

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GOOGLE LLC

Petitioner

v.

DDC TECHNOLOGY, LLC,

Patent Owner

U.S. Patent No. 10,528,199

Case No.: IPR2023-00709

PETITION FOR INTER PARTES REVIEW

OF CLAIMS 1, 2, 4-6, 17-26, 30, 34, 35, and 37-39

OF U.S. PATENT NO. 10,528,199 UNDER 35 U.S.C. §§ 311-319

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- 1. 1(a): A virtual reality viewer for use with a mobile electronic device having a touchscreen, the viewer comprising:45**
- 2. 1(b): a first lens and a second lens, wherein the first lens is facing the same direction as the second lens, and wherein the first lens and the second lens are spaced apart in a horizontal direction;47**
- 3. 1(c): a frame having a first side and a second side opposite the first side, the first side configured to hold the first lens and the second lens, the second side configured to receive the mobile electronic device, wherein the frame is configured to hold the mobile electronic device such that the mobile electronic device is generally centered in a horizontal direction and directly in a user's field of view when looking through the first side of the frame; and54**
- 4. 1(d): a touchscreen input constructed of material and having a surface such that only a portion of the surface of the touchscreen input is configured to contact a central region of the touchscreen of the mobile electronic device when the touchscreen input is activated.64**

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3.	30(c): a frame having a first side and a second side opposite the first side, the first side configured to hold the first lens and the second lens, the second side configured to receive the mobile electronic device, wherein the frame is configured to hold the mobile electronic device such that the mobile electronic device is generally centered in a horizontal direction and directly in a user's field of view when looking through the first side of the frame;	96

4.	30(d): a user input that is accessible from an exterior of the enclosure and has a first position and a second position; and	96
5.	30(e): a touchscreen input that is coupled to the user input and generally centered between the first lens and the second lens in the horizontal direction, wherein the touchscreen has a surface such that only a portion of the surface of the touchscreen input is configured to contact a central region of the touchscreen when the user input is in the second position.	101
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I. INTRODUCTION

This *Inter Partes* Review petition challenges claims 1, 2, 4-6, 17-26, 30, 34, 35, 37-39 (“challenged claims”) of U.S. Patent No. 10,528,199 (the ’199 patent), which is one in a family of seven patents, all related as continuations. Petitioner Google has been charged with infringing five of those and is therefore concurrently filing five IPR petitions. The other petitions are: IPR2023-00707; IPR2023-00708; IPR2023-00710; and IPR2023-00711.

The ’199 patent describes and claims a virtual reality viewer (VR viewer) that holds a smartphone and has an input device. The patent admits that VR viewers were well-known at the time of the alleged invention and so were input devices for interacting with these viewers. The patent describes two embodiments for its input device: one is electrical and the other is mechanical. The ’199 patent’s claims are directed to the mechanical embodiment because its input device contacts the smartphone’s touchscreen when the input device is activated or is in a pressed, “second position.” See EX1001, cls. 1, 30.

The prior art discloses the same device as claimed by the ’199 patent. Kondo (JP3176588) discloses a VR viewer that holds a smartphone and has an input device that contacts the smartphone’s touchscreen. Kondo’s input device, however, is electrical, and its input device contacts the touchscreen both when it is activated and when it is not. Chu (US 2013/0082963), on the other hand, discloses

a mechanical input mechanism for a device that holds a smart phone. Chu's input mechanism contacts the smartphone's touchscreen when activated. A POSA would have many reasons for forming this combination with a reasonable expectation of success because these are simple mechanical devices. Therefore, the Kondo/Chu combination renders the challenged claims unpatentable.

II. MANDATORY NOTICES

A. Real Party-in-Interest

Pursuant to 37 C.F.R. § 42.8(b)(1), Petitioner certifies that Google LLC is the real party-in-interest, and further certifies that no other party exercised control or could exercise control over Google's participation in this proceeding, the filing of this petition, or the conduct of any ensuing trial.¹

B. The Patent Owner

The '199 Patent is assigned to DDC Technology, LLC ("DDC").

¹ Google LLC is a subsidiary of XXVI Holdings Inc., which is a subsidiary of Alphabet Inc. XXVI Holdings Inc. and Alphabet Inc. are not real parties-in-interest to this proceeding.

C. Related Matters

The '199 Patent is one of seven patents that are all continuations and thus share the same specification. These patents in order of issue date follow:

- U.S. Pat. No. 9,420,075;
- U.S. Pat. No. 9,723,117;
- U.S. Pat. No. 9,811,184;
- U.S. Pat. No. 10,528,199;
- U.S. Pat. No. 11,093,000;
- U.S. Pat. No. 11,093,001;
- U.S. Pat. No. 11,449,099.

The following cases all involve at least one of these patents.

Case Caption	Court	Patent(s)	Status
MerchSource, LLC, et al. v. DODOcase VR, Inc., et al. IPR2018-00494 (filed 1/15/18)	PTAB	'075	Terminated after institution
MerchSource, LLC et al v. DODOcase VR, Inc., et al.	PTAB	'117	Terminated after institution

PGR2018-00019 (filed 1/15/18)			
MerchSource, LLC, et al. v. DODOcase VR, Inc., et al. PGR2018-00020 (filed 1/15/18)	PTAB	'184	Terminated after institution
DDC Technology LLC v. Landsberg Orora, et al. 3-23-cv-01160 (filed 3/15/23)	NDCA	'199 '000 '001 '075 '184	The Petitioner is a defendant.
DDC Technology, LLC v. Emerge Technologies, Inc. d/b/a Utopia 360, et al. 3-22-cv-01263 (filed 6/10/22)	NDTX	'199 '000 '001 '075 '184	The Petitioner was a defendant. The Petitioner was severed and that case was transferred to NDCA.

DDC Technology, LLC v. Mattel, Inc. 1-21-cv-01781 (filed 12/21/21)	DDE	'075 '184	DDC voluntarily dismissed case.
DDC Technology, LLC v. Unofficial Cardboard, Inc. 1-21-cv-05596 (filed 10/21/21)	NDIL	'199 '000 '001 '075 '184	DDC voluntarily dismissed case.
DDC Technology, LLC v. Merge Labs, Inc. 6-21-cv-00850 (filed 8/16/21)	WDTX	'199 '075 '117 '184	DDC voluntarily dismissed case.
DDC Technology, LLC v. DPI, Inc. 4-21-cv-00402 (filed 4/6/21)	EDMO	'199 '075 '117 '184	DDC voluntarily dismissed case.
DDC Technology, LLC v. Sanho Corporation 1-21-cv-00152 (filed 2/4/21)	DDE	'199 '075 '117 '184	DDC voluntarily dismissed case.

DODOCASE VR, Inc. f/k/a DODOcase, Inc. v. MerchSource, LLC 3-17-cv-07088 (filed 12/13/17)	NDCA	'075 '117 '184	Plaintiff withdrew patent claims and case was dismissed for lack of subject matter jurisdiction thereafter.
DODOcase, Inc. v. DGL Group, LLC, et al. 1-17-cv-01188 (filed 8/23/17)	DDE	'075 '117	Plaintiff voluntarily dismissed case

D. Identification of Lead and Back-up Counsel

Pursuant to 37 C.F.R. § 42.8(b)(3), Petitioner provides the following designation of counsel: Lead counsel is Michael L. Kiklis (Reg. No. 38,939) and back-up counsel is Kimani P. Clark (Reg. No. 45,969).

E. Service Information

Petitioner consents to service via email. Pursuant to 37 C.F.R. § 42.8(b)(4), papers concerning this matter should be served on the following:

Address: Michael L. Kiklis
Kiklis and Clark, PLLC
1800 Diagonal Rd., Suite 600

Alexandria, VA 22314

Email: michael@kiklisclark.com

Phone: 800-966-7832

Fax: 703-647-6009

III. PAYMENT OF FEES

Petitioner concurrently electronically submits the required fees for this Petition.

IV. REQUIREMENTS FOR *INTER PARTES* REVIEW

As set forth below and pursuant to 37 C.F.R. § 42.104, each requirement for *inter partes* review of the '199 Patent is satisfied.

A. Grounds for Standing

Petitioner certifies pursuant to 37 C.F.R. § 42.104(a) that the '199 Patent is available for *inter partes* review and that Petitioner is not barred or estopped from requesting *inter partes* review challenging the patent claims on the grounds identified herein.

B. Identification of Challenge Under 37 C.F.R. § 42.104(b)

Petitioner requests *inter partes* review and cancellation of claims 1, 2, 4-6, 17-26, 30, 34, 35, 37-39 of the '199 Patent as being obvious under 35 U.S.C. § 103. The '199 patent's earliest priority document is a provisional filed on July 16, 2014. Petitioner contests that this provisional adequately supports all claims.

Nevertheless, for the purposes of this proceeding only, Petitioner will assume this date is the earliest priority date.

C. The Specific Art on Which the Challenge is based

Petitioner relies upon the following patent and patent publication:

Exhibit 1003 — JP 3176588 (“Kondo”), issued on June 28, 2012, more than one year before the ’199 patent’s earliest priority date, and therefore, Kondo constitutes prior art under at least 35 U.S.C. §102(b).

Exhibit 1004 — US 2013/0082963 (“Chu”) published on April 4, 2013, more than one year before the ’199 patent’s earliest priority date, and therefore, Chu constitutes prior art under at least 35 U.S.C. §102(b).

D. The Specific Grounds on which the Challenge is Based

Petitioner respectfully requests cancellation of claims 1, 2, 4-6, 17-26, 30, 34, 35, 37-39 of the ’199 Patent based on the following ground:

Claims 1, 2, 4-6, 17-26, 30, 34, 35, 37-39 are obvious under 35 U.S.C. §103 in view of Kondo and Chu.

V. DECLARATION EVIDENCE

This Petition is supported by the declaration of Kurtis P. Keller. See EX1002, §§I-IX. Mr. Keller is a Research Engineer for the Computer Science Department at the University of North Carolina at Chapel Hill where he has

worked for over 25 years, primarily in the mechanical/optical design of Head-Mounted Displays and other Virtual and Augmented Reality hardware/systems. EX1002, §III, Appendix A. Mr. Keller offers his opinion on the skill level of a person of ordinary skill in the art (“POSA”), EX1002, §V; the content and state of the prior art, EX1002, §§VI, VII; claim construction, EX1002, §IV(A); the state of the technology, EX1002, §VI(A); the ’199 Patent, EX1002, §§VI(B), VI(C); and the teachings and suggestions that one of ordinary skill would understand based on the prior art, EX1002, §§I, II, VII, VIII.

This petition’s analysis is based on and supported by Mr. Keller’s declaration.

VI. THE ’199 PATENT

A. State of the Technology at the Time of the Alleged Invention

Virtual reality headsets are based on a long-established, three-dimensional viewing technology called stereoscopy.

See EX1002, ¶27. Stereoscopy uses a pair of separate, distinct images presenting a left-eye and right-eye view with the views being captured or geometrically generated at unique left

and right locations; the scene is interpreted by the viewer as a single, three-



dimensional image of the scene. *Id.* Stereoscopy can be traced back to the 1820s. One example of a well-known stereoscopic device is the View-Master, first produced in the 1930s. Shown on the right is a version from the 1960s. See EX1002, §VI(A), ¶27.

Advancements in computers and computing technology led in the late 1960s to development of head-mounted displays (“HMD”) for Augmented Reality (“AR”) and Virtual Reality (“VR”) applications. See EX1002, ¶28. AR describes superimposing or layering computer-generated images or data in a user’s “real world” field of vision—such as a heads-up display in a fighter pilot’s helmet. VR is similar, but the user only sees computer-generated images. *Id.* Both AR and VR require software and multiple hardware devices or systems to be effective. *Id.* This includes, for example, a tracker to determine the view orientation and position of the user, a real-time graphics processor capable of stereo display generation, and an HMD worn on the user’s head.

Virtual Reality headsets were originally called “Head-Mounted Displays,” HMDs, before Jarret Lanier coined the term “Virtual Reality.” See EX1002, ¶29. HMDs were first created in 1968 by Ivan Southerland and his students; it was an ungainly device but demonstrated the concept. *Id.* In the mid 1980’s and especially the early 1990’s, significant advances were made in tracking, optics, and computer graphics to allow for the HMDs to become practical. *Id.* UNC Chapel

Hill's Computer Science department was at the forefront of this advancement and much of the technology we developed there has made its way into the consumer market over time.

While most head-mounted displays through 2014 used integrated display screens such as in the Rift, the idea of using a mobile device display in a headset was known at least as early as 2008. See EX1002, ¶30. For example, U.S. Patent No. 8,957,835, assigned to Apple, Inc. and filed in September 2008, discloses a “[h]ead-mounted display systems and

methods of operation that allow users to couple and decouple a portable electronic device such as a handheld

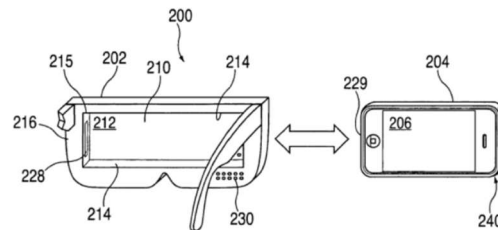


FIG. 2B

portable electronic device with a separate head-mounted device....” Although not shown in this image, the Apple patent discloses an embodiment using a left and right optical lens “so that the user is given the illusion of viewing image based content in three dimensions.” EX1005, 3:20-23, 23:34-39, Fig. 2B; see EX1002, ¶30.

Prior to 2014 and still through today, there were multiple types of touchscreens that were integrated into mobile electronic devices; these include infrared, pressure, resistive, and capacitive. As of 2012, the filing date of Chu (EX1004), the most common types of touchscreens used by handheld devices, like

smartphones, were resistive and capacitive touchscreens. EX1004, ¶0003; see EX1002, ¶31.

Resistive screens: These screens are made up of two layers of conductive material, typically polymer coated glass and a polymer coated plastic, and have the ability to take direct input by touch including a gloved finger or stylus. Resistive screens are now more common on legacy and lower-priced smartphones. Physical pressure is needed to make resistive screens function. See EX1002, ¶31.

A resistive touch screen includes a glass sheet coated with a thin conductive layer and a metallic layer.... When a user makes contact with the touch screen, the two layers touch each other at the same location. The change in electric current will be identified and computed to a set of coordinates on the touch screen display. A resistive touch screen can be operated by fingers or by many types of object as long as it can provide pin point compression on the touch screen. EX1004, ¶0004.

Capacitive screens: These screens use the electrical properties of the body to create a change of charge at a location on a polymer coated touchscreen. They require a finger or conductive path to a body but are able to detect lighter touches. See EX1002, ¶31.

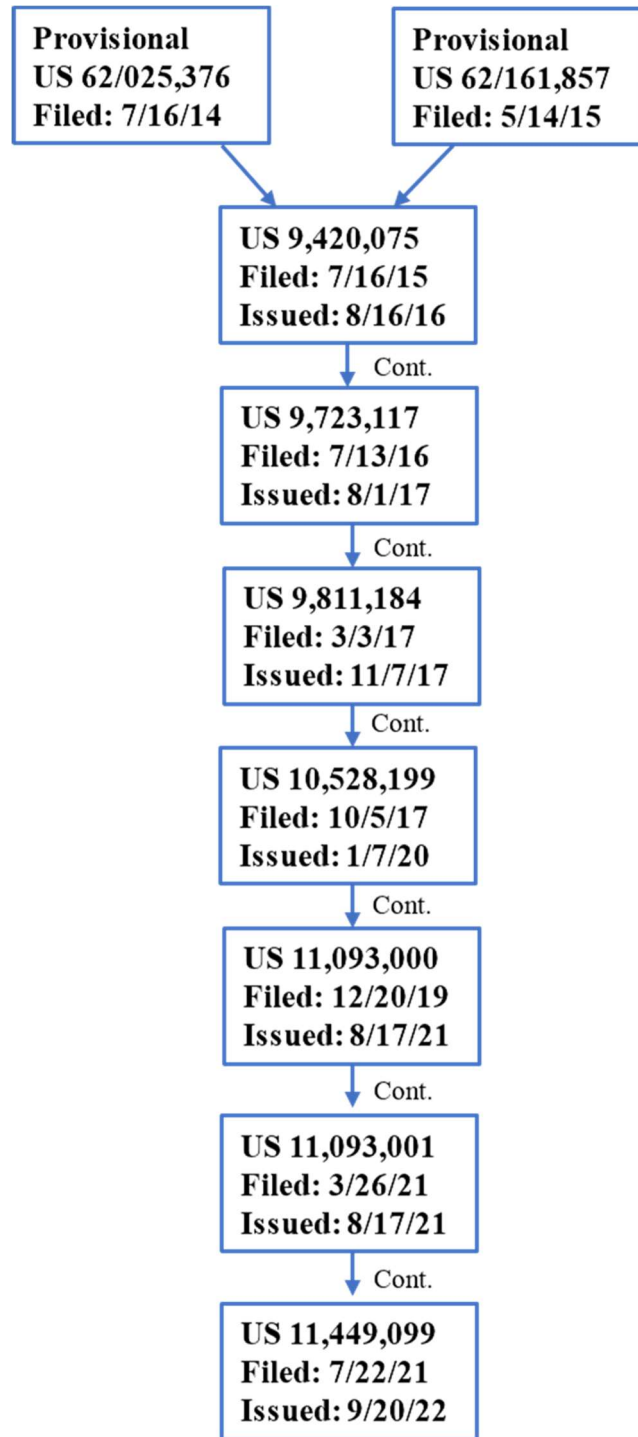
When a user makes contact with the touch screen, usually with a bare finger, small quantity of electric charge is transmitted to or from the user's finger.... This change in electric charge is detected and

computed to a set of coordinates on the display. A finger usually works well with capacitive touch screen. A human body is a good transferor and transferee of electric charge because of the electromagnetic field around the human body at all times. A device composed of compatible materials with good conductivity of electric charge can perform the function. However, a pencil or stylus which is workable on a resistive touch screen is not workable on a capacitive touch screen. EX1004, ¶10005.

One well-known goal for devices that encompass a smartphone (*e.g.*, VR viewers) at the time of the '199 patent's alleged invention was to accommodate as many different types of touchscreens as possible (both current and legacy), thus appealing to a wide range of consumers. See EX1002, ¶32.

B. The '199 Patent

The '199 patent is one in a family of related patents, all continuations, which stem from two provisionals:



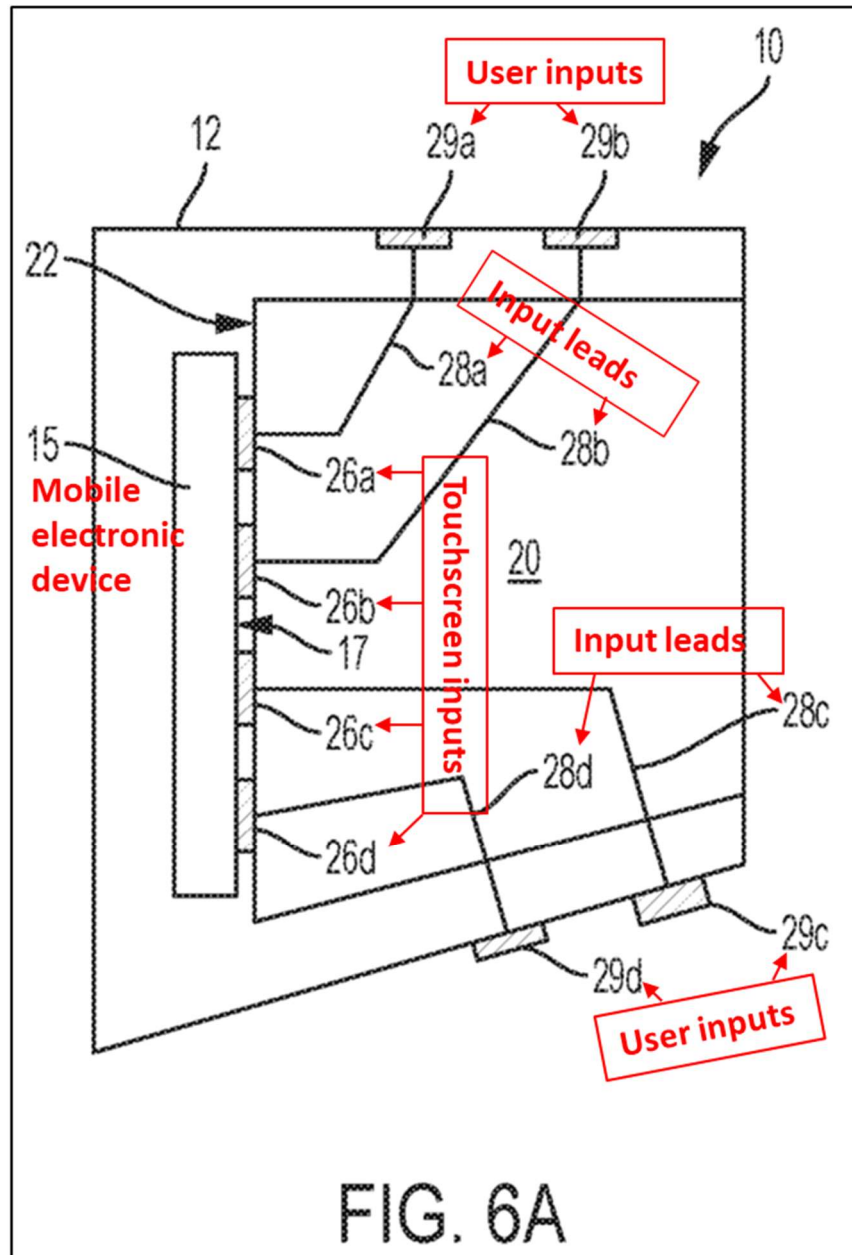
See EX1002, §VI(B), ¶33.

The '199 patent purports to invent a virtual reality viewer with “an input mechanism that can be used with [a] mobile electronic device having a touchscreen contained within the viewer.” EX1001, 2:45-48. However, the '199 patent admits that VR viewers with input devices were well-known at the time of the alleged invention. For example, in the Background of the Invention section, the patent admits that “[w]ith 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.” EX1001, 1:54-60; see EX1002, ¶34.

The Background continues by admitting that “[t]ypically the viewers have a housing that a user looks into in order to view the video display device contained within the housing” and that “[v]iewers can be hand-held devices that a user holds up to the users [sic] face/eyes....” EX1001, 1:63-65; see EX1002, ¶35.

The Background mentions that since a smartphone is enclosed within the viewer, “[o]ne challenge ... 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....” EX1001, 2:13-17. Thus, the Background admits that some VR viewers use magnets as input devices and “[o]ther VR viewers utilize dedicated input devices, like video game controllers....” EX1001, 2:17-36; see EX1002, ¶36.

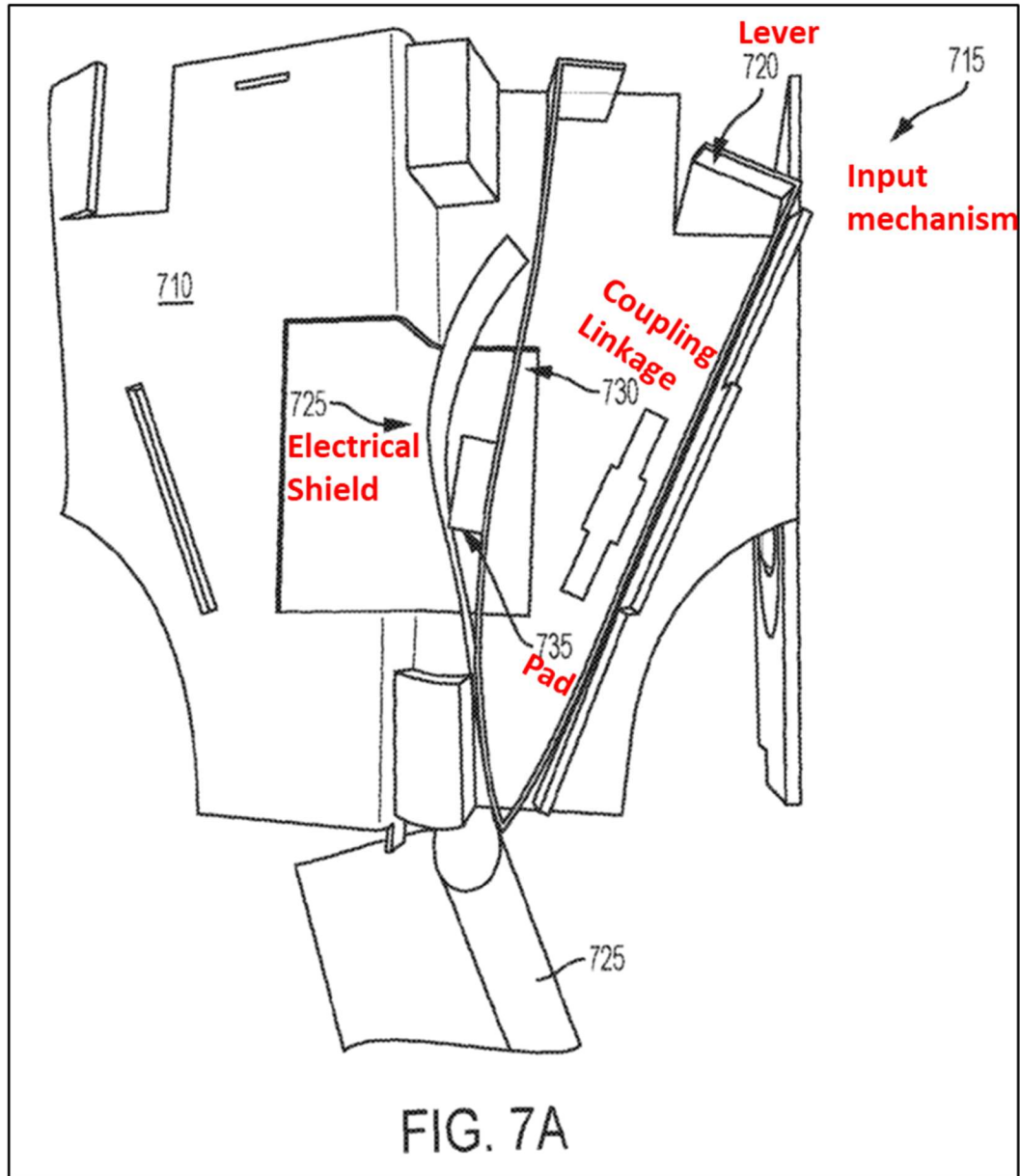
The '199 patent is directed to two embodiments of input mechanisms: one is an electrical connection, referred to in the patent as “passive,” as shown in Figure 6A:



EX1001, Fig. 6A (annotations added); see EX1002, ¶37.

This embodiment includes touchscreen inputs 26a–26d electrically coupled to user inputs 29a–29d via input leads 28a–28d. User inputs 29a–29d are exposed on the outer surfaces of the housing so that the user can interact with them to provide input to the mobile electronic device 15. EX1001, 3:54–7:20, 5:58–6:8, Figs. 6A–B. In this way, the user inputs 29a–29d transfer a capacitive touch to touchscreen inputs 26a–26d; see EX1002, ¶38.

