within the interior between at least a first position and an extended position, the input mechanism comprising:

an electrical shield having a surface, wherein only a portion of the surface of the electrical shield is configured to contact a central region of the touch-screen of the mobile electronic device when the input mechanism is in the extended position.

2. (Previously Presented) The virtual reality viewer of claim 1, wherein input mechanism is configured to provide a capacitive touch input to the touch-screen when the input mechanism is in the extended position, and

wherein at least a portion of the input mechanism is moveable between the first position and the extended position and is located within a central region of the interior that is between a left and a right region of the interior and the field of view such that only the portion of the surface of the electrical shield contacts the central area of the touch-screen of the mobile electronic device.

3. (Previously Presented) The virtual reality viewer of claim 1, wherein an exterior wall of the housing is shaped to define a cut-out, and wherein at least a first portion of the input mechanism is accessible to the user through the cut-out.

4. (Previously Presented) The virtual reality viewer of claim 1, wherein at least a portion of the input mechanism defines at least a portion of a view divider within the interior of the housing, wherein the view divider is a structure that is generally centered within the interior and at least partially separates a left and a right region of the interior.
5. (Previously Presented) The virtual reality viewer of claim 3, wherein the housing substantially encloses the touch-screen within the interior, and further comprising:
- a back wall opposite the touch-screen, wherein the back-wall includes a left and a right lens for viewing a left and a right region of the interior and the touch-screen within the housing;
  - wherein at least a second portion of the input mechanism is generally centered in the horizontal direction within the interior and is configured to move in a direction toward the touch-screen when the first portion of the input mechanism is actuated; and
  - wherein the portion of the surface of the electrical shield is disposed on the second portion of the input mechanism and is generally centered within the interior in the horizontal direction whereby the portion is generally located between the left and right regions and is moveable between the first position and the extended position.
6. (Previously Presented) The virtual reality viewer of claim 1, wherein the electrical shield comprises one or more of: a metallized fabric, a metallized polymer; a conductive polymer, a conductive fabric, a rigid flex printed circuit board and a flexographic ink.
7. (Previously Presented) The virtual reality viewer of claim 6, wherein the surface of the electrical shield is sized to have electrical properties that are sufficient to be detected by the touch-screen based on capacitance when the input mechanism is in the extended position and only the portion of the surface is contacting the touch-screen.
8. (Previously Presented) The virtual reality viewer of claim 6, wherein the surface of the electric shield is sized to have sufficient capacitive properties such that contact between only the portion of the surface and the touch-screen can be detected by a capacitive touch-screen when the input mechanism is in the extended position and in the absence of human contact with the electric shield.
9. (Previously Presented) The virtual reality viewer of claim 6, further comprising a compressible pad disposed between the second portion of the input mechanism and the portion of the surface of the electric shield, wherein the pad is configured to create a sufficiently sized area

of contact between the portion of the surface and the touch-screen when the input mechanism is in the extended position.

10. (Previously Presented) The virtual reality viewer of claim 9, wherein the pad is configured to vary the size of the area of contact between the portion of the surface of the electric shield and the touch-screen as a function of a force applied to the input mechanism from the exterior of the housing.

11. (Previously Presented) The virtual reality viewer of claim 1, wherein the input mechanism includes a lever and a flexible linkage coupled to the housing, wherein the flexible linkage is configured to deform when the lever is actuated and thereby guide at least the portion of the surface between the first position and the extended position.

12. (Previously Presented) The virtual reality viewer of claim 11, wherein at least a portion of the flexible linkage is integrally formed with the housing.

13. (Previously Presented) The virtual reality viewer of claim 11, wherein the flexible linkage is configured to return the portion of the surface from the extended position to the first position in the absence of user interaction with the input mechanism.

14. (Currently Amended) The virtual reality viewer of claim 1, wherein the housing is formed to define a cut-out through an exterior side of the housing; and

wherein the input mechanism further comprises:

a lever that is accessible through the cut-out;

wherein the surface of the electrical shield is sized to have capacitive properties sufficient to provide a detectable capacitive touch input to the touch-screen when the input mechanism is in the extended position and only the portion of the surface contacts the touch-screen; ~~and~~

a flexible linkage coupled to the lever and the housing, wherein the linkage is configured to flex in response to actuation of the lever and guide at least the portion of the surface between the first position and the extended position and return to the first position in response to release of the lever after actuation is complete; ~~and~~

~~a compressible pad disposed beneath the portion of the surface of the electrical shield configured to contact the touch-screen, wherein the pad is configured to create a sufficiently-sized area of contact between the touch-screen and the portion of the surface when the input mechanism is in the extended position.~~

15. (Previously Presented) The virtual reality viewer of claim 1, further comprising:  
a plurality of input mechanisms;  
wherein each of the plurality of input mechanisms are accessible from the exterior of the housing at a respective location and are moveable within the interior;  
wherein each of the plurality of input mechanisms have a respective electric shield having a respective surface located within the interior of the housing, and wherein only a respective portion of the respective surface is configured to contact the central region of the touch-screen at a distinct respective location when in the extended position.
16. (Original) The virtual reality viewer of claim 1, further comprising at least one additional user input devices that is accessible from an exterior of the housing.
17. (Previously Presented) A virtual reality viewer for use with a mobile electronic device having a capacitive touch-screen, the viewer comprising:  
a housing configured to receive the mobile electronic device and substantially enclose the touch-screen within a generally hollow interior of the housing, wherein the housing holds the touch-screen in a position that is generally centered in a horizontal direction and directly in a user's field of view when viewing the touch-screen through a back wall of the housing, wherein the back-wall is opposite the touch-screen and includes a left and a right lens for viewing a left region and a right region of the interior and the touch-screen;  
an input device including,  
a first portion that is accessible from an exterior of the housing, and  
an elongate second portion disposed within the interior of the housing between the left and right regions wherein the second portion is generally oriented in a vertical direction that is perpendicular to the horizontal direction;  
an electric shield,  
wherein a first surface of the electric shield is disposed on the first portion and is electrically coupled to a second surface of the electric shield,  
wherein the second surface is disposed on the second portion within the interior and is generally centered in the horizontal direction between the left and right regions, and wherein only the second surface of the electric shield is configured to contact a central portion of the touch-screen of the mobile electronic

device and selectively transfer a capacitive touch input to the touch-screen in response to a user interaction with the first portion of the input mechanism.

18. (Previously Presented) The virtual reality viewer of claim 17, further comprising:

a compressible pad disposed between the second portion and the second surface to provide an area of contact between the second surface and the touch-screen that is sufficient to transfer the capacitive touch input;

wherein at least the electric shield includes a conductive material configured to transfer electrical capacitance between the first surface and the touch-screen via the second surface in response to a user interaction with the first surface; and

wherein the second portion of the input mechanism at least partially divides the left and right regions.

19. (Previously Presented) A virtual reality viewer for use with a mobile electronic device having a touch-screen, the viewer comprising:

a housing configured to receive a mobile electronic device within an interior of the housing, wherein the housing is formed to define a cut-out through an exterior side of the housing;

an input mechanism that is accessible from an exterior of the housing and is moveable within the interior between at least a first position and an extended position, the input mechanism comprising:

a lever that is accessible through the cut-out;

an electrical shield, wherein only portion of a surface of the electrical shield is configured to contact the touch-screen of the mobile electronic device when in the extended position,

a flexible linkage coupled to the lever and the housing, wherein the linkage is configured to deform in response to actuation of the lever and thereby guide the portion of the surface between the first position and the extended position, and

wherein at least a portion of the input mechanism defines at least a portion of a view divider within the interior of the housing.

20. (Previously Presented) The virtual reality viewer of claim 8, wherein the only portion of the surface that is configured to contact the touch-screen when the input mechanism is in the

extended position is substantially smaller in size than the remaining portion of the surface of electric shield that is not configured to contact the touch-screen.

## **AMENDMENTS TO THE DRAWINGS**

Applicant requests entry of the attached replacement sheets that include Figs. 1-7F (10 sheets), which have been amended.

## **REMARKS**

This is in response to the Notice of Allowance mailed on April 6, 2016 and in response to the Notice to File Corrected Application Papers mailed May 2, 2016 concerning the above-identified application.

By this submission claims 1 and 14 have been amended. In particular, the portion of claim 1 describing the housing been amended to more clearly describe that the housing receives a mobile electronic device such that the touch-screen is centered and directly in a user's field of view. Applicant submits the amendment does not substantively change the scope of this claim feature. Claim 14 has been amended to remove a recited feature, namely, the compressible pad. Because claim 14 depends from claim 1, which is allowable. With the Examiner's approval Applicant respectfully requests entry of these two amendments. If there are issues with the proposed amendments to the claims, the Examiner is respectfully requested to contact the undersigned at the telephone number indicated below.

### **Amendments to the Specification**

In the Amendments to the Specification, the Description of the Drawings has been amended to more accurately describe the various drawings.

The amendments to the specification also address the following typographical errors:

- correct the numbering of the viewer (10) and view divider (20) in paragraph [0032] of the application as published;
- accurately reference FIG. 7A at paragraph [0049] of the application as published.

### **Replacement Drawings**

Replacement drawings are submitted herewith to address the Notice to File Corrected Application Papers mailed May 2, 2016. In addition, in FIG. 5, numbers 18 and 19 have been switched for consistency with FIG. 4 and the corresponding description in the Specification.

Examiner's statement of Reasons for Allowance

Applicant submits the following Comments in regard to the Examiner's statement of Reasons for Allowance. Applicant agrees with the Examiner's determination of the allowability of the claims in the subject application and further submits that each of the independent claims and dependent claims define over the art of record in view of the combination of features recited in each respective claim.

Concluding Remarks

Applicant respectfully submits that all of the issues raised by the Examiner have been addressed by the present submission.

If there are any other issues remaining which the Examiner believes could be resolved through a Supplemental Response or an Examiner's Amendment, the Examiner is respectfully requested to contact the undersigned at the telephone number indicated below.

It is believed that no fees are due or all fees have been paid; however, if the Patent Office believes that additional fees are due, the Patent Office is authorized to charge Deposit Account No. 50-4570.

Dated: June 9, 2016

Respectfully submitted,

*Attorneys for Applicant*  
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/henry gabathuler/  
Henry Gabathuler  
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# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
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## NOTICE OF ALLOWANCE AND FEE(S) DUE

76808 7590 04/06/2016  
Leason Ellis LLP  
One Barker Avenue  
Fifth Floor  
White Plains, NY 10601-1526

EXAMINER

PERVAN, MICHAEL

ART UNIT

PAPER NUMBER

2621

DATE MAILED: 04/06/2016

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
|-----------------|-------------|----------------------|---------------------|------------------|

14/801,606

07/16/2015

Patrick Buckley

10101/004260-US0

8439

TITLE OF INVENTION: VIRTUAL REALITY VIEWER AND INPUT MECHANISM

| APPLN. TYPE    | ENTITY STATUS | ISSUE FEE DUE | PUBLICATION FEE DUE | PREV. PAID ISSUE FEE | TOTAL FEE(S) DUE | DATE DUE   |
|----------------|---------------|---------------|---------------------|----------------------|------------------|------------|
| nonprovisional | SMALL         | \$480         | \$0                 | \$0                  | \$480            | 07/06/2016 |

**THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.**

**THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.**

### HOW TO REPLY TO THIS NOTICE:

I. Review the ENTITY STATUS shown above. If the ENTITY STATUS is shown as SMALL or MICRO, verify whether entitlement to that entity status still applies.

If the ENTITY STATUS is the same as shown above, pay the TOTAL FEE(S) DUE shown above.

If the ENTITY STATUS is changed from that shown above, on PART B - FEE(S) TRANSMITTAL, complete section number 5 titled "Change in Entity Status (from status indicated above)".

For purposes of this notice, small entity fees are 1/2 the amount of undiscounted fees, and micro entity fees are 1/2 the amount of small entity fees.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

**IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.**

# PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: **Mail** **Mail Stop ISSUE FEE**  
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INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

76808 7590 04/06/2016  
**Leason Ellis LLP**  
**One Barker Avenue**  
**Fifth Floor**  
**White Plains, NY 10601-1526**

## Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

|                    |
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| (Depositor's name) |
| (Signature)        |
| (Date)             |

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 14/801,606      | 07/16/2015  | Patrick Buckley      | 10101/004260-US0    | 8439             |

TITLE OF INVENTION: VIRTUAL REALITY VIEWER AND INPUT MECHANISM

| APPLN. TYPE    | ENTITY STATUS | ISSUE FEE DUE | PUBLICATION FEE DUE | PREV. PAID ISSUE FEE | TOTAL FEE(S) DUE | DATE DUE   |
|----------------|---------------|---------------|---------------------|----------------------|------------------|------------|
| nonprovisional | SMALL         | \$480         | \$0                 | \$0                  | \$480            | 07/06/2016 |

| EXAMINER        | ART UNIT | CLASS-SUBCLASS |
|-----------------|----------|----------------|
| PERVAN, MICHAEL | 2621     | 345-174000     |

|                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                           |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).</b><br><input type="checkbox"/> Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.<br><input type="checkbox"/> "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. <b>Use of a Customer Number is required.</b> | <b>2. For printing on the patent front page, list</b><br>(1) The names of up to 3 registered patent attorneys or agents OR, alternatively, 1 _____<br>(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed. 2 _____<br>3 _____ |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### 3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE (B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ☐ Individual ☐ Corporation or other private group entity ☐ Government

#### 4a. The following fee(s) are submitted:

- ☐ Issue Fee  
☐ Publication Fee (No small entity discount permitted)  
☐ Advance Order - # of Copies \_\_\_\_\_

#### 4b. Payment of Fee(s): (Please first reapply any previously paid issue fee shown above)

- ☐ A check is enclosed.  
☐ Payment by credit card. Form PTO-2038 is attached.  
☐ The director is hereby authorized to charge the required fee(s), any deficiency, or credits any overpayment, to Deposit Account Number \_\_\_\_\_ (enclose an extra copy of this form).

#### 5. Change in Entity Status (from status indicated above)

- ☐ Applicant certifying micro entity status. See 37 CFR 1.29  
☐ Applicant asserting small entity status. See 37 CFR 1.27  
☐ Applicant changing to regular undiscounted fee status.

**NOTE:** Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

**NOTE:** If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

**NOTE:** Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature \_\_\_\_\_ Date \_\_\_\_\_  
Typed or printed name \_\_\_\_\_ Registration No. \_\_\_\_\_



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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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Leason Ellis LLP  
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Fifth Floor  
White Plains, NY 10601-1526

EXAMINER

PERVAN, MICHAEL

| ART UNIT | PAPER NUMBER |
|----------|--------------|
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2621

DATE MAILED: 04/06/2016

## Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (Applications filed on or after May 29, 2000)

The Office has discontinued providing a Patent Term Adjustment (PTA) calculation with the Notice of Allowance.

Section 1(h)(2) of the AIA Technical Corrections Act amended 35 U.S.C. 154(b)(3)(B)(i) to eliminate the requirement that the Office provide a patent term adjustment determination with the notice of allowance. See Revisions to Patent Term Adjustment, 78 Fed. Reg. 19416, 19417 (Apr. 1, 2013). Therefore, the Office is no longer providing an initial patent term adjustment determination with the notice of allowance. The Office will continue to provide a patent term adjustment determination with the Issue Notification Letter that is mailed to applicant approximately three weeks prior to the issue date of the patent, and will include the patent term adjustment on the patent. Any request for reconsideration of the patent term adjustment determination (or reinstatement of patent term adjustment) should follow the process outlined in 37 CFR 1.705.

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

## OMB Clearance and PRA Burden Statement for PTOL-85 Part B

The Paperwork Reduction Act (PRA) of 1995 requires Federal agencies to obtain Office of Management and Budget approval before requesting most types of information from the public. When OMB approves an agency request to collect information from the public, OMB (i) provides a valid OMB Control Number and expiration date for the agency to display on the instrument that will be used to collect the information and (ii) requires the agency to inform the public about the OMB Control Number's legal significance in accordance with 5 CFR 1320.5(b).

