

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

MERCHSOURCE, LLC,

Petitioner

v.

DODOCASE, INC.

Patent Owner

U.S. Patent No. 9,811,184

Case No.: PGR2018-00020

PETITION FOR POST GRANT REVIEW

DDC_007993

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LIST OF EXHIBITS

- Ex. 1001 U.S. Patent No. 9,811,184 (“184 Patent”)
- Ex. 1002 Declaration of Kurtis Keller (“Keller Decl.”)
- Ex. 1003 C.V. of Kurtis Keller
- Ex. 1004 Prosecution History of U.S. Patent No. 9,811,184 (“File History”)
- Ex. 1005 Image File Wrapper of U.S. Provisional Patent Application No. 62/025,376 (“376 Application”)
- Ex. 1006 Image File Wrapper of U.S. Provisional Patent Application No. 62/161,857 (“857 Application”)
- Ex. 1007 Signe Brewster, “Why Google Cardboard Is Actually A Huge Boost For Virtual Reality” Gigaom (June 28, 2014) with comments, <https://gigaom.com/2014/06/28/why-google-cardboard-is-actually-a-huge-boost-for-virtual-reality> (last visited Jan 15, 2018) (“Gigaom”)
- Ex. 1008 Video File of Prince Aryajeet Ramteke (“Tech#”), “Use Google Cardboard Without Magnetometer (Enabling Magnetic Ring Support To Every Device)” Youtube (May 10, 2015), https://www.youtube.com/watch?v=o_Pk_kipYto (last visited Jan 15, 2018) submitted in mp4 format
- Tech# - Part 1, 0 - 3.32.mp4
- Tech# - Part 2, 3.32 - 7.15.mp4
- Tech# - Part 3, 7.15 - end.mp4
- Ex. 1009 U.S. Patent Publication No. 2013/0141360 (“Compton”)
- Ex. 1010 GoogleDevelopers, “Google I/O 2014 - Cardboard: VR for Android” YouTube (June 27, 2014), https://www.youtube.com/watch?time_continue=2&v=DFog2gMnm44 (last visited Jan 15, 2018) submitted in mp4 format

Google IO 2014 - PART 1 0 - 4.24.mp4
Google IO 2014 - PART 2 4.24 -9.10.mp4
Google IO 2014 - PART 3 9.10 -13.32.mp4
Google IO 2014 - PART 4 13.32 - 18.22.mp4
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Google IO 2014 - PART 9 37.47 - 41.13.mp4
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- Ex. 1011 Prosecution History of U.S. Patent No. 9,420,075 (“’075 File History”)
- Ex. 1012 “Why Google Cardboard is actually a huge boost for virtual reality” Internet Archive (July 15, 2014), <https://web.archive.org/web/20140715204200/https://gigaom.com/2014/06/28/why-google-cardboard-is-actually-a-huge-boost-for-virtual-reality/> (last visited Jan 15, 2018)
- Ex. 1013 “Comments on: Why Google Cardboard is actually a huge boost for virtual reality” Internet Archive (July 15, 2014), <https://web.archive.org/web/20140715204200/https://gigaom.com/2014/06/28/why-google-cardboard-is-actually-a-huge-boost-for-virtual-reality/feed> (last visited Jan 15, 2018)
- Ex. 1014 U.S. Patent Number. 5,877,459 (“Prater”)
- Ex. 1015 U.S. Patent Publication No. 2011/0162894 (“Weber”)
- Ex. 1016 U.S. Patent Publication No. 2011/0164000 (“Pance”)

Ex. 1017	U.S. Patent Publication No. 2012/0128995 (“Leto”)
Ex. 1018	U.S. Patent Publication No. 2012/0139879 (“Kim”)
Ex. 1019	U.S. Patent Publication No. 2012/0146957 (“Dunagan”)
Ex. 1020	U.S. Patent Publication No. 2013/0002606 (“Mann”)
Ex. 1021	U.S. Patent Publication No. 2013/0249870 (“Slaby”)
Ex. 1022	Prosecution History of U.S. Patent No. 9,723,117
Ex. 1023	Declaration of Prince Aryajeet Milind Ramteke
Ex. 1024	Declaration of Kyle B. Fleming