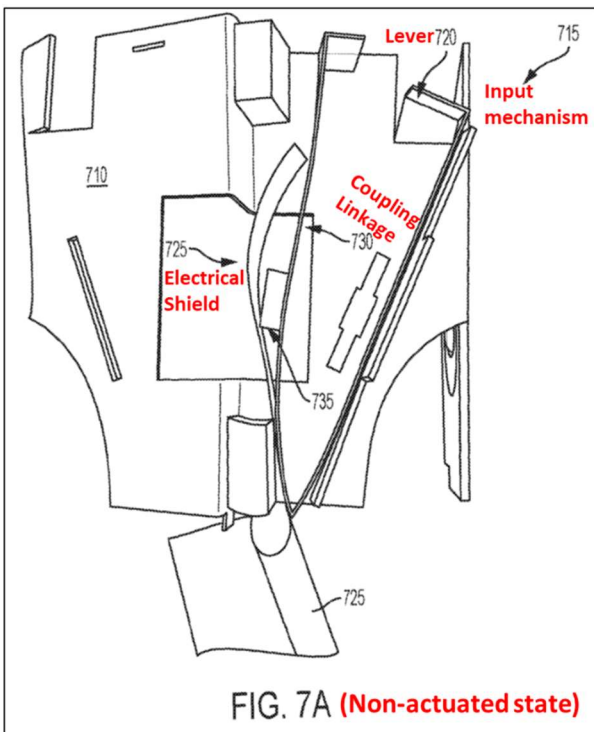
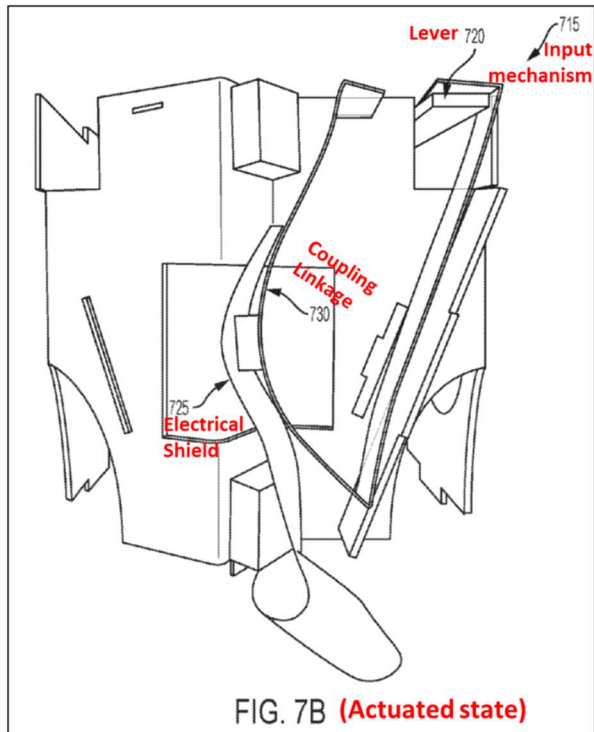
The other embodiment is a mechanical embodiment, which the patent refers to as “active,” as shown in Figures 7A–F. Figure 7A is reproduced below:

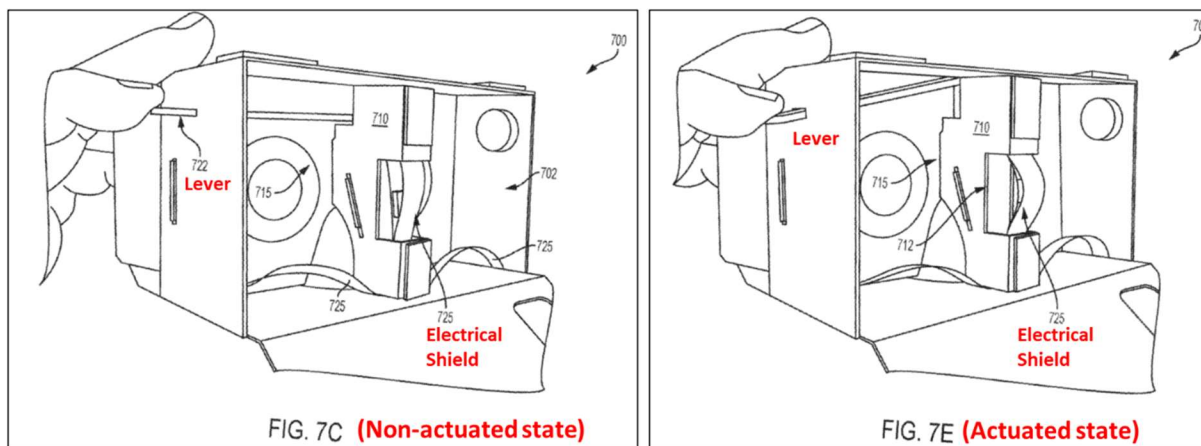


EX1001, Fig. 7A (annotations added); see EX1002, ¶39.

In this embodiment, the input mechanism 715 is moveable within the housing/enclosure. EX1001, 7:51–10:49, Figs. 7A–F. In particular, the viewer 700 (not shown) includes a lever 720 that is accessible from an exterior of a housing/enclosure to bring the electrical shield 725 into an actuated state where a

contact event is transferred to a touchscreen and a non-actuated state where a contact event is not transferred to the touchscreen inside the housing/enclosure. A coupling linkage 730 extends between the lever 720 and the electrical shield 725. EX1001, 7:51–10:49. A pad 735 sits between the coupling linkage 730 and electrical shield 725. “[A]ctuation 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.” EX1001, 8:49-49-10. Figures 7A and 7C below show the non-actuated state, and Figures 7B and 7E below show the actuated state. See EX1002, ¶40.





EX1001, Figs. 7A, 7B, 7C, 7E (annotations added).

C. The '199 Patent's Prosecution History

In an office action dated February 8, 2018, the Examiner issued a double patenting rejection and an obviousness rejection over Murray and Kim. EX1008, pp. 159-169. The Patent Owner responded by offering to file a terminal disclaimer, arguing that Kim was not prior art, and amending the independent claims as follows: EX1008, p. 76; see EX1002, §VI(C), ¶41.

1. (amended) A virtual reality viewer for use with a mobile electronic device having a touchscreen, the viewer comprising:

a first lens and a second lens, wherein the first lens is facing the same direction as the second lens, and wherein the first lens and the second lens are spaced apart in a horizontal direction;

~~an enclosure~~ a frame having a first side and a second side opposite the first side, the first side configured to hold the first lens and the second lens, the second side configured to receive the mobile electronic device wherein the frame is configured to hold the mobile electronic device such that the mobile electronic device is generally centered in a horizontal direction and directly in a user's field of view when looking through the first side of the frame;

a touchscreen input constructed of ~~conductive~~ material and having a surface such that only a portion of the surface of, ~~wherein~~ the touchscreen input is configured to contact a central region of the touchscreen ~~of in physical contact with the touchscreen upon receipt of the mobile electronic device when the touchscreen input is activated.~~

(amended) A virtual reality viewer for use with a mobile electronic device having a touchscreen, the viewer comprising:

a first lens and a second lens, wherein the first lens is facing the same direction as the second lens, and wherein the first lens and the second lens are spaced apart in a horizontal direction;

a frame ~~an enclosure~~ having a first side and a second side opposite the first side, the first side configured to hold the first lens and the second lens, the second side configured to receive the mobile electronic device wherein the frame is configured to hold the mobile electronic device such that the mobile electronic device is generally centered in a horizontal direction and directly in a user's field of view when looking through the first side of the frame;

a user input that is accessible from an exterior of the enclosure and has a first position and a second position;

a touchscreen input ~~that is conductively~~ coupled to the user input and generally centered between the first lens and the second lens in the horizontal direction, wherein the touchscreen has a surface such that only a portion of the surface of ~~the mobile electronic device~~, the touchscreen input is configured to contact a central region of the touchscreen ~~in physical contact with the touchscreen~~ when the user input is in ~~the~~ the second position.

EX1008, pp. 69-71.

On November 30, 2018, the Examiner issued a final office action rejecting the pending claims for double patenting. EX1008, pp. 60-67. In response, the Patent Owner filed a request for continued examination, stating that it had filed a terminal disclaimer. EX1008, p. 59; see EX1002, ¶42.

On March 8, 2019, the Examiner issued an office action maintaining the double patenting rejection and rejecting the terminal disclaimer. EX1008, pp. 44-59. The Patent Owner responded by fixing the deficiencies in the terminal disclaimer. EX1008, p. 20; see EX1002, ¶43.

The Examiner then issued a notice of allowance, stating the following:

The Prior Art discloses headsets that hold mobile devices where the touchscreen can be viewed through lenses. However, the Prior Art does not disclose having a touchscreen input constructed of material and having a surface such that only a portion of the surface of the touchscreen input is configured to contact a central region of the touchscreen of the mobile electronic device when the touchscreen input is activated.

EX1008, p. 10 (highlighting added) ; see EX1002, ¶44.

It is unclear from the Examiner's statement as to whether he thought that the prior art did not teach (1) a touchscreen input constructed of material, (2) only a portion of the surface of the touchscreen input contacts the touchscreen, (3) the touchscreen input contacting the central region of the touchscreen, or (4) combinations of all three. Nevertheless, as discussed below, the combination of Kondo/Chu teaches all of these claim limitations. See EX1002, ¶45

VII. 35 U.S.C. § 314(a)

A. *Fintiv* Analysis

The Board should institute this proceeding because under a holistic analysis of the *Fintiv* factors, non-institution would be improper.

1. Whether the court granted a stay or evidence exists that one may be granted if a proceeding is instituted;

Petitioner intends to request a stay pending IPR at the appropriate time. At the very least, this factor is neutral because determining how a district court might proceed would be merely speculative. *Sand Revolution II, v. Cont'l Intermodal Group-Trucking*, IPR2019-01393, Paper 24 at 11-12 (informative) (finding this factor neutral because "the court may determine whether or not to stay any individual case, including the related one, based on a variety of circumstances and facts beyond our control and to which the Board is not privy.).

2. Proximity of the court's trial date to the Board's projected statutory deadline for a final written decision;

The co-pending litigation was just transferred from NDTX to NDCA. See EX1012 (Transfer Order, dated 3/14/23). As such, there is currently no schedule, including no trial date. This factor weighs toward institution.

3. Investment in the parallel proceeding by the court and the parties;

At the new forum, NDCA, the parties and the court have made no substantial investment, as the case was just transferred. Before transfer, in NDTX, the court did not make any substantive determinations.

These five IPRs are filed soon after receiving DDC's infringement contentions (ICs) on 1/9/23, and soon after receiving DDC's supplemental ICs with clarifications on 1/23/23, about two months ago.

This factor weighs toward institution.

4. Overlap between issues raised in the petition and in the parallel proceeding;

Petitioner is challenging more claims than are asserted at the district court. Also, given the early stage of the co-pending litigation, it is unclear how much overlap, if any, there will be between the two proceedings. Significant case milestones lie ahead in the litigation that will determine the scope of any overlap,

and given the case was transferred not long ago, any overlap is uncertain at this stage. This factor is therefore neutral.

5. Whether the petitioner and the defendant in the parallel proceeding are the same party; and

The Petitioner and defendant in the parallel proceeding are the same. However, Petitioner is not the same party as any prior defendant sued by DDC or any prior PTAB Petitioner that challenged DDC's patents. See §II(C).

6. Other circumstances that impact the Board's exercise of discretion, including the merits.

The invalidity case presented below is a compelling unpatentability challenge and has never been presented to the Office. Also, institution is consistent with the significant public interest against "leaving bad patents enforceable." (*Thryv, Inc. v. Click-To-Call Techs., LP*, 140 S. Ct. 1367, 1374 (2020).)

On balance, the factors weigh toward institution.

B. General Plastic Analysis

Google had no involvement whatsoever in the previous PGRs and IPR filed by MerchSource: IPR2018-00494, PGR2018-00019, and PGR2018-00020. See §II(C). Also, Google has no relationship to MerchSource.

C. Burden on the Board

The Board will not be overburdened by these five cases for several reasons. First, each patent shares the same specification. Second, the claims of the different patents are strikingly similar. And lastly, Petitioner relies on no prior art other than Kondo and Chu in all cases. As a result, after the Board is familiar with one of these petitions, the time investment to review the other petitions should drop dramatically.

VIII. 35 U.S.C. § 325(d)

This Petition relies on Kondo and Chu, which were not previously considered by the Office and are not substantially the same nor cumulative to any prior art considered by the Office.

IX. A PERSON OF ORDINARY SKILL IN THE ART

A POSA at the time of the alleged invention had a minimum of an undergraduate degree (or equivalent) in mechanical engineering or a related field, with knowledge of mechanical actuation systems, basic optical design with lenses, head-mounted displays, a basic understanding of touchscreen technology, and at least two years of professional experience in mechanical and basic optical design or engineering. See EX1002, §V.

X. CLAIM CONSTRUCTION (37 C.F.R. § 42.104(B)(3))

Petitioner provides a claim construction using the *Phillips* standard and the factual basis for that construction. The ordinary and customary meaning will be used for all other terms. The '199 patent and the entire patent family's prosecution histories were considered when construing the below term. See EX1002, §IV(A).

Claim Term	Meaning
Virtual Reality Viewer	“A viewer of an artificial environment,” where “viewer” includes both handheld devices and headsets.

Virtual Reality Viewer – This term appears in all claims and is not defined in the '199 patent other than to state “[v]irtual reality viewers and headsets (collectively referred to as viewers) are becoming an increasingly popular way of viewing digital media, gaming and the like.” EX1001, 1:54-56. The patent also states that “[v]iewers can be hand-held devices that a user holds up to the users [sic] face/eyes, for example, like a user would hold a pair of binoculars.” EX1001, 1:39-41. And the patent states that “[v]iewers can also be worn on a user's head....” EX1001, 1:65-67. So, the patent is using the term “virtual reality viewer” to include both handheld devices and headsets. Beyond describing some

typical features of virtual reality viewers (see 1:54-2:41), the '199 patent does not provide any definition or place any limitations on this term. The term “virtual reality” is defined in dictionaries:

an artificial environment which is experienced through sensory stimuli (such as sights and sounds) provided by a computer and in which one's actions partially determine what happens in the environment. Merriam-Webster Online Dictionary, <https://www.merriam-webster.com/dictionary/virtual%20reality>.

A realistic simulation of an environment, including three-dimensional graphics, by a computer system using interactive software and hardware. EX1006, p. 4 (Random House Webster's College Dictionary, p. 1459 (2000)).

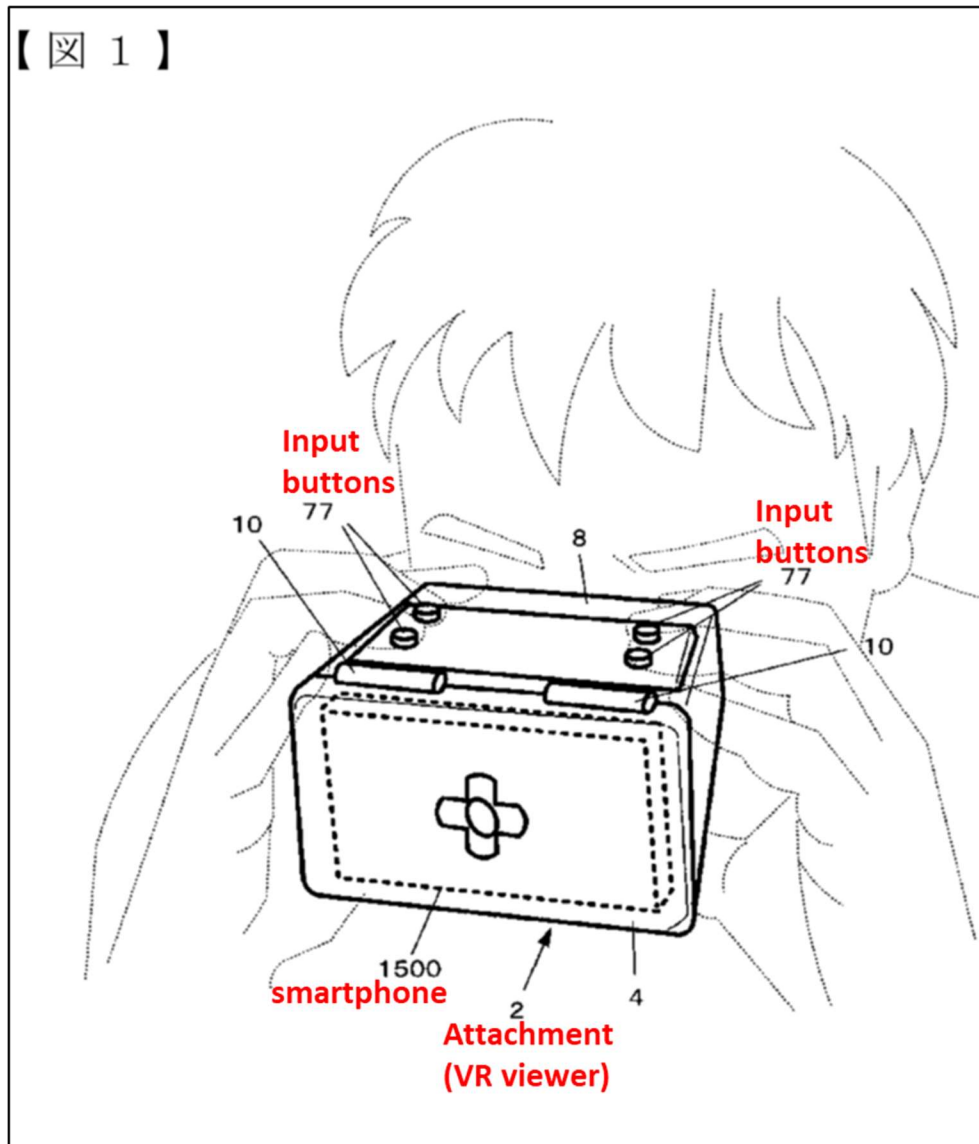
These definitions suggest that Virtual Reality is an artificial environment and are consistent with a POSA's understanding. A POSA would note the difference between Augmented Reality, which is when computer-generated images are superimposed on a user's real-world field of vision (see §VI(A)), and Virtual Reality, which is an artificial environment. Therefore, based on the well-known meaning and the patent's usage, Petitioner uses its ordinary meaning to a POSA, which is “a viewer of an artificial environment” where “viewer” includes both handheld devices and headsets. See EX1002, §IV(A), ¶¶17, 18.

XI. PRIOR ART

A. Kondo – JP3176588

Kondo is a Japanese patent entitled “Remote Touch Circuit and Attachment,” issued on June 28, 2012, which provides a VR viewer so the user can enjoy “three-dimensional stereoscopic images.” EX1003, ¶0021; *see also* Fig. 3, ¶0027. Kondo refers to its VR viewer as an “attachment” using reference numeral “2.” Petitioner will therefore use “VR viewer” and “attachment” interchangeably when describing Kondo. See EX1002, §VII(A), ¶46.

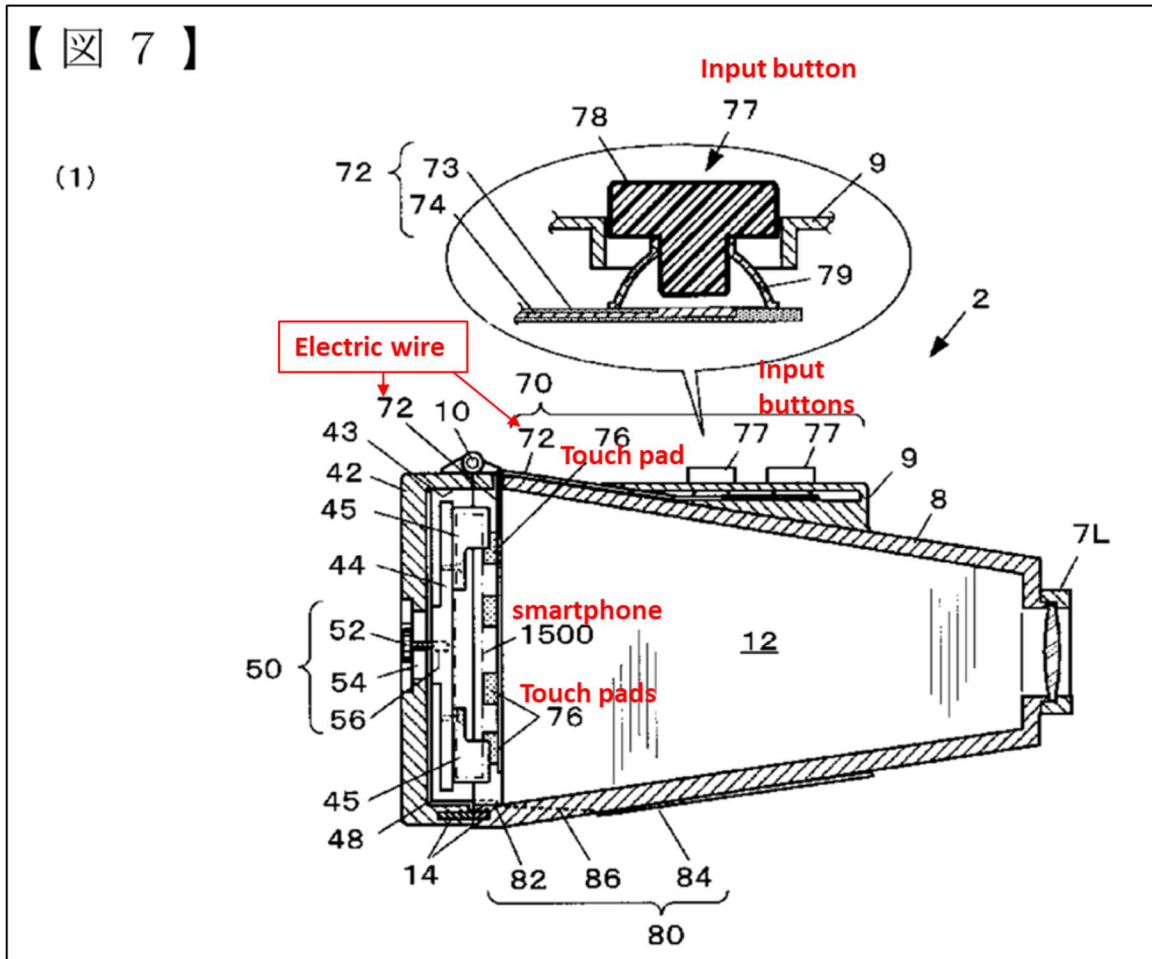
Kondo is directed to the same problem as the ’199 patent, namely, “[t]o provide an attachment that achieves remote control input to a touch panel mounted on an electronic device.” EX1003, p. 2; *see also* ¶4. Kondo’s solution is to equip the VR viewer “with a remote touch circuit that enables remote operation input to the touch panel from the outside using the fingers gripping the attachment.” EX1003, p. 2. Kondo’s input mechanism is electrical or passive. EX1003, ¶0005. Kondo’s Figure 1 below shows this input mechanism (buttons 77) on a VR viewer 2 with a smartphone 1500 mounted therein. EX1003, Fig. 1; ¶0022; *see* EX1002, ¶47.



EX1003, Fig. 1 (annotations added).

Kondo describes how the remote touch circuit is mounted and utilized, and the benefits of having externally available buttons 77. The basic concept is to have one or more electrically conductive pads 76 placed over the smartphone screen and electrically in contact by wire with the external buttons 77. These external buttons are placed on the outer shell of the virtual reality viewer and can be touched by the

user, which is conducted through the wire, to the conductive pad and registered by the smartphone as a “touch.” The electrical path from the external button(s) of the virtual reality viewer can provide for both capacitive and conductive types of sensing. This is shown in Fig. 7 below:

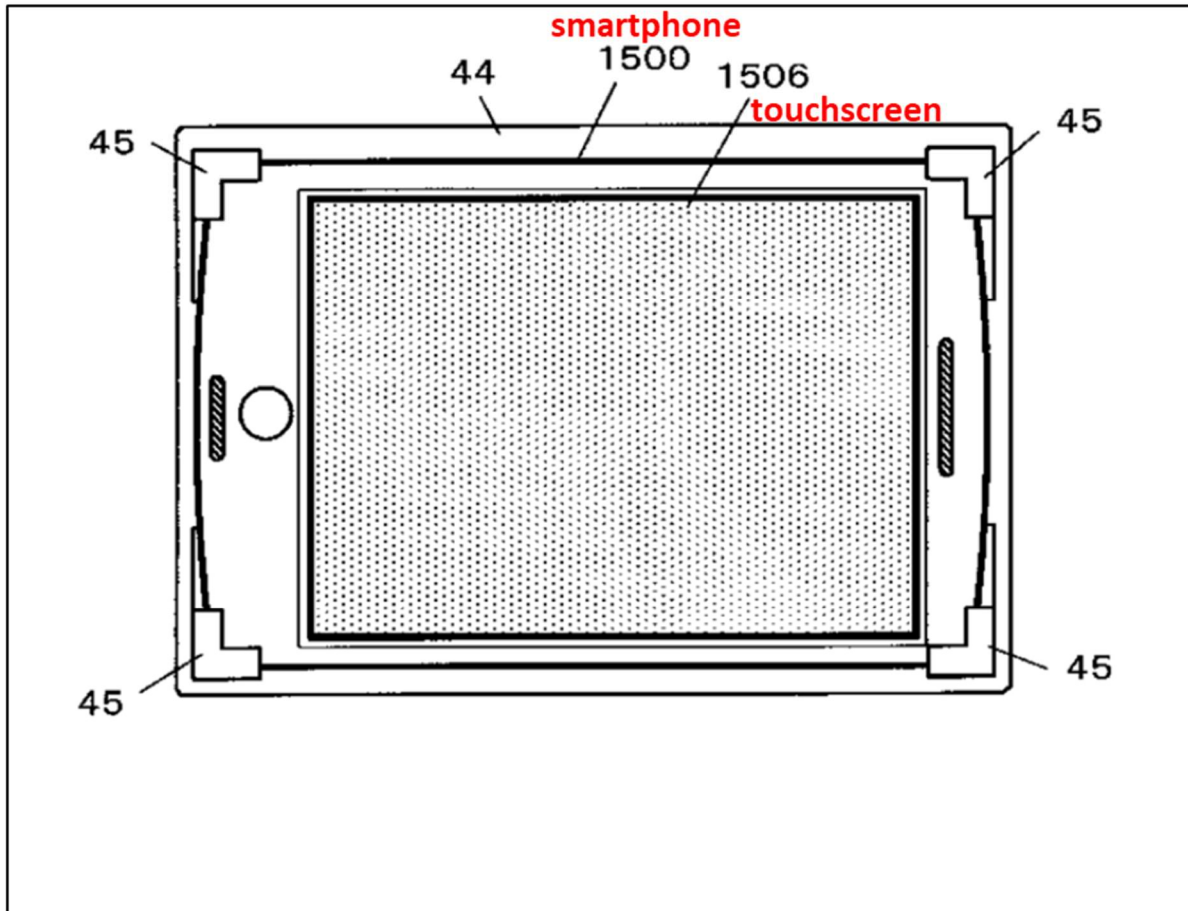


EX1003, Fig. 7 (annotations added); see EX1002, ¶48.

When button 77 is depressed by a user’s finger, the impedance of the user’s finger is electrically connected to the smartphone 1500 (specifically, its touch

panel shown as 1506 in Fig. 8, see below) via electrical wire 72 and touch pads 76.

EX1003, Fig. 7; ¶¶0043-0048; see EX1002, ¶49.