The information collected by PTOL-85 Part B is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450. Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

### Privacy Act Statement

**The Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

|                               |                                      |                                         |                                                   |
|-------------------------------|--------------------------------------|-----------------------------------------|---------------------------------------------------|
| <b>Notice of Allowability</b> | <b>Application No.</b><br>14/801,606 | <b>Applicant(s)</b><br>BUCKLEY, PATRICK |                                                   |
|                               | <b>Examiner</b><br>Michael Pervan    | <b>Art Unit</b><br>2621                 | <b>AIA (First Inventor to File) Status</b><br>Yes |

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

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 22 December 2015.  
☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on \_\_\_\_\_.
2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on \_\_\_\_\_; the restriction requirement and election have been incorporated into this action.
3. ☒ The allowed claim(s) is/are 1-20. As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see [http://www.uspto.gov/patents/init\\_events/pph/index.jsp](http://www.uspto.gov/patents/init_events/pph/index.jsp) or send an inquiry to [PPHfeedback@uspto.gov](mailto:PPHfeedback@uspto.gov).
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

**Certified copies:**

- a) ☐ All    b) ☐ Some    \*c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

5. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.  
☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.  
**Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).**
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

- |                                                                                                            |                                                                                      |
|------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892)                                           | 5. <input type="checkbox"/> Examiner's Amendment/Comment                             |
| 2. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08),<br>Paper No./Mail Date _____    | 6. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| 3. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit<br>of Biological Material | 7. <input type="checkbox"/> Other _____.                                             |
| 4. <input type="checkbox"/> Interview Summary (PTO-413),<br>Paper No./Mail Date _____.                     |                                                                                      |

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## **DETAILED ACTION**

### ***Notice of Pre-AIA or AIA Status***

1. The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

### ***Allowable Subject Matter***

2. Claims 1-20 are allowed.
3. The following is an examiner's statement of reasons for allowance:

In regards to claim 1, it recites, among other features, "a housing configured to receive the mobile electronic device within a generally hollow interior of the housing, wherein the housing is configured to hold the touch-screen such that it is generally centered in a horizontal direction and directly in a user's field of view when looking into the interior of the housing through a side opposite the touch-screen;

an electrical shield having a surface, wherein only a portion of the surface of the electrical shield is configured to contact a central region of the touch-screen of the mobile electronic device when the input mechanism is in the extended position.

Murray merely discloses a housing to hold a mobile device that has buttons to give access to buttons on the touchscreen. The mobile device is also not in the field of view of the user. There is no discussion of an electrical shield, where only a portion of the surface of the electrical shield contacts a central region of the mobile device.

In regards to claim 17, it recites, among other features, “a housing configured to receive the mobile electronic device and substantially enclose the touch-screen within a generally hollow interior of the housing, wherein the housing holds the touch-screen in a position that is generally centered in a horizontal direction and directly in a user's field of view when viewing the touch-screen through a back wall of the housing, wherein the back-wall is opposite the touch-screen and includes a left and a right lens for viewing a left region and a right region of the interior and the touch-screen;

wherein the second surface is disposed on the second portion within the interior and is generally centered in the horizontal direction, between the left and right regions, and wherein only the second surface of the electric shield is configured to contact a central portion of the touch-screen of the mobile electronic device and selectively transfer a capacitive touch input to the touch-screen in response to a user interaction with the first portion of the input mechanism.

Murray merely discloses a housing to hold a mobile device that has buttons to give access to buttons on the touchscreen. The mobile device is also not in the field of view of the user. There is no discussion of an electrical shield, where only a portion of the surface of the electrical shield contacts a central region of the mobile device. Murray does not disclose the housing having lenses for viewing a right and left region of the interior and mobile device.

In regards to claim 19, it recites, among other features, “a housing configured to receive a mobile electronic device within an interior of the housing, wherein the housing is formed to define a cut-out through an exterior side of the housing;

a lever that is accessible through the cut-out;

an electrical shield, wherein only portion of a surface of the electrical shield is configured to contact the touch-screen of the mobile electronic device when in the extended position,

a flexible linkage coupled to the lever and the housing, wherein the linkage is configured to deform in response to actuation of the lever and thereby guide the portion of the surface between the first position and the extended position, and

wherein at least a portion of the input mechanism defines at least a portion of a view divider within the interior of the housing.

Murray merely discloses a housing to hold a mobile device that has buttons to give access to buttons on the touchscreen. The mobile device is also not in the field of view of the user. There is no discussion of an electrical shield, where only a portion of the surface of the electrical shield contacts a central region of the mobile device.

Murray does not disclose a flexible linkage that deforms in response to actuation of a lever and guides the portion of the surface between the first and extended positions.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably

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accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### ***Conclusion***

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Pervan whose telephone number is (571)272-0910. The examiner can normally be reached on Monday - Friday between 9am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amr Awad can be reached on (571) 272-7764. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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

/Michael Pervan/  
Primary Examiner, Art Unit 2621

March 30, 2016

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

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In re Application of:  
Patrick Buckley

Application No.: 14/801,606

Confirmation No.: 8439

Filed: July 16, 2015

Art Unit: 2621

For: VIRTUAL REALITY VIEWER AND INPUT  
MECHANISM

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Examiner: Pervan, Michael

**RESPONSE TO NON-FINAL OFFICE ACTION**

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

Dear Sir:

**INTRODUCTORY COMMENTS**

In response to the Non-Final Office Action dated October 23, 2015, please enter the following amendments to the claims.

**Amendments to the Claim** begin on page 2;

**Remarks** begin on page 10.

## AMENDMENT TO THE CLAIMS

### **In the claims:**

Upon entry of this Amendment, the listing of claims is as follows:

What is claimed:

1. (Currently Amended) A virtual reality viewer for use with a mobile electronic device having a touch-screen, the viewer comprising:

a housing configured to receive ~~a~~the mobile electronic device within ~~an~~a generally hollow interior of the housing, wherein the housing is configured to hold the touch-screen such that it is generally centered in a horizontal direction and directly in a user's field of view when looking into the interior of the housing through a side opposite the touch-screen;

an input mechanism that is accessible from an exterior of the housing and is moveable within the interior between at least a first position and an extended position, the input mechanism comprising:

an electrical shield having a surface, wherein only a portion of ~~a~~the surface of the input mechanism the electrical shield is configured to contact a central region of the touch-screen of the mobile electronic device when the input mechanism is in the extended position.

2. (Currently Amended) The virtual reality viewer of claim 1, wherein input mechanism is configured to provide a capacitive touch input to the touch-screen when the input mechanism is in the extended position, and

wherein at least a portion of the input mechanism is moveable between the first position and the extended position and is located within a central region of the interior that is between a

left and a right region of the interior and the field of view such that only the portion of the surface of the electrical shield contacts the central area of the touch-screen of the mobile electronic device.

3. (Currently Amended) The virtual reality viewer of claim 1, wherein an exterior side-wall of the housing is shaped to define a cut-out, and wherein at least a first portion of the input mechanism is accessible to the user through the cut-out.

4. (Currently Amended) The virtual reality viewer of claim 1, wherein at least a portion of the input mechanism defines at least a portion of a view divider within the interior of the housing, wherein the view divider is a structure that is generally centered within the interior and at least partially separates a left and a right region of the interior.

5. (Currently Amended) The virtual reality viewer of claim 4, wherein the housing substantially encloses the touch-screen within the interior, and further comprising:

a back wall opposite the touch-screen, wherein the back-wall includes a left and a right lens for viewing a left and a right region of the interior and the touch-screen within the housing;

wherein at least a second portion of the input mechanism is generally centered in the horizontal direction within the interior and is configured to move in a direction toward the touch-screen when the first portion of the input mechanism is actuated; and

wherein the input mechanism further comprises an portion of the surface of the electrical shield is disposed on the second portion of the input mechanism and is generally centered within the interior in the horizontal direction whereby the portion is generally located between the left and right regions and is moveable between the first position and the extended position, and

~~wherein a portion of the electric shield is configured to contact the touch-screen of the mobile electronic device when the input mechanism is in the extended position.~~

6. (Currently Amended) The virtual reality viewer of claim 51, wherein the electrical shield comprises one or more of: a metallized fabric, a metallized polymer; a conductive polymer, a conductive fabric, a rigid flex printed circuit board and a flexographic ink.

7. (Currently Amended) The virtual reality viewer of claim 6, wherein the surface of the electrical shield is configured-sized to have electrical properties that are sufficient to be detected by the touch-screen based on capacitance when the input mechanism is in the extended position and only the portion of the surface is contacting the touch-screen.

8. (Currently Amended) The virtual reality viewer of claim 6, wherein the surface of the electric shield is sized to have sufficient capacitive properties such that contact between only the portion of the surface and the touch-screen sufficient to can be detected by a capacitive touch-screen when the input mechanism is in the extended position and in the absence of human contact with the electric shield.

9. (Currently Amended) The virtual reality viewer of claim 56, further comprising a compressible pad disposed ~~at~~ between the surface second portion of the input mechanism and the portion of the surface of the electric shield, wherein the pad is configured to create a sufficiently sized area of contact between the portion of the surface and the touch-screen when the input mechanism is in the extended position.

10. (Currently Amended) The virtual reality viewer of claim 9, wherein the pad is configured to vary the size of the area of contact between the portion of the surface of the electric shield and

the touch-screen as a function of a force applied to the input mechanism from the exterior of the housing.

11. (Currently Amended) The virtual reality viewer of claim 1, wherein the input mechanism includes a lever and a flexible linkage coupled to the housing, wherein the flexible linkage is configured to deform when the lever is actuated and thereby guide at least the portion of the surface between the first position and the extended position.

12. (Currently Amended) The virtual reality viewer of claim 11, wherein at least a portion of the ~~input mechanism~~ flexible linkage is integrally formed with the housing.

13. (Currently Amended) The virtual reality viewer of claim 11, wherein the flexible linkage is configured to return the portion of the surface from the extended position to the first position in the absence of user interaction with the input mechanism.

14. (Currently Amended) The virtual reality viewer of claim 1, wherein the housing is formed to define a cut-out through an exterior side of the housing; and

wherein the input mechanism further comprises:

a lever that is accessible through the cut-out;

~~an electrical shield, wherein the surface comprises a portion of the electrical shield comprises, and~~ wherein the surface of the electrical shield is configured sized to have capacitive properties sufficient to provide a detectable capacitive touch input to the touch-screen when the input mechanism is in the extended position and only the portion of the surface contacts the touch-screen;

a flexible linkage coupled to the lever and the housing, wherein the ~~coupling~~ linkage is configured to flex in response to actuation of the lever and guide at least the portion of the surface between the first position and the extended position and return to the first position in response to ~~actuation~~ release of the lever after actuation is complete; and

a compressible pad disposed ~~between the coupling and beneath~~ the portion of the surface of the electrical shield configured to contact the touch-screen, wherein the pad is configured to create a sufficiently sized area of contact between the touch-screen and the portion of the surface when the input mechanism is in the extended position.

15. (Currently Amended) The virtual reality viewer of claim 1, further comprising:

a plurality of input mechanisms;

wherein each of the plurality of input mechanisms are accessible from the exterior of the housing at a respective location and are moveable within the interior;

wherein each of the plurality of input mechanisms have a respective electric shield having a respective surfaces located within the interior of the housing, and wherein only a respective portion of the respective surface is configured to contact the central region of the touch-screen at a distinct respective location to contact the touch-screen of the mobile electronic device when in the extended position at distinct locations.

16. (Original) The virtual reality viewer of claim 1, further comprising at least one additional user input devices that is accessible from an exterior of the housing.

17. (Currently Amended) A virtual reality viewer for use with a mobile electronic device having a capacitive touch-screen, the viewer comprising:

a housing configured to receive ~~a~~the mobile electronic device and substantially enclose the touch-screen within an a generally hollow interior of the housing, wherein the housing holds the touch-screen in a position that is generally centered in a horizontal direction and directly in a user's field of view when viewing the touch-screen through a back wall of the housing, wherein the back-wall is opposite the touch-screen and includes a left and a right lens for viewing a left region and a right region of the interior and the touch-screen;

an input device including,

a first portion that is accessible from an exterior of the housing, and

an elongate second portion disposed within the interior of the housing between the left and right regions wherein the second portion is generally oriented in a vertical direction that is perpendicular to the horizontal direction;

an electric shield,

wherein a first surface of the electric shield is disposed on the first portion and is electrically coupled to a second surface of the electric shield,

wherein the second a surface is disposed on the second portion within the interior and is generally centered in the horizontal direction between the left and right regions, that and wherein only the second surface of the electric shield is configured to contact a central portion of the touch-screen of the mobile electronic device and selectively transfer a capacitive touch input to the touch-screen in response to a user interaction with the first portion of the input mechanism.

18. (Currently Amended) The virtual reality viewer of claim 17, further comprising:

a compressible pad disposed between the second portion and at the second surface to provide an area of contact between the ~~input mechanism~~ second surface and the touch-screen that is sufficient to transfer the capacitive touch input; ~~and~~

wherein at least the ~~surface~~-electric shield includes a conductive material configured to transfer an electrical ~~charge~~-capacitance between the first surface ~~to and~~ the touch-screen via the second surface in response to a user interaction with the first surface; and

wherein the second portion of the input mechanism at least partially divides the left and right regions.

19. (New) A virtual reality viewer for use with a mobile electronic device having a touch-screen, the viewer comprising:

a housing configured to receive a mobile electronic device within an interior of the housing, wherein the housing is formed to define a cut-out through an exterior side of the housing;

an input mechanism that is accessible from an exterior of the housing and is moveable within the interior between at least a first position and an extended position, the input mechanism comprising:

a lever that is accessible through the cut-out;

an electrical shield, wherein only portion of a surface of the electrical shield is configured to contact the touch-screen of the mobile electronic device when in the extended position,

a flexible linkage coupled to the lever and the housing, wherein the linkage is configured to deform in response to actuation of the lever and thereby guide the portion of the surface between the first position and the extended position, and

wherein at least a portion of the input mechanism defines at least a portion of a view divider within the interior of the housing.

20. (New) The virtual reality viewer of claim 8, wherein the only portion of the surface that is configured to contact the touch-screen when the input mechanism is in the extended position is substantially smaller in size than the remaining portion of the surface of electric shield that is not configured to contact the touch-screen.

## **REMARKS**

This is in response to the Non-Final Office Action mailed on October 23, 2015 concerning the above-identified application. Claims 1-18 are pending in the application. Claims 1-15, 17-18 have been amended. Claims 19 and 20 are new. No new matter has been added. Reconsideration of the application in light of the following remarks is respectfully requested.

### ***Applicant Initiated Interview Summary***

Applicant appreciates the courtesies of the Examiner extended in the interview of November 17, 2015. Applicant submits this statement to confirm that the Substance of Interview summary mailed on November 23, 2015 provides an accurate summary of the discussions with the undersigned during the Interview. Applicant further notes that, during the Interview, the Examiner agreed that Compton fails to disclose an input mechanism that defines at least a portion of a view divider within the interior of the housing and a flexible linkage as recited in claim 14. In addition, the undersigned believes that the Examiner also appreciated additional distinctions over Compton that were advanced, namely: a) that Compton fails to disclose an input mechanism that is moveable within the interior of the housing and located within a central region between a left and right side of the interior (and thus the left and right sides of a user's field of view) so as to deliver inputs to the central portion of the touch-screen; and b) that Compton fails to disclose an input mechanism including an electric shield wherein only a portion of a surface of the electric shield material is configured to contact the touch-screen when the input mechanism is actuated. Applicant has amended the claims to more completely cover these and other aspects of the invention that improve patentably over Compton.

### ***Claim Rejections***

#### 35 U.S.C. §102

Claims 1-18 stand rejected under pre-AIA 35 U.S.C. 102 on the grounds of allegedly being unpatentable over Compton et al (US 2013/0141360). Applicant respectfully traverses.

The invention recited in amended claim 1 concerns a virtual reality viewer for use with smartphones having a touch-screen. As recited in amended claim 1 the housing of the viewer is configured to “receive the mobile electronic device within a generally hollow interior of the housing, wherein the housing is configured to hold the touch-screen in a position that is ***generally centered in a horizontal direction*** and directly in a user’s field of view when looking into the interior of the housing through a side opposite the touch-screen.”

Applicant has also amended claim 1 to more completely describe additional aspects of the input mechanism that are not disclosed or suggested by Compton. In particular, claim 1 has been amended to further describe the electrical shield component of the input mechanism and clarify that “***only a portion of the surface of the electrical shield*** is configured to contact a central region of the touch-screen of the mobile electronic device when the input mechanism is in the extended position.”

By providing a housing configured to position the touch-screen generally centered within the user’s field of view and also providing an input mechanism that is accessible from the exterior of the housing and that, when actuated, moves within the housing and contacts the central region of the touch-screen, the claimed input mechanism is configured to provide inputs to the touch-screen in a manner that does not disturb the field of view of the left or right eye. In addition, this configuration also enables the viewer to be used with touch-screen devices of different size.