I. INTRODUCTION

MerchSource, LLC (“Petitioner”) requests Post-Grant Review (“PGR”) of Claims 1 to 20 of U.S. Patent No. 9,811,184 (“’184 patent”) (Ex. 1001) under 35 U.S.C. §§ 321–329. The ’184 patent is directed to a virtual reality viewer for use with a touchscreen enabled mobile device and having an input at an exterior of the viewer for causing a touch event at the touchscreen of the mobile device. The patent contends that there is a need for VR viewer having an integrated user input mechanism other than incorporating magnets at an exterior of the viewer, built in accelerometers or other position/orientation sensors, or separate dedicated input devices that connect to the mobile device. Ex. 1001 at 2:9-35.

The patent purports to address this problem by including (a) a non-moveable input that is in contact with a touchscreen of the mobile device and transfers a capacitive touch to the touchscreen in response to a user interaction with a portion of the input mechanism at an exterior of the viewer, or (b) a moveable input mechanism where the mechanism is movable within an interior of the viewer between a first position and a second position, and having a surface of the input mechanism that contacts the touchscreen of the mobile device when the input mechanism is in the second position, the contact allows for transfer of a capacitive touch to the touchscreen in response to a user interaction with a portion of the input mechanism at an exterior of the viewer. *Id.* at 2:42-64.

But neither claimed invention of the '184 patent was new or inventive as of the earliest effective filing dates relating to the specific claims. Claims 1-11 relating to a viewer having a non-moveable input are not novel or are rendered obvious in view of one or more of Gigaom and Compton. Claims 12-20 relating to a viewer having a movable touchscreen input are not novel or are rendered obvious in view of one or more of Tech#, Gigaom, and Compton.

To the extent Patent Owner may argue that there was anything novel claimed with regard to the claimed viewers, such limitations are mere design modifications in view of the teachings of Gigaom, Tech# and Compton.

II. GROUNDS FOR STANDING UNDER 37 C.F.R. § 42.204(a)

Petitioner certifies that it has standing under 37 C.F.R. § 42.201(a–c), and that (1), the '184 patent, issued on August 1, 2017, is available for PGR; (2) Petitioner is not barred or estopped from requesting a PGR on the Grounds identified herein; and (3) Petitioner has not filed a complaint challenging the validity of the '184 patent. This Petition is filed in accordance with 37 C.F.R. § 42.206(a). Concurrently filed herewith is a Power of Attorney and an Exhibit List per 37 C.F.R. § 42.10(b) and § 42.63(e), respectively.

In a Related Matter, *see infra* Section III.B, Patent Owner has alleged that Petitioner contractually agreed to not contest the validity of the '184 patent. While Patent Owner might raise this allegation in a preliminary response in an attempt to

avoid institution, legal precedent is clear that contract or licensee estoppel is not a defense or basis to deny institution. *Dot Hill Systems Corp. v. Crossroads Systems, Inc.*, IPR2015-00822 (PTAB 9/17/2015) (Paper 18, pp 6-8) (instituting *inter partes* review and finding that a settlement agreement containing an agreement to not challenge validity was not a defense to, or grounds to deny institution of, *inter partes* review). *See also Esselte Corp. v. Dymo*, Case IPR2015-00779 (PTAB Aug. 28, 2015) (Paper 13, pp. 4-7) (determining that 35 U.S.C. §§ 311, 314–316 do not provide assignor estoppel as a defense to *inter partes* review and rejecting Patent Owner’s contractual bar argument for the same reasons).