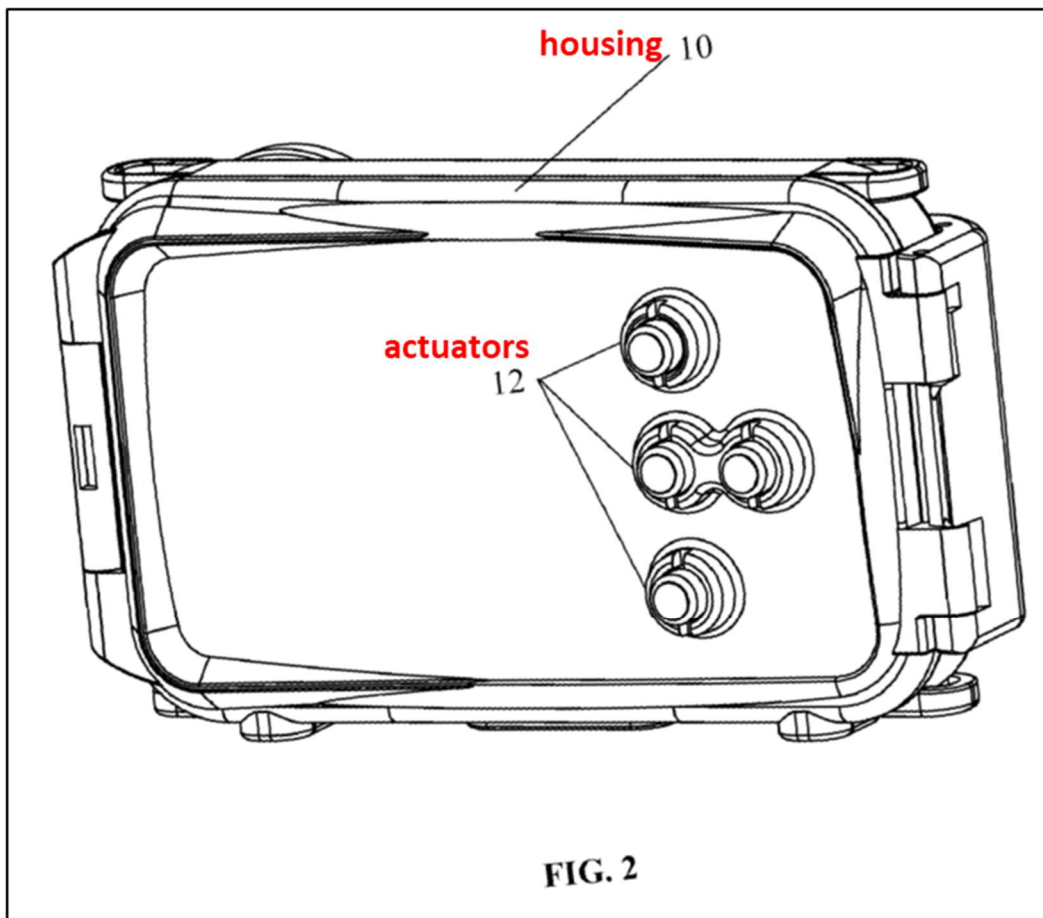


EX1003, Fig. 8(2) (annotations added).

Kondo discloses alternative embodiments, such as button 77 connecting to a different capacitive element other than the human body (Fig. 12, ¶0054) and using a game controller to operate the smartphone (Fig. 13, ¶0055). Kondo also specifically contemplates alternatives to button 77, including “a cross-shaped directional input key, a joystick, and the like.” EX1003, ¶0057; see EX1002, ¶50.

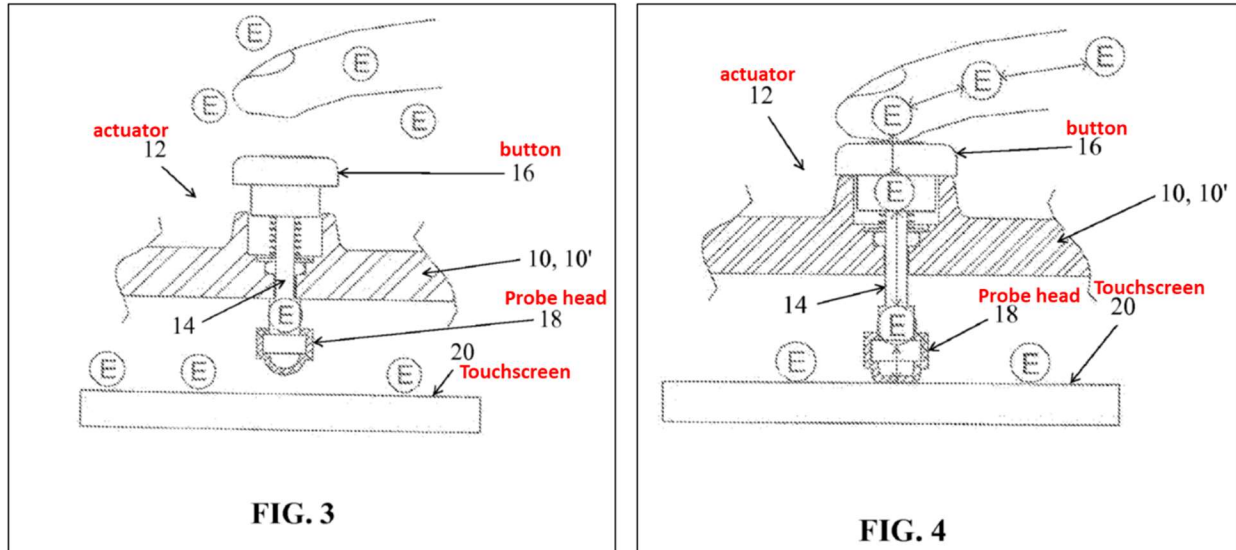
B. Chu – U.S. 2013/0082963

Chu is a U.S. patent publication dated April 4, 2013. It is directed to actuating a capacitive touchscreen of a smartphone held within a waterproof housing. EX1004, Abstract. Fig. 2 below shows the housing 10 enclosing a smartphone as well as the actuators 12, or input mechanisms, that are capable of actuating the touchscreen on the smartphone through physical contact:



EX1004, Fig. 2 (annotations added); see EX1002, §VII(B), ¶51.

Figure 3 shows actuator 12 at rest, and Figure 4 shows the actuator 12 in an actuation position where probe head 18 is touching the capacitive touchscreen 20 to create a touch event. EX1004 ¶¶0040-0041.



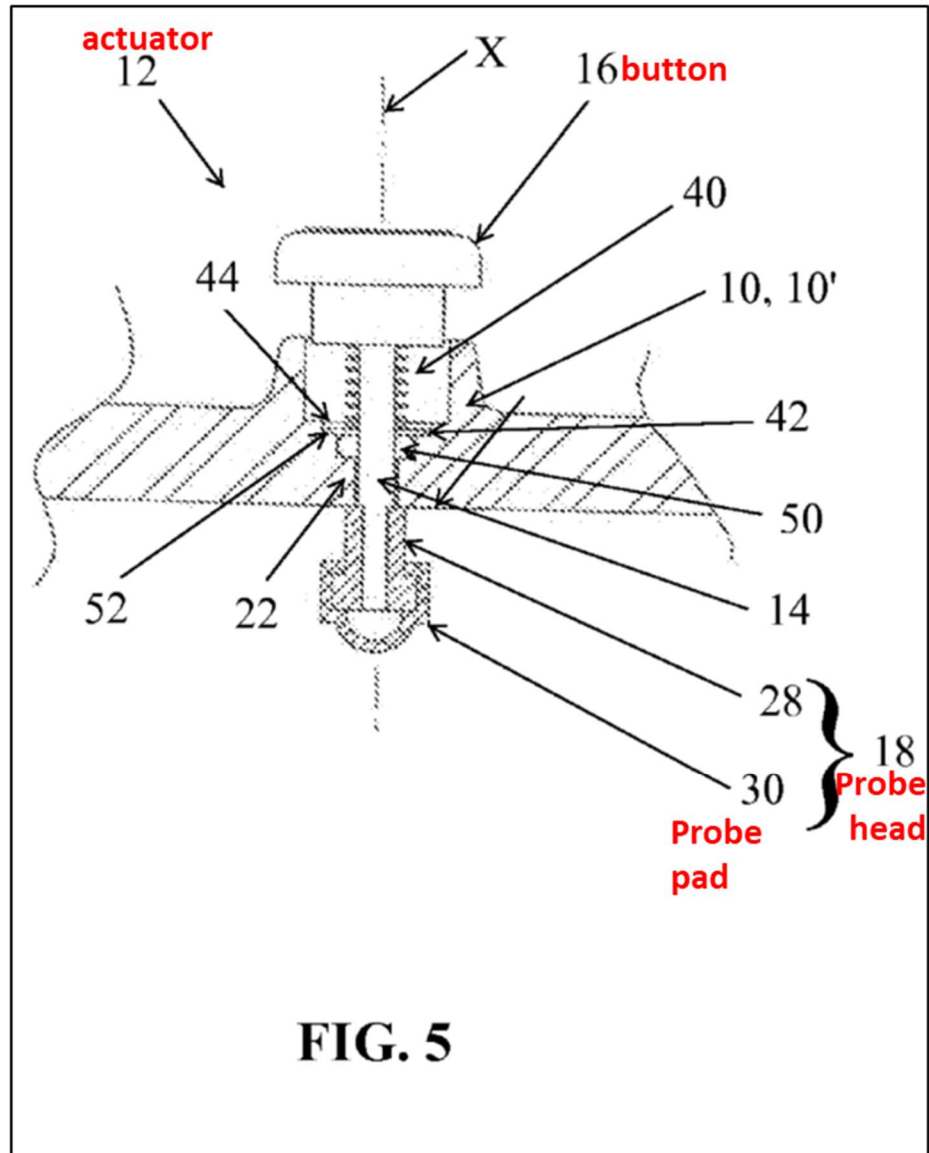
EX1004, Figs. 3, 4 (annotations added); see EX1002, ¶52.

Chu explains that when the user presses down on button 16, the contact area with button 16 increases, and since button 16 is metal, the user's finger is electric charge connected. If the user continues to press down, the probe head will contact the touchscreen (see Figure 4 above) and the electric charge conductivity between the user and button 16 improves. EX1004, ¶0054-0055; see EX1002, ¶53.

Figure 5 shows a more detailed view of probe head 18, which includes probe pad 30 for direct contact with the touchscreen 20. The probe pad 30 may be made

of rubber with an additive to “enhance its electric charge transfer performance.”

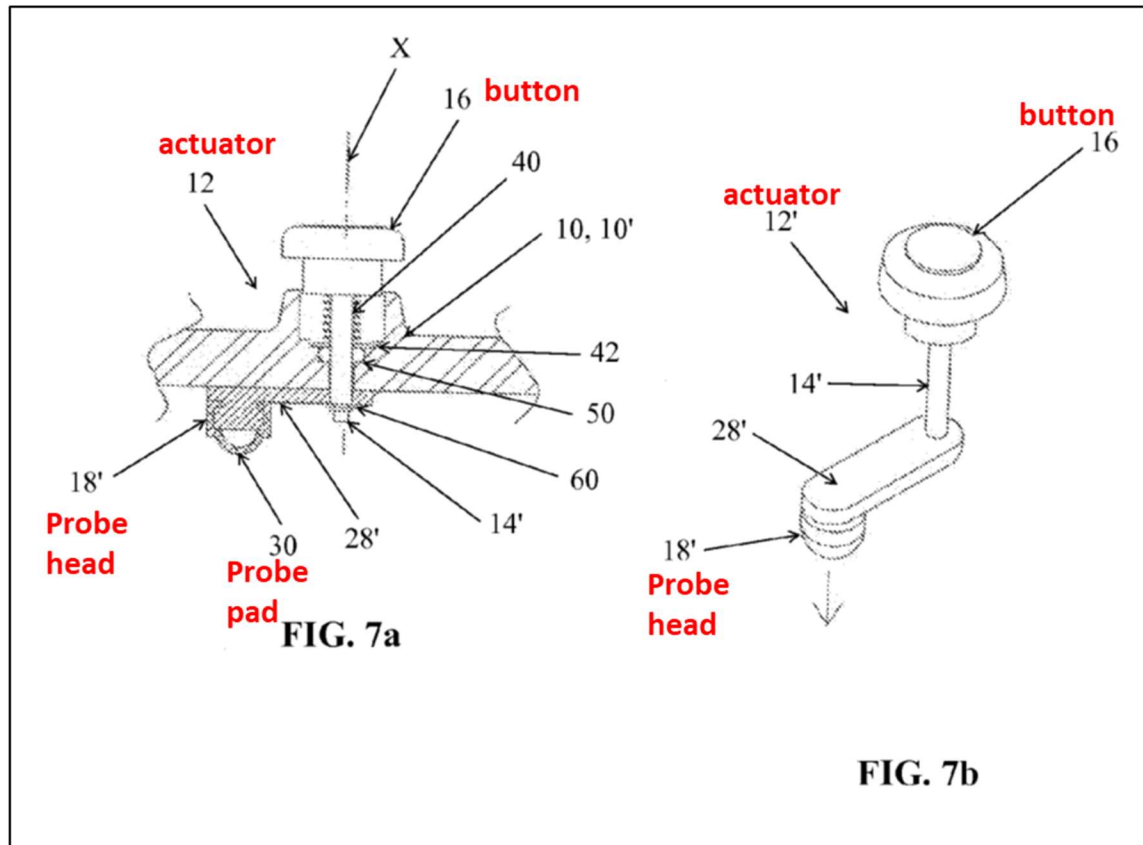
EX1004, ¶¶0048-0049; see EX1002, ¶54.



EX1004, Fig. 5 (annotations added).

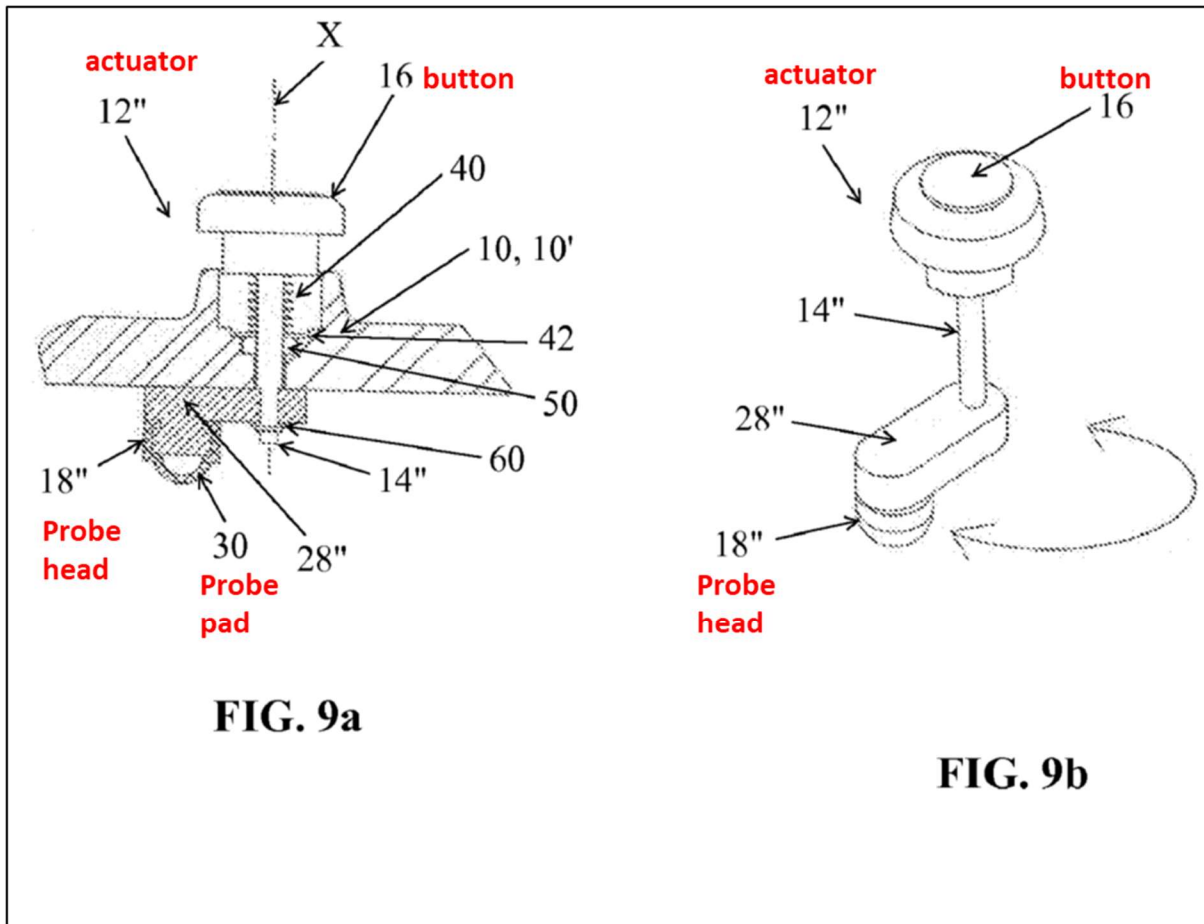
Figures 7a and 7b below show an alternative embodiment that operates similarly to the first embodiment in that when the user presses button 16, the probe

head 18 (and probe pad 30) comes into contact with touchscreen 20 (see ¶¶0058-0059):



EX1004, Figs. 7a, 7b (annotations added); see EX1002, ¶55.

Chu recognizes that in some situations, the touchscreen may require a “touch-swipe” or “touch-circle” motion where the probe head needs to move in a swiping or circular motion. Chu therefore describes another embodiment for just this situation where the user presses down on button 16 and can turn the button so that probe head 18” touches touchscreen 20 and can move along a circular path, causing a swipe. EX1004, ¶¶0060-0062; see EX1002, ¶56.



EX1004, Figs. 9a, 9b (annotations added).

A POSA would understand Chu as a conductive extension actuator from the interior to the exterior location of the device. The exterior location is accessible by the user and can be pressed by a user to create the capacitive or electrically conductive touch with the mobile device display within the housing. A POSA would understand that Chu would work not only with capacitive touchscreens, but also with resistive touchscreens. As to resistive touchscreens, Chu's mechanical input device applies pressure to the touchscreen, thus providing a touch input for a

resistive touchscreen. At ¶0004, Chu explains how such pressure will provide a touch input to a resistive screen. See EX1002, ¶57.

C. Motivation to Combine Kondo and Chu and Reasonable Expectation of Success

As mentioned above in §VI(A), the most common touchscreens on the market as of the time of the '199 patent's alleged invention were capacitive and resistive. See EX1002, ¶58. A mechanical input mechanism, like Chu's, can work with both types of screens, whereas an electrical input mechanism, like Kondo's, can only work with capacitive screens. *Id.* One goal of device designers is always to increase the usability and consumer appeal for their product where possible, allowing many different types of smartphones and touchscreens to be used. *Id.* In this situation, a VR designer looking at Kondo would readily realize and be motivated to increase the usability and consumer appeal for their device by making it work with both capacitive and resistive screens and therefore would be led to Chu. *Id.* Chu's input mechanism works with both types of screens. See EX1002, §VII(C), ¶58.

Moreover, both Kondo and Chu deal with a smartphone enclosed in a housing or device and both references face a similar problem, the external activation of the touchscreen of the smartphone enclosed in that device. *See e.g.*, EX1003, pg. 2 ("PROBLEM To provide an attachment that achieves remote

control input to a touch panel mounted on an electronic device”), EX1004, ¶0009 (“Therefore, there is a need to provide a specially designed actuator mechanism for actuating a capacitive touch screen of a digital device inside a waterproof housing.”). Therefore, a POSA that is designing a VR viewer by using Kondo would look to other available input mechanisms, thus leading the POSA to Chu. See EX1002, ¶59.

There are additional reasons why a POSA would combine Kondo/Chu. First, because Chu’s input mechanism is mechanical, the user can press the button using different levels of pressure, increasing not only the area in which contact is made but also the conductivity. See EX1002, ¶60. Touchscreens can interpret this as differing inputs, based on the size of touch-screen contact, the level of pressure, and the level of conductivity. *Id.* In other words, Chu provides a wider range of input at a single location on the touchscreen rather than just binary input (i.e., on or off). *Id.*

Second, Chu’s “swipe” embodiment provides additional input to Kondo’s device. See EX1002, ¶61. Not only can Chu provide a “touch” with different amounts of pressure and conductivity, but it also enables a whole new form of input, the swipe. *Id.* A POSA would understand that having additional inputs beyond a mere binary touch, such as differing pressures, conductivity, and swipes, would allow the VR viewer to provide more functionality. *Id.* The Kondo/Chu

combination would therefore allow the resulting VR viewer to be used for more applications, increasing the desirability of the device. *Id.*

Third, Chu's input mechanism is designed to be waterproof, and thus, adding Chu's input mechanism to Kondo has advantages. See EX1002, ¶¶62-63.

In particular, this combination of Kondo and Chu would be less susceptible to damage from water and other environmental factors, like dirt and dust. *Id.*

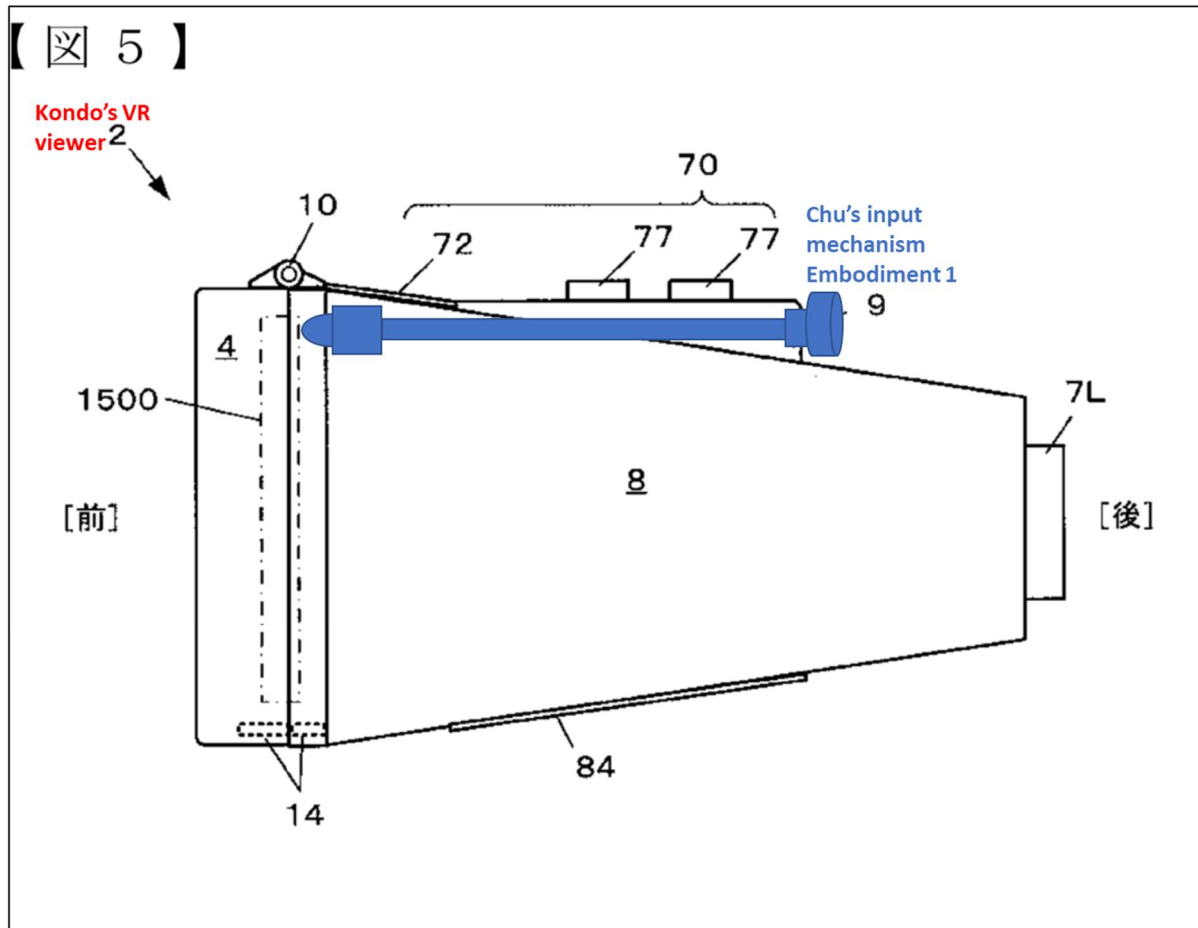
Handheld devices are often subjected to such conditions if they are used outdoors or even indoors if dropped in some liquid or splashed by accident for example. *Id.*

This combination would also allow the resulting device to be used underwater. *Id.*

Fourth, this combination would allow the device to be cleaned without fear of cleaning fluid reaching the inner parts of the device. See EX1002, ¶64. This can be important if the VR viewer is being used in a sanitary environment, such as during a medical procedure or in a manufacturing facility, like a semiconductor fabrication facility. *Id.* For these reasons, a POSA would be motivated to combine Kondo/Chu. *Id.*

Both Kondo and Chu are simple mechanical devices. Thus, a POSA would have a reasonable expectation of success in combining Chu's input mechanism with Kondo. See EX1002, ¶65. In fact, a POSA would consider the formation of this combination to be merely routine, requiring little skill. *Id.*

The following diagram shows how a POSA could easily combine Chu's first embodiment (depicted in **blue**), found in Figs. 3-6, with Kondo's Fig. 5. See EX1002, ¶66. Of course, inputs 77 and electrical wire 72 would be removed. To do so would require little effort and skill, and a POSA would have a reasonable expectation of success. *Id.* This figure is not to scale and is only illustrative. A POSA would recognize that minor adjustments might need to be made, like elongating the stem of Chu's input device, and possibly providing supportive structure inside of Kondo's device to accommodate Chu's input device. *Id.* In fact, Chu contemplates such structure as "one or more posts or guides" and shows supportive structure in its figures. EX1004, ¶0059, Figs. 3-10. All such modifications are well within the skill of a POSA, requiring little ingenuity. *Id.*

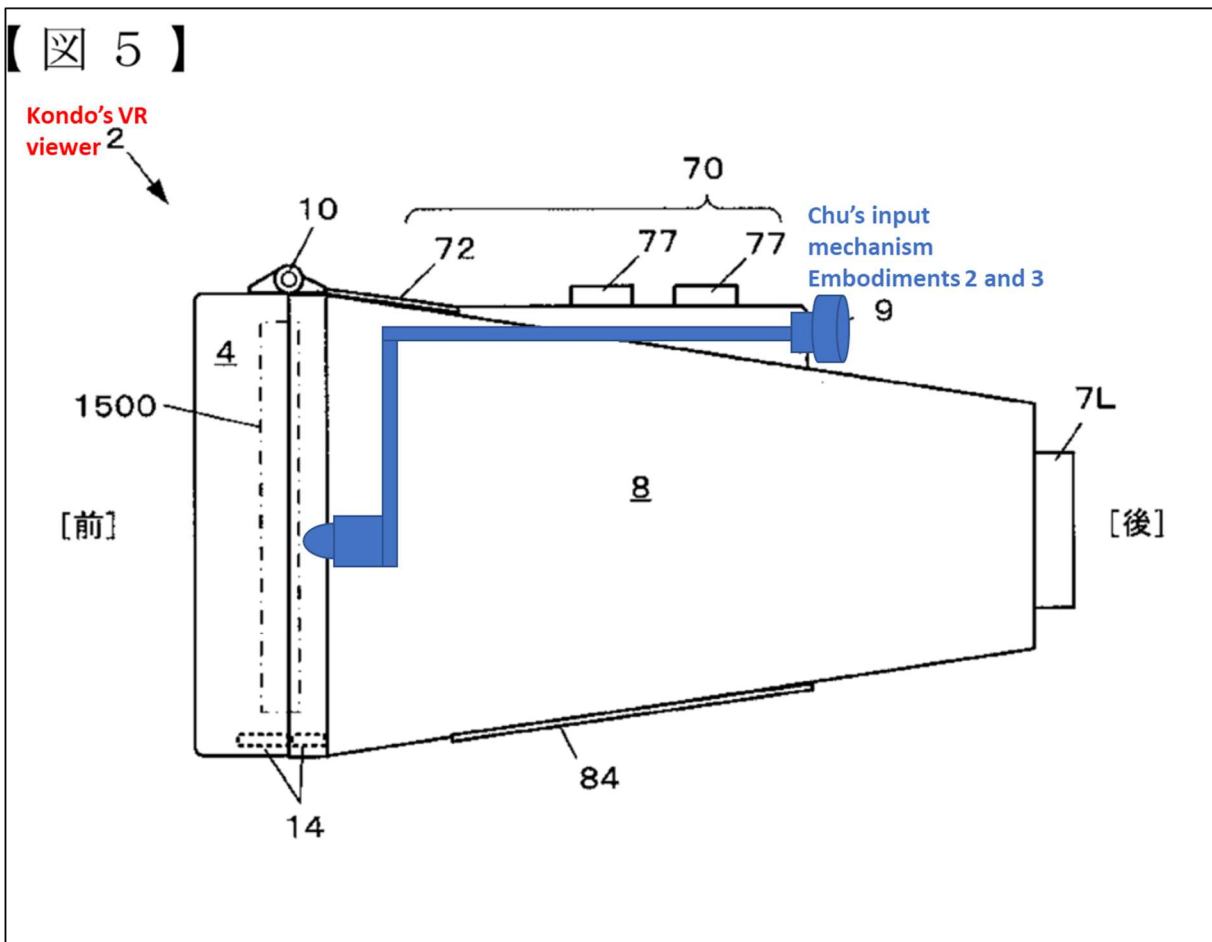


EX1003, Fig. 5 (annotated to include Chu's input device).