Compton fails to disclose or suggest a viewer having such a configuration. Compton describes a head mounted display for displaying three dimensional images in which the mobile device is placed in a holder mounted to the user's head (e.g., above the eyes near the forehead) and the user views images that are projected to the viewing lenses indirectly through a series of mirrors. See FIG. 2B and FIG. 9 of Compton. Accordingly, Compton fails to disclose or suggest a housing configured to "hold the touch-screen in a position that is generally centered in a horizontal direction and directly in a user's field of view when looking into the interior of the housing through a side opposite the touch-screen," as recited in amended claim 1.

Moreover, the input mechanism of amended claim 1 further distinguishes patentably over Compton. In particular, Compton fails to disclose an input mechanism that includes "an electrical shield having a surface, wherein *only a portion of the surface of the electrical shield* is configured to contact a central region of the touch-screen of the mobile electronic device when the input mechanism is in the extended position," as recited in claim 1.

The input device of Compton consists of: a rigid rocker arm (e.g., 512, 513) that is pivotably mounted to the mobile device holder 22 and has a "special tip 610" at the end of the rocker arm that makes contact with *the edge* of the screen 51, as shown in FIG. 6A of Compton which is reproduced below.

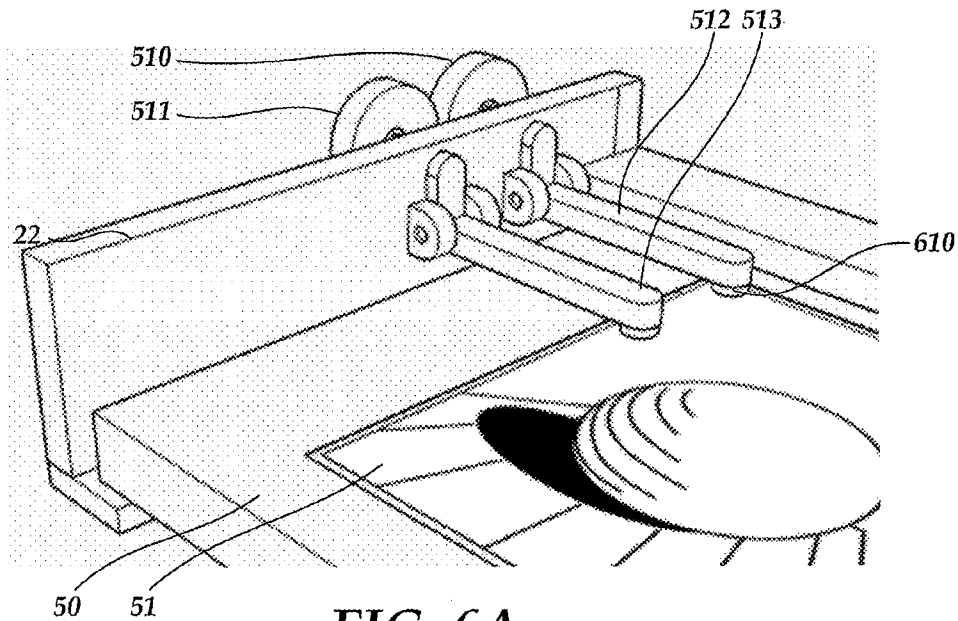


**FIG. 6A**

Applicant believes that, during the Interview, the Examiner appreciated the salient differences over Compton relating to the claimed input mechanism including the location of the delivery of inputs, namely, at the central region of the touch-screen. As noted above, the claimed housing and input mechanism are configured to provide inputs to *the central region of the touch-screen* and, as such, does not disturb the field of view of the left or right eye and can be used with devices of varying screen sizes. Conversely Compton provides inputs around the outside edge of the touch-screen.

Moreover, Compton describes and depicts a special tip in which the surface of the *entire tip* is configured to touch the screen. Compton otherwise fails to describe the special tip and its configuration with particularity. See Compton at [050]. As noted during the interview, the particular configuration of Compton, in which the entire surface of a small special tip is configured to touch the touch-screen, would be ineffective at providing a detectable capacitive touch input to conventional touch-screen devices. Accordingly, Compton cannot be fairly

interpreted as disclosing or suggesting an electric shield “having a surface, wherein *only a portion of the surface of the electrical shield is configured* to contact a central region of the touch-screen,” as recited in amended claim 1.

For at least the foregoing reasons, amended claim 1 is submitted to be patentable over Compton, or any fair modification of Compton. In addition, independent claim 17, which has also been amended to further describe aspects relating to the particular configuration of the housing and the input mechanism, is submitted to be patentable for at least the foregoing reasons. In addition, each of the dependent claims not discussed explicitly herein are submitted to be patentable on the basis of their respective dependency from independent Claims 1 and 17.

Discussion of the dependent claims

Applicant has amended the dependent claims consistent with the amendments to the independent claims and to further highlight and clarify the foregoing distinctions over Compton.

Claims 2 and 5 have been amended to more completely cover aspects of the input mechanism which is located *within a central region of the interior* of the housing and is configured to deliver touch-screen inputs to the central region of the touch-screen without disturbing the field of view of a user’s left and right eye. In particular, claim 2 recites that, “at least a portion of the input mechanism is moveable between the first position and the extended position and is located within a central region of the interior that is between a left and a right region of the interior and the field of view such that only the portion of the surface of the electrical shield contacts the central area of the touch-screen of the mobile electronic device.”

Claim 5 has been amended to further recite that the “housing substantially encloses the touch-screen within the interior,” and further describe the housing as comprising “a back wall opposite the touch-screen, wherein the back-wall includes a left and a right lens for viewing a

left and a right region of the interior and the touch-screen within the housing.” In addition claim 5 has been amended to more completely describe the components of the input mechanism within the central region of the housing, namely, “a second portion of the input mechanism is generally centered within the interior in the horizontal direction and is configured to move toward the touch-screen when the first portion of the input mechanism is actuated” such that “the portion of the surface of the electrical shield is disposed on the second portion of the input mechanism and is generally centered within the interior in the horizontal direction whereby the portion is generally located between the left and right regions and is moveable between the first position and the extended position.”

Claim 4, has been amended to further describe the viewer configuration wherein at least a portion of the input mechanism defines at least a portion of a view-divider within the interior of the housing. In particular, claim 4 recites that “the view divider is a structure that is generally centered within the interior and at least partially separates a left and a right region of the interior.” As noted previously, the Office indicated that Compton fails to disclose a configuration in which the input mechanism defines at least a portion of a view divider. Accordingly, Compton also fails to disclose or suggest an input mechanism that is located within a central region of the interior and at least partially separates the left and right regions of the interior and a user’s field of view.

New claim 20 has been added and claims 8 and 9 have been amended to more completely cover aspects of the invention relating to the particular configuration of the electric shield. In particular the claims further recite that the electric shield is sized such that the electric shield is sufficient to provide a detectable input to the touch-screen when only the portion of the surface of the shield contacts the touch-screen.

Claims 11 and 14 have been amended to more completely cover aspects of the input mechanism relating to the flexible linkage, which is coupled to a lever and the housing, and is configured to flex (e.g., deform) when the input mechanism is actuated and, as a result, guides the portion of the electric shield toward the touch-screen to make contact and transfer a touch input.

#### New Claim 19

As noted in the Examiner's Interview Summary, Compton does not disclose features recited in original claim 4 or the flexible linkage of claim 14. Accordingly, Applicant has added new independent claim 19, which is based on claim 1, and includes features of original claims 4 and 14. New claim 19 also includes a more specific description of the configuration of the electrical shield. In particular, claim 19 recites that "at least a portion of the input mechanism defines at least a portion of a view divider within the interior of the housing." In addition, new claim 19 also further describes the input mechanism and recites features described in original claim 14 including: "a flexible linkage coupled to the lever and the housing, wherein the linkage is configured to deform in response to actuation of the lever, thereby guiding the portion of the surface between the first position and the extended position."

#### Concluding Remarks

Applicant respectfully submits that all of the issues raised by the Examiner have been addressed and overcome by the present amendment.

In view of the foregoing it is believed that the pending claims are in condition for allowance and it is respectfully requested that the application be reconsidered and that all pending claims be allowed and the case passed to issue.

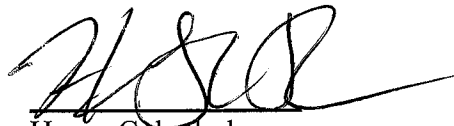
If there are any other issues remaining which the Examiner believes could be resolved through a Supplemental Response or an Examiner's Amendment, the Examiner is respectfully requested to contact the undersigned at the telephone number indicated below.

It is believed that no fees are due or all fees have been paid; however, if the Patent Office believes that additional fees are due, the Patent Office is authorized to charge Deposit Account No. 50-4570.

Dated: December 22, 2015

Respectfully submitted,

*Attorneys for Applicant*  
Leason Ellis LLP  
One Barker Avenue, Fifth Fl.  
White Plains, New York 10601  
(914) 288-0022

  
Henry Gabathuler  
Registration No. 65,763



# UNITED STATES PATENT AND TRADEMARK OFFICE

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| APPLICATION NO.                                                                     | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-------------------------------------------------------------------------------------|-------------|----------------------|---------------------|------------------|
| 14/801,606                                                                          | 07/16/2015  | Patrick Buckley      | 10101/004260-US0    | 8439             |
| 76808                                                                               | 7590        | 11/23/2015           | EXAMINER            |                  |
| Leason Ellis LLP<br>One Barker Avenue<br>Fifth Floor<br>White Plains, NY 10601-1526 |             |                      | PERVAN, MICHAEL     |                  |
|                                                                                     |             |                      | ART UNIT            | PAPER NUMBER     |
|                                                                                     |             |                      | 2621                |                  |
|                                                                                     |             |                      | NOTIFICATION DATE   | DELIVERY MODE    |
|                                                                                     |             |                      | 11/23/2015          | ELECTRONIC       |

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

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

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

uspto@leasonellis.com

|                                                     |                                      |                                         |  |
|-----------------------------------------------------|--------------------------------------|-----------------------------------------|--|
| <b><i>Applicant-Initiated Interview Summary</i></b> | <b>Application No.</b><br>14/801,606 | <b>Applicant(s)</b><br>BUCKLEY, PATRICK |  |
|                                                     | <b>Examiner</b><br>Michael Pervan    | <b>Art Unit</b><br>2621                 |  |

All participants (applicant, applicant's representative, PTO personnel):

(1) Michael Pervan. (3) \_\_\_\_.

(2) Henry Gabathuler. (4) \_\_\_\_.

Date of Interview: 17 November 2015.

Type:    ☒ Telephonic    ☐ Video Conference  
              ☐ Personal [copy given to: ☐ applicant    ☐ applicant's representative]

Exhibit shown or demonstration conducted:    ☐ Yes    ☒ No.  
     If Yes, brief description: \_\_\_\_\_.

Issues Discussed    ☐ 101    ☐ 112    ☒ 102    ☐ 103    ☐ Others  
 (For each of the checked box(es) above, please describe below the issue and detailed description of the discussion)

Claim(s) discussed: 4,5 and 14.

Identification of prior art discussed: Compton.

**Substance of Interview**  
 (For each issue discussed, provide a detailed description and indicate if agreement was reached. Some topics may include: identification or clarification of a reference or a portion thereof, claim interpretation, proposed amendments, arguments of any applied references etc...)

Examiner and Applicant's representative discussed the differences between the claimed invention and the prior art. Examiner agreed that Compton does not disclose the features of claim 4 or the flexible linkage of claim 14. Examiner explained how Compton still taught the limitations of claim 5. Proposed amendments to claims 1, 11 and 14 were discussed. No agreement was reached with respect to the proposed amendments..

**Applicant recordation instructions:** The formal written reply to the last Office action must include the substance of the interview. (See MPEP section 713.04). If a reply to the last Office action has already been filed, applicant is given a non-extendable period of the longer of one month or thirty days from this interview date, or the mailing date of this interview summary form, whichever is later, to file a statement of the substance of the interview

**Examiner recordation instructions:** Examiners must summarize the substance of any interview of record. A complete and proper recordation of the substance of an interview should include the items listed in MPEP 713.04 for complete and proper recordation including the identification of the general thrust of each argument or issue discussed, a general indication of any other pertinent matters discussed regarding patentability and the general results or outcome of the interview, to include an indication as to whether or not agreement was reached on the issues raised.

☐ Attachment

|                                                     |  |
|-----------------------------------------------------|--|
| /Michael Pervan/<br>Primary Examiner, Art Unit 2621 |  |
|-----------------------------------------------------|--|

## Summary of Record of Interview Requirements

### Manual of Patent Examining Procedure (MPEP), Section 713.04, Substance of Interview Must be Made of Record

A complete written statement as to the substance of any face-to-face, video conference, or telephone interview with regard to an application must be made of record in the application whether or not an agreement with the examiner was reached at the interview.

### Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews

#### Paragraph (b)

In every instance where reconsideration is requested in view of an interview with an examiner, a complete written statement of the reasons presented at the interview as warranting favorable action must be filed by the applicant. An interview does not remove the necessity for reply to Office action as specified in §§ 1.111, 1.135. (35 U.S.C. 132)

#### 37 CFR §1.2 Business to be transacted in writing.

All business with the Patent or Trademark Office should be transacted in writing. The personal attendance of applicants or their attorneys or agents at the Patent and Trademark Office is unnecessary. The action of the Patent and Trademark Office will be based exclusively on the written record in the Office. No attention will be paid to any alleged oral promise, stipulation, or understanding in relation to which there is disagreement or doubt.

The action of the Patent and Trademark Office cannot be based exclusively on the written record in the Office if that record is itself incomplete through the failure to record the substance of interviews.

It is the responsibility of the applicant or the attorney or agent to make the substance of an interview of record in the application file, unless the examiner indicates he or she will do so. It is the examiner's responsibility to see that such a record is made and to correct material inaccuracies which bear directly on the question of patentability.

Examiners must complete an Interview Summary Form for each interview held where a matter of substance has been discussed during the interview by checking the appropriate boxes and filling in the blanks. Discussions regarding only procedural matters, directed solely to restriction requirements for which interview recordation is otherwise provided for in Section 812.01 of the Manual of Patent Examining Procedure, or pointing out typographical errors or unreadable script in Office actions or the like, are excluded from the interview recordation procedures below. Where the substance of an interview is completely recorded in an Examiners Amendment, no separate Interview Summary Record is required.

The Interview Summary Form shall be given an appropriate Paper No., placed in the right hand portion of the file, and listed on the "Contents" section of the file wrapper. In a personal interview, a duplicate of the Form is given to the applicant (or attorney or agent) at the conclusion of the interview. In the case of a telephone or video-conference interview, the copy is mailed to the applicant's correspondence address either with or prior to the next official communication. If additional correspondence from the examiner is not likely before an allowance or if other circumstances dictate, the Form should be mailed promptly after the interview rather than with the next official communication.

The Form provides for recordation of the following information:

- Application Number (Series Code and Serial Number)
- Name of applicant
- Name of examiner
- Date of interview
- Type of interview (telephonic, video-conference, or personal)
- Name of participant(s) (applicant, attorney or agent, examiner, other PTO personnel, etc.)
- An indication whether or not an exhibit was shown or a demonstration conducted
- An identification of the specific prior art discussed
- An indication whether an agreement was reached and if so, a description of the general nature of the agreement (may be by attachment of a copy of amendments or claims agreed as being allowable). Note: Agreement as to allowability is tentative and does not restrict further action by the examiner to the contrary.
- The signature of the examiner who conducted the interview (if Form is not an attachment to a signed Office action)

It is desirable that the examiner orally remind the applicant of his or her obligation to record the substance of the interview of each case. It should be noted, however, that the Interview Summary Form will not normally be considered a complete and proper recordation of the interview unless it includes, or is supplemented by the applicant or the examiner to include, all of the applicable items required below concerning the substance of the interview.

A complete and proper recordation of the substance of any interview should include at least the following applicable items:

- 1) A brief description of the nature of any exhibit shown or any demonstration conducted,
- 2) an identification of the claims discussed,
- 3) an identification of the specific prior art discussed,
- 4) an identification of the principal proposed amendments of a substantive nature discussed, unless these are already described on the Interview Summary Form completed by the Examiner,
- 5) a brief identification of the general thrust of the principal arguments presented to the examiner,  
(The identification of arguments need not be lengthy or elaborate. A verbatim or highly detailed description of the arguments is not required. The identification of the arguments is sufficient if the general nature or thrust of the principal arguments made to the examiner can be understood in the context of the application file. Of course, the applicant may desire to emphasize and fully describe those arguments which he or she feels were or might be persuasive to the examiner.)
- 6) a general indication of any other pertinent matters discussed, and
- 7) if appropriate, the general results or outcome of the interview unless already described in the Interview Summary Form completed by the examiner.