Moreover, the Supreme Court has long held that public policy favors challenging the validity of patents and that licensee estoppel or contractual “no challenge” clauses are not enforceable. *Lear v. Adkins*, 395 U.S. 653, 670 (1969) (license does not estop or preclude licensee from challenging validity of the patent, “Licensees may often be the only individuals with enough economic incentive to challenge the patentability of an inventor’s discovery. If they are muzzled, the public may continually be required to pay tribute to would-be monopolists without need or justification. We think it plain that the technical requirements of contract doctrine must give way before the demands of the public interest in the typical situation involving the negotiation of a license after a patent has issued.”). *See also Massillon-Cleveland-Akron S. Co. v. Golden State Adv. Co.*, 444 F.2d 425, 427

(9th Cir. 1971) (“We think the rationale of *Lear* requires us to hold that the covenant of Golden State and Gold, in the settlement agreement of July 23, 1962, not to contest the validity of MCA’s patent, is void on its face and unenforceable.”); *Rates Tech#. Inc. v. Speakeasy, Inc.*, 685 F.3d 163 (2d Cir. 2012) (following *Massillon*).

III. MANDATORY NOTICES (37 C.F.R. § 42.8(b))

A. Real Parties-In-Interest (37 C.F.R. § 42.8(b)(1))

Petitioner certifies that Merchsource, LLC located at 15 Cushing, Irvine, California 92618, and ThreeSixty Brands Group LLC located at 15 Cushing, Irvine California 92618 are the real parties-in-interest.

B. Related Matters (37 C.F.R. § 42.8(b)(2))

DODOcase VR, Inc. (allegedly f/k/a DODcase, Inc.) filed a filed a complaint on December 13, 2017 against MerchSource, LLC and ThreeSixty Brands Group LLC regarding U.S. Patent Nos. 9,420,075, 9,723,117 and 9,811,184. Defendants have not yet responded to the complaint. Also, a petition for Inter Partes Review is being concurrently submitted for U.S. Patent No. 9,420,075 and a PGR petition is being concurrently submitted for U.S. Patent No. 9,723,117.

C. Lead and Backup Counsel and Service (37 C.F.R. § 42.8(b)(3)-(4))

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Petitioner consents to electronic service by email. A power of attorney under 37 C.F.R. § 42.10(b) accompanies this Petition.

IV. IDENTIFICATION OF CHALLENGE UNDER 37 C.F.R. § 42.204(b)

Pursuant to 37 C.F.R. §§ 42.204(b) and (b)(1), Petitioner requests PGR of claims 1-20 of the '184 patent and further requests that the challenged claims be canceled as unpatentable based on the following grounds (which includes the specific prior art identified as well as the knowledge of one of ordinary skill in the art):

Ground 1: Claims 1–3 and 8–10 are invalid under 35 U.S.C. § 102¹ as anticipated by Gigaom;

¹ The AIA version of Sections 102 and 103 of the Patent Act applies.

Ground 2: Claims 2–11 are invalid under 35 U.S.C. § 103 as obvious over Gigaom;

Ground 3: Claims 12, 15–17, 19 and 20 are invalid under 35 U.S.C. § 102 as anticipated by Tech#;

Ground 4: Claims 12–20 are invalid under 35 U.S.C. § 103 as obvious over Tech#;

Ground 5: Claims 12–20 are invalid under 35 U.S.C. § 103 as obvious over Tech# and Compton;

While some of the above grounds for obviousness cover the same claims, the technical teachings between the different grounds are not cumulative.

V. OVERVIEW OF THE '184 PATENT

A. Effective Filing Date of the '184 Patent

The '184 Patent issued from U.S. Application No. 15/448,785, which was filed on March 3, 2017, and claims priority to U.S. Application No. 62/025, 376 filed on July 16, 2014 ('376 Application) (Ex. 1004), and U.S. Application No. 62/161,857 filed on May 14, 2015 ('857 Application) (Ex. 1005). The '184 Patent is subject to AIA Rules.