In the above diagram, Chu's input mechanism could be smaller and take a variety of sizes. Additionally, the outer shell of Kondo's device through which Chu operates could easily be extended to accommodate more input devices if desired. See EX1002, ¶67.

The following diagram shows how a POSA could easily combine Chu's second embodiment, found in Figs. 7a, 7b, and 8, and third embodiment, found in Figs. 9a, 9b, and 10, in Kondo's Fig. 5. See EX1002, ¶68. Chu's input mechanism

reflecting both the second and third embodiments is depicted in **blue**. Again, inputs 77 and electrical wire 72 would be removed. This would require little effort and skill, and a POSA would have a reasonable expectation of success. *Id.*



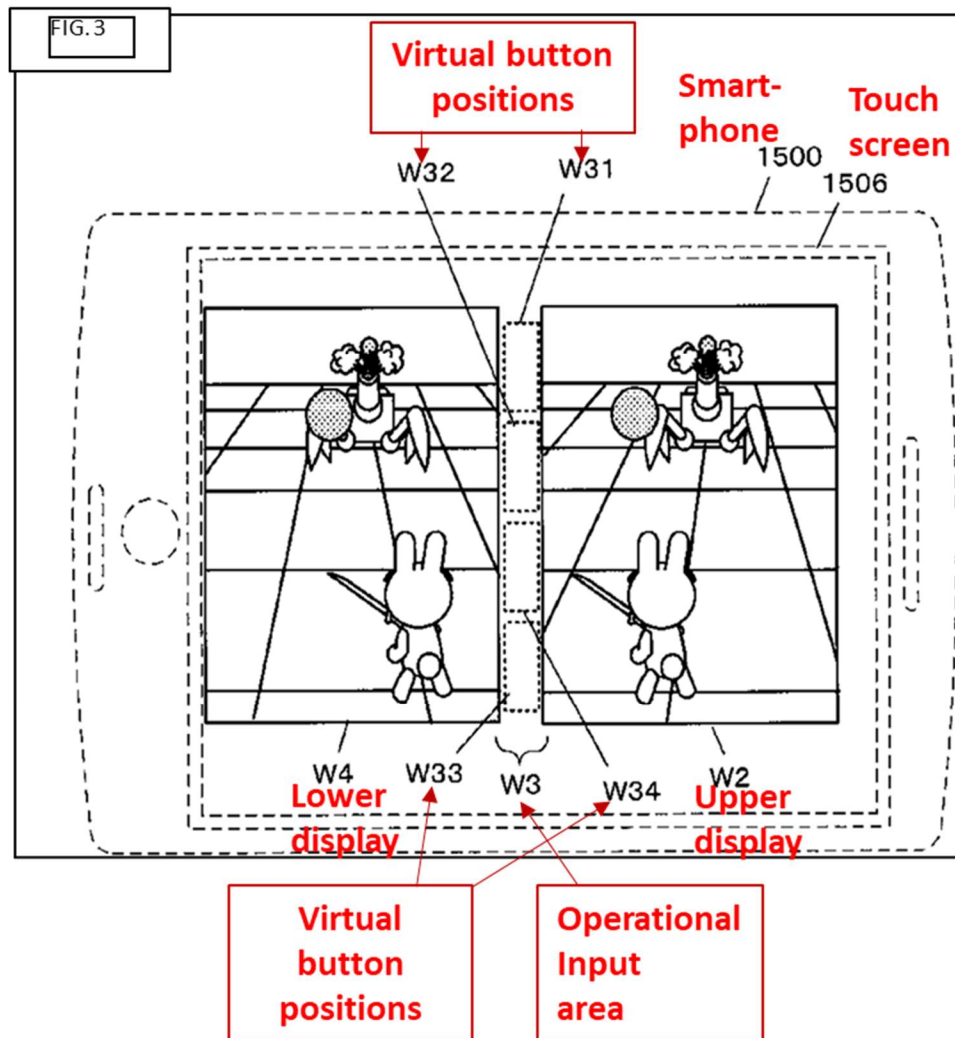
EX1003, Fig. 5 (annotated to include Chu's input device).

Again, minor adjustments might need to be made, including adding supportive structure. See EX1002, ¶69. But those modifications would be well within the skill of a POSA, and as stated with respect to the discussion of Chu's first-embodiment combination, Chu contemplates such supportive structure. *Id.*

Additionally, Chu's input mechanism could be smaller and take a variety of sizes.

Id. And, the outer shell of Kondo's device through which Chu operates could easily be extended to accommodate more input devices if desired. *Id.*

Both combinations shown above would contact the central region of the smartphone's touchscreen because Kondo shows that its operational input area is at the center of the touchscreen and this operational input area contains virtual button positions for operating the smartphone. See EX1002, ¶70.



EX1003, Fig. 3 (annotations added), ¶¶0027-0028.

XII. OBVIOUSNESS OF CHALLENGED CLAIMS BY KONDO/CHU

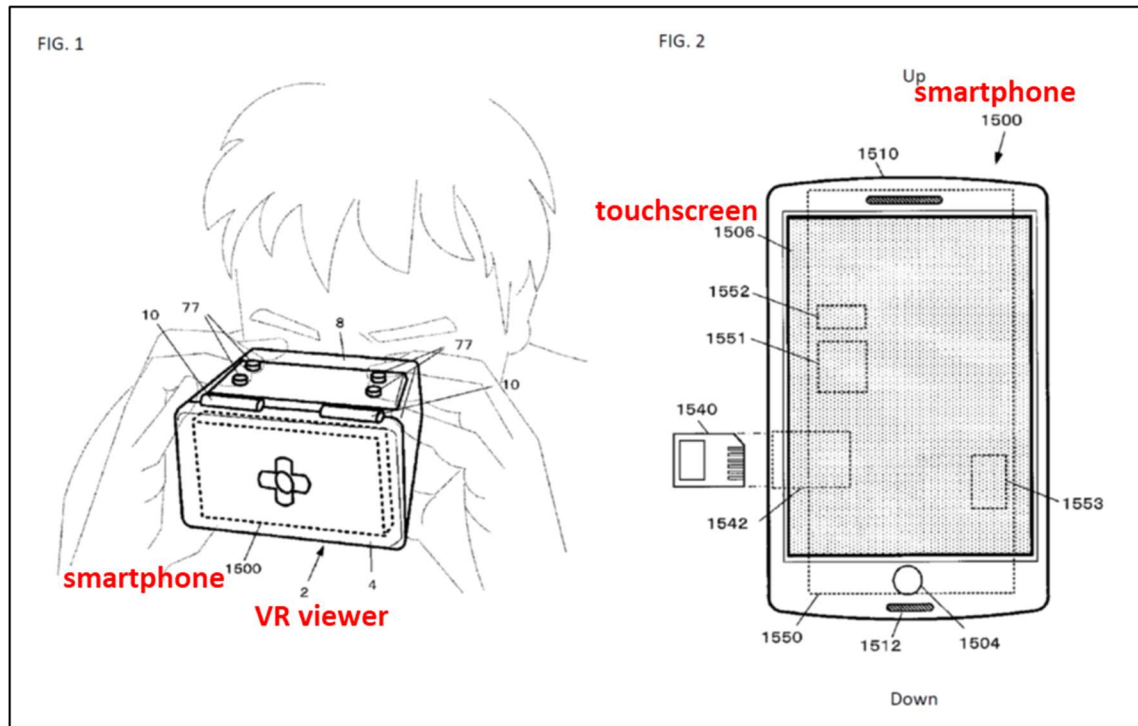
The following paragraphs demonstrate how the challenged claims are rendered obvious by the Kondo/Chu combination. See EX1002, §§VII, VIII, ¶71.

In addition, please see §§XI(A, B, C) above for context and explanation of each of Kondo and Chu, and how the two references would be combined by a POSA.

A. Claim 1:

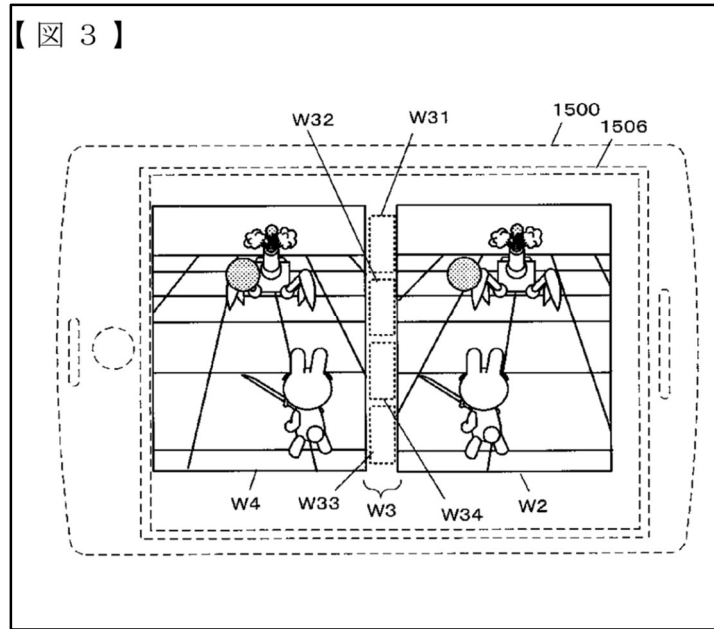
1. 1(a): A virtual reality viewer for use with a mobile electronic device having a touchscreen, the viewer comprising:

Kondo discloses a virtual reality viewer that uses a mobile phone with a touchscreen display. The term “virtual reality viewer” has been defined above to mean “a viewer of an artificial environment,” where “viewer” includes both handheld devices and headsets. See §X above. Figures 1 and 2 of Kondo below show a VR viewer 2 that encloses a smartphone 1500 with a touch-screen display 1506. As mentioned above in §XI(A), Kondo refers to its VR viewer as an “attachment.” Petitioner will therefore use the terms VR viewer and attachment interchangeably when discussing Kondo.



EX1003, Figs. 1, 2 (annotations added).

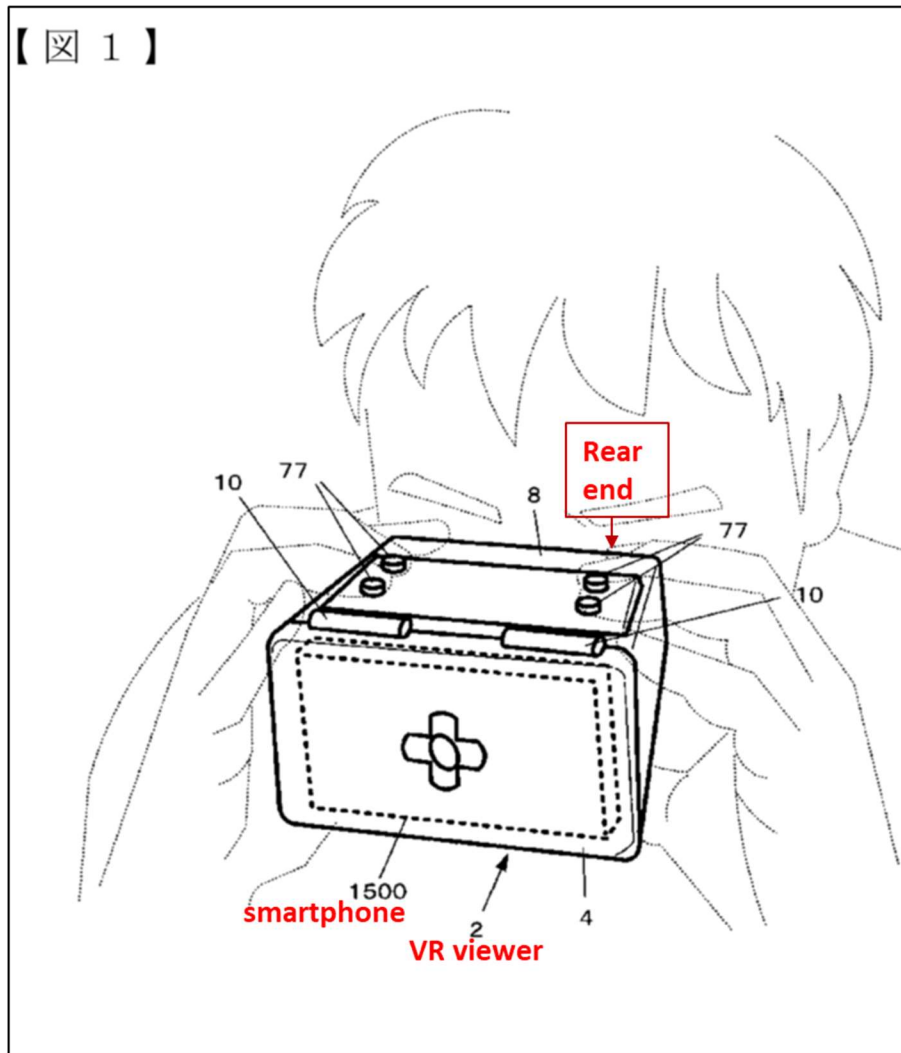
Kondo's Figure 3 below shows the touchscreen 1506 depicting an artificial environment, a stereoscopic video. EX1003, ¶¶0022, 0027. The touchscreen is a capacitive touchscreen. EX1003, cls. 1, 4, ¶¶0005, 0009, 0023, 0024.



EX1003, Fig. 3; *see also* ¶¶0021-0024; *see* EX1002, §VIII(A)(1).

2. **1(b): a first lens and a second lens, wherein the first lens is facing the same direction as the second lens, and wherein the first lens and the second lens are spaced apart in a horizontal direction;**

Kondo's Figure 1 below shows a rear end opposite the touchscreen of the smartphone 1500, and Figure 4(2) below shows a left and right lens on that side for viewing the left and right region of the touchscreen, which is on the opposite side. The Figures also show the lenses spaced apart in the horizontal direction and both lenses are facing the same direction.



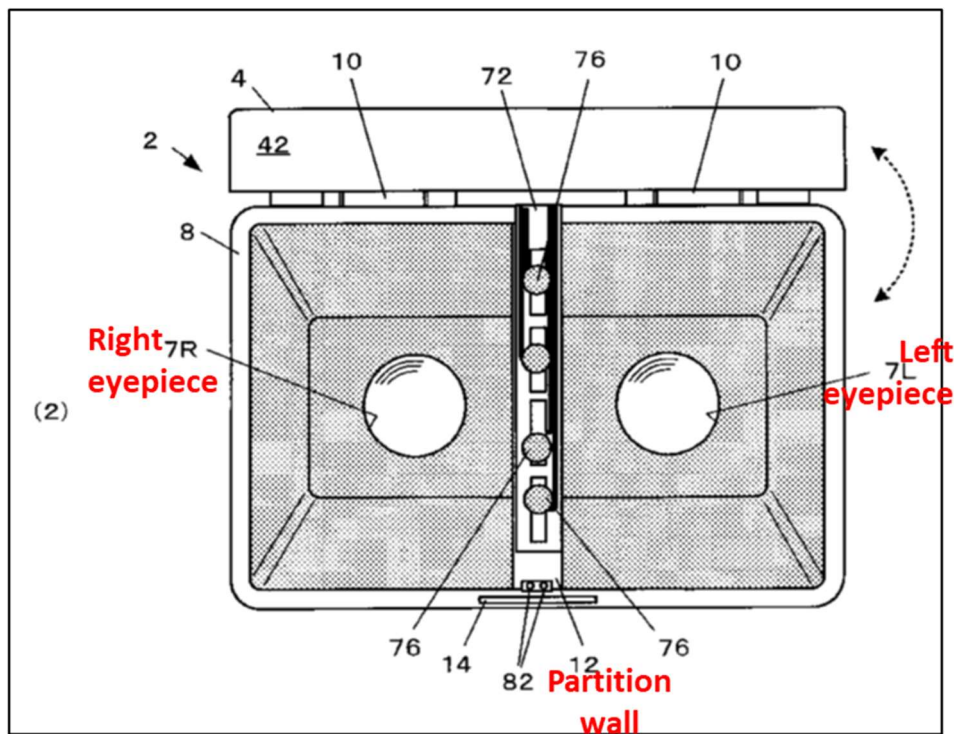
EX1003, Fig. 1 (annotations added).

Kondo explains that the left and right eyepieces are on one side of the VR viewer and the smartphone is on the other side. See EX1003, ¶0022.

FIG. 1 is a perspective view of an attachment according to Embodiment 1, viewed obliquely from the front and above. The attachment 2 is a structural body having two substantially cylindrical bodies integrated on the left and right sides, provided with a holding part 4 that can open and close on the front end thereof, and *left and right eyepieces 7* (see

FIG. 6) on the rear end thereof. The user mounts the touch panel of the smartphone 1500 to the inside of the holding part 4 facing the eyepieces 7, then closes the holding part. Since left and right eye images are displayed on the touch panel of the smartphone 1500 for three-dimensional stereoscopic vision, the user can enjoy a three-dimensional stereoscopic image by abutting the eyepieces 7 to the eyes and holding the attachment 2 as if using binoculars. EX1003, ¶0022 (emphasis added).

Figure 4(2) below shows the eyepieces spaced out horizontally and facing the same direction.



EX1003, Fig. 4(2) (annotations added).

Kondo explains that 7R is the right eyepiece and 7L is the left eyepiece. A POSA would recognize these eyepieces are lenses. This is also bolstered by the shadings on the upper left portion of the eyepieces 7R and 7L on Figure 4(2) indicating a curved glass-like lens. Kondo's eyepieces are the same as the '199 patent's lenses because they perform the same function. The '199 patent explains that "[t]hese 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." EX1001, 2:5-8. Kondo's eyepieces serve the exact same purpose: "By looking into the inside of the attachment 2 with the eyepieces placed on both eyes as if using binoculars, the user can enjoy a three-dimensional stereoscopic image." EX1003, pg. 2.

Not only does Kondo disclose the claimed lenses, but the '199 patent's admissions also render them obvious. The '199 patent admits that VR viewers typically have lenses.

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. EX1001, 2:5-8 (emphasis added).

The '199 patent also admits that the configuration, construction, and placement of lenses in VR viewers is well-known:

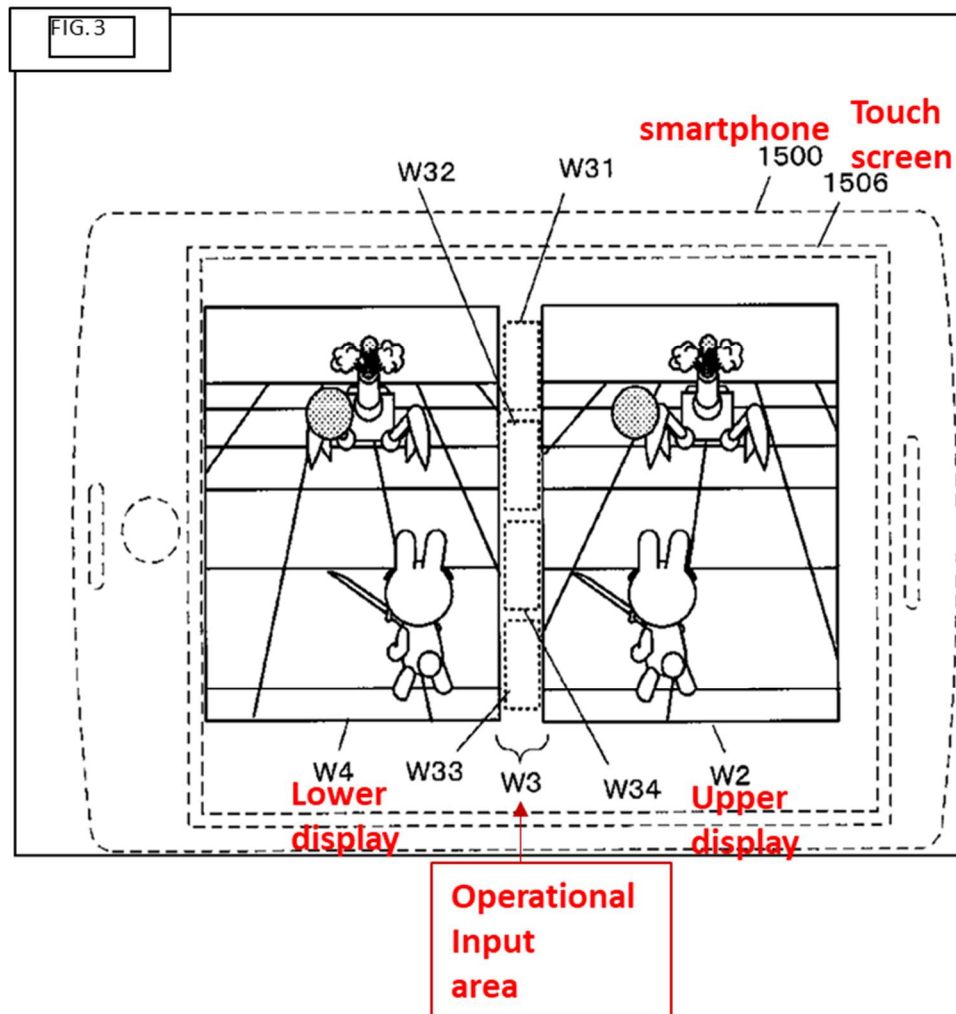
The configuration, construction and placement of a lens or lenses 70 for use in virtual reality viewers are generally known and understood by those skilled in the art. EX1001, 4:36-39.

These admissions demonstrate that the claimed lenses were well-known and that a POSA would be motivated to use the claimed lenses to facilitate a three-dimensional viewing experience. It is worth noting that Kondo states the same motivation. EX1003, pg. 2 (“By looking into the inside of the attachment 2 with the eyepieces placed on both eyes as if using binoculars, the user can enjoy a three-dimensional stereoscopic image.”). These admissions also demonstrate that a POSA would know how to configure, construct, and place those lenses in a VR viewer and thus have a reasonable expectation of success.

Figure 4(2) also shows a partition wall 12, separating the interior to a left and right region. Thus, 7R views a right region of the interior and 7L views a left region of the interior.

A partition wall 12 is provided in the center side-to-side of the attachment main body 8, separating into a tubular part communicating with the right eyepiece 7R and a tubular part communicating with the left eyepiece 7L. The smartphone 1500 is supported and secured to the holding part 4 such that when the holding part 4 is closed, the operation input area W3 is positioned facing the front end part of the partition wall 12. EX1003, ¶0037 (emphasis added).

Figure 3 shows that, when mounted, the smartphone is horizontally centered because the user will see region W2 as the right side, region W4 as the left side, and region W3 is used for input.

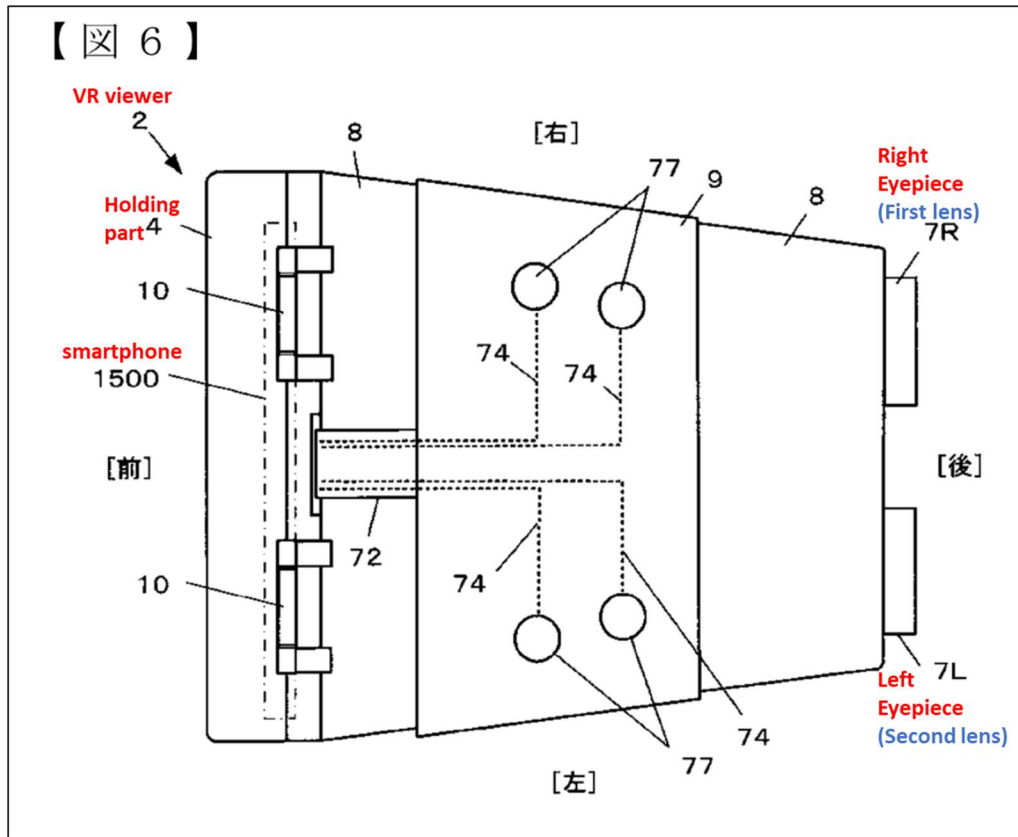


EX1003, Fig. 3 (annotations added).

Kondo explains that the smartphone is mounted in the VR viewer sideways using holding part 4.

FIG. 3 is a diagram illustrating an example of a display screen of a three-dimensional stereoscopic video. *The smartphone 1500 is mounted to the holding part 4 with the smartphone 1500 turned sideways.* An upper display area W2 and lower display area W4 are set on the screen of the touch panel 1506, and an operation input area W3 is further set between these display areas. *The upper display area W2 and lower display area W4 are on the right and left sides of the attachment 2 when the smartphone 1500 is mounted to the attachment 2. Therefore, the control board 1550 of the smartphone 1500 provides control so as to display a right eye image on the former, and a left eye image on the latter.* EX1003, ¶0027 (emphasis added).

Figure 6 below is a top view of VR viewer 2 and also shows the right eyepiece (the claimed first lens in **blue**) and the left eyepiece (the claimed second lens in **blue**), where both lenses face the same direction and are spaced apart in the horizontal direction.