Examiners are expected to carefully review the applicant's record of the substance of an interview. If the record is not complete and accurate, the examiner will give the applicant an extendable one month time period to correct the record.

### Examiner to Check for Accuracy

If the claims are allowable for other reasons of record, the examiner should send a letter setting forth the examiner's version of the statement attributed to him or her. If the record is complete and accurate, the examiner should place the indication, "Interview Record OK" on the paper recording the substance of the interview along with the date and the examiner's initials.



# UNITED STATES PATENT AND TRADEMARK OFFICE

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

| APPLICATION NO.                                                                     | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-------------------------------------------------------------------------------------|-------------|----------------------|---------------------|------------------|
| 14/801,606                                                                          | 07/16/2015  | Patrick Buckley      | 10101/004260-US0    | 8439             |
| 76808                                                                               | 7590        | 10/23/2015           | EXAMINER            |                  |
| Leason Ellis LLP<br>One Barker Avenue<br>Fifth Floor<br>White Plains, NY 10601-1526 |             |                      | PERVAN, MICHAEL     |                  |
|                                                                                     |             |                      | ART UNIT            | PAPER NUMBER     |
|                                                                                     |             |                      | 2621                |                  |
|                                                                                     |             |                      | NOTIFICATION DATE   | DELIVERY MODE    |
|                                                                                     |             |                      | 10/23/2015          | ELECTRONIC       |

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

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

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

uspto@leasonellis.com

|                              |                                      |                                         |                                                   |
|------------------------------|--------------------------------------|-----------------------------------------|---------------------------------------------------|
| <b>Office Action Summary</b> | <b>Application No.</b><br>14/801,606 | <b>Applicant(s)</b><br>BUCKLEY, PATRICK |                                                   |
|                              | <b>Examiner</b><br>Michael Pervan    | <b>Art Unit</b><br>2621                 | <b>AIA (First Inventor to File) Status</b><br>Yes |

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

### Period for Reply

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

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

### Status

- 1) ☒ Responsive to communication(s) filed on 16 July 2015.  
☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on \_\_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on \_\_\_\_\_; the restriction requirement and election have been incorporated into this action.
- 4) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims\*

- 5) ☒ Claim(s) 1-18 is/are pending in the application.  
5a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 6) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 7) ☒ Claim(s) 1-18 is/are rejected.
- 8) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 9) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

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

### Application Papers

- 10) ☐ The specification is objected to by the Examiner.
- 11) ☒ The drawing(s) filed on 16 July 2015 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

### Priority under 35 U.S.C. § 119

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

#### Certified copies:

- a) ☐ All    b) ☐ Some\*\*    c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

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

### Attachment(s)

- |                                                                                                                               |                                                                                         |
|-------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                                   | 3) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b)<br>Paper No(s)/Mail Date _____ | 4) <input type="checkbox"/> Other: _____                                                |

**DETAILED ACTION**

***Notice of Pre-AIA or AIA Status***

1. The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a)(1) the claimed invention was patented, described in a printed publication, or in public use, on sale or otherwise available to the public before the effective filing date of the claimed invention.

3. Claims 1-18 are rejected under 35 U.S.C. 102(a)(1) as being anticipated by Compton et al (US 2013/0141360).

In regards to claim 1, Compton discloses a virtual reality viewer for use with a mobile electronic device having a touch-screen, the viewer comprising:

a housing configured to receive a mobile electronic device within an interior of the housing (Figs. 4-6 and paragraphs 42-43);

an input mechanism that is accessible from an exterior of the housing and is moveable within the interior between at least a first position and an extended position, wherein a surface of the input mechanism is configured to contact the touch-screen of the mobile electronic device when in the extended position (Figs. 4-6 and paragraphs 44-46).

In regards to claim 2, Compton discloses the virtual reality viewer of claim 1, wherein input mechanism is configured to provide a capacitive touch input to the touch-screen when the input mechanism is in the extended position (Figs. 4-6 and paragraphs 47-51).

In regards to claim 3, Compton discloses the virtual reality viewer of claim 1, wherein a side of the housing is shaped to define a cut-out, and wherein at least a first portion of the input mechanism is accessible through the cut-out (Figs. 4-6 and paragraphs 47-51).

In regards to claim 4, Compton discloses the virtual reality viewer of claim 1, wherein at least a portion of the input mechanism defines at least a portion of a view divider within the interior of the housing (Figs. 4-6 and paragraphs 42-51).

In regards to claim 5, Compton discloses the virtual reality viewer of claim 1, wherein the input mechanism further comprises an electrical shield, and wherein a portion of the electric shield is configured to contact the touch-screen of the mobile electronic device when the input mechanism is in the extended position (Figs. 4-6 and paragraphs 47-51).

In regards to claim 6, Compton discloses the virtual reality viewer of claim 5, wherein the electrical shield comprises one or more of: a metallized fabric, a metallized

polymer; a conductive polymer, a conductive fabric, a rigid flex printed circuit board and a flexographic ink (Figs. 4-6 and paragraphs 47-51).

In regards to claim 7, Compton discloses the virtual reality viewer of claim 6, wherein the electrical shield is configured to have electrical properties sufficient to be detected by the touch-screen when the input mechanism is in the extended position (Figs. 4-6 and paragraphs 47-51).

In regards to claim 8, Compton discloses the virtual reality viewer of claim 6, wherein the electric shield is sized to have capacitive properties sufficient to be detected by a capacitive touch-screen when the input mechanism is in the extended position and in the absence of human contact with the electric shield (Figs. 4-6 and paragraphs 47-51).

In regards to claim 9, Compton discloses the virtual reality viewer of claim 5, further comprising a compressible pad disposed at the surface, wherein the pad is configured to create a sufficiently sized area of contact between the surface and the touch-screen when the input mechanism is in the extended position (Figs. 4-6 and paragraphs 47-51).

In regards to claim 10, Compton discloses the virtual reality viewer of claim 9, wherein the pad is configured to vary the size of the area of contact as a function of a

force applied to the input mechanism from the exterior of the housing (Figs. 4-6 and paragraphs 47-51).

In regards to claim 11, Compton discloses the virtual reality viewer of claim 1, wherein the input mechanism includes a flexible linkage configured to guide at least the surface between the first position and the extended position (Figs. 4-6 and paragraphs 44-46).

In regards to claim 12, Compton discloses the virtual reality viewer of claim 11, wherein at least a portion of the input mechanism is integrally formed with the housing (Figs. 4-6 and paragraphs 44-46).

In regards to claim 13, Compton discloses the virtual reality viewer of claim 11, wherein the flexible linkage is configured to return the surface from the extended position to the first position in the absence of user interaction with the input mechanism (Figs. 4-6 and paragraphs 44-46).

In regards to claim 14, Compton discloses the virtual reality viewer of claim 1, wherein the housing is formed to define a cut-out through an exterior side of the housing (Figs. 4-6 and paragraphs 42-43); and

wherein the input mechanism further comprises:

a lever that is accessible through the cut-out (Figs. 4-6 and paragraphs 44-46);

an electrical shield, wherein the surface comprises a portion of the electrical shield comprises, and wherein the electrical shield is configured to provide a capacitive touch input to the touch-screen when the input mechanism is in the extended position (Figs. 4-6 and paragraphs 47-51);

a flexible linkage coupled to the lever and the housing, wherein the coupling is configured to guide the surface between the first position and the extended position in response to actuation of the lever (Figs. 4-6 and paragraphs 44-46); and

a compressible pad disposed between the coupling and the portion of the electrical shield, wherein the pad is configured to create a sufficiently sized area of contact between the touch-screen and the surface when the input mechanism is in the extended position (Figs. 4-6 and paragraphs 47-51).

In regards to claim 15, Compton discloses the virtual reality viewer of claim 1, further comprising:

a plurality of input mechanisms (Figs. 4-6 and paragraphs 44-46);

wherein each of the plurality of input mechanisms are accessible from the exterior of the housing at a respective location (Figs. 4-6 and paragraphs 44-46);

wherein each of the plurality of input mechanisms have a respective surfaces located within the interior of the housing a distinct respective location to

contact the touch-screen of the mobile electronic device when in the extended position at distinct locations (Figs. 4-6 and paragraphs 44-46).

In regards to claim 16, Compton discloses the virtual reality viewer of claim 1, further comprising at least one additional user input devices that is accessible from an exterior of the housing (Figs. 4-6 and paragraphs 44-46).

In regards to claim 17, Compton discloses a virtual reality viewer for use with a mobile electronic device having a capacitive touch-screen, the viewer comprising:

- a housing configured to receive a mobile electronic device within an interior of the housing (Figs. 4-6 and paragraphs 42-43);

- an input device including

- a first portion that is accessible from an exterior of the housing (Figs. 4-6 and paragraphs 44-46), and

- a surface within the interior that is configured to contact the touch-screen of the mobile electronic device and transfer a capacitive touch input to the touch-screen in response to a user interaction with the first portion (Figs. 4-6 and paragraphs 44-46).

In regards to claim 18, Compton discloses the virtual reality viewer of claim 17, further comprising:

a compressible pad disposed at the surface to provide an area of contact between the input mechanism and the touch-screen that is sufficient to transfer the capacitive touch input (Figs. 4-6 and paragraphs 47-51); and

wherein at least the surface includes a conductive material configured to transfer an electrical charge to the touch-screen in response to a user interaction (Figs. 4-6 and paragraphs 47-51).

### ***Conclusion***

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Pervan whose telephone number is (571)272-0910. The examiner can normally be reached on Monday - Friday between 9am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amr Awad can be reached on (571) 272-7764. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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

/Michael Pervan/  
Primary Examiner, Art Unit 2621

October 16, 2015

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

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In re Patent Application of:  
Patrick Buckley

Application No.: 14/801,606

Confirmation No.: 8439

Filed: July 17, 2015

Art Unit: N/A

For: VIRTUAL REALITY VIEWER AND INPUT  
MECHANISM

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Examiner: N/A

**PRELIMINARY AMENDMENT**

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

Dear Sir:

In advance of prosecution on the merits, please enter the following amendments in which:

**Amendments to the Specification** begin on page 2; **and**

**Remarks** begin on page 3.

**AMENDMENTS TO THE SPECIFICATION**

**Please add the following paragraph after the title:**

**CROSS REFERENCE TO RELATED APPLICATIONS**

The present application is related to and includes U.S. Provisional Patent Application Serial No. 62/025,376 titled “SYSTEM AND METHOD FOR VR HEADSET USER INTERACTION” filed on July 16, 2014 and listing inventors Patrick Regan Buckley, Craig Dalton and Gene Daly; and U.S. Provisional Patent Application Serial No. 62/161,857, titled “SYSTEM AND METHOD FOR VIRTUAL REALITY HEADSET USER INTERACTION THROUGH ELECTROMECHANICAL DEVICE AND TOUCHSCREEN,” filed on May 14, 2015 and listing inventors Patrick Regan Buckley, Craig Dalton and Gene Daly, which are each hereby incorporated by reference as if set forth in their respective entireties herein.

### REMARKS

The specification has been amended to contain a specific reference to earlier filed patent applications that the subject application claims benefit of. The above-identified amendment to the specification is made within 4 months of the filing of the present patent application.

No new matter has been added.

In advance of prosecution on the merits, please enter this Preliminary Amendment.

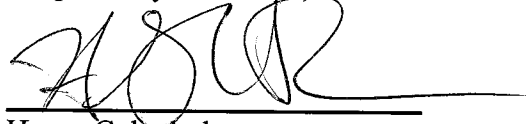
### CONCLUSION

It is believed that no fees are due or that all fees have been paid; however, if the Patent Office believes that fees due, Deposit Account No. 50-4570 can be accessed.

Applicant respectfully requests prompt and favorable review of this application.

Dated: July 17, 2015

Respectfully submitted,



---

Henry Gabathuler

Registration No. 65,763

*Attorneys for Applicant*

Leason Ellis LLP

One Barker Avenue, Fifth Floor

White Plains, New York 10601

(914) 288-0022

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

|                                                                                                                                     |                        |                                            |
|-------------------------------------------------------------------------------------------------------------------------------------|------------------------|--------------------------------------------|
| <b>UTILITY<br/>PATENT APPLICATION<br/>TRANSMITTAL</b><br><br><i>(Only for new nonprovisional applications under 37 CFR 1.53(b))</i> | Attorney Docket No.    | 10101/004260-US0                           |
|                                                                                                                                     | First Named Inventor   | Patrick Buckley                            |
|                                                                                                                                     | Title                  | VIRTUAL REALITY VIEWER AND INPUT MECHANISM |
|                                                                                                                                     | Express Mail Label No. |                                            |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>APPLICATION ELEMENTS</b><br><i>See MPEP chapter 600 concerning utility patent application contents.</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <b>ADDRESS TO:</b><br><b>Commissioner for Patents</b><br><b>P.O. Box 1450</b><br><b>Alexandria, VA 22313-1450</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 1. <input type="checkbox"/> <b>Fee Transmittal Form</b><br>(PTO/SB/17 or equivalent)<br>2. <input checked="" type="checkbox"/> <b>Applicant asserts small entity status.</b><br>See 37 CFR 1.27<br>3. <input type="checkbox"/> <b>Applicant certifies micro entity status.</b> See 37 CFR 1.29.<br>Applicant must attach form PTO/SB/15A or B or equivalent.<br>4. <input checked="" type="checkbox"/> <b>Specification</b> [Total Pages <u>27</u> ]<br>Both the claims and abstract must start on a new page.<br>(See MPEP § 608.01(a) for information on the preferred arrangement)<br>5. <input checked="" type="checkbox"/> <b>Drawing(s)</b> (35 U.S.C. 113) [Total Sheets <u>10</u> ]<br>6. <b>Inventor's Oath or Declaration</b> [Total Pages _____]<br>(including substitute statements under 37 CFR 1.64 and assignments<br>serving as an oath or declaration under 37 CFR 1.63(e))<br>a. <input type="checkbox"/> Newly executed (original or copy)<br>b. <input type="checkbox"/> A copy from a prior application (37 CFR 1.63(d))<br>7. <input checked="" type="checkbox"/> <b>Application Data Sheet</b> * See note below.<br>See 37 CFR 1.76 (PTO/AIA/14 or equivalent)<br>8. <b>CD-ROM or CD-R</b><br>in duplicate, large table, or Computer Program (Appendix)<br><input type="checkbox"/> Landscape Table on CD<br>9. <b>Nucleotide and/or Amino Acid Sequence Submission</b><br>(if applicable, items a. – c. are required)<br>a. <input type="checkbox"/> Computer Readable Form (CRF)<br>b. <input type="checkbox"/> Specification Sequence Listing on:<br>i. <input type="checkbox"/> CD-ROM or CD-R (2 copies); or<br>ii. <input type="checkbox"/> Paper<br>c. <input type="checkbox"/> Statements verifying identity of above copies | <b>ACCOMPANYING APPLICATION PAPERS</b><br>10. <input type="checkbox"/> <b>Assignment Papers</b><br>(cover sheet & document(s))<br>Name of Assignee _____<br>11. <input type="checkbox"/> <b>37 CFR 3.73(c) Statement</b> <input type="checkbox"/> <b>Power of Attorney</b><br>(when there is an assignee)<br>12. <input type="checkbox"/> <b>English Translation Document</b><br>(if applicable)<br>13. <input type="checkbox"/> <b>Information Disclosure Statement</b><br>(PTO/SB/08 or PTO-1449)<br><input type="checkbox"/> Copies of citations attached<br>14. <input type="checkbox"/> <b>Preliminary Amendment</b><br>15. <input type="checkbox"/> <b>Return Receipt Postcard</b><br>(MPEP § 503) (Should be specifically itemized)<br>16. <input type="checkbox"/> <b>Certified Copy of Priority Document(s)</b><br>(if foreign priority is claimed)<br>17. <input type="checkbox"/> <b>Nonpublication Request</b><br>Under 35 U.S.C. 122(b)(2)(B)(i). Applicant must attach form PTO/SB/35<br>or equivalent.<br>18. <input checked="" type="checkbox"/> <b>Other:</b> Request for Prioritized Examination (1 page)<br>_____<br>_____<br>_____ |

**\*Note:** (1) Benefit claims under 37 CFR 1.78 and foreign priority claims under 1.55 **must** be included in an Application Data Sheet (ADS).  
(2) For applications filed under 35 U.S.C. 111, the application must contain an ADS specifying the applicant if the applicant is an assignee, person to whom the inventor is under an obligation to assign, or person who otherwise shows sufficient proprietary interest in the matter. See 37 CFR 1.46(b).