The '184 patent contains 20 claims including a total of 2 independent claims 1 and 12, and 18 dependent claims. Each of claims 12-20 requires a “a user input that ... has a first position and a second position.” Ex. 1001 at 14:4-5. At best, the

'367 Application discloses merely that “[t]he input devices can be configured to be passive and/or active input devices,” and “[i]t should also be understood that other active input device configurations can also be implemented.” Ex. 1004 at 7:13-14 and 9:21-22. No exemplary embodiments or other disclosure of such “active input device(s)” are disclosed. A person of ordinary skill in the art at the time of the alleged invention (“POSITA”) would understand that the '376 Application does not include disclosure sufficient to support the claimed user input that has a first position and a second position. Ex. 1002 at ¶¶37 and 38

Additionally, claim 10 requires “at least a portion of the user input is accessible through the cut-out.” Ex. 1001 at 13:42-43. Similar to claims 12-20 above, the cut-out feature of claim 10 is not disclosed by the '376 Application. Rather, the cut-out feature was newly introduced in Figs. 7A-7E of the '857 application.

Accordingly, claims 10 and 12–20 are not entitled to priority from the '367 Application and therefore have an effective filing date no earlier than the May 14, 2015 filing date of the '857 Application.

B. State of the Technology at the Time of the Alleged Invention²

Virtual reality headsets were in use prior to the earliest priority date of any claim of the '184 patent, and the underlying principles date back to at least the 1820s. Ex. 1002 at ¶40.

Petitioner has submitted a declaration from Kurtis Keller, an expert regarding the relevant art herein. *See* Section VII. Mr. Keller's declaration contains a more detailed background and summary of the technology and the development of head mounted displays for virtual reality, particularly from the 1960s through 2014. *See* Ex. 1002 at ¶¶42-47.

Although not the first virtual reality viewer utilizing a mobile device touchscreen, a well-known event in the field was Google I/O 2014, on June 25 and 26, 2014, during which it introduced the Google Cardboard Version 1 ("Cardboard"), a virtual reality viewer for use with a mobile electronic device having a touchscreen. Google presented Cardboard during the event on June 26, 2014 and published a video of the presentation, that same day. Exhibit 1010. During the presentation Christian Plagemann explains one of the problems with

² Cited references not named in a ground of rejection are cited for the purpose of showing the state of the art and the background knowledge of a POSITA. *Randall Mfg. v. Rea*, 733 F.3d 1355, 1362-63 (Fed. Cir. 2013).

these viewers: how to interact with the touchscreen when the mobile device is inside the enclosure without the user sticking fingers inside the enclosure and interfering with the experience. Ex. 1010 at 18:28–18:35.

Cardboard utilized two magnets, one fixed inside the enclosure and a second “washer” magnet that the user could slide along the exterior, side of the enclosure. *Id.* at 18:35–19:22. The movement of the second magnet creates a change in the magnetic field that is detected by the compass inside Google’s mobile device, and software can interpret those changes as an input event in lieu of the user touching the screen with a finger. *Id.*

Mr. Plagemann indicates that Google wants developers to come up with other ways to interact with the touchscreen besides Google’s washer-slider-magnet feature:

“And you see when I move this magnet, what kind of beautiful signals we get. And so you can write a very simple classifier that picks up the up and down and translates that into an input event. The downside of this, of course, is you’re losing the compass. So inside this experience, we don’t know, anymore, where kind of north is. Because we always think, oh, north is where the magnet is. But we figured universal environments, it’s much more important you have some way of interacting. Like flying, not flying, starting/stopping a video, opening up a box, or whatever you want to do. So that’s a trade-off, and you’re completely free to come up with other awesome ideas to interact.”

Id. at 19:14–19:49.

One such solution for interacting with a touchscreen of a mobile device is disclosed in Tony Pace, “Google Cardboard DIY Guide” Hacklab

Taichung (July 1, 2014), <http://hacklabtaichung.blogspot.com/2014/07/google-cardboard-diy-guide.html> (last visited Jan 