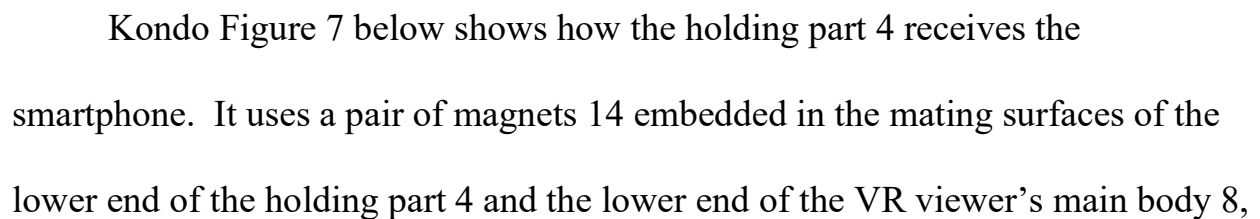


EX1003, Fig. 6 (annotations added); see EX1002, §VIII(A)(2).

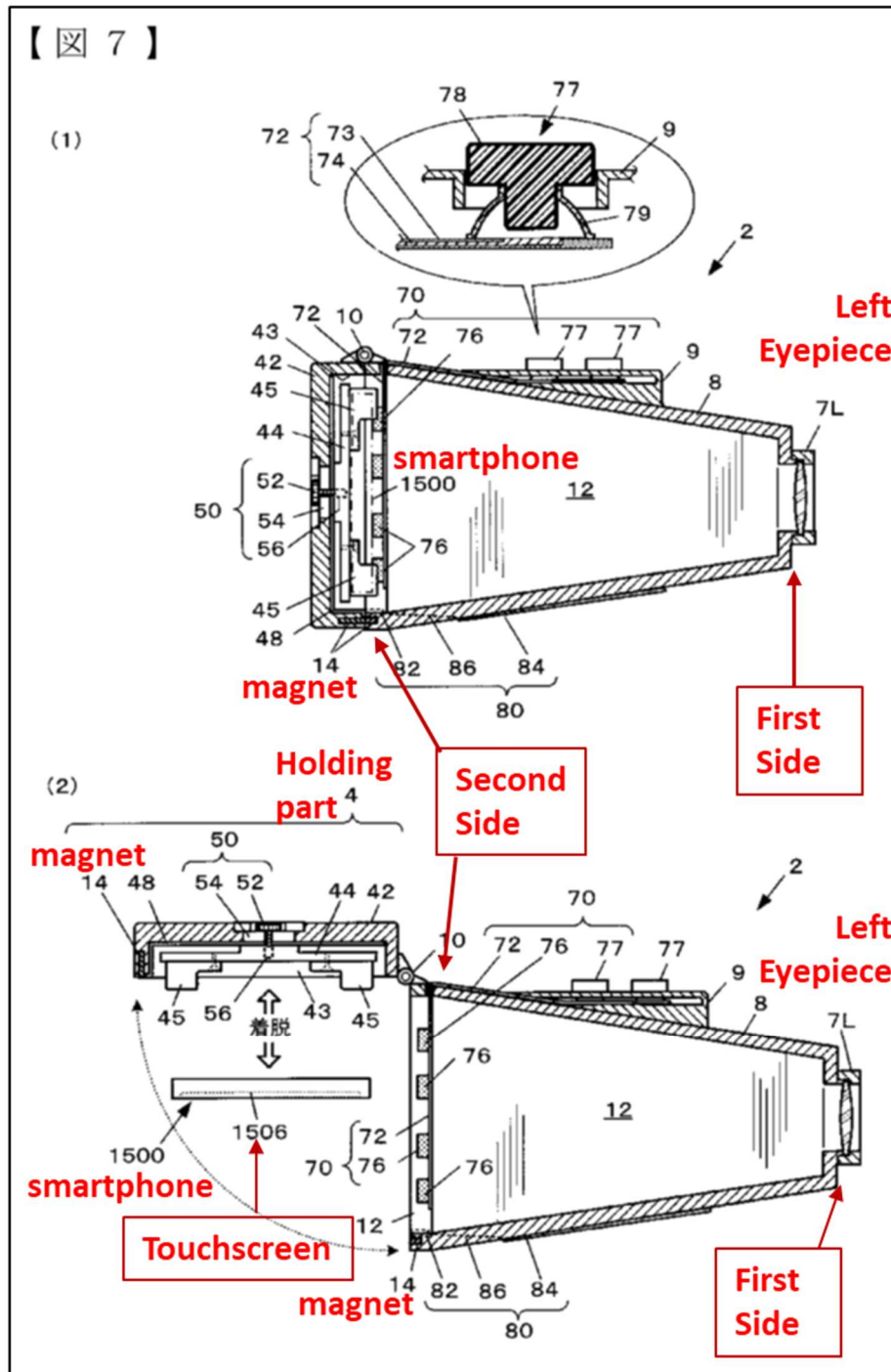
3. **1(c): a frame having a first side and a second side opposite the first side, the first side configured to hold the first lens and the second lens, the second side configured to receive the mobile electronic device, wherein the frame is configured to hold the mobile electronic device such that the mobile electronic device is generally centered in a horizontal direction and directly in a user's field of view when looking through the first side of the frame; and**

See the analysis of 1(a) and 1(b) above for a description of the Kondo/Chu combination's viewer and its lenses. Also, Kondo's Figure 6 below shows the VR viewer (the housing of which is the claimed "frame") having a first side with a left

EX1003, Fig. 6 (annotations added).

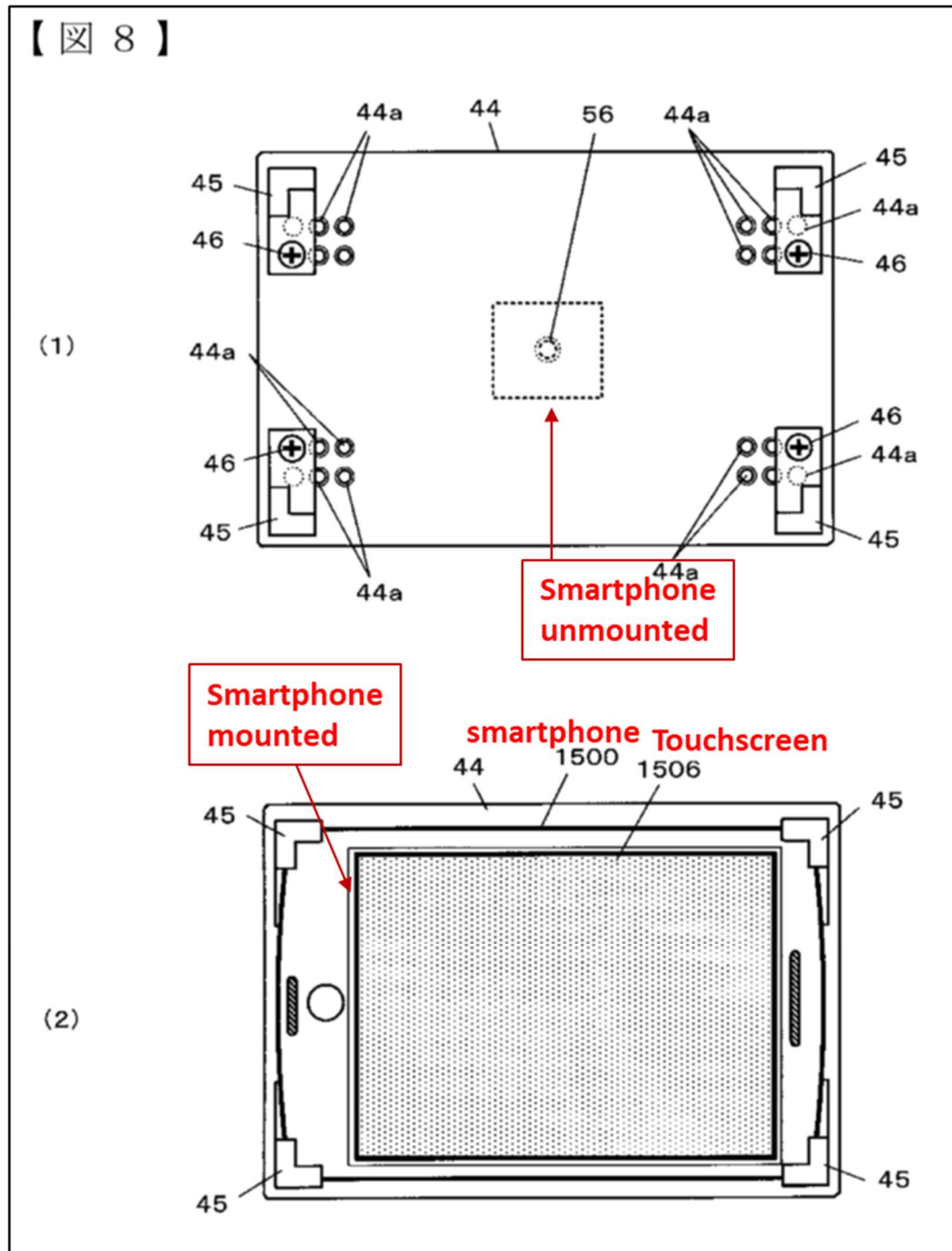


and when the holding part 4 is closed, the magnets attract each other to keep the holding part 4 closed. Kondo Figure 7 below also shows the first side, the second side, and the left eyepiece. Only the left eyepiece is shown because this figure is a side view. Additionally, this figure shows that the smartphone is directly in the user's field of view when looking through the first side. EX1003, ¶0030, Fig. 7; see also ¶¶0022.



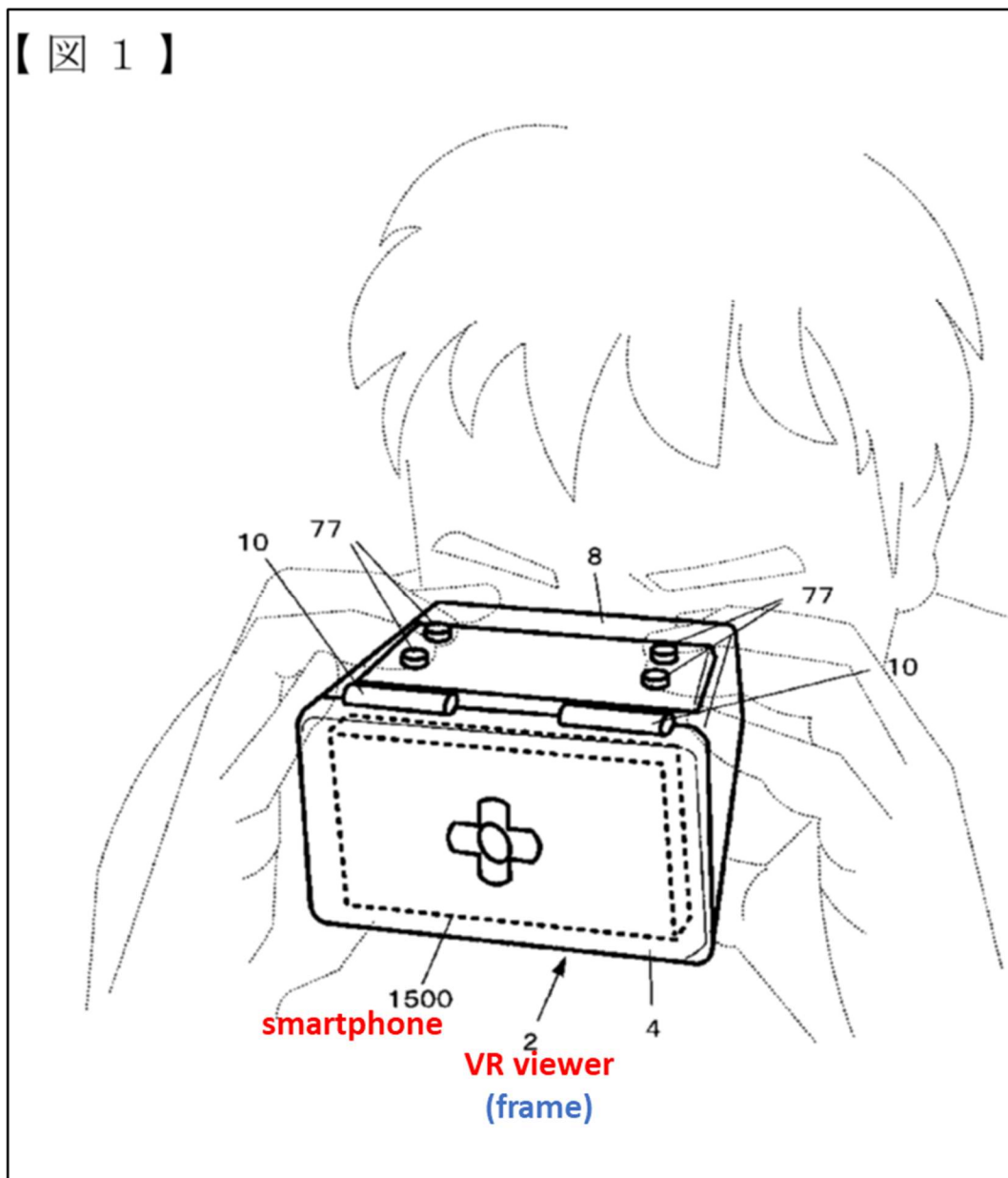
EX1003, Fig. 7 (annotations added); see also 0030-0032.

In Figure 8 below, Kondo shows both when the mobile phone is mounted and when it is not. When it is mounted, the mobile phone is centered in a horizontal direction.



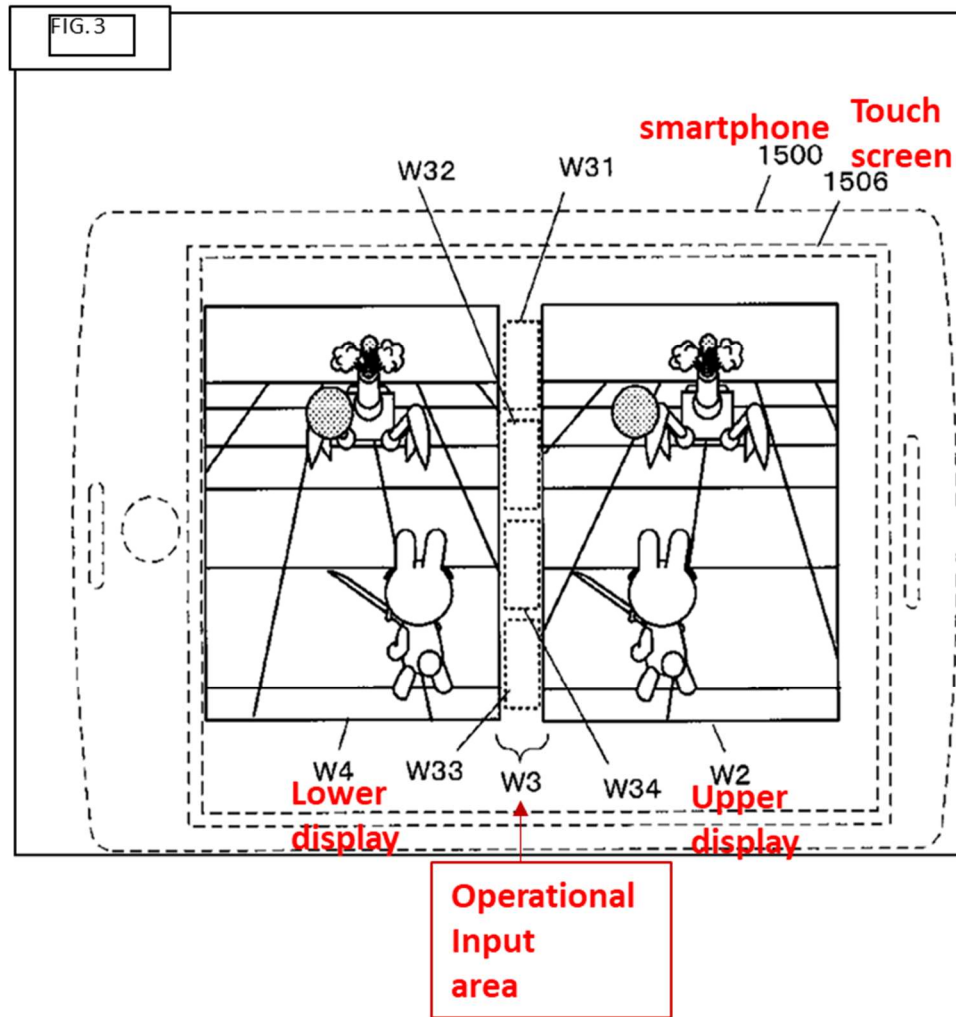
EX1003, Fig. 8; *see also* ¶¶0033, 0034.

In Figure 1 below, Kondo shows the VR viewer, the housing of which is the claimed frame (labeled in **blue**), holding the smartphone 1500 horizontally centered and directly within the user's view. Also, the user looks through a side opposite the touch-screen of the smartphone.



EX1003, Fig. 1 (annotations added); *see also* ¶0022.

Kondo Figure 3 below shows the smartphone horizontally centered.

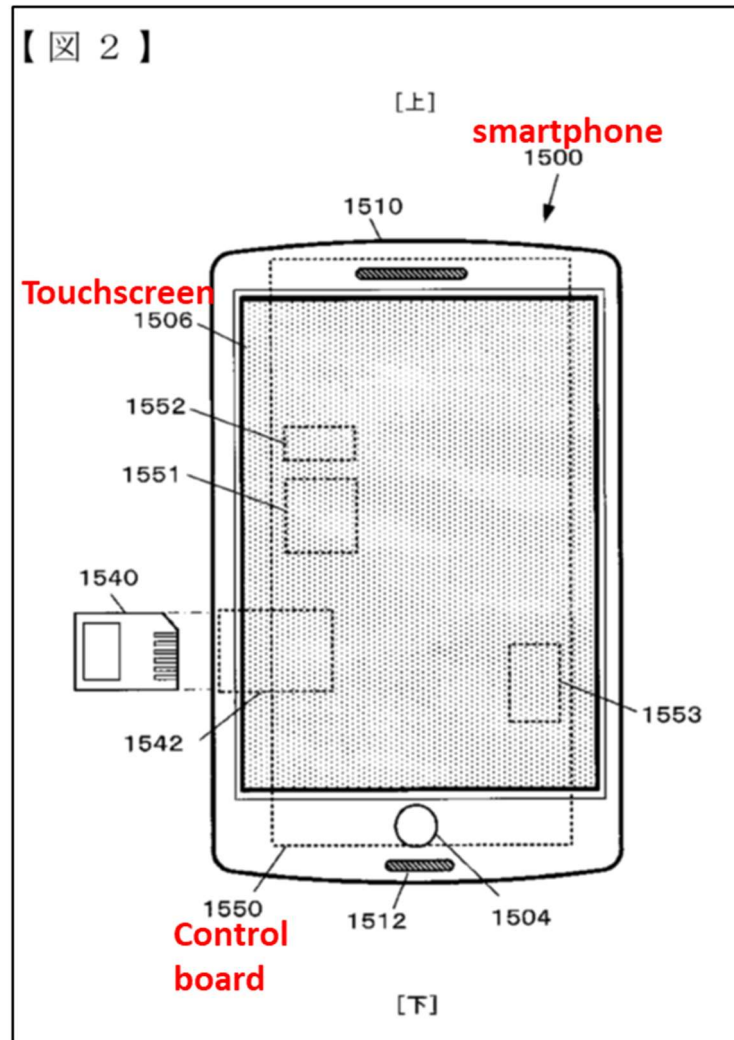


EX1003, Fig. 3 (annotations added).

Kondo Figure 3 (above) is a diagram illustrating an example of a display screen of a three-dimensional stereoscopic video. The smartphone 1500 is mounted to the holding part 4 (shown in Figure 7 above) with the smartphone 1500 turned sideways. Figure 3 shows an upper display area W2 and lower display area

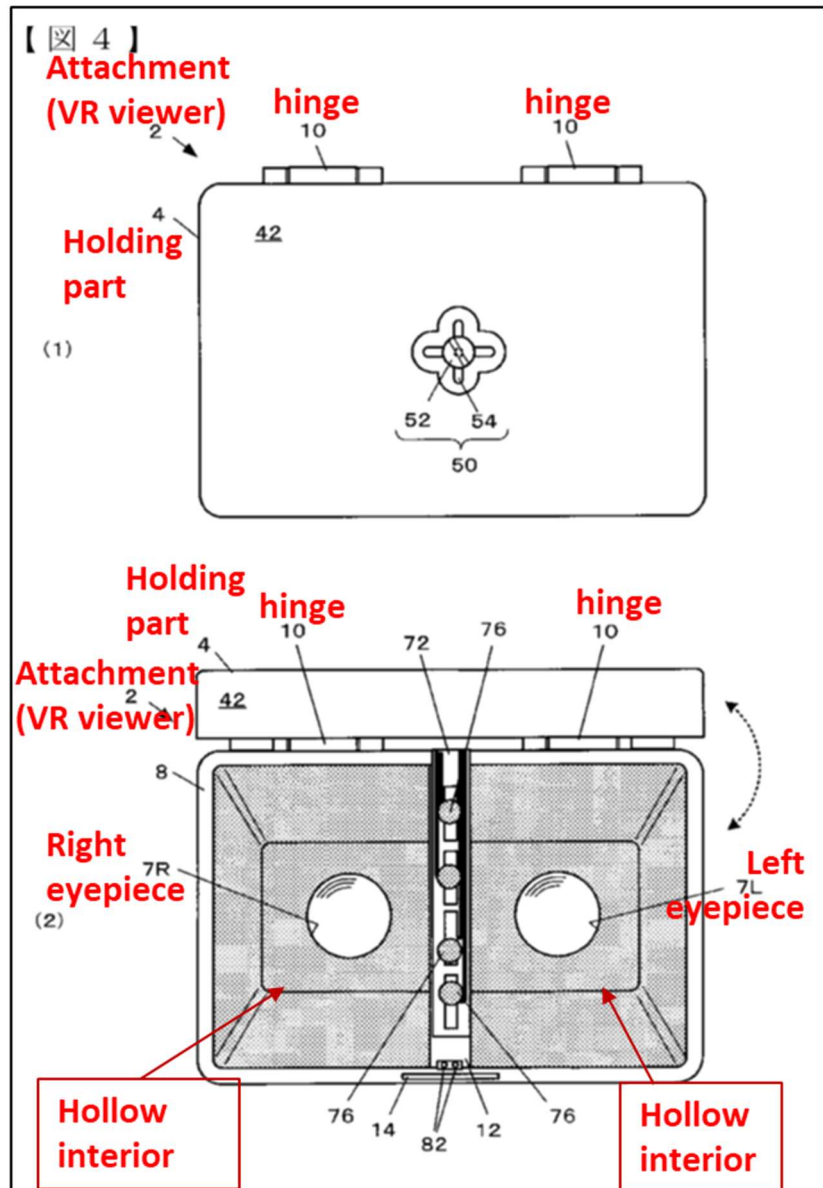
W4 on the screen of the touch panel 1506, and an operational input area W3 is between these display areas. The upper display area W2 and lower display area W4 are on the right and left sides of the VR viewer 2, respectively, when the smartphone 1500 is mounted to the VR viewer. Therefore, the control board 1550 (shown in Figure 2 below) of the smartphone 1500 displays a right-eye image on the upper display area W2, and a left eye image on the lower display area W4.

EX1003, ¶¶0027-0028.



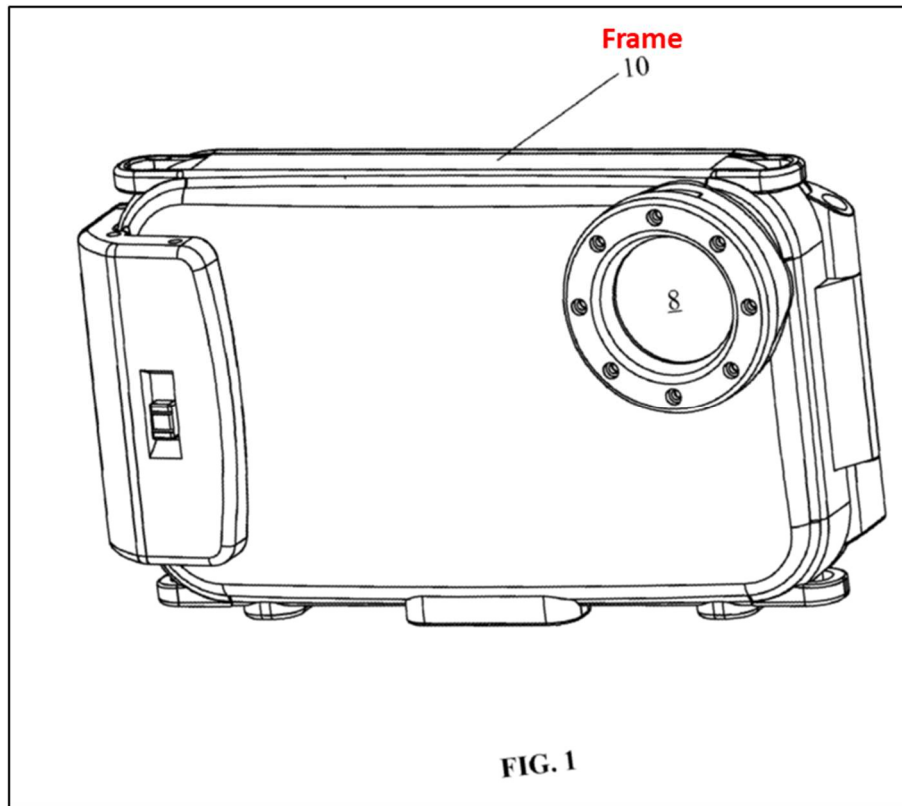
EX1003, Fig. 2 (annotations added).

As illustrated in Kondo Figure 4 below (as well as Figures 5-7), the VR viewer 2 has a hinge 10 on the upper front end of a hollow attachment main body 8, and the hinge supports the holding part 4 so as to swing freely. The holding part 4 is opened to mount and dismount the smartphone 1500 to the VR viewer 2, and the holding part 4 is closed for use as a stereoscope. Figure 4 also shows that the smartphone is held in a centered, horizontal position, and is directly in the user's field of view. EX1003, ¶0030; *see also* ¶0022.



EX1003, Fig. 4 (annotations added).

Chu shows a frame that holds a mobile phone in Figure 1 below:



EX1004, Fig. 1 (annotation added); *see also* ¶0038; *see* EX1002, §VIII(A)(3).

4. **1(d): a touchscreen input constructed of material and having a surface such that only a portion of the surface of the touchscreen input is configured to contact a central region of the touchscreen of the mobile electronic device when the touchscreen input is activated.**

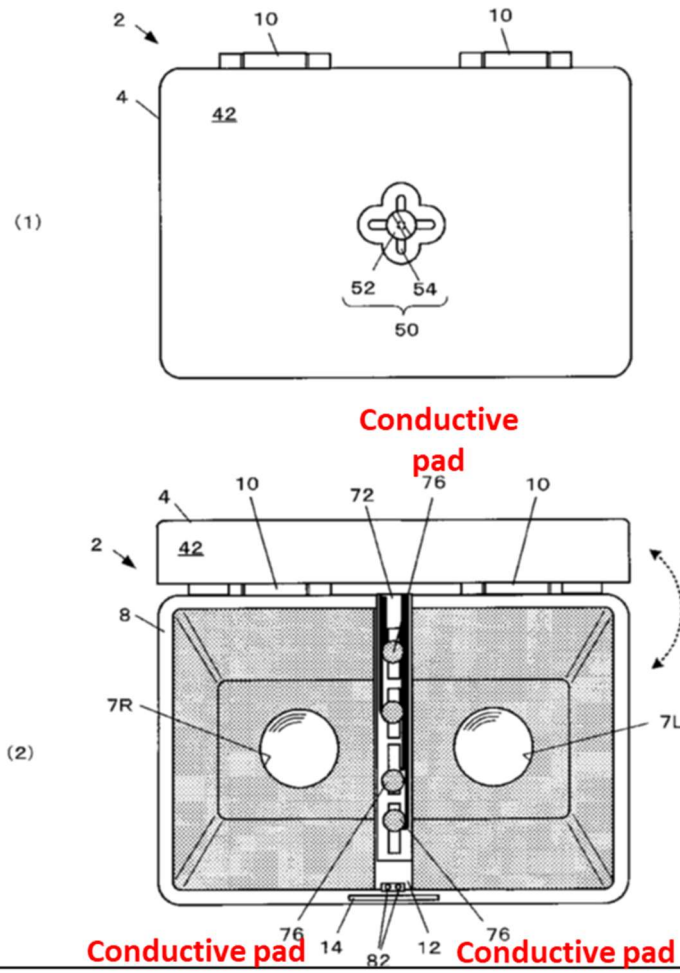
See the proposed combinations in §XI(C) and the analysis of 1(b) and (c) for a description of the Kondo/Chu combination's viewer.