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| Name<br>(Print/Type)                                                                                                                                          | Henry Gabathuler                                                                    |          | Registration No.<br>(Attorney/Agent) | 65,763        |  |

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## **VIRTUAL REALITY VIEWER AND INPUT MECHANISM**

### **TECHNICAL FIELD OF THE INVENTION**

The present invention relates to virtual reality viewer devices, in particular, virtual reality viewer devices for use with personal mobile electronic devices and having an input device.

### **BACKGROUND OF THE INVENTION**

Virtual reality viewers and headsets (collectively referred to as viewers) are becoming an increasingly popular way of viewing digital media, gaming and the like. With the widespread distribution of powerful and capable smartphone devices, many VR viewers are designed to use such smartphone devices as the visual display device, instead of having dedicated displays and electronics.

Typically the viewers have a housing that a user looks into in order to view the video display device contained within the housing. Viewers can be hand-held devices that a user holds up to the users face/eyes, for example, like a user would hold a pair of binoculars. Viewers can also be worn on a user's head, so as to free the users hands while looking into the viewer.

As would be understood by those in the art, viewers configured to use a smartphone as the visual display device typically receive the smartphone such that the smart phone display is viewable when a user looks into the viewer housing. These viewers also typically include one or more optical lenses within the housing so as to facilitate a three-dimensional viewing experience despite the two-dimensional display of the smartphone. In some instances the smartphone is completely contained within the housing, in other implementations the smartphone is attached to the housing in a manner such that the display is exposed within the interior of the viewer

One challenge to utilizing a smartphone in these types of viewers is that the touch sensitive display is concealed within the viewer housing, thereby making it difficult for a user to interact with the touch sensitive display of the device. To overcome this, some existing VR viewers utilize magnets on the exterior of the viewer as input devices, however one drawback is that the locations of magnetic sensors on smartphones vary from device to device and, as such, these viewers with magnetic inputs are only effectively used with a limited number of devices. Other VR viewers utilize built in accelerometers or other such position/orientation sensors within the smartphone to detect movement or the absence of movement and identify user inputs using the movement data. Other VR viewers utilize dedicated input devices, like video game controllers, that connect to the electronic device within the viewer either by a wired plug like connection (e.g., USB or Apple compatible connector), or a wireless connection capabilities. However, such VR viewer configurations typically require complex electronic circuitry and wireless connectivity capabilities in order to facilitate the capture and transfer of user inputs. Moreover, dedicated input controllers can be cumbersome when used with hand-held viewer.

What is needed is a VR viewer having integrated user input devices that is configured for use with a wide variety of conventionally available smartphone devices.

These considerations are addressed by the present invention.

## **SUMMARY OF THE INVENTION**

The present invention concerns a virtual reality viewer including an input mechanism that can be used with mobile electronic device having a touchscreen contained within the viewer. According to a first aspect, the virtual reality viewer for use with a mobile electronic device having a touch-screen, comprises: a housing configured to receive a mobile electronic device within an interior of the housing. In addition, the viewer further comprises an input mechanism that is accessible from an exterior of the housing and is moveable within the interior between at least a first position and an extended position, wherein a surface of the input mechanism is configured to contact the touch-screen of the mobile electronic device when in the extended position.

According to another aspect, the virtual reality viewer for use with a mobile electronic device having a touch-screen, comprises: a housing configured to receive a mobile electronic device within an interior of the housing; and an input device including a first portion that is accessible from an exterior of the housing, and a surface within the interior that is configured to contact the touch-screen of the mobile electronic device and transfer a capacitive touch input to the touch-screen in response to a user interaction with the first portion.

These and other aspects, features, steps and advantages can be further appreciated from the accompanying figures and description of certain illustrative embodiments.

## **BRIEF DESCRIPTION OF THE DRAWINGS**

FIG. 1, illustrates a virtual reality viewer;

FIG. 2, illustrates the viewer of FIG. 1;

FIG. 3, illustrates the viewer of FIG. 1;

FIG. 4, illustrates a virtual reality viewer;

FIG. 5, illustrates the viewer of FIG. 1;

FIG. 6A, illustrates an exemplary viewer of FIG. 1 including an input mechanism in accordance with an embodiment of the invention;

FIG. 6B, illustrates the viewer of FIG. 6A;

FIG. 7A, illustrates the viewer of FIG. 1 including an input mechanism in accordance with an embodiment of the invention;

FIG. 7B, illustrates the viewer of FIG. 7A;

FIG. 7C, illustrates the viewer of FIG. 7A;

FIG. 7D, illustrates the viewer of FIG. 7A;

FIG. 7E, illustrates the viewer of FIG. 7A; and

FIG. 7F, illustrates the viewer of FIG. 7A.

## **DETAILED DESCRIPTION OF THE INVENTION**

According to an aspect of the subject application, Virtual reality viewer systems and methods are provided that facilitate the capture of user inputs while using the virtual reality viewer. More specifically, the disclosed systems and methods provide a virtual reality viewer for use with a wide variety of personal electronic devices (e.g., a smartphone) as the visual display device, and having improved tactile user input capabilities.

According to a salient aspect, the disclosed systems and methods facilitate receiving tactile user inputs (e.g., user touches, button depressions etc.) on the exterior of the housing of the viewer and providing the user inputs to the touch sensitive display of the smartphone device that is within the viewer housing. In this manner, the disclosed systems and methods provide a

viewer that is configured to be useable with a wide variety of smartphones without requiring input devices that require specifically placed magnetic sensors, wireless or dedicated cable connection to the electronic device 15.

In one arrangement, the viewer is provided having a housing that encloses a generally hollow interior. As shown in FIG. 1, which is a perspective view of an exemplary viewer 10 having a conventional construction without an input mechanism. As shown, the viewer comprises a housing 12 that includes a front surface 30, back surface 25, top surface 45, bottom surface 50 (not shown), left surface 40 and right surface 35.

In some implementations, when in operation, housing 12 will be disposed in the position directly in front of the user's eyes such that the lenses contained in the housing, are in alignment with each of the user's eyes and the display of the electronic device is viewable through the lenses. It should be understood that the housing can be held by the user, or worn by the user such that the back surface of the housing is held against or in proximity to the users face.

The housing 12 is configured to receive an electronic device 15 having a touch sensitive display. The electronic device 15 can be any electronic device configured to visually display information via a display (e.g., LED, Plasma, LCD display) and receive user inputs via a touch sensitive user interface (e.g., a capacitive touch sensitive display), as would be understood by those skilled in the art. For example and without limitation, electronic device 15 can include a smartphone or other such personal electronic device having a touch sensitive display, for example, an iPhone or Android smartphone device and the like that are commercially available.

Preferably the electronic device 15 is received or mounted within the interior of the housing 12 such that the electronic device display 17 is viewable when the user is looking through the housing 12. By way of further example, the electronic device 15, can be mounted on

the housing such that it defines the back surface of the viewer. It can be appreciated that other configurations for the viewer 10 are envisioned without departing from the scope of the invention.

As shown in FIG. 2, which is a back view of the viewer (the terminology back side of refers to the side that the user looks into), preferably the housing 12 is configured to receive the electronic device 15 such that the touch sensitive display 17 of the device 15 is centered in a vertical direction 80 and/or a horizontal direction 85.

As shown in FIGS. 1 and 2, in some implementations, the housing includes one or more lenses 70 disposed therein arranged to be in alignment with the user's eyes when the user looks into the viewer. Generally, lenses 70 are mounted such that light from the display of the electronic device passes through lenses 70 to the user's eyes. The configuration, construction and placement of a lens or lenses 70 for use in virtual reality viewers are generally known and understood by those skilled in the art.

A view divider 20 can also be disposed within the housing. FIG. 4 is a perspective view of an exemplary configuration of a viewer 100 without a top, bottom and sides and showing the interior space of the viewer including the view divider 200. FIG 5 shows a bottom view of the interior of an exemplary viewer 10 including view divider 20 and having the left and right, bottom and front sides removed. Referring to FIG. 5, the view divider 20 is configured to isolate the field of view of the left eye from the right eye. In other words, the view divider serves to obstruct the right eye from seeing or receiving images displayed by the left portion 19 of the display 17 of the electronic device 15 and the left eye from seeing images displayed by the right portion 18 of the display 17. It should also be appreciated that the particular width of the left and

right portions of the display that are actually viewable by the user can vary depending on the lenses. In some implementations view dividers are not used.

Between the left and right portion of the display 17 is a central portion 14 of the display. The central portion of the display is not viewable by either the left or right eye due to the view divider 20, and, in addition or alternatively, due to the optical characteristics of the lenses 70. The width of the central portion 14 can range from the width of the view divider 20 but can be larger depending on the optical characteristics of the lenses 70. The central portion 14 that is not viewable by either the left or right eye can also vary in shape depending on the optical characteristics of the lenses. For example it might be rectangular or an hour glass shape that is wider towards the top and bottom sides of the viewer and narrower in the middle section of the display 17.

In one arrangement, the viewer 10 is configured to include one or more input devices that are configured to receive user inputs at the exterior of the viewer and provide such inputs directly to the touch sensitive display 17. The input devices can be configured to be passive and/or active input devices.

Preferably the inputs are provided to the display at the central portion 14 of the display, however one or more of the user inputs can be provided to the electronic device at alternative portions of the display 17 as well. Because the central portion 14 of the display is not viewable by the left or right eye to, by providing inputs at the central portion 14, the viewer 10 is capable of providing inputs to the electronic device 15 in a manner that does not disturb the field of view of the left or right eye. Moreover, because the device 15 is received within the housing and preferably positioned such that the display 17 portion of the device is generally centered in at least a horizontal direction and often in vertical direction as well, providing inputs in the central

portion 14, for example, where the view divider 20 is proximate to the display 17, allows the systems and methods disclosed herein to be useable with a wide variety of touch sensitive smartphone devices of various sizes and screen layouts. Moreover software can be configured universally to these touch points regardless of the shape or size of the device because of the centered location.

An exemplary implementation of a viewer including an input mechanism in accordance with an embodiment of the invention is shown in FIG. 6A-6B, which depict a cross-sectional view and of the exemplary viewer 10, including the view divider 20 and the electronic device 15 from the side and back perspective respectively. As shown, the viewer includes input devices that include one or more touchscreen inputs (26a-26d). In this particular exemplary configuration, the touchscreen inputs (26a-26d) are disposed on the distal surface 22 of the view divider 20. Preferably, the electronic device 15 is mounted in a manner such that the touch sensitive display 17 of the device 15, is proximate to (or is touching) at least a portion of the distal surface 22 of the view divider 20, such that the display 17 (not shown from this particular perspective) of the device is in physical contact with the surface of the touchscreen input portion of the input mechanism.

As most smartphones have capacitive touch sensitive displays, in an exemplary implementation, the touchscreen inputs (26a-26d) are constructed from a conductive material, for example, a conductive foam or polymer and the like as are used as the tip of a stylus configured for use with a capacitive touch screen. A compressible material will allow the housing to accommodate devices of varying thicknesses and create a capacitive connection between the display and the touchscreen inputs without the screen touching other portions of the surface 22,

for example, to prevent scratching of the screen, provide communicative connection between touchscreen input and the touchscreen without cross-talk and other such considerations.

Preferably, the touchscreen inputs (26a-26d) are electrically coupled to one or more user inputs (29a-29d) that are configured to receive user interactions while using the viewer. Preferably the user inputs (29a-29d) are exposed on the outer surfaces of the housing or positioned on the exterior of the housing 12 such that the user can interact with the user inputs (29a-29d) while using the viewer 10, although other configurations are envisioned without departing from the scope of the invention. The user inputs are configured to sense/detect or receive the user interactions and transmit/transfer/relay the user interaction to the touch sensitive display via the touch screen inputs (26a-26d). In some implementations, the user inputs relay the user interactions to the touch screen inputs (26a-26d) via input leads (28a-28d), respectively. For example and without limitation, input leads can be conductive wires/leads that electrically couple the user inputs (29a-29d) to touchscreen inputs (26a-26d).

In such an exemplary configuration in which the input device is a passive input device, the user inputs (e.g., 29a-29d) are preferably constructed of conductive material, for example, a metalized polymer, conductive polymers, conductive/capacitive inks, carbon based inks or other such inks designed to activate capacitive screens. Accordingly, a user touch of a conductive user input (e.g., 29a), via the conductive lead (e.g., 28a) and touchscreen input (e.g., 26a), will alter the electrical properties of the portion of the display 17 that is in contact with the touchscreen input.

As will be understood by those skilled in the art, the device 15 having a capacitive touch sensitive display 17 can detect the particular location of a change in the electrical property that is caused by the user touch of the user input (e.g., 29a). As would be understood by those skilled in

the art, based on the particular location of the sensed change, the device 15, which has a processor executing instructions in the form of code, can interpret that an electrical change sensed at a particular location on the display 17 corresponds to a user interaction with a particular user input and corresponds to a prescribed input instruction, for example, a left mouse click or a right mouse click, or a double click, or as the user moving a cursor, or other such functions. Moreover, it would be understood that other combinations of user interactions sensed by the touch sensitive display can be interpreted as one or more of a number of user inputs such as pushing all 4 buttons at once could represent grabbing a virtual item. The 3 dimensional physical interaction offered by the users hands wrapping around the virtual reality viewer and interacting with the inputs can more easily be translated into 3 dimensional virtual interactions in a more natural way than previous user input mechanisms used today. It should also be understood that the arrangement of the touchscreen inputs the corresponding user inputs and associated functions can be pre-defined in software that is loaded into and executing in the device 15 processor.

Although an exemplary passive input device configuration having 4 distinct user inputs has been disclosed, it can be appreciated that other passive input device configurations are envisioned. For example an array of user inputs and corresponding touchscreen inputs can be provided. It should also be understood that other active input device configurations can also be implemented in accordance with the disclosed embodiments without departing from the scope of the invention.

Although FIG. 6A shows the user inputs positioned on the top and bottom surfaces of the housing 12 and also shows that the leads run through the view divider 20 and through the top and bottom surfaces of the housing to corresponding user inputs, it can be appreciated that the leads

can run through any portions of the housing. It can be further appreciated that any number of the user inputs (29a-29d) can be located on any portion of the housing and in any orientation or configuration. Moreover, it can be further appreciated that any number of touchscreen inputs (e.g., 26a-26d) can be located on the distal end 22 and in any orientation or configuration.

Moreover, although the exemplary configuration provides the user inputs to the screen 17 at the central portion 14 of the display 17 via the view divider 20, other configurations are possible. For example, the viewer can provide such touchscreen inputs (e.g., 26a-26d) on a surface that abuts one or more other portions the display 17.

In accordance with the disclosed embodiments of the invention, the exemplary viewers can be configured to allow the user to mechanically induce an electrical/capacitive touch event on the touchscreen. Further to the foregoing exemplary embodiments of the invention, additional exemplary configurations of a viewer having an input mechanism, which is also referred to as the user input assembly, configured to induce a capacitive touch event that is detectable by a touchscreen based on mutual-capacitance are further described herein. It can be appreciated that the exemplary implementation described herein can be adapted to mechanically induce input events on a variety of types of touchscreens (e.g., resistive touchscreen events, touch events). Additional exemplary configurations of the viewer in accordance with the disclosed embodiments are further described herein in relation to FIGS. 7A-7F.

FIG. 7C depicts a perspective view of a viewer 700 assembled and having a front side open showing the generally hollow interior of the viewer. Also shown is an input mechanism 715. The input mechanism is disposed within the interior 702 of the housing of the viewer 700. Moreover, at least a portion of the input mechanism is also accessible from the exterior of the viewer such that a user can interact with the input mechanism and cause the portion of the input

mechanism contained within the housing to generate a touch input on the touch interface. More specifically, the input mechanism is moveable within the interior between at least a first position (also referred to as an unactuated state), in which a portion of the input mechanism is retracted so as to not contact a touchscreen of the mobile device, and an extended position (also referred to as the actuated state) in which a surface of the input mechanism contacts the touch-screen of the mobile electronic. As shown, at least a portion of the input mechanism is centrally located within the housing and defines at least a portion of a view divider 710. It should be appreciated that the housing and or one or more portions of the input mechanism further described herein can be comprised of a variety of materials such as plastics, metals, composites, woods and other heavy paper-like materials (e.g., cardboard) and or other such natural and synthetic materials.

FIG. 7A depicts the view divider 710 with one side of the view divider folded back so as to expose a portion of the user input mechanism 715 disposed within the interior of the viewer 700. The diagram also shows the user input mechanism 715 in an unactuated state.

As shown, FIG. 7A depicts a distal end 720 of a user input portion of the user input mechanism, which in this exemplary implementation is a lever. The proximal end (not shown) of the lever is accessible to a user from outside the viewer when assembled. The diagram depicts the input assembly 715 in an un-actuated state. Also shown is an electrical shield 725. The electric shield is arranged such that at least a portion of the electric shield is configured to contact the touch-screen of the mobile electronic device when the input mechanism is in the extended position. The electrical shield is a material configured to, when brought in proximity to and/or touches the touchscreen, induce a touch event that is electrically detectable by the touchscreen/device. In some implementations the electrical shield material can be a metallized textile/fabric or films, e.g., polymer film coated with a thin layer of metal, for example PET

(Polyethylene terephthalate) films and Mylar (BoPET Biaxially-oriented polyethylene terephthalate). Such metalized materials are commonly used in anti-static bags. Moreover, the electrical shield can be comprised of other metallic conductors, non-metallic conductors, metallized fabrics, metallized polymers, conductive polymers, conductive fabrics, flexographic inks, rigid flex printed circuit board (PCB) and the like. As would be understood by those skilled in the art, such materials have electrical properties that, when a surface of the material is brought in proximity to a touchscreen and/or touches a touchscreen, can affect the electrical properties detected at that location by the touchscreen device. Other materials having the requisite electrical properties can also be used, for example, inks or pastes with carbon such as black flexographic inks having capacitive touch properties that are printed on substrates. Moreover, it can be appreciated that a combination of materials can be used to provide a surface of the input mechanism that is configured to induce a detectable touch input when the surface is touched to the touchscreen. For example the electric shield can include a conductive polymer arranged to selectively contact the touchscreen and that is electrically coupled to a metallized fabric or conductive ink applied to a surface of the housing and/or input mechanism.

In some implementations, the electric shield is configured (e.g., sized and/or positioned) so as to have capacitive properties sufficient to be detected by a capacitive touch-screen when the input mechanism is in the extended position and in the absence of human contact with the electric shield. However, it can also be appreciated that, in some implementations, the electric shield can be electrically coupled to the portion of the input mechanism that is interacted with by the user such that electrical properties of the user's body can be utilized to induce the touch input.

Also shown is a coupling 730 that is configured to move the input mechanism towards the touchscreen when the lever is actuated. The coupling is a linkage that couples the portion of the input mechanism that is accessible to the user from the exterior (e.g., the proximal end of the lever) to the surface of the input mechanism configured to touch the touchscreen and induce a touch input. The coupling mechanically translates user actuation of the portion of the input mechanism from the exterior of the housing into movement of the input mechanism within the interior of the housing and causing a surface of the input mechanism to touch the touchscreen. For example, in the particular implementation shown in FIGS. 7A-7F, actuation of the lever causes the coupling to deform and extend in a direction towards the touchscreen, which in turn moves a portion of the electrical shield towards the touchscreen. Furthermore, as shown in FIG. the coupling can be coupled to the housing. As can be appreciated, coupling one or more portions of the input mechanism to the housing can serve to support the input mechanism as well as guide the movement of the input mechanism during user actuation.

The coupling can be comprised of one or more flexible materials such as plastics, metals, composites, woods and other heavy paper-like materials (e.g., cardboard) and or other such natural and synthetic materials. A linkage or coupling that is flexible can be beneficial in that the material memory causes the coupling to return to a resting state when pressure is released from the lever which automatically pulls the input mechanism away from the touchscreen. However, alternative methods for automatically retracting the contact surface of the input mechanism can be similarly implemented without departing from the scope of the invention.

Although a particular exemplary linkage configuration is described in relation to FIGS. 7A-7F, it can be appreciated that other linkage configurations can be implemented without departing from the scope of the invention. It can also be appreciated that, although the lever,

coupling and metallic shield have been described as individual components, the subject invention is not so limited as one or more of the foregoing components can be joined or integrally formed as single unit. Similarly, it can also be appreciated that one or more of the components of the input mechanism can be joined to the housing or integrally formed with the housing in a permanent or temporary fashion using any conventional manufacturing techniques.

In some implementations, a compressible pad 735, for example, a foam or foam-like material can be disposed between the flexible coupling and the electric shield. The pad can be placed between the flexible coupling and the electrical shield 725 in at least the location where the coupling contacts the metallic shield when extended (e.g., the back side of the electrical shield where the front side of the shield material contacts the touchscreen when extended). It can be appreciated that the electrical shield can be attached to the foam material or unattached. It can also be appreciated that the pad can be coupled to the coupling either directly or indirectly by one or more intermediate structures that comprise the input mechanism. The pad is used to create a sufficiently sized contact surface between the front side of the shield material and the touchscreen so as to register a touch input event on the screen (e.g., to simulate the size and shape of a finger). The pad also helps the surface of the input mechanism configured to touch the touchscreen (i.e., the shield material) conform to the touchscreen surface when the input mechanism is in the extended position/actuated state.

It can be appreciated that various sizes and shapes of the pad can be used to induce a sufficient sized contact surface. It can also be appreciated that in some implementations the pad can be omitted. It can also be appreciated that the metallic shield and pad may be integrated or combined into a single material such as conductive foam gaskets used in Electromagnetic Interference (EMI) or Radio Frequency Interference (RFI) applications. It can also be

appreciated that the pad can be sized and/or shaped such that actuating the input mechanism with greater force causes a greater surface area of the electrical shield to be applied to the screen which can be interpreted differently by the device than when a smaller surface area is detected by the touchscreen. This input mechanism configuration can be used to provide a secondary signal for detecting the amplitude of the users input, for example a method for detecting the amount of force the user applied to the input.

A portion of the lever can be attached to or in communication with (i.e., touching) or integrally formed to at least a portion of the coupling. For instance, as shown, the distal end of the lever can be abutting a portion of the coupling such that, when the lever is actuated at a proximal end, movement of the distal end of the lever causes the plastic coupling to buckle and at least a portion of the coupling extends in the direction towards the touchscreen. In addition or alternatively the coupling can be a structure that is flexibly coupled to one or more portions of the housing such that it moves in a prescribed manner when a lever is moved or a button is pushed by the user.

FIG. 7A depicts the view divider 710 with one side of the view divider folded back so as to expose the user input assembly 715 disposed within the view divider of the viewer 700. The diagram also shows the user input assembly 715 in an unactuated state.

FIG. 7B depicts the view divider 710 with one side of the view divider folded back so as to expose the user input assembly 715 disposed within the view divider of the viewer 700. The diagram also shows the user input assembly 715 in an actuated state.

FIG. 7C depicts a perspective view of the viewer 700 assembled and showing the view divider 710 and showing at least a portion of the user input assembly 715 disposed within the interior of the housing 700. The diagram also shows the user input assembly 715 in an un-

actuated state. As shown, the user input (lever) includes a proximal end portion 722 that extends through a cut-out in the housing of the viewer 700 and is accordingly accessible to the user from the exterior of the housing. It can be appreciated that alternative configurations in which one or more portions of the lever or other such mechanical actuators or portions of the input mechanism is accessible from the exterior of the viewer are envisioned. For instance the lever can be contained within the interior of the housing and accessible to the user through a cut-out through an external wall of the housing.

FIG. 7D depicts a side view of the viewer 700 assembled and showing the view divider 710 and showing at least a portion of the user input assembly 715 disposed within the interior of the viewer housing 700. The figure also shows the user input assembly 715 in an un-actuated state.

FIG. 7E depicts a perspective view of the viewer 700 assembled and showing the view divider 710 and showing at least a portion of the user input assembly 715 disposed within the interior of the viewer housing 700. The diagram also shows the user input assembly 715 in an actuated state where the electrical shield is extended out of the cut-out in the view divider.

FIG. 7F depicts a side view of the viewer 700 assembled and showing the view divider 710 and showing at least a portion of the user input assembly 715 disposed within the interior of the viewer 700. The diagram also shows the user input assembly 715 in an actuated state where the electrical shield is extended out of the cut-out 712 in the view divider.

When a user device is placed within the viewer, such that the touchscreen is facing the interior of the viewer and near the view divider, actuating the user input assembly by actuating the lever can cause the coupling to flex and therefore cause the electrical shield to extend towards and touch the touchscreen of the user device. In this exemplary implementation, the

coupling and shield extend out of a cut-out in the view divider. As a result, the device can detect the change in an electrical property at one or more locations of the screen, which is caused by the electrical shield touching (or approaching) the touch-sensitive display.

Accordingly, it can be appreciated that, what is provided is a virtual reality viewer for use with an electronic touchscreen device comprising a housing for receiving and holding a touchscreen display device within an interior region of the housing. The viewer further comprising an input mechanism that is accessible from an exterior of the housing and is moveable within the interior between at least a first position and an extended position, wherein a surface of the input mechanism is configured to contact the touch-screen of the mobile electronic device when in the extended position. In one particular implementation, the input mechanism comprises a lever having a proximal end that is exposed to the exterior of the housing and a distal end disposed within the housing, whereby the proximal end of the lever is accessible by a user from the exterior of the housing and actuation (e.g., movement) of the lever at the proximal end translates to mechanical movement of the distal end. The viewer further comprising a coupling attached to or in communication with the distal end of the lever such that, when the lever is actuated at the proximal end, movement of the lever causes at least a portion of the coupling to move toward a back wall of the housing, e.g., extend or move in a direction of the touchscreen. The viewer further comprises an electrical shield, wherein the electrical shield is a material configured to induce a touch event that is electrically detectable by a touchscreen/device when at least a portion of the shield contacts or is in proximity to a touchscreen. In addition, the portion of the electrical shield is positioned between the coupling and the touchscreen such that movement of the coupling advances at least the portion of the electrical shield material toward the touchscreen so as to induce the touch event. Moreover, the viewer can further comprise a

compressible pad disposed between the portion of the coupling and the electrical shield, wherein the pad is attached to the coupling and is sized, shaped and has the softness/rigidity to create a sufficiently sized contact point for generating a touchscreen detection event on the touchscreen device. The compressible pad and electrical shield material work to mimic the electrical and physical properties of a human finger so that any form of touch screen technology will register a touch event when the lever mechanism is actuated. As would be understood by those skilled in the art the combination of physical, and electrical properties of this pad electrical shield material can be tuned to work on a variety of touch screen technologies such as capacitive, resistive, or conductive touch screen technologies. As previously noted, in some implementations, one or more components of the exemplary user input assembly can be integrated into or part of the view divider.

According to a salient aspect, the viewer and the exemplary electro-mechanical user input assembly is configured to allow a user to interact with the touch sensitive screen without access to the touch sensitive screen while within the viewer. Moreover, the exemplary viewer and user input assembly can be configured to allow a user to interact with the touch sensitive screen without reliance on the electrical properties of the human body to induce the electrical event. For instance, the metallized film 725 can be sized such that it is suitable for inducing a touch event without requiring user contact therewith. In addition or alternatively, the portion of the metallized film that is configured to touch the screen can be accessible to receiving a user touch. For instance, a portion of the metallized film can be exposed on the lever 722 or otherwise accessible to the user on an external surface.

As would be understood by those skilled in the art, the mobile electronic device, which has a processor executing instructions in the form of code, can detect that electrical property

change at the one or more locations and interpret the change as one or more prescribed user interactions. In some implementations, the user interaction can be interpreted as a simple click event. In some implementations, a variety of possible user interactions can be detected as a function of the location of the touch event on the touchscreen (e.g., as caused by different input mechanisms configured to cause touch inputs at respective locations on the touchscreen), the duration of the touch event, the size of the area of the touchscreen registering the touch event, and the like. These detected aspects of the touch event can be interpreted and translated into one or more prescribed input instructions, for example, a left mouse click or a right mouse click, a double click, or as the user moving a cursor, a virtual gesture such as a grab, push, pull, throw, pinch or as a scaled input instruction such as a hold softly or hold firmly or other such functions.

Moreover, user interactions detected by the touch sensitive display can be interpreted in combination with one or more other input devices. More specifically, a user interaction detected can be interpreted in light of other input data received by the user device from other on-board input devices or data sources, for example and without limitation, an accelerometer that detects the orientation and location of the device or a camera or 3d scanner that detects the physical environment of the user or portions of the users body position. In addition, the housing can also include one or more additional user input devices electrically coupled to the mobile device by a wireless or wired connection, such that inputs via the electro-mechanical input mechanism can be provided to the mobile device in addition to inputs provided using the additional input device. For example, based on the orientation and location of the device and the information being viewed by the user on the device, the device can determine that a user is looking at an interactive virtual icon using the viewer. Paired with the user actuation of the user input mechanism and the detection of a touch input, the device can interpret the combined user input (e.g. accelerometer

data and the touch interaction data) as a “mouse click” on that particular virtual icon or as a grab or hold of that virtual item or icon. Another example might be combining the accelerometer data for device position, camera data from the device capturing the users physical environment, and a touch event from the mechanism described in this invention in a way that allows the user to select a real physical item to scan/import into a virtual or augmented reality interface allowing for the digital manipulation of the physical item or overlaying additional information about the physical item.

It can also be appreciated that the user input mechanism can be adapted to induce user interactions at a variety of different locations or multiple user input assemblies can be provided to facilitate more complex user inputs.

It is to be understood that like numerals in the drawings represent like elements through the several figures, and that not all components and/or steps described and illustrated with reference to the figures are required for all embodiments or arrangements.

The subject matter described above is provided by way of illustration only and should not be construed as limiting. The terminology used herein is for the purpose of describing particular embodiments only and is not intended to be limiting of the invention. As used herein, the singular forms “a”, “an” and “the” are intended to include the plural forms as well, unless the context clearly indicates otherwise. It will be further understood that the terms “comprises” and/or “comprising”, when used in this specification, specify the presence of stated features, integers, steps, operations, elements, and/or components, but do not preclude the presence or addition of one or more other features, integers, steps, operations, elements, components, and/or groups thereof.

Also, the phraseology and terminology used herein is for the purpose of description and should not be regarded as limiting. The use of "including," "comprising," or "having," "containing," "involving," and variations thereof herein, is meant to encompass the items listed thereafter and equivalents thereof as well as additional items.

The subject matter described above is provided by way of illustration only and should not be construed as limiting. Various modifications and changes can be made to the subject matter described herein without following the example embodiments and applications illustrated and described, and without departing from the true spirit and scope of the present invention, as set forth in each and any of the following claims.

What is claimed:

1. A virtual reality viewer for use with a mobile electronic device having a touch-screen, the viewer comprising:

a housing configured to receive a mobile electronic device within an interior of the housing;

an input mechanism that is accessible from an exterior of the housing and is moveable within the interior between at least a first position and an extended position, wherein a surface of the input mechanism is configured to contact the touch-screen of the mobile electronic device when in the extended position.

2. The virtual reality viewer of claim 1, wherein input mechanism is configured to provide a capacitive touch input to the touch-screen when the input mechanism is in the extended position.

3. The virtual reality viewer of claim 1, wherein a side of the housing is shaped to define a cut-out, and wherein at least a first portion of the input mechanism is accessible through the cut-out.

4. The virtual reality viewer of claim 1, wherein at least a portion of the input mechanism defines at least a portion of a view divider within the interior of the housing.

5. The virtual reality viewer of claim 1, wherein the input mechanism further comprises an electrical shield, and wherein a portion of the electric shield is configured to contact the touch-screen of the mobile electronic device when the input mechanism is in the extended position.

6. The virtual reality viewer of claim 5, wherein the electrical shield comprises one or more of: a metallized fabric, a metallized polymer; a conductive polymer, a conductive fabric, a rigid flex printed circuit board and a flexographic ink.

7. The virtual reality viewer of claim 6, wherein the electrical shield is configured to have electrical properties sufficient to be detected by the touch-screen when the input mechanism is in the extended position.
8. The virtual reality viewer of claim 6, wherein the electric shield is sized to have capacitive properties sufficient to be detected by a capacitive touch-screen when the input mechanism is in the extended position and in the absence of human contact with the electric shield.
9. The virtual reality viewer of claim 5, further comprising a compressible pad disposed at the surface, wherein the pad is configured to create a sufficiently sized area of contact between the surface and the touch-screen when the input mechanism is in the extended position.
10. The virtual reality viewer of claim 9, wherein the pad is configured to vary the size of the area of contact as a function of a force applied to the input mechanism from the exterior of the housing.
11. The virtual reality viewer of claim 1, wherein the input mechanism includes a flexible linkage configured to guide at least the surface between the first position and the extended position.
12. The virtual reality viewer of claim 11, wherein at least a portion of the input mechanism is integrally formed with the housing.
13. The virtual reality viewer of claim 11, wherein the flexible linkage is configured to return the surface from the extended position to the first position in the absence of user interaction with the input mechanism.