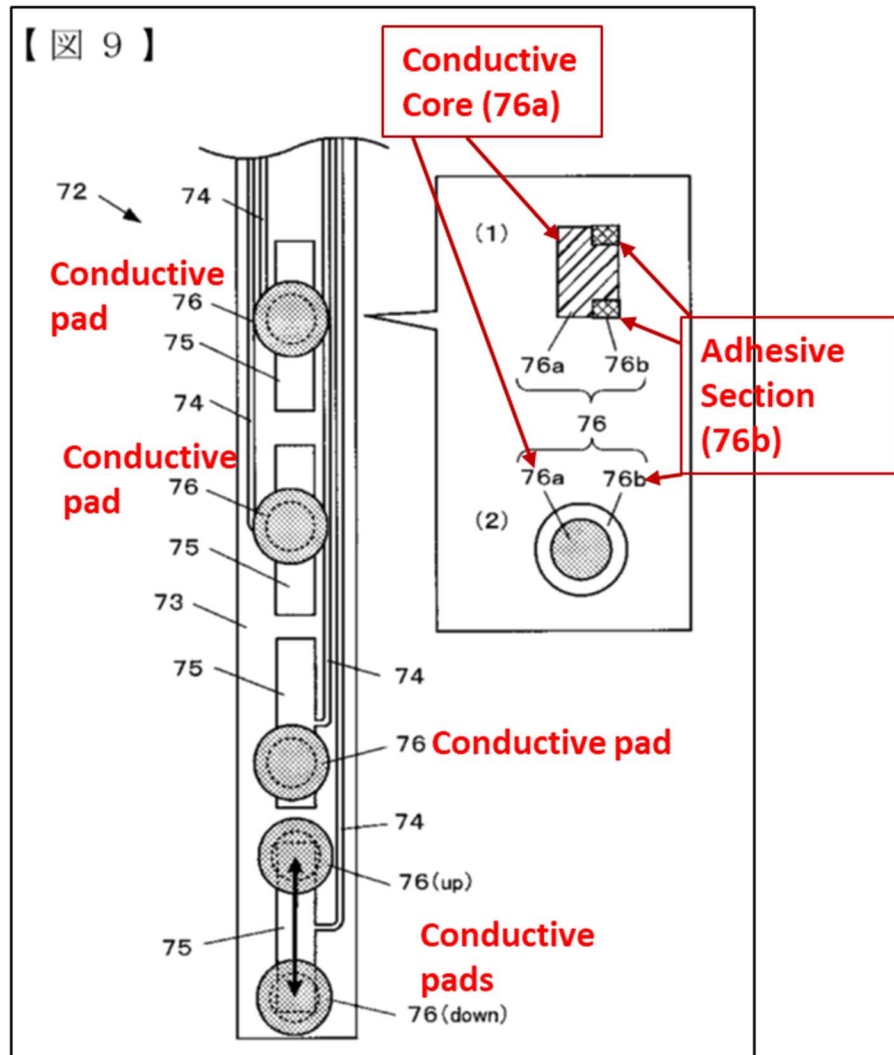
Kondo shows an input mechanism 77 on the exterior of the housing (button 77):

with the touchscreen of the smartphone 1500 when the smartphone is mounted or received.

Kondo discloses that the conductive pads 76 are activated by pushing button 77 on the exterior of the housing. After mounting, the conductive pads 76 physically contact the central region of the smartphone. Figure 4 below shows that the conductive pads contact the central region of the smartphone, and Figure 9 below shows the conductive pads in more detail.

【 図 4 】





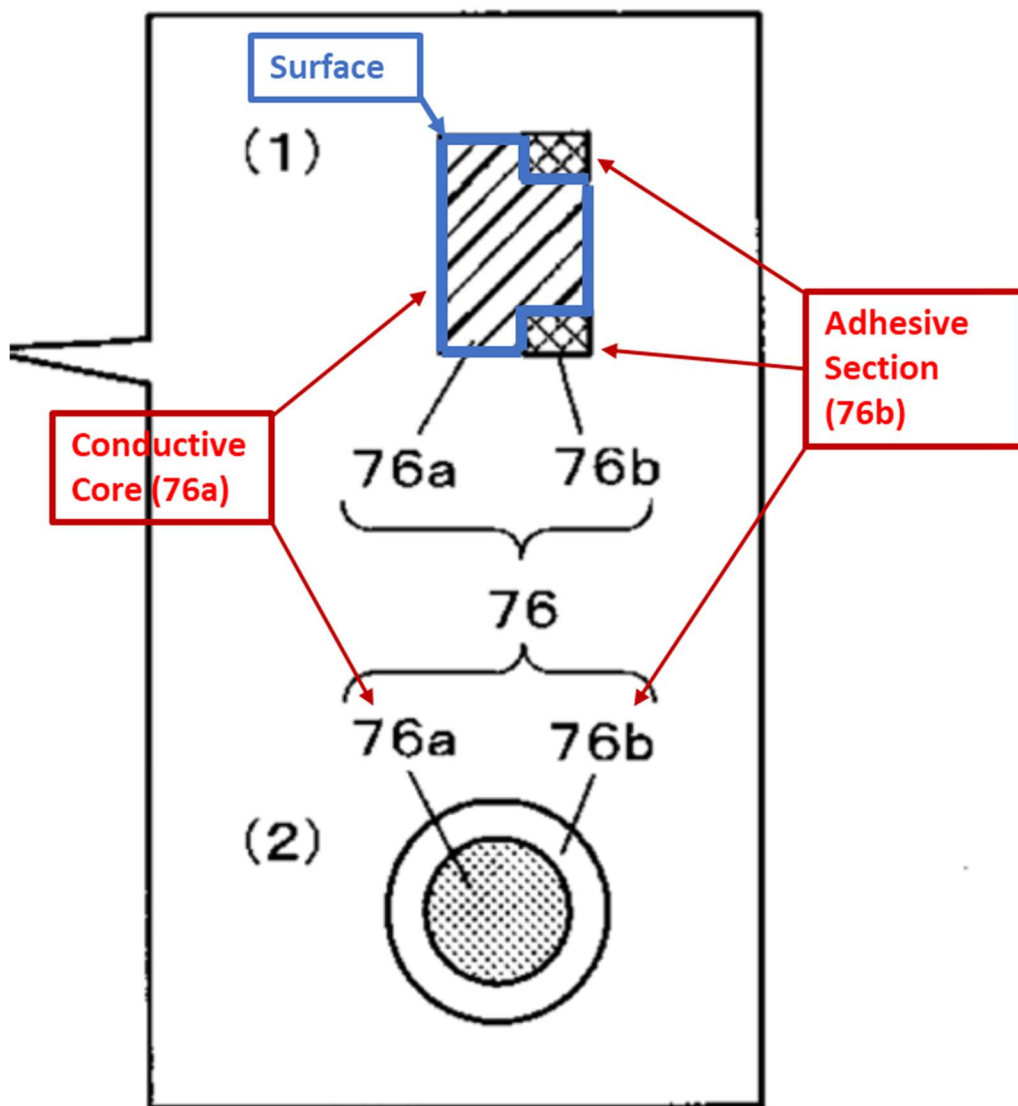
EX1003, Figs. 4, 9 (annotations added).

Kondo explains that the conductive pad 76 has a conductive core 76a and an adhesive section 76b.

The conductive pad 76 of the present Embodiment is a disk-shaped pad, and includes *a conductive core section 76a exposed on both end surfaces and adhesive section 76b* provided on the outer periphery of the end portion of the side in contact with the widened section 75. The adhesive section 76b is an elastic resin that can be removed and re-

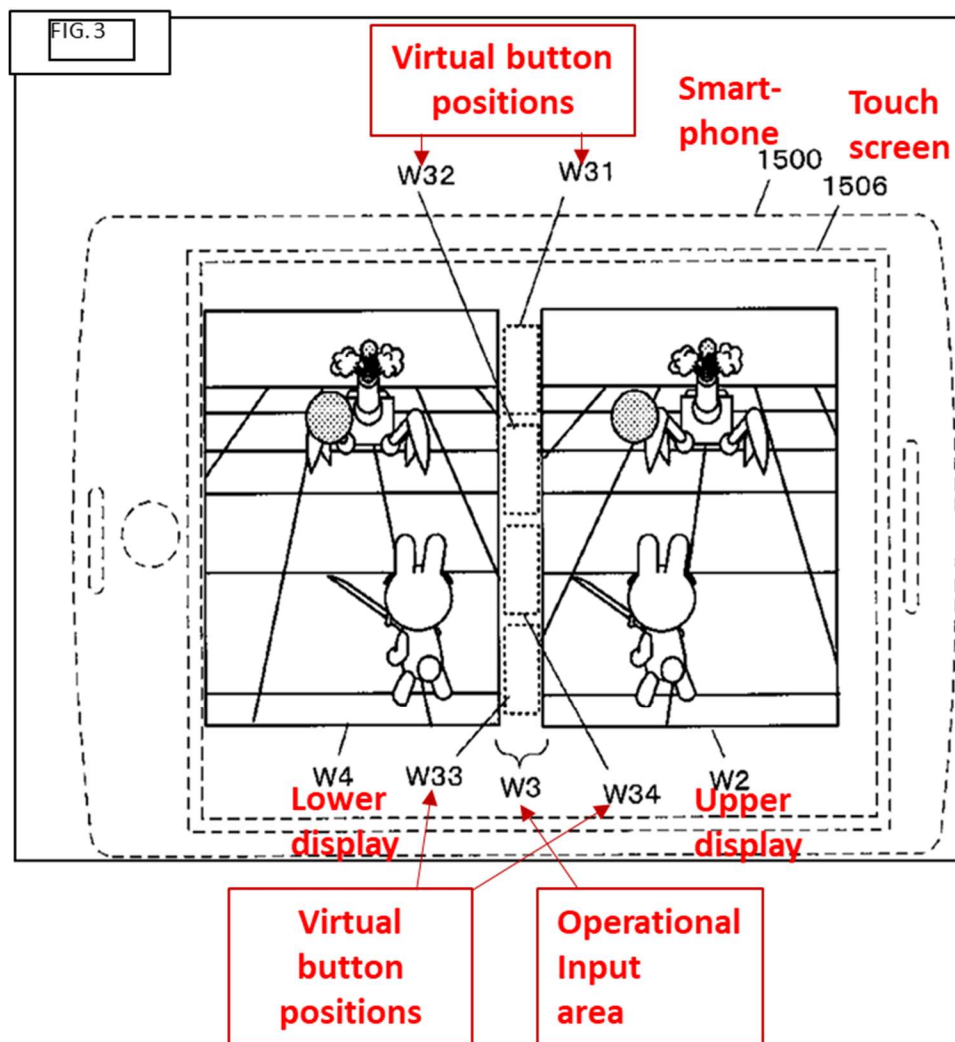
adhered to the flexible sheet 73 and the conductive lines 74. EX1003,
¶0041 (emphasis added).

The following is a blow-up of the call-out of Figure 9 showing the claimed surface in **blue**. Only a portion of the surface is configured to contact the touchscreen, the part between the adhesive section.



EX1003, Fig. 9 (cropped, blown-up, annotations added).

The portion of the surface of the conductive core that contacts the touchscreen does so at the central region of the touchscreen. Kondo's Figure 3 below shows operational input area W3 centered on the touchscreen that the conductive pads physically contact:



EX1003, Fig. 3 (annotations added); *see also* ¶¶0027-0028.

Kondo explains that when holding part 4 is closed (shown in Figures 5-7, see claim 1(c)), the conductive pads 76 (shown in Figures 4 and 9 above) physically contact (as shown in Figure 3 above (*see also* Figure 10 above)) with the operational input area W3 and, specifically, virtual button positions W31-W34. The following quote also shows that the conductive pad is made of conductive material because it has a conductive core. A POSA would understand that labeling the “conductive” pad so means that it is made of conductive material. Moreover, the input device would not work if the conductive pads did not conduct electricity. See EX1003, ¶0041.

The blown-up portion of FIG. 9 is a diagram illustrating a (1) vertical cross-sectional view and (2) bottom view (attachment surface side) of the conductive pad 76. ***When the holding part 4 is closed, the conductive pad 76 comes into contact with the virtual button positions W31 to W34 set on the touch panel 1506 of the smartphone 1500 held by the holding part 4.*** The conductive pad 76 of the present Embodiment is a disk-shaped pad, and ***includes a conductive core section 76a*** exposed on both end surfaces and adhesive section 76b provided on the outer periphery of the end portion of the side in contact with the widened section 75. EX1003, ¶0041 (emphasis added).

Kondo explains that when the holding part 4 is closed, the conductive pads 76 come into contact with the smartphone’s touchscreen.

FIG. 10 is a circuit diagram of the remote touch circuit 70 according to the present Embodiment.

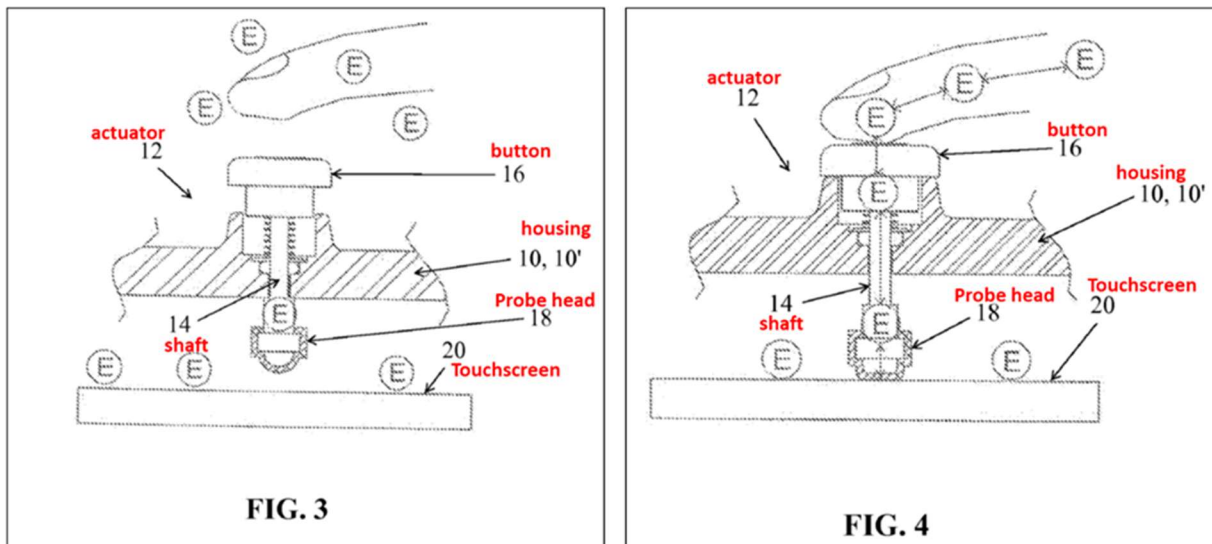
When the holding part 4 is closed, the main body of the smartphone 1500 is electrically conductively connected and grounded to the human body that is the user through the device holding plate 44, holding side ground circuit 48, and attachment main body side ground circuit 80. On the other hand, *when the holding part 4 is closed, the conductive pad 76 projecting from the front side of the partition wall 12 comes into contact with the touch panel 1506.* EX1003, ¶0047 (emphasis added).

Kondo explains that the conductive pad conducts electricity to operate the touchscreen and that touch events happen at virtual button positions W31 to W34.

When the user presses the button part 77 with a finger F1, *the touch panel 1506 is electrical conductively connected to the finger of the user through the conductive pad 75 [sic 76], electrical wire part 72, and button part 77. That is to say, that substantially, the impedance (capacitor or the like capacitance) of the finger (human body) of the user is electrically connected to the touch panel 1506.* Therefore, the touch panel 1506 can detect a current value corresponding to this impedance and recognize that a touch operation has been performed at the virtual button positions W31 to W34. EX1003, ¶0048 (emphasis added); see also cl. 1, ¶¶0005, 0009.

Kondo's touchscreen input initially contacts the touchscreen when the smartphone is mounted and so it is also in contact with the touchscreen when the touchscreen input is activated. If it is required that the touchscreen input only contact the touchscreen upon activation, Chu discloses this.

Chu discloses (in Figures 3 and 4 below) a touchscreen input with a surface on probe head 18 (probe pad 30, not shown) where only a portion of the surface contacts the smartphone:



EX1004, Figs. 3, 4 (annotations added).

Chu explains how a user activates its input mechanism as follows (see EX1003, ¶¶0053-0056):

[0053] At an initial state, as illustrated in FIG. 3, the press button 16 is at its highest position when the press button 16 is released and the biasing member 40 is urging the press button 16 upwards.... Since the

press button 16 is at its highest position, the probe head 18 being connected to the shaft 14 is also at its highest position. ***Therefore, the probe head 18 is not touching the capacitive touch screen 20 of the digital device inside the waterproof housing 10.*** The electric charge E on the capacitive touch screen 20 does not change. EX1004, ¶0053 (emphasis added).

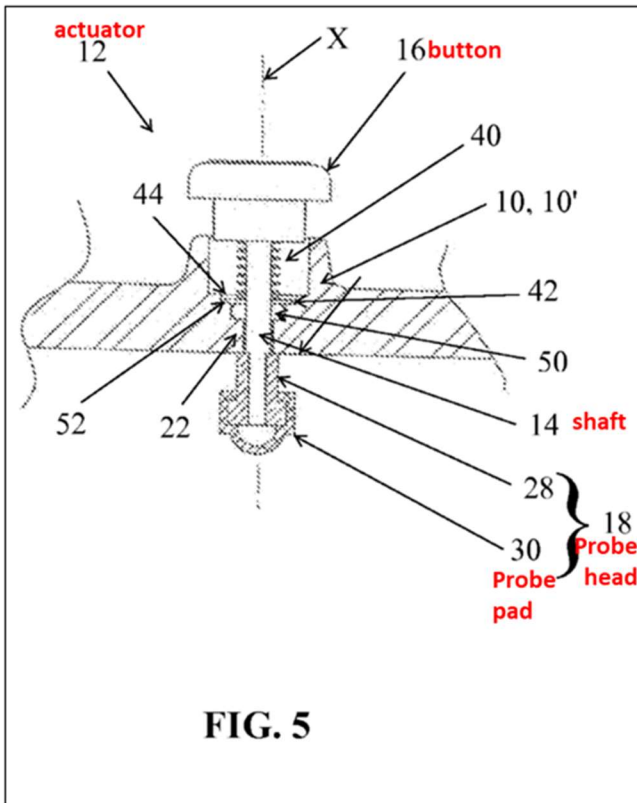
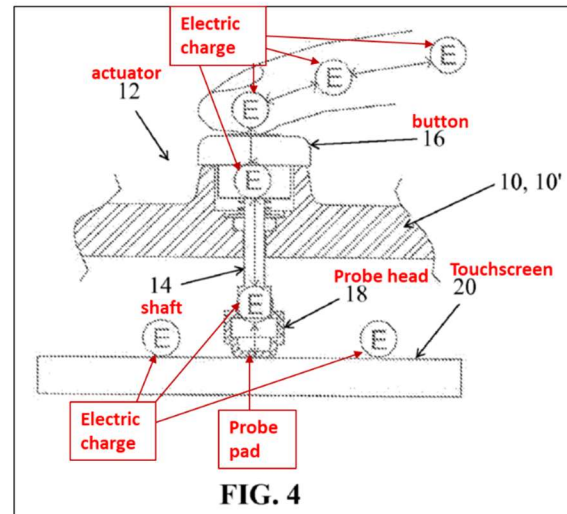
[0054] When a user's finger or body part starts to touch the press button 16 and begins to press downwards, the user's finger or body part gets intimate with the press button 16 and the contact area with the press button 16 increases. ***Since the press button 16 is metal or metalized, the user's finger or body part is electric charge connected.*** EX1004, ¶0054 (emphasis added).

[0055] ***When the user's finger or body part continues to press downwards, the electric charge conductivity between the press button 16 and the user's finger or body part further improves. The press button 16 together with the actuator shaft 14 starts to move downwards.... The probe head 18 carried by the actuator shaft 14 starts touching the touch screen 20. When the probe pad 30 is further pressed onto the touch screen 20, the probe pad 30 starts to deform and form a larger contact area with the touch screen 20, as depicted in FIG. 4, thereby enhancing the electric charge conductivity....*** This results in change of electric charge on the touch screen 20. The digital device can then compute a set of coordinates on the touch screen display. EX1004, ¶0055 (emphasis added).

[0056] *When the press button 16 is released, the biasing member 40 then pushes the press button 16 upwards. The actuator shaft 14 and the probe head 18 also move upwards thereby separating the probe head 18 from the touch screen 20 and stopping the interaction with the touch screen 20.* The operation of the actuator mechanism 12 is then completed. EX1004, ¶0056 (emphasis added); see also ¶¶0011, 0038.

Chu explains that its second and third embodiments operate in the same way in that pressing button 16 causes the probe head (18' in embodiment two and 18'' in embodiment 3) to contact the touchscreen 20 and cause a touch event. EX1004, ¶¶0058-0062.

In Figure 5 below, Chu shows the claimed surface (probe pad 30), that is made of material capable of conducting electric charge to a touchscreen. EX1004, ¶0011. And Figure 4 below shows that only a portion of the probe pad's surface—specifically, the middle, bottom portion—contacts the touchscreen 20 of the smartphone when the input mechanism is activated.



EX1004, Figs. 4, 5 (annotations added).

The probe pad 30 is made of conductive material, such as metal or rubber with a conductive additive.

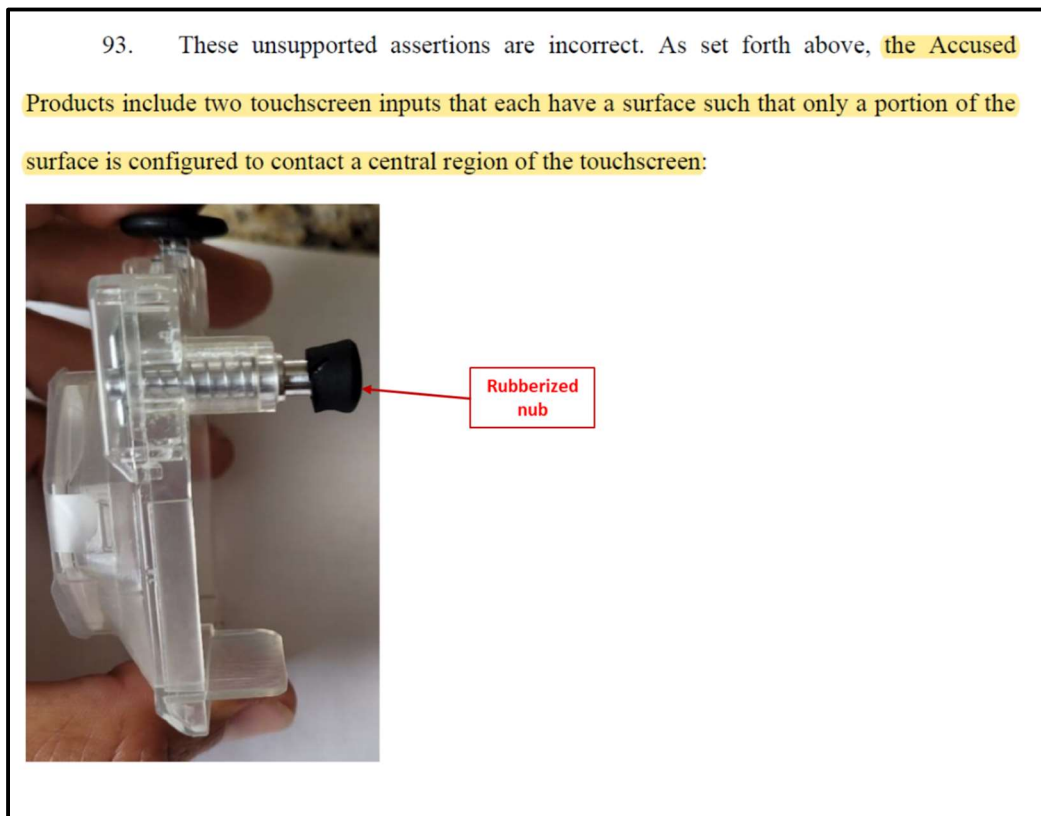
The press button, the shaft and *the probe head may be made of a material capable of conducting electric charge.* EX1004, ¶ 0011(emphasis added).

The press button, the shaft, the adaptor, and the probe head may be made of metal. EX1004, ¶0014; *see also* ¶¶0019, 0049.

The probe pad 30 may be made of soft material such as rubber. Additive may be added to the rubber in order to enhance its electric charge transfer performance. Soft material is used because it can

minimize possible scratch or damage on the touchscreen 20. EX1004, ¶10049 (emphasis added).

Notably, in district court, the Patent Owner charged a company with infringement based on a viewer with an input device that is almost exactly the same as Chu's. The Patent Owner alleged that a rubberized nub is the "touchscreen input" and that only a portion of its surface touches the touchscreen. That surface extends up the sides of the input mechanism which must therefore constitute part of the touchscreen input's surface. See EX1002, ¶109.

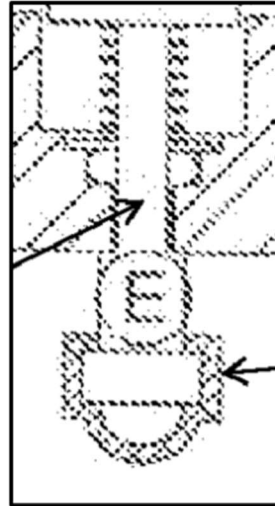


DDC Technology v. Merge Labs, Inc., Complaint, Case No.: 6:21-cv-000850, WDTX (EX1009, p. 23 (highlighting and annotation added)).

A side-by-side comparison between the accused “rubberized nub” and Chu’s probe pad demonstrates the similarity. Indeed, compared to the accused rubberized nub on the left, a smaller portion of Chu’s probe pad surface contacts the touchscreen. See EX1002, ¶110.



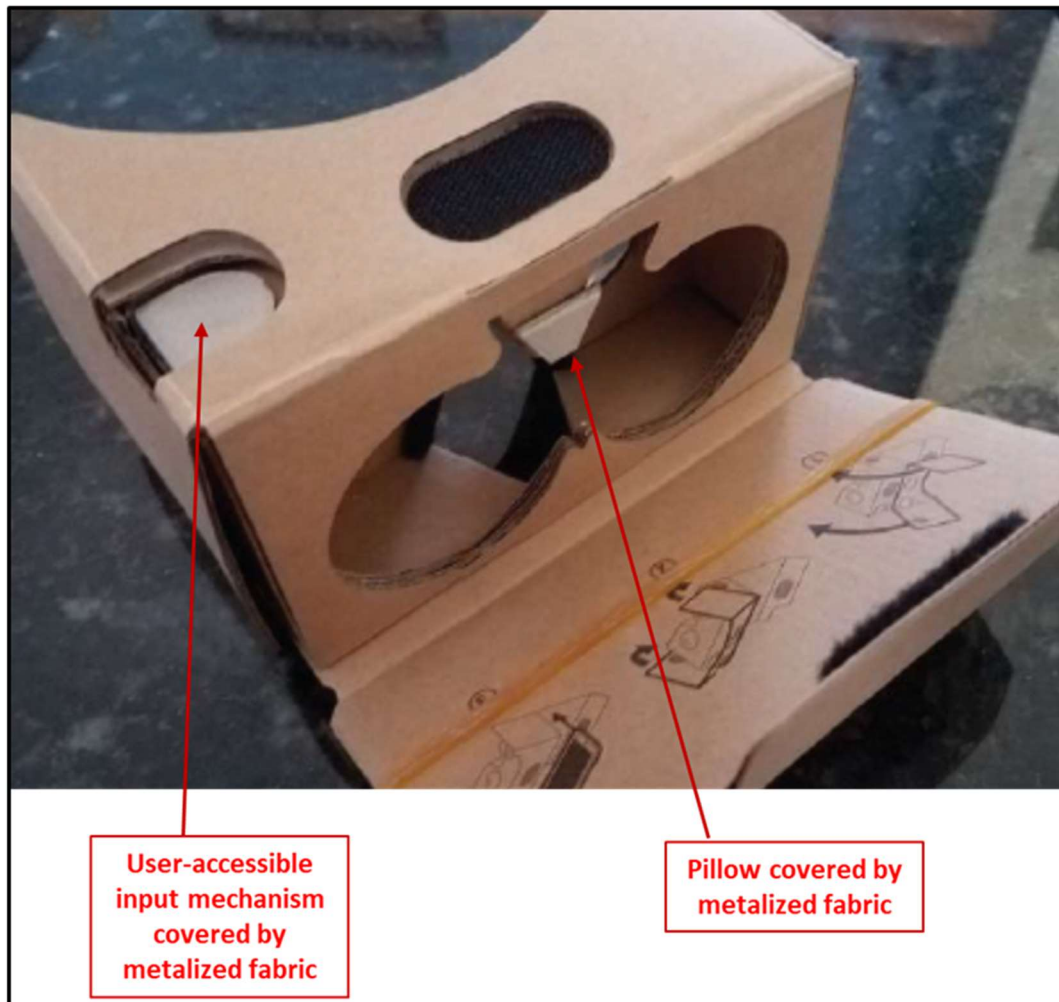
**DDC v. Merge Labs
Complaint**



Chu Fig. 3

EX1009, p. 23 (cropped and rotated); EX1004, Fig. 3 (cropped).

The Patent Owner also accuses Google’s Cardboard Viewer of infringement. Google’s accused device has what is known as a “pillow” that contacts the touchscreen. The touchscreen-facing side of the pillow is covered by a silver-colored, metalized fabric that wraps around the bottom of the pillow and continues along a “conductive strip” all the way to the user-accessible input mechanism, as shown below. See EX1002, ¶111.



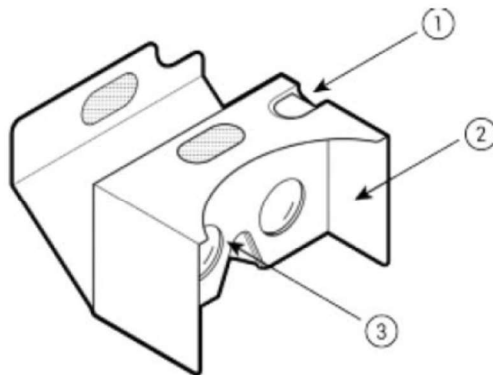
DDC v. Google et al. Supplemental Annotated Infringement Contentions (EX1011, p. 9 (annotations added)).

DDC accuses the metalized fabric on the pillow that contacts the touchscreen as constituting the claimed portion of the surface of the touchscreen input. See EX1002, ¶112.

The Cardboard Viewers comprise a touchscreen input constructed of material and having a surface such that only a portion of the surface of the touchscreen input is configured to contact a central region of the touchscreen of the mobile electronic device when the touchscreen input is activated.



GCV2 Physical Unit.



The touchscreen input of the Cardboard Viewers is the "pillow" - and, specifically, the metalized fabric that encases the "pillow" and faces the touchscreen of an electronic device (in red). See also annotated supplement.

The portion of the surface of the touchscreen input of the Cardboard Viewers is the surface of the "pillow" that makes contact with the touchscreen (in blue). See also annotated supplement.

Figure 1. Typical components of a Google Cardboard viewer: (1) - input, (2) - enclosure, (3) - lenses.

Google Cardboard Best Practices – Version 3.0 (2020).

EX1011, p. 32 (annotations in original).

The portion of the metalized fabric that wraps around the pillow's sides which do not contact the touchscreen are not accused of being the claimed "only a portion of the surface of the touchscreen input" but are claimed to be part of the touchscreen input's surface. In this respect, Chu is the same. As explained above, Chu's probe pad's end contacts the touchscreen, but the probe pad extends up Chu's input device along the sides. See EX1002, ¶113.

The Patent Owner’s infringement positions and apparent interpretation of the claims in district court litigations are consistent with Chu’s probe pad constituting the claimed “touchscreen input.” See EX1002, §VIII(A)(4), ¶114.

B. Claim 2: The virtual reality viewer of claim 1, further comprising a user input that is accessible from an exterior of the frame and is coupled to the touchscreen input.

See the analysis of claim 1(d) for an explanation of how Kondo’s button 77 is on the exterior of the frame and coupled to the touchscreen input (the conductive pads 76). In that section is also an explanation for how Chu’s button 16 is on the exterior of the frame and is coupled to the touchscreen input (probe pad 30). See EX1002, §VIII(B).

C. Claim 4: The virtual reality viewer of claim 2, wherein the user input is a metal or conductive polymer.

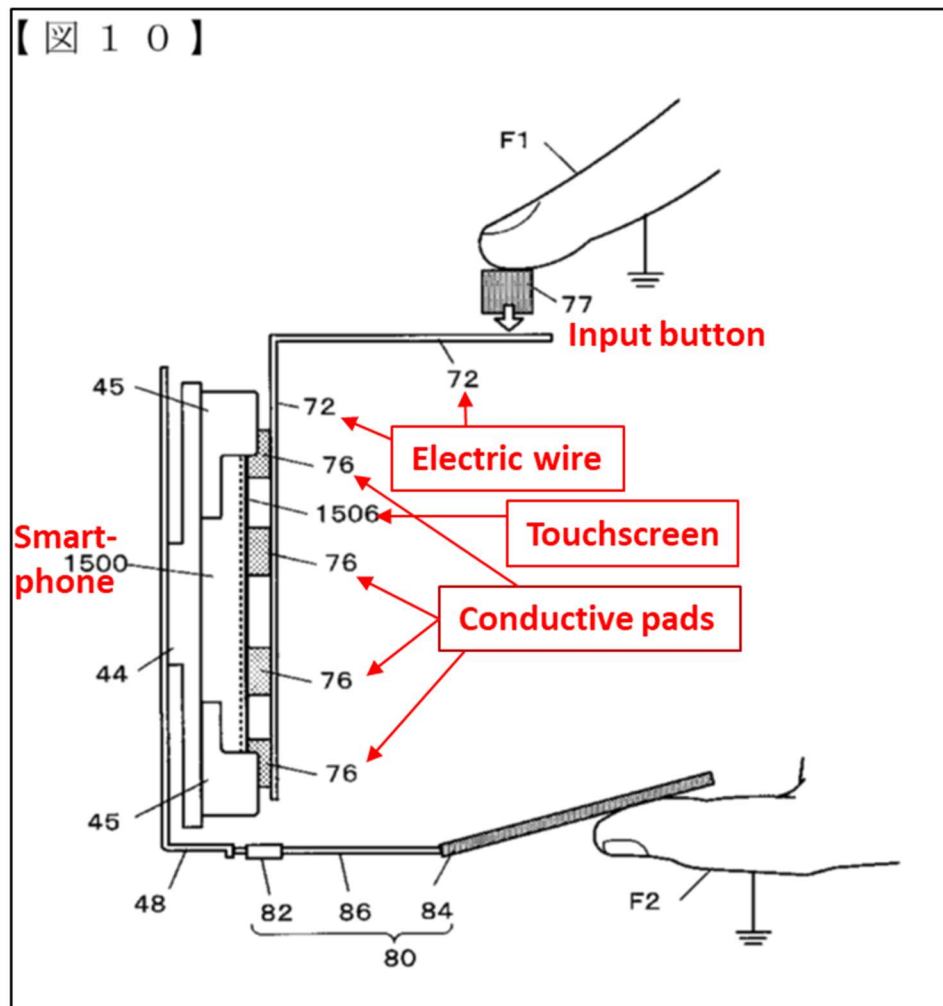
Please see claim 2 and 1(d) for a description of the Kondo/Chu combination’s viewer and user input. Chu’s button 16 is made of metal, “[t]he press button 16 may be made of metal...” EX1004, ¶0043; see EX1002, §VIII(C).

D. Claim 5: The virtual reality viewer of claim 2 wherein said user input is a tactile user input.

Please see the analysis of claims 1 and 2 for a description of the Kondo/Chu combination’s viewer and user input.

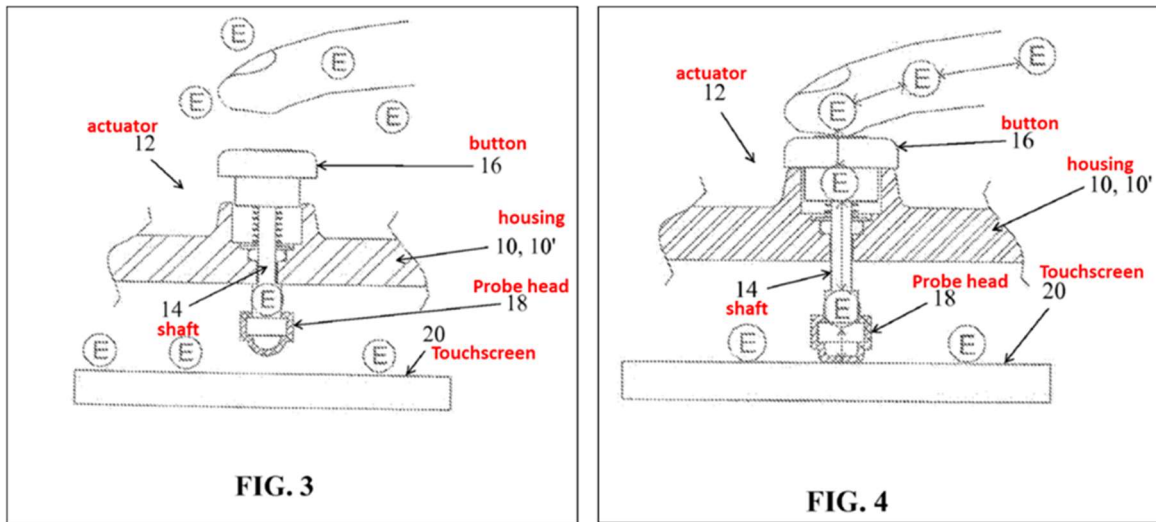
The '199 patent mentions tactile user inputs as follows: “the disclosed systems and methods facilitate receiving tactile user inputs (e.g., user touches, button depressions, etc.) on the exterior of the housing....” EX1001, 3:43-46. The term “tactile user inputs” therefore includes buttons, and both Kondo and Chu disclose buttons on the exterior for the user.

Kondo's Figure 10 shows the user depressing button 77 to cause a touch event.



EX1003, Fig. 10 (annotations added); *see also* Figs. 1, 5-7, ¶¶0042, 0043, 0047, 0048, 0049, 0052.

Chu also discloses a button 16 on the exterior for the user to cause a touch event.



EX1004, Figs. 3, 4 (annotations added); *see also* ¶¶0053-0062; *see* EX1002, §VIII(D).

E. Claim 6: The virtual reality viewer of claim 2 wherein said tactile input is a depressible button.

See the analysis of claims 1 and 5 for a description of how the Kondo/Chu combination's user input is a depressible button. See EX1002, §VIII(E).

F. Claim 17: The virtual reality viewer of claim 1, wherein the first lens and the second lens are configured to facilitate a three-dimensional viewing experience.

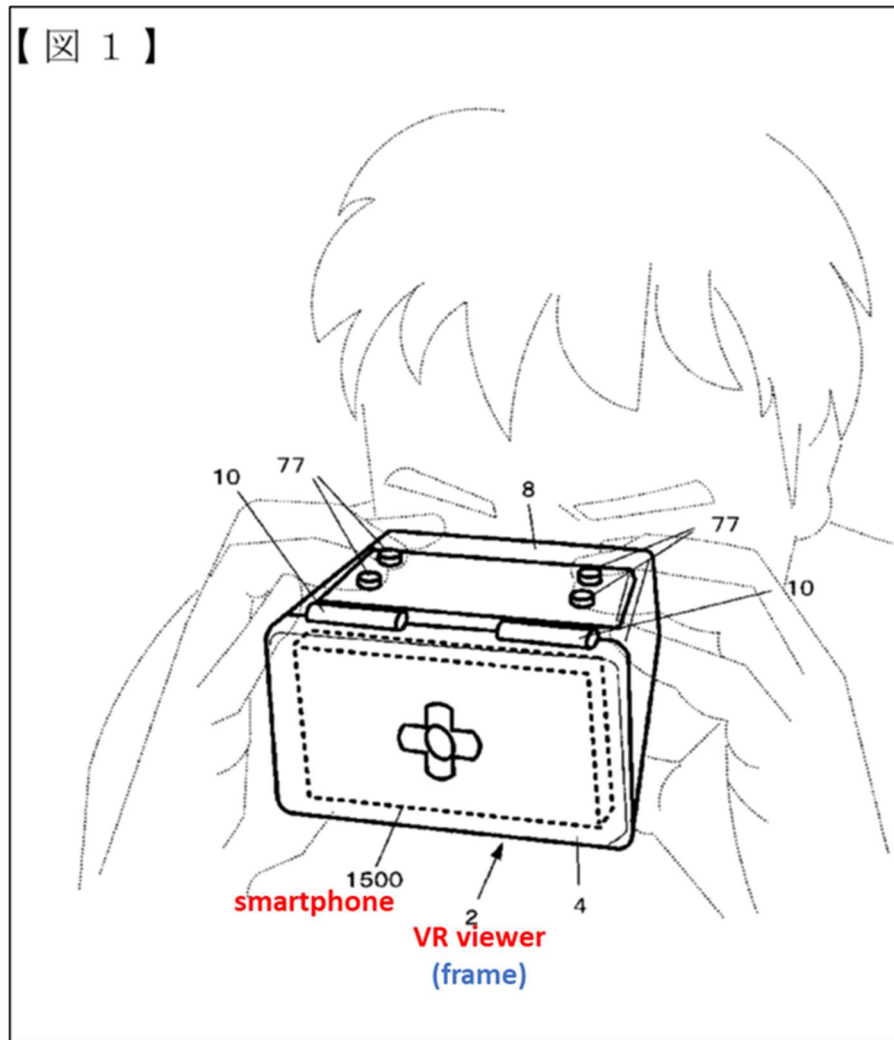
See the analysis of claim 1 for a description of the Kondo/Chu combination's viewer, including its lenses. See EX1003, pg. 2 ("By looking into the inside of the attachment 2 with the eyepieces placed on both eyes as if using binoculars, the user can enjoy a three-dimensional stereoscopic image."); *see also* cl. 9, ¶¶0018, 0021-0022, 0026-0027, 0053-0055; see EX1002, §VIII(F).

G. Claim 18: The virtual reality viewer of claim 1, wherein the touchscreen input is generally centered between the first lens and the second lens in the horizontal direction.

Please see the analysis of claim 1 for a description of the Kondo/Chu combination's viewer, touchscreen input and how it is centered between the lenses in a horizontal direction. See EX1002, §VIII(G).

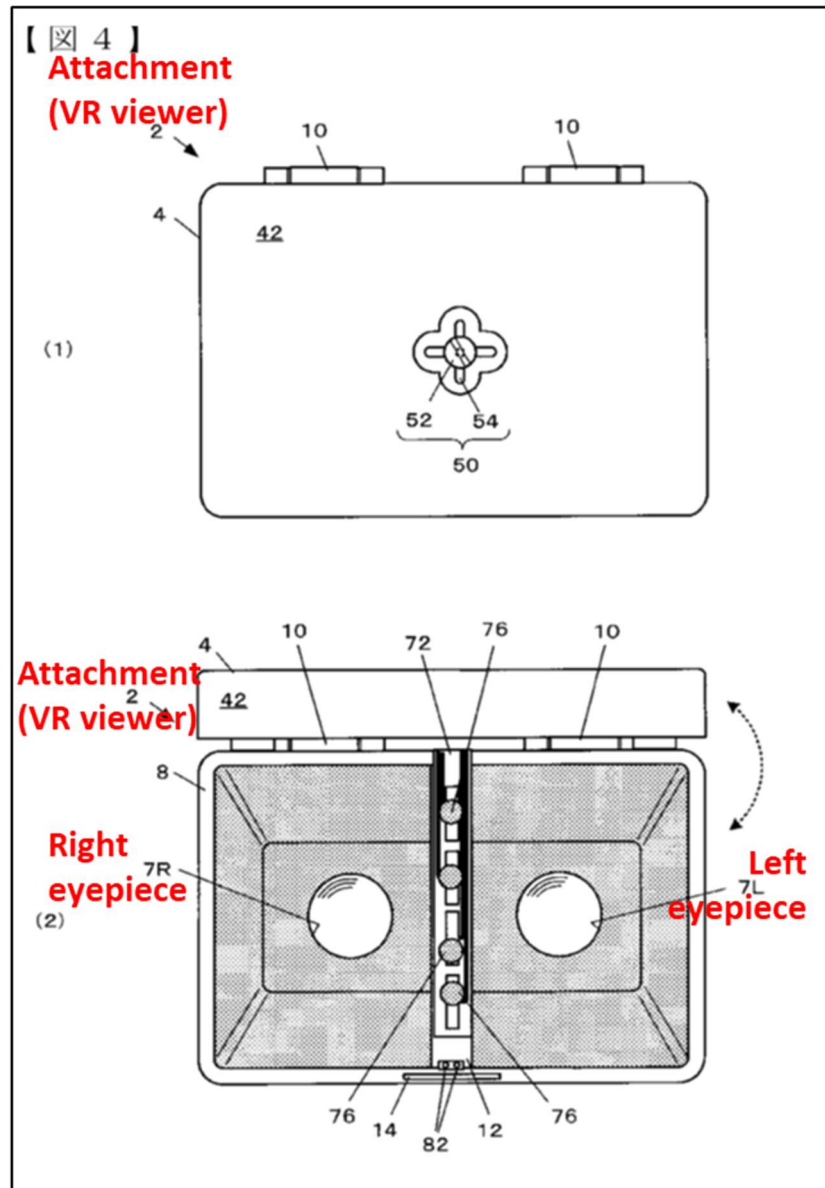
H. Claim 19: The virtual reality viewer of claim 1, wherein the frame surrounds the lenses and touchscreen device on at least two sides and has a cut-out, wherein at least a portion of the user input is accessible through the cut-out.

Please see the analysis of claim 1 for a discussion of the claimed frame. Kondo's Figure 1 below shows smartphone 1500 within the frame and surrounded on at least two sides by the frame.



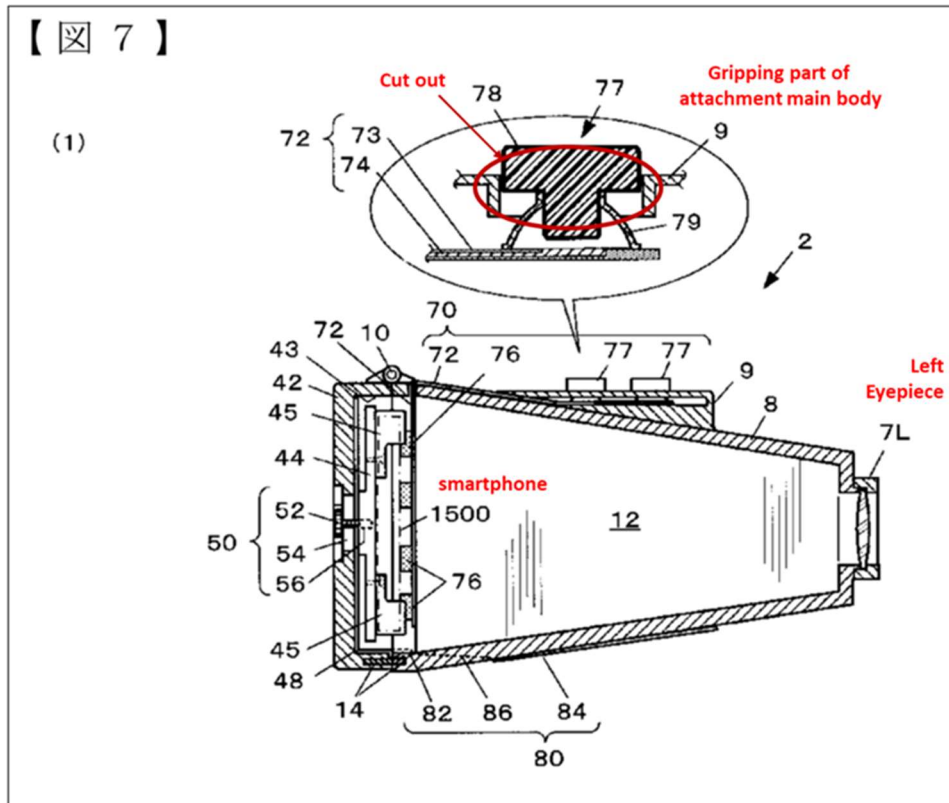
EX1003, Fig. 1 (annotations added).

125. Kondo's Figure 4 shows the lenses surrounded by the frame on at least two sides:



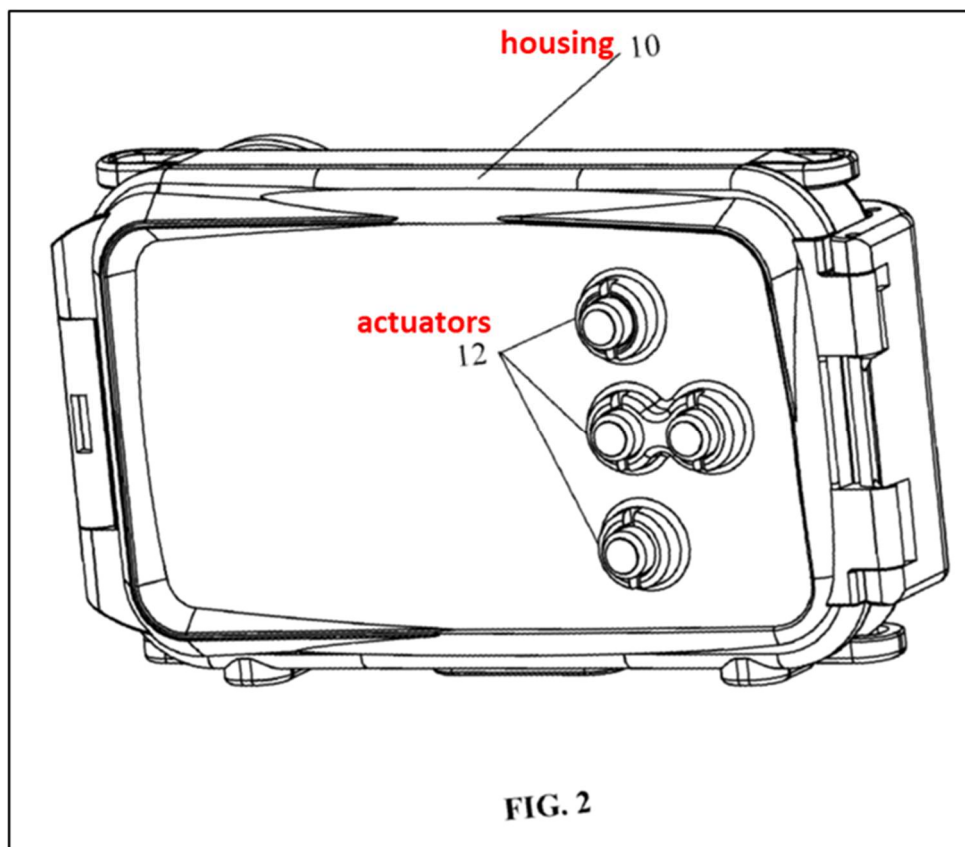
EX1003, Fig. 4 (annotations added).

Kondo's Figure 7 shows a cut-out in the gripping part of the attachment's main body through which a portion of the user input 77 is accessible. This Figure also shows smartphone 1500 surrounded and left eyepiece 7L surrounded by at least two sides of the frame.



EX1003, Fig. 7 (annotations added).

Chu shows in Figure 2 below that a portion of the actuator 12 is accessible to the user through a cut-out.



EX1004, Fig. 1 (annotations added).

Chu also shows this in Figures 3-5, 7a, and 9a because button 16 is accessible to the user on the outside of housing 10. Also, the proposed combinations of Kondo/Chu show a portion of the actuator 12 accessible through a cut-out. See §XI(C); see EX1002, §VIII(H).

- I. Claim 20: The virtual reality viewer of claim 1, wherein the material is at least one of the following: a conductive foam or polymer, conductive rubber, metalized plastic, wire mesh fabric, metallic fabric with foam, a carbon based ink, a conductive ink, a material capable of carrying a surface charge that activates a capacitive touchscreen, a material capable of activating a capacitive touchscreen.**

Please see the analysis of claim 1 for a description of the Kondo/Chu combination's touchscreen input.

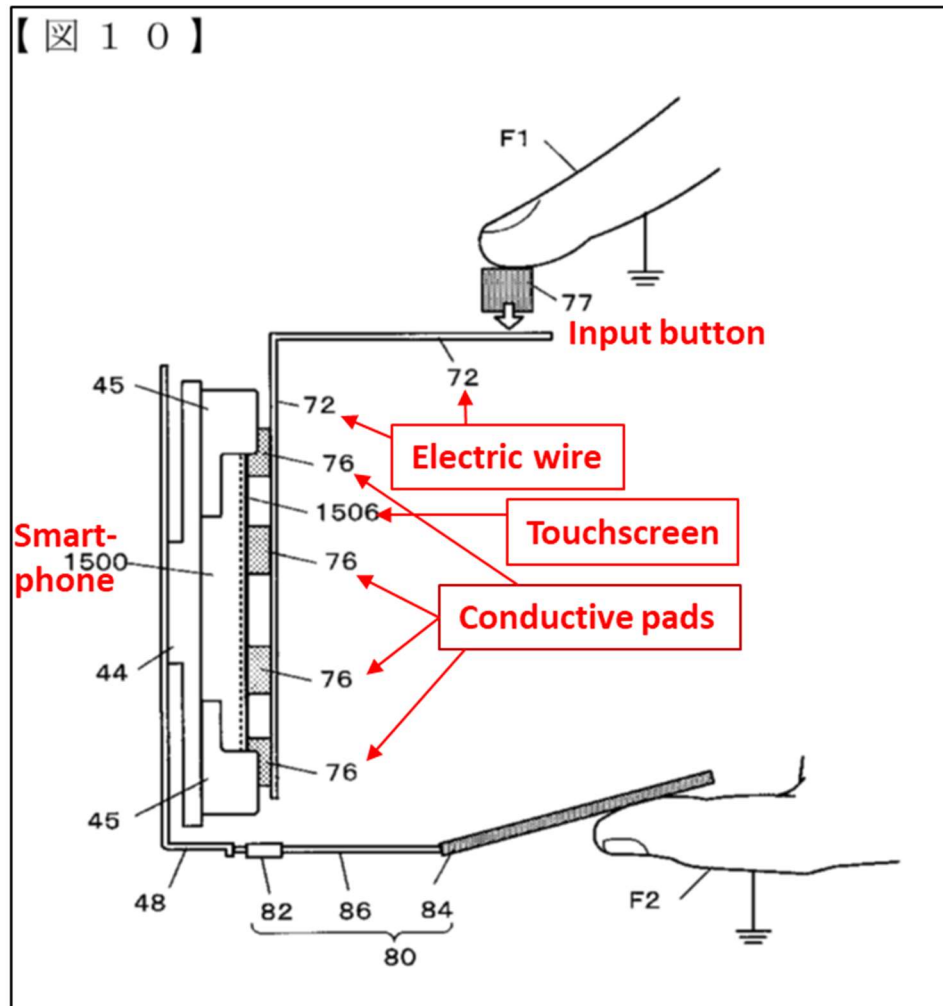
Chu explains that the probe head is “made of material capable of conducting electric charge” and may be made of “rubber” with an additive “to enhance its electric charge transfer performance.” Therefore, Chu discloses “conductive rubber,” which is one of the materials recited in claim 20.

The probe pad 30 may be made of soft material such as rubber. Additive may be added to the rubber in order to enhance its electric charge transfer performance. Soft material is used because it can minimize possible scratch or damage on the touchscreen 20. EX1004, ¶0049 (emphasis added); *see also* ¶¶0019, 0049; *see* EX1002, §VIII(I).

- J. Claim 21: The virtual reality viewer of claim 1, further comprising at least one user input, that user input being coupled to the touchscreen input and configured to receive interactions from a user.**

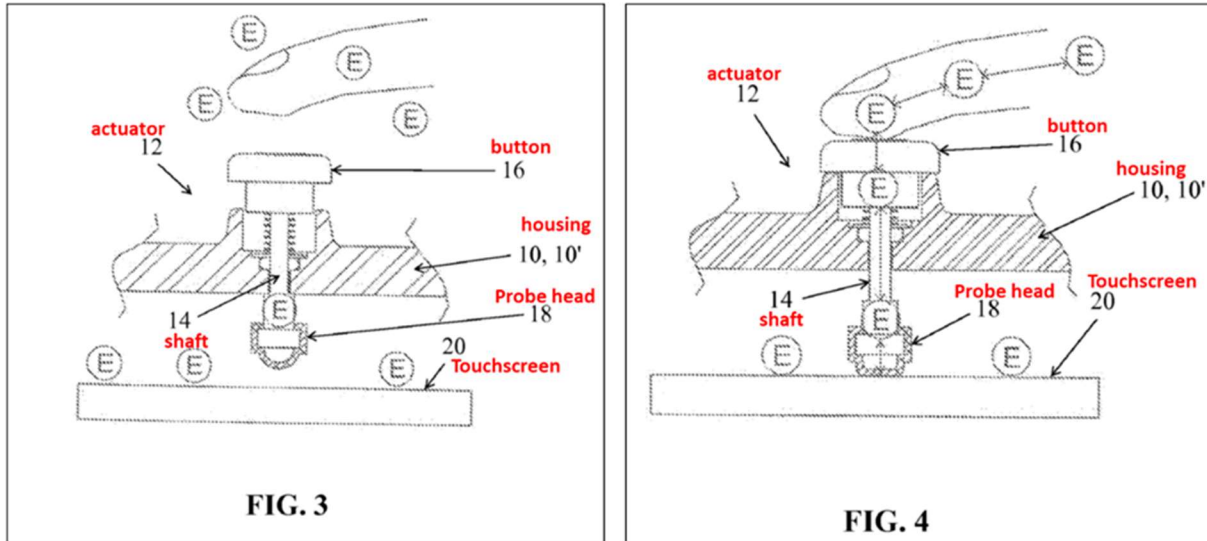
Please see the analysis of claims 1 and 5 for a description of the Kondo/Chu combination's viewer and its touchscreen input.

Kondo shows an input mechanism 77 (the claimed user input) accessible to a user on the exterior of the housing (button 77) which is coupled to the claimed touchscreen input (conductive pads 76) via electric wire 72.



EX1003, Fig. 10 (annotations added); *see also* Figs. 5-7, ¶¶0042, 0043, 0047, 0048, 0049, 0052.

Chu discloses (in Figures 3 and 4 below) button 16 (the claimed user input) which is accessible to a user and which is coupled to the claimed touchscreen input (probe pad 30 on probe head 18, not shown).



EX1004, Figs. 3, 4 (annotations added); *see also* ¶¶0053-0062; *see* EX1002, §VIII(J).

K. Claim 22: The virtual reality viewer of claim 21 wherein the user input is configured to sense, detect, or receive the user interactions and to transmit, transfer, or relay the user interactions to the touchscreen via the touchscreen input.

See the analysis of claims 1 and 21 for a description of the user input in both Kondo (button 77) and Chu (button 16) and how the user input receives user interactions and transmits them to the touchscreen via the touchscreen input. See EX1002, §VIII(K).

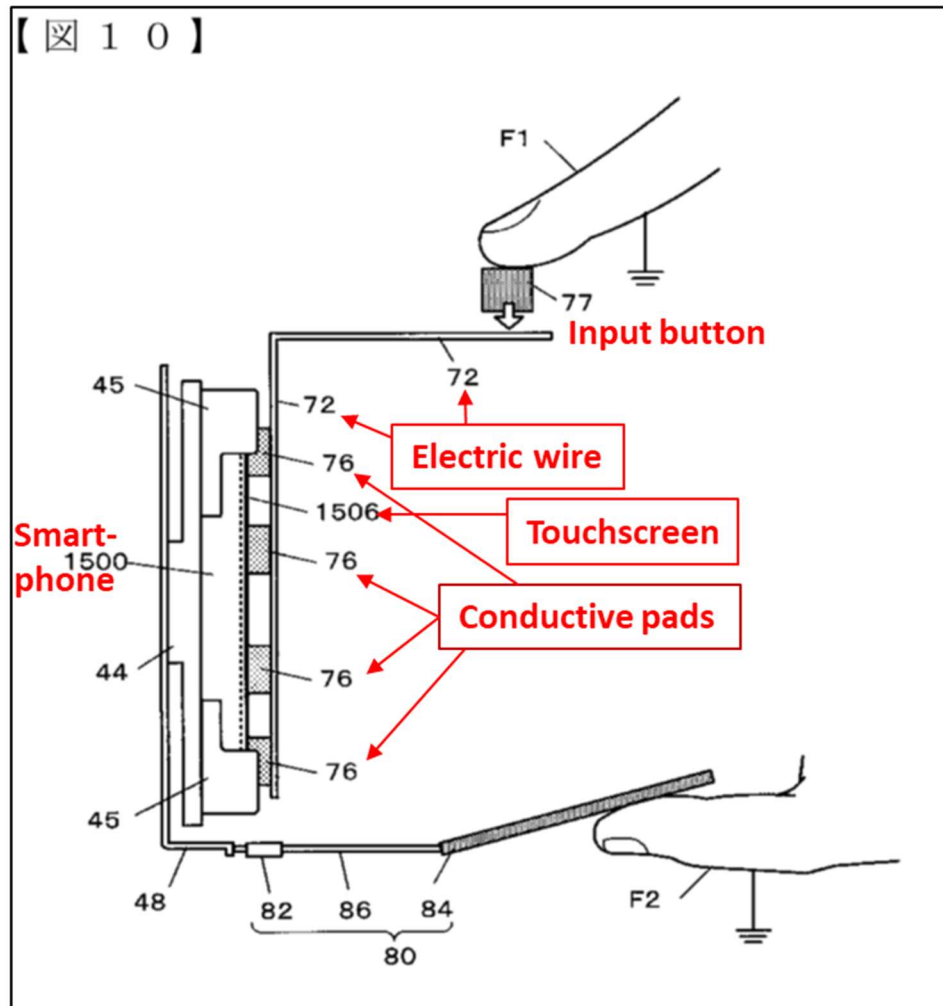
L. Claim 23: The virtual reality viewer of claim 21, the user input being mechanically coupled to the touchscreen input.

Please see the analysis for claims 1 and 21 for a description of the Kondo/Chu combination's viewer, user input, and touchscreen input. As shown in Figures 3 and 4, Chu's button 16 is mechanically coupled to the claimed touchscreen input (probe pad 30 on probe head 18). See EX1002, §VIII(L).

M. Claim 24: The virtual reality viewer of claim 21, the user input being electrically coupled to the touchscreen input.

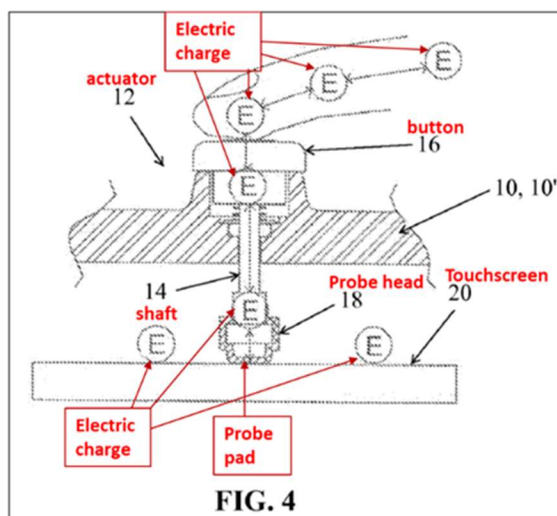
Please see the analysis of claims 1 and 21 for a description of the Kondo/Chu combinations viewer, user input, and touchscreen input.

Kondo shows an input mechanism 77 on the exterior of the housing (button 77) which is electrically coupled to the claimed touchscreen input (conductive pads 76) via electric wire 72.



EX1003, Fig. 10 (annotations added); *see also* Figs. 5-7, ¶¶0042, 0043, 0047, 0048, 0049, 0052.

As shown in Figure 4, Chu's button 16 is also electrically coupled to the claimed touchscreen input (probe pad).



EX1004, Fig. 4 (annotations added); *see also* ¶¶0053-0062; *see* EX1002, §VIII(M).

N. Claim 25: The virtual reality viewer of claim 1, further comprising a user input that is accessible from an exterior of the enclosure and is coupled to the touchscreen input via one or more intermediate coupling devices.

Please see the analysis of claims 1, 21, and 22 for an explanation of Kondo's user input (button 77) and Chu's user input (button 16), how they are accessible from the exterior, and how they are coupled to the touchscreen input via one or more intermediate coupling devices. In Kondo, the intermediate coupling device is electric wire 72. See EX1003, Fig. 10. In Chu, the intermediate coupling device is shaft 14. See EX1004, Figs. 3, 4; *see* EX1002, §VIII(N).

- O. Claim 26: The virtual reality viewer of claim 25, wherein a touch by a user of the user input is transmitted, transferred, or relayed via at least one of the intermediate coupling devices and the touchscreen input to contact a portion of the touchscreen so as to change one or more electrical properties of the portion of the touchscreen that is in contact with the touchscreen input.**

Please see the analysis of claims 1, 21, 22, and 25 for an explanation of how when the user touches the user input (Kondo's button 77; Chu's button 16), this touch is relayed through the intermediate coupling devices (Kondo's electric wire 72; Chu's shaft 14) to cause a touch event at the touchscreen via the touchscreen input (Kondo's conductive pads 76; Chu's probe pad 30). See EX1002, §VIII(O).

P. Claim 30:

Please see the analysis of claim 1 and §XI for a description of the Kondo/Chu combination's viewer. See EX1002, §VIII(P).

- 1. 30(a): A virtual reality viewer for use with a mobile electronic device having a touchscreen, the viewer comprising:**

See the analysis of claim 1(a) for a description of the Kondo/Chu combination's viewer. See EX1002, §VIII(P)(1).

2. **30(b): a first lens and a second lens, wherein the first lens is facing the same direction as the second lens, and wherein the first lens and the second lens are spaced apart in a horizontal direction;**

See the analysis of claim 1(b) for a description of the Kondo/Chu combination's viewer and lenses, including how the lenses are spaced apart in the horizontal direction. See EX1002, §VIII(P)(2).

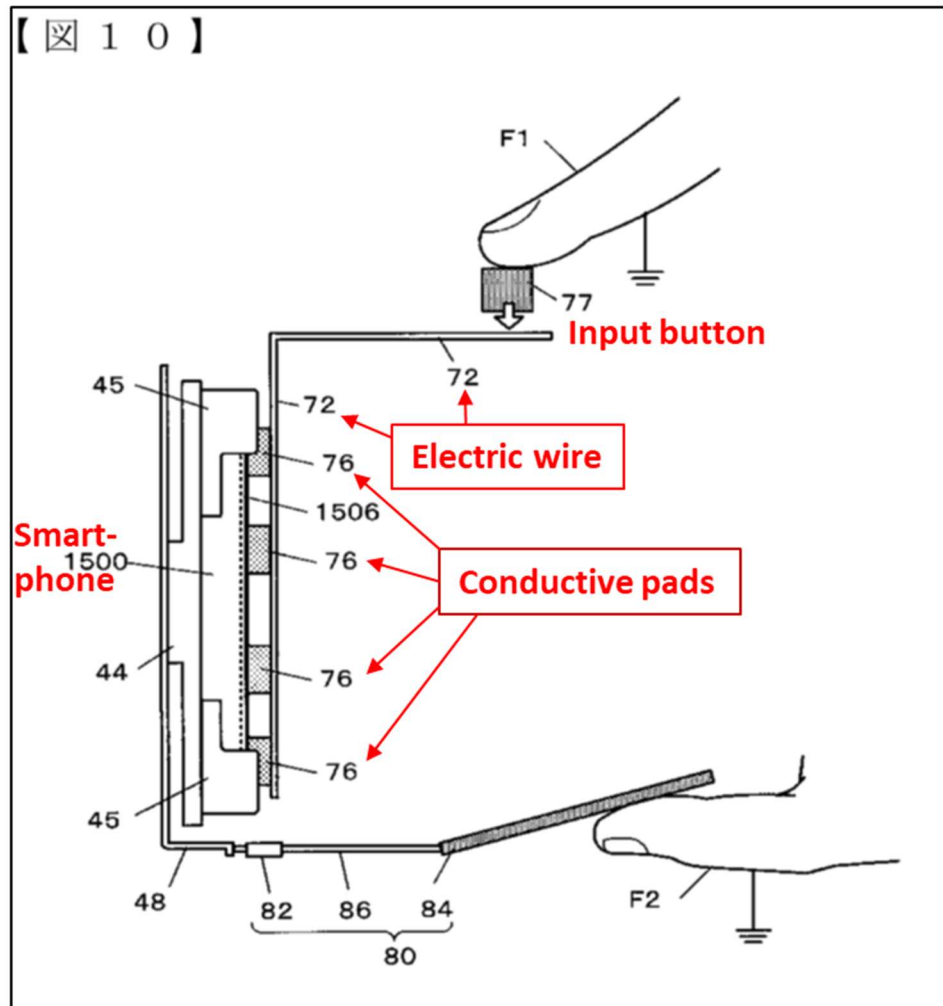
3. **30(c): a frame having a first side and a second side opposite the first side, the first side configured to hold the first lens and the second lens, the second side configured to receive the mobile electronic device, wherein the frame is configured to hold the mobile electronic device such that the mobile electronic device is generally centered in a horizontal direction and directly in a user's field of view when looking through the first side of the frame;**

See the analysis of §XI(C) and claim 1 for a description of the Kondo/Chu combination's viewer, its lenses, how the viewer receives the smartphone, and how the smartphone is centered in a horizontal direction. See EX1002, §VIII(P)(3).

4. **30(d): a user input that is accessible from an exterior of the enclosure and has a first position and a second position; and**

Please see the analysis of claim 1 for a description of the Kondo/Chu combination's viewer and user input.

Kondo discloses an input mechanism on the exterior of the housing (button 77) that is movable between a first position and a second position:

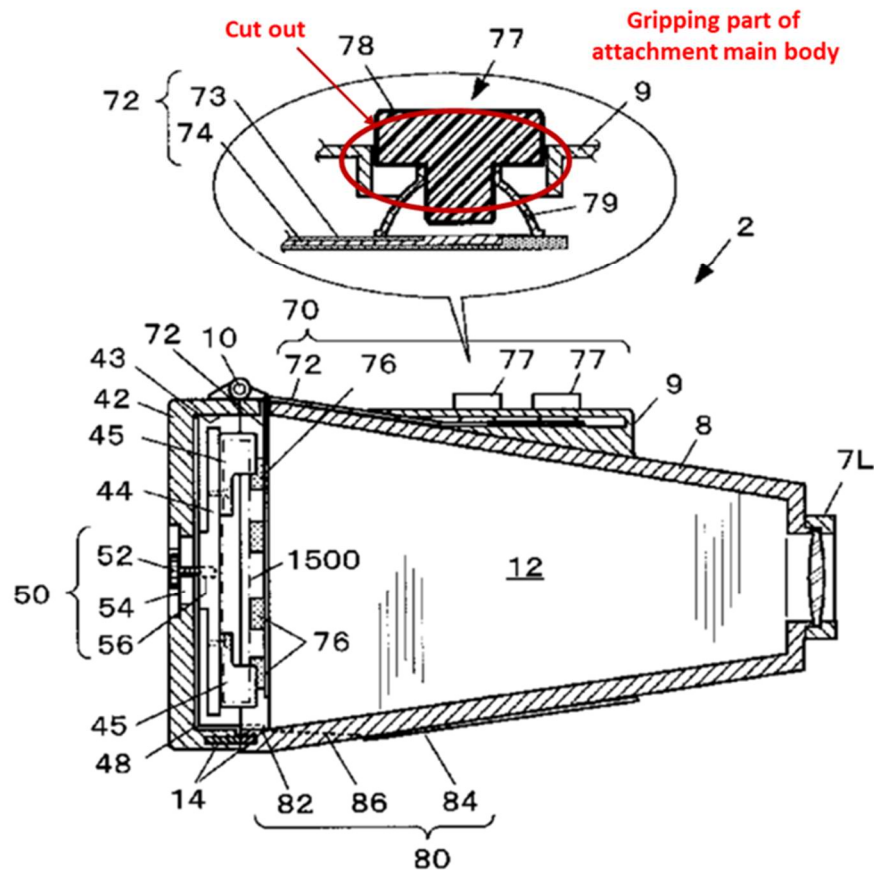


EX1003, Fig. 10 (annotations added).

In Figure 10 above, Kondo shows the user depressing input button 77, which then provides input to mobile phone 1500 via electric wire 72 and conductive pads 76. Figure 7 below shows that button 77 is accessible from the exterior of the housing and that this button moves from a first position to a second position through a cut out in the main body of the attachment, called the gripping part 9:

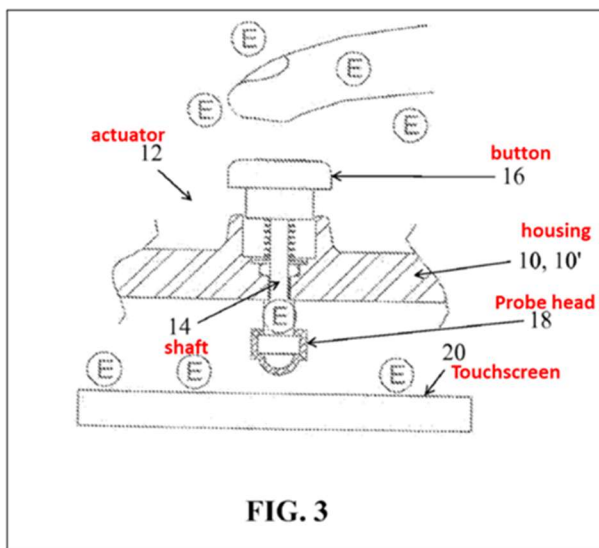
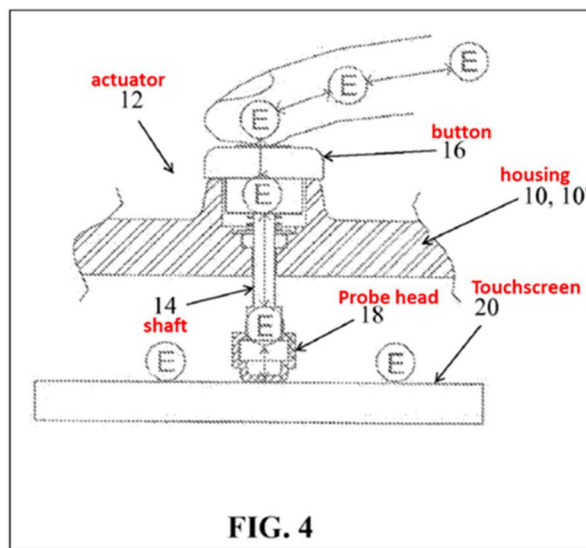
【 図 7 】

(1)



EX1003, Fig. 7 (annotations added); *see also*, ¶¶0042, 0043, 0047, 0048, 0049, 0052.

Chu discloses (in Figures 3 and 4 below) an exterior input mechanism that moves from a first position to a second position:



EX1004, Figs. 3, 4 (annotations added).

Chu explains how this input mechanism is accessible from the exterior and how it moves between a first and second position. See EX1004, ¶¶0053-0056.

[0053] At an initial state, as illustrated in FIG. 3, the press button 16 is at its highest position when the press button 16 is released and the biasing member 40 is urging the press button 16 upwards.... ***Therefore, the probe head 18 is not touching the capacitive touch screen 20 of the digital device inside the waterproof housing 10.*** The electric charge E on the capacitive touch screen 20 does not change. EX1004, ¶0053 (emphasis added).

[0054] When a user's finger or body part starts to touch the press button 16 and begins to press downwards, the user's finger or body part gets intimate with the press button 16 and the contact area with the press button 16 increases. ***Since the press button 16 is metal or metalized,***

the user's finger or body part is electric charge connected. EX1004, ¶0054 (emphasis added).

[0055] *When the user's finger or body part continues to press downwards,* the electric charge conductivity between the press button 16 and the user's finger or body part further improves. *The press button 16 together with the actuator shaft 14 starts to move downwards.... The probe head 18 carried by the actuator shaft 14 starts touching the touch screen 20. When the probe pad 30 is further pressed onto the touch screen 20, the probe pad 30 starts to deform and form a larger contact area with the touch screen 20, as depicted in FIG. 4, thereby enhancing the electric charge conductivity....* This results in change of electric charge on the touch screen 20. The digital device can then compute a set of coordinates on the touch screen display. EX1004, ¶0055 (emphasis added).

[0056] *When the press button 16 is released, the biasing member 40 then pushes the press button 16 upwards. The actuator shaft 14 and the probe head 18 also move upwards thereby separating the probe head 18 from the touch screen 20 and stopping the interaction with the touch screen 20.* The operation of the actuator mechanism 12 is then completed. EX1004, ¶0056 (emphasis added); *see also* ¶¶0011, 0038.

Chu explains that its second and third embodiments operate in the same way in that pressing button 16 causes the probe head (18' in embodiment two and 18''

in embodiment 3) to contact the touchscreen 20 and cause a touch event. EX1004, ¶¶0058-0062; see EX1002, §VIII(P)(4).

- 5. 30(e): a touchscreen input that is coupled to the user input and generally centered between the first lens and the second lens in the horizontal direction, wherein the touchscreen has a surface such that only a portion of the surface of the touchscreen input is configured to contact a central region of the touchscreen when the user input is in the second position.**

See §XI(C) and claims 1 and 30(a)-(d) for a discussion of the user input being conductively coupled to the touchscreen input and how the touchscreen input is centered between the first lens and the second lens in a horizontal direction. Additionally, the analysis of 1(d) explains how only a portion of the surface of the touchscreen input contacts a central region of the touch screen when the user input is in the second position and explains how this obviousness analysis is consistent with how the Patent Owner is asserting its claims at the district court. See EX1002, §VIII(P)(5).

- Q. Claim 34: The virtual reality viewer of claim 30, wherein the frame surrounds the lenses and touchscreen device on at least two sides, and has a cut-out, and wherein at least a portion of the user input is accessible through the cut-out.**

Please see the analysis of claims 1, 19, and 30. See EX1002, §VIII(Q).

R. Claim 35: The virtual reality viewer of claim 30, wherein the touchscreen input is constructed of a material capable of carrying a surface charge that activates a capacitive touchscreen, or a material capable of activating a capacitive touchscreen.

Please see the analysis of claim 1(d) for a description of the touchscreen input in both Kondo (conductive pads 76) and Chu (probe pad 30) and how they operate to cause a touch event on a capacitive touchscreen. Kondo's conductive pads 76 are made of conductive material and are capable of carrying a surface charge that activates a capacitive touchscreen, as explained for claim 1(d). EX1003, ¶¶0005, 0009, 0041, 0047, 0048; cl. 1. Chu's probe pad is made of conductive material and is also capable of carrying a surface charge that activates a capacitive touchscreen, as explained for claim 1(d). EX1004, ¶¶0011, 0014, 0019, 0049, 0053-0062; see EX1002, §VIII(R).

S. Claim 37: The virtual reality viewer of claim 30, wherein the touchscreen detects the change of location of the touchscreen input, or the change of one or more electrical properties of the touchscreen input when the touchscreen input is activated or in contact with the touchscreen.

Please see the analysis of claim 1(d) for an explanation of how both Kondo and Chu cause a touch event on a touchscreen. See EX1002, §VIII(S).

T. Claim 38: The virtual reality viewer of claim 30, wherein said user input is a tactile user input.

See the analysis of claims 1, 5, and 30 for a description of how the Kondo/Chu combination's user input is a tactile user input. See EX1002, §VIII(T).

U. Claim 39: The virtual reality viewer of claim 38, wherein said tactile input is a depressible button.

See the analysis of claims 1, 5, 30, and 38 for a description of how the Kondo/Chu combination's user input is a depressible button. See EX1002, §VIII(U).

XIII. CONCLUSION

Petitioner has established a reasonable likelihood of prevailing with respect to at least one claim and respectfully requests that the PTAB institute an *Inter Partes* Review and cancel the challenged claims.

Respectfully Submitted,

Dated: March 29, 2023

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PETITIONER'S EXHIBIT LIST

March 29, 2023

EX1001	U.S. Patent No. 10,528,199
EX1002	Declaration of Kurtis Keller
EX1003	Kondo (JP3176588)
EX1004	Chu (US 2013/0082963
EX1005	U.S. Pat. No. 8,957,835
EX1006	Random House Webster's College Dictionary (2000)
EX1007	Not used
EX1008	Selected portions of '199 Patent's prosecution history
EX1009	<i>DDC v. Merge Labs</i> complaint
EX1010	<i>DDC v. Google, et al.</i> infringement contentions
EX1011	DDC's '199 supplemental patent infringement chart for Google
EX1012	<i>DDC v. Google</i> Transfer Order

CERTIFICATE OF WORD COUNT

Pursuant to 37 C.F.R. § 42.24(d), the undersigned certifies that the foregoing document, excluding the portions exempted under 37 C.F.R. § 42.24(a)(1), contains 12,312 words, which is under the limit of 14,000 words set by 37 C.F.R. § 42.24(a)(1)(i).

Respectfully Submitted,

Dated: March 29, 2023

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CERTIFICATE OF SERVICE

The undersigned certifies service pursuant to 37 C.F.R. §§ 42.6(e) and 42.105(b) on the Patent Owner by Express Mail of a copy of this Petition for Inter Partes Review and supporting materials, including all exhibits and Petitioner's Exhibit List, at the correspondence address of record for the '199 Patent:

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