14. The virtual reality viewer of claim 1, wherein the housing is formed to define a cut-out through an exterior side of the housing; and

wherein the input mechanism further comprises:

a lever that is accessible through the cut-out;

an electrical shield, wherein the surface comprises a portion of the electrical shield comprises, and wherein the electrical shield is configured to provide a capacitive touch input to the touch-screen when the input mechanism is in the extended position;

a flexible linkage coupled to the lever and the housing, wherein the coupling is configured to guide the surface between the first position and the extended position in response to actuation of the lever; and

a compressible pad disposed between the coupling and the portion of the electrical shield, wherein the pad is configured to create a sufficiently sized area of contact between the touch-screen and the surface when the input mechanism is in the extended position.

15. The virtual reality viewer of claim 1, further comprising:

a plurality of input mechanisms;

wherein each of the plurality of input mechanisms are accessible from the exterior of the housing at a respective location;

wherein each of the plurality of input mechanisms have a respective surfaces located within the interior of the housing a distinct respective location to contact the touch-screen of the mobile electronic device when in the extended position at distinct locations.

16. The virtual reality viewer of claim 1, further comprising at least one additional user input devices that is accessible from an exterior of the housing.

17. A virtual reality viewer for use with a mobile electronic device having a capacitive touch-screen, the viewer comprising:

a housing configured to receive a mobile electronic device within an interior of the housing;

an input device including

a first portion that is accessible from an exterior of the housing, and

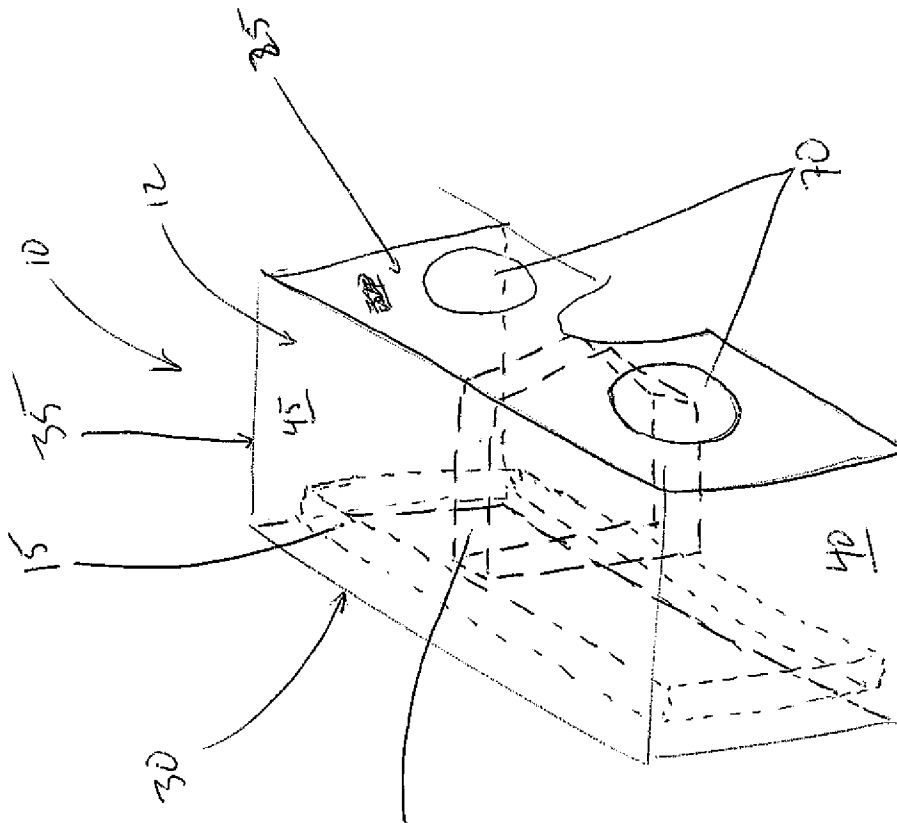
a surface within the interior that is configured to contact the touch-screen of the mobile electronic device and transfer a capacitive touch input to the touch-screen in response to a user interaction with the first portion.

18. The virtual reality viewer of claim 17, further comprising:

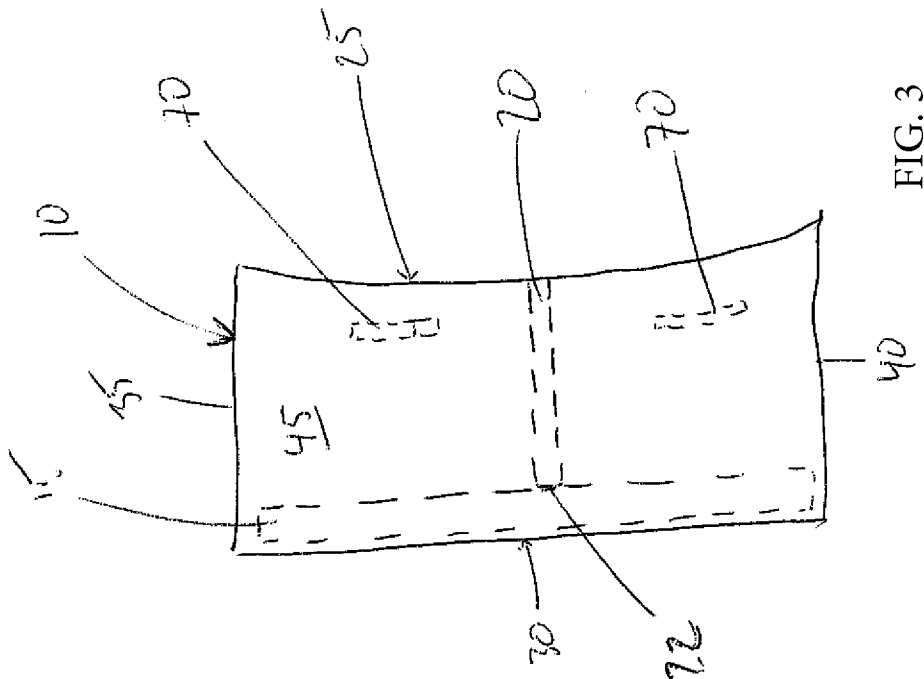
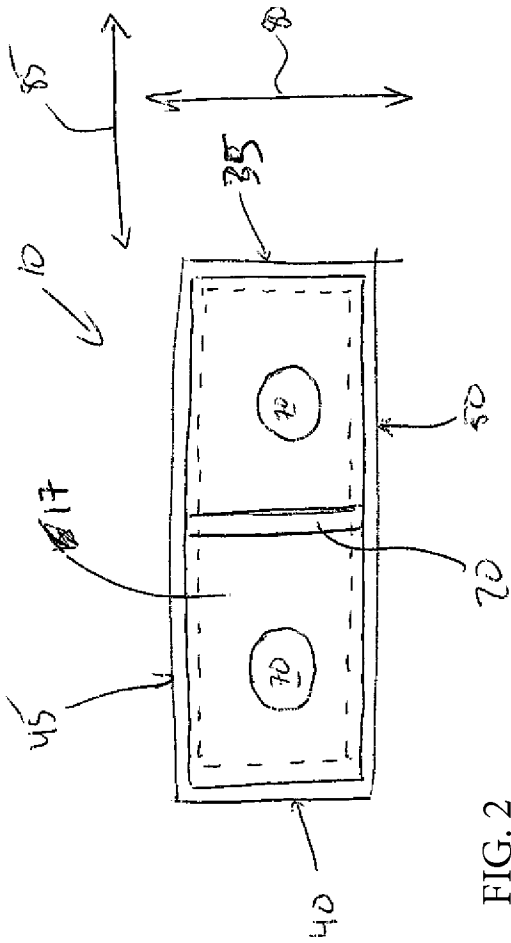
a compressible pad disposed at the surface to provide an area of contact between the input mechanism and the touch-screen that is sufficient to transfer the capacitive touch input; and wherein at least the surface includes a conductive material configured to transfer an electrical charge to the touch-screen in response to a user interaction.

## **ABSTRACT**

The present invention concerns virtual reality viewers for use with touchscreen enabled mobile devices. The virtual reality viewer comprises: a housing configured to receive a mobile electronic device within an interior of the housing; and an input mechanism that is accessible from an exterior of the housing and that is moveable within the interior between a first position and an extended position, wherein a surface of the input mechanism is configured to contact the touch-screen of the mobile electronic device when in the extended position. The disclosed systems and methods facilitate receiving user inputs on the exterior of the housing and providing the user inputs to the touchscreen within the housing using the electro-mechanical input mechanism. Accordingly, the viewer can be used with a variety of smartphones without requiring magnetic switches or a wireless/cable connection between the input device and the smartphone.



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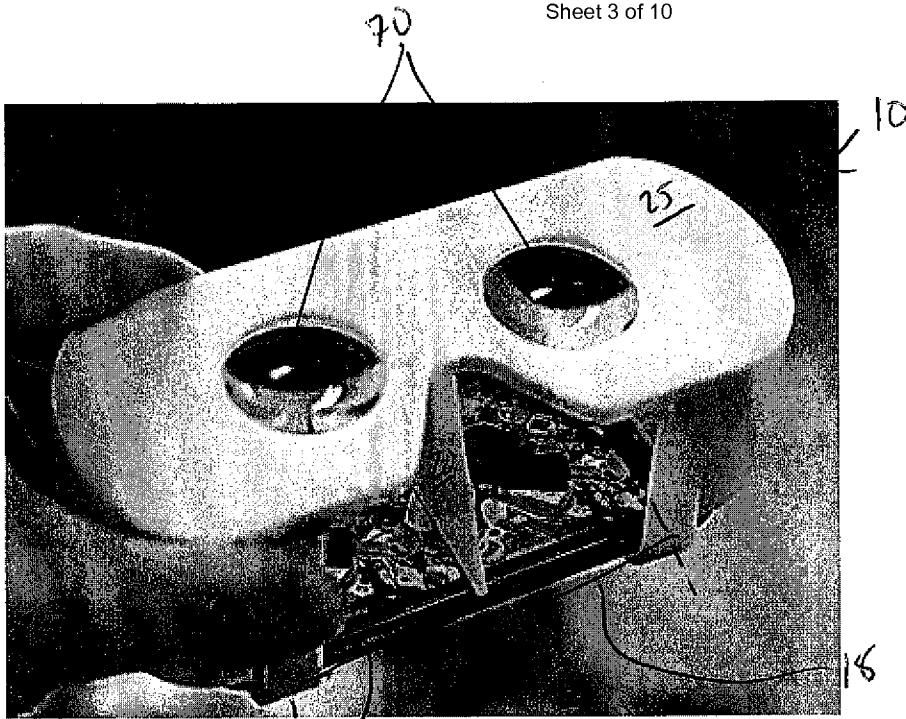


FIG. 4

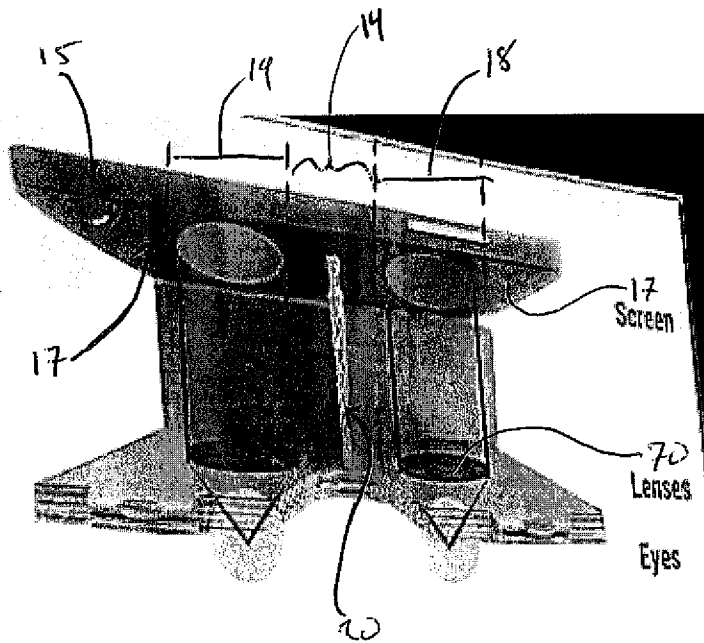


FIG. 5

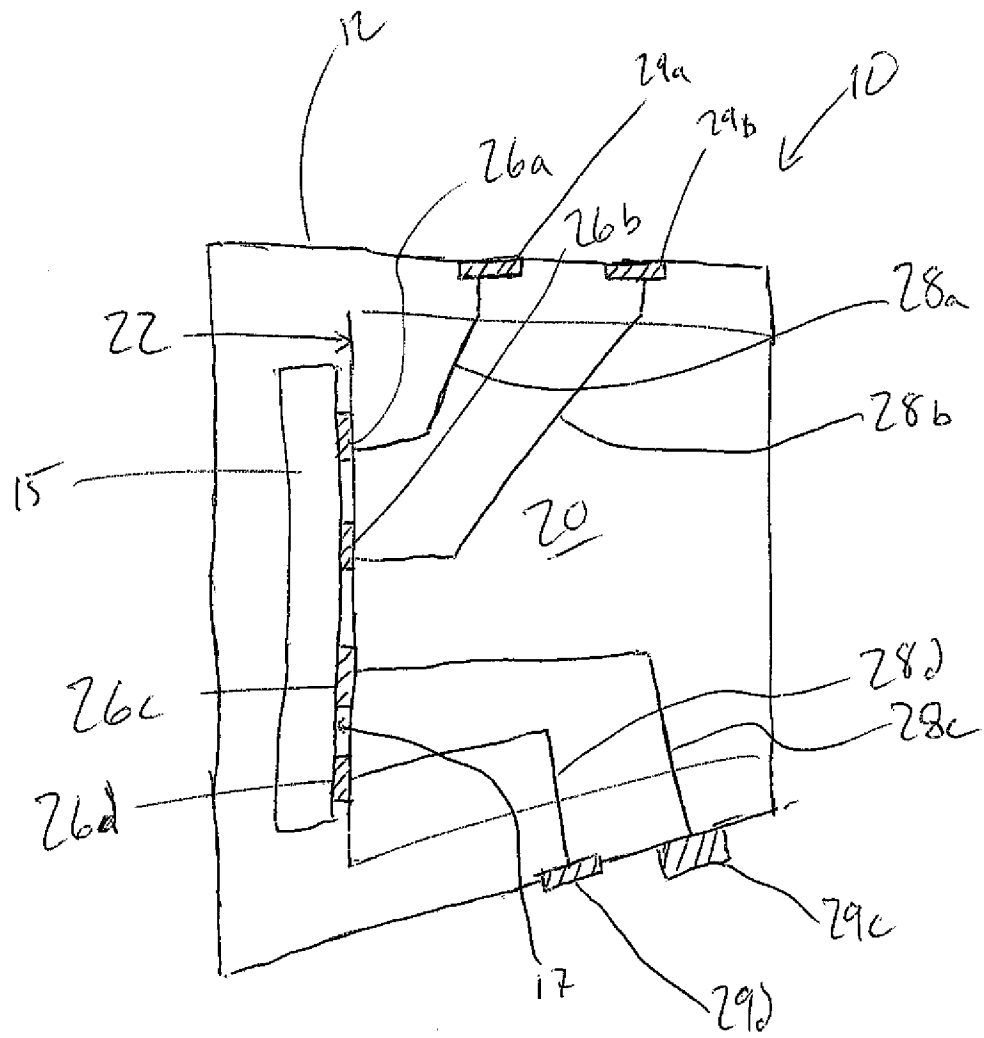


FIG. 6A

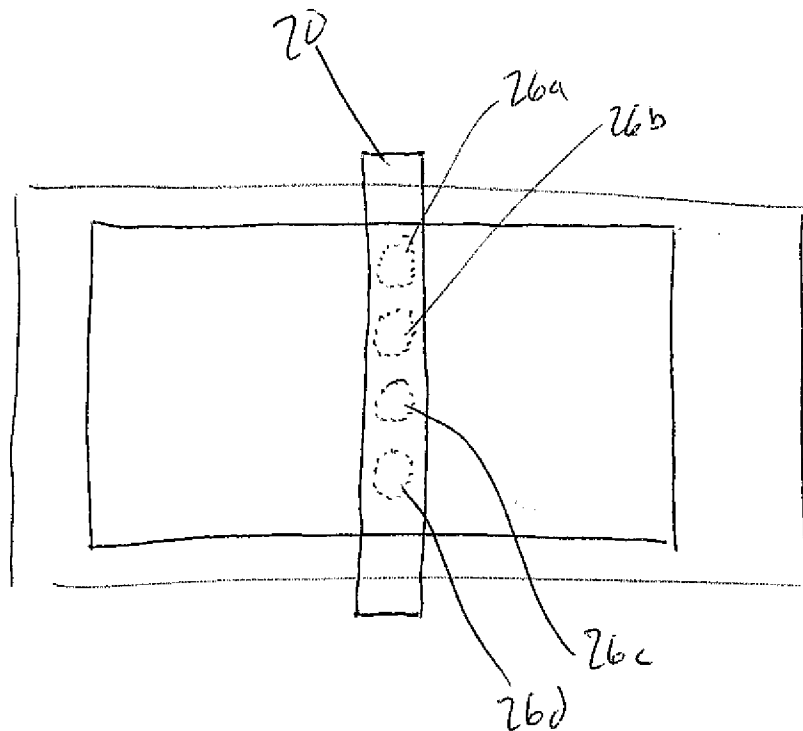


FIG. 6B

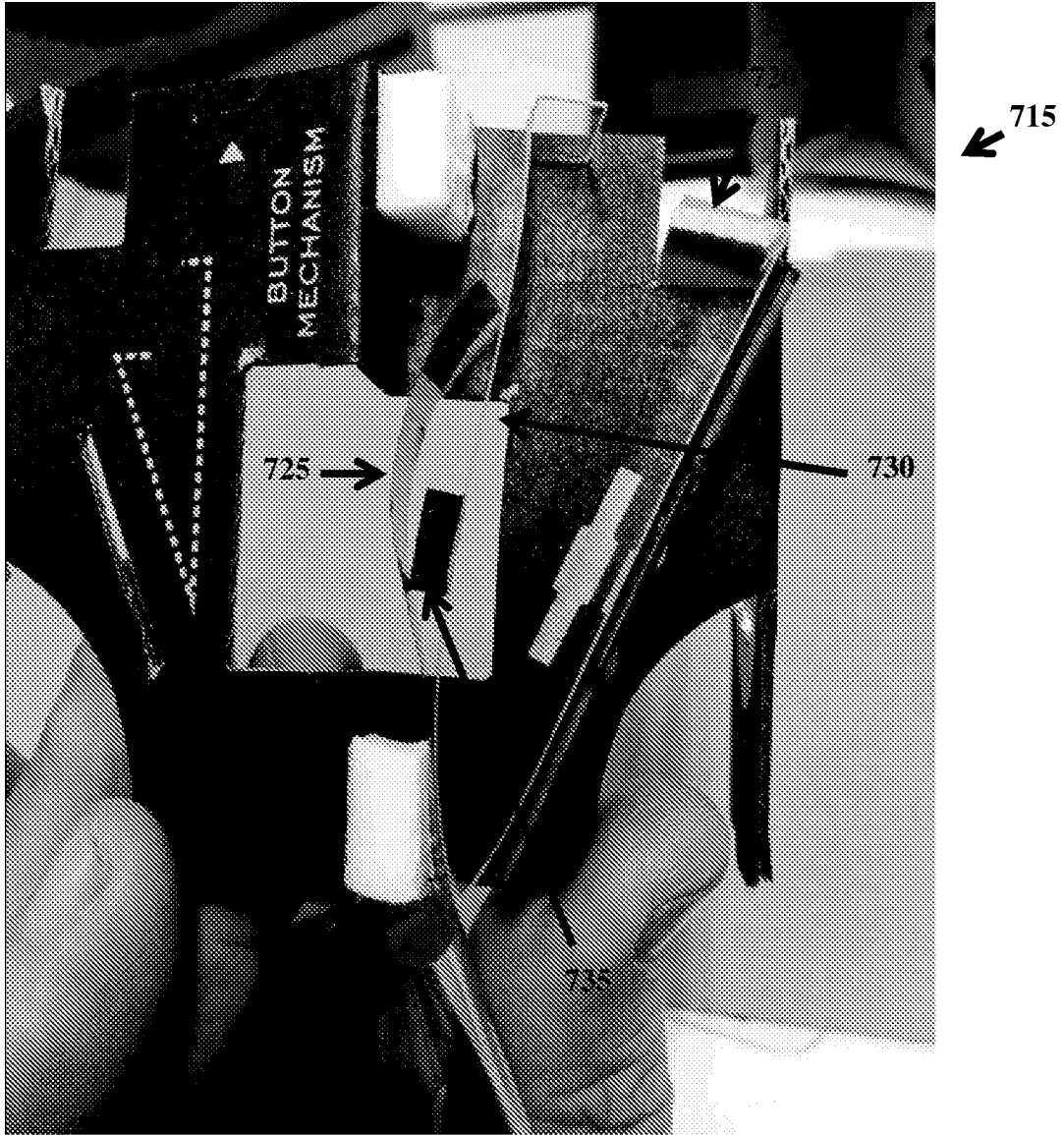


FIG. 7A

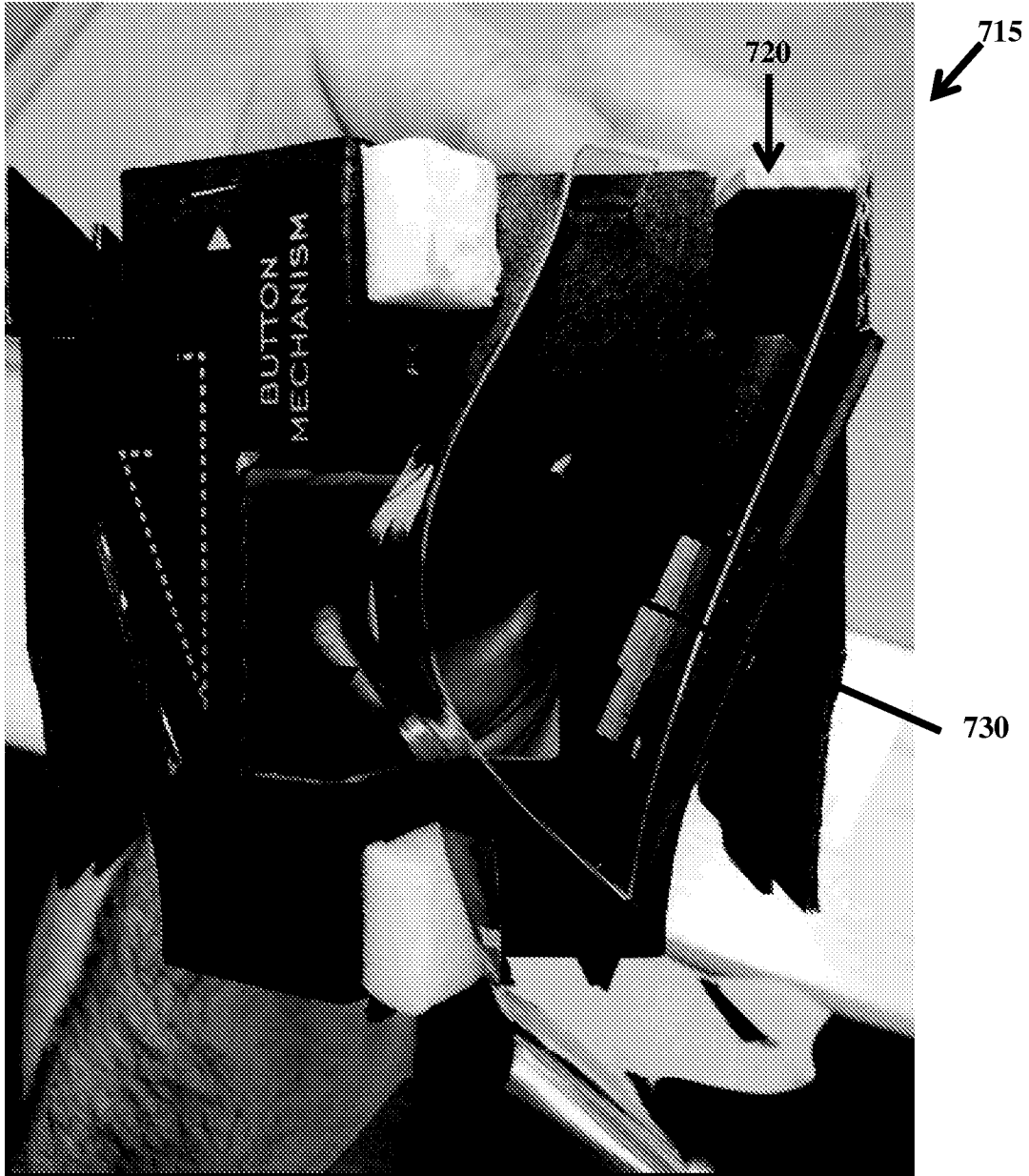


FIG. 7B



FIG. 7C

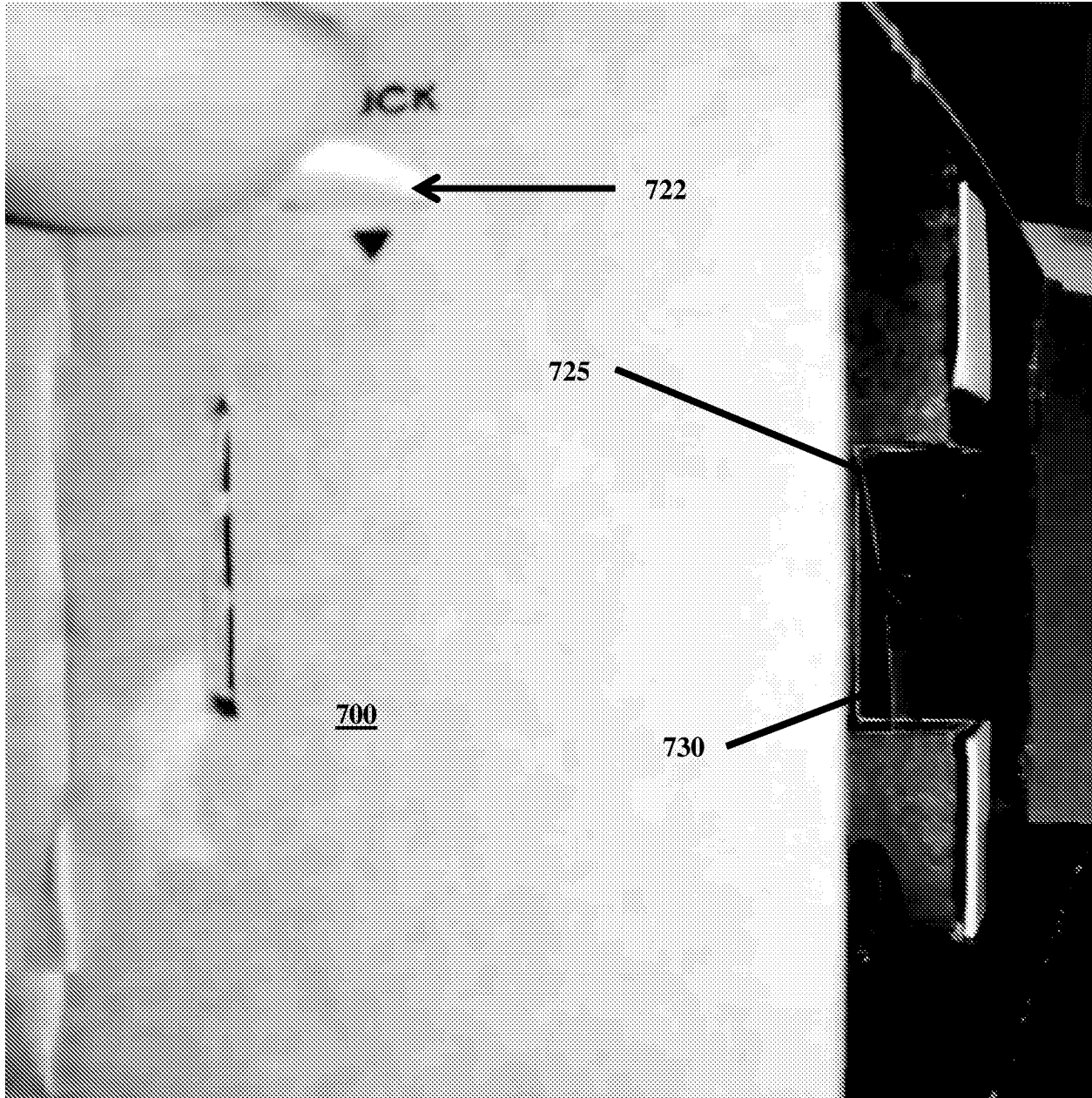


FIG. 7D

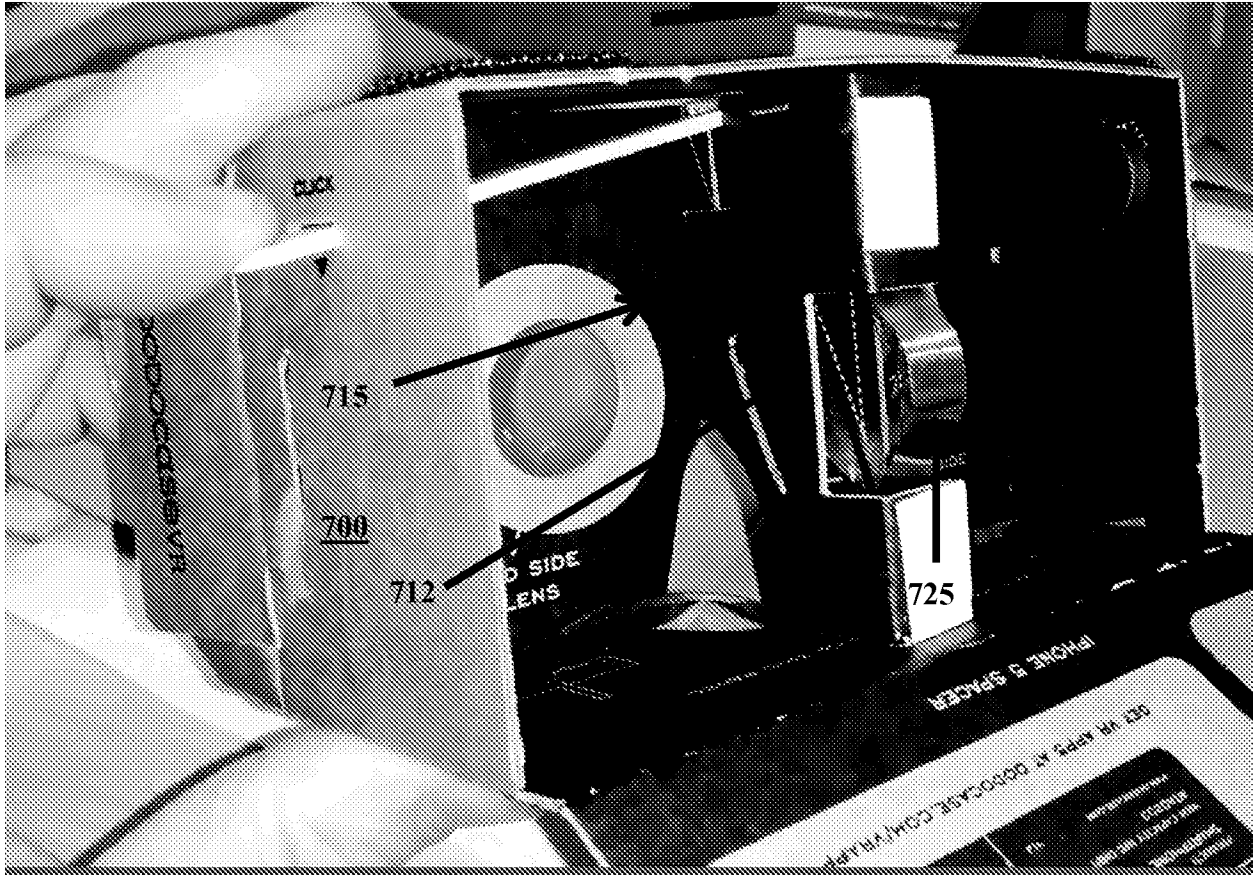


FIG. 7E



FIG. 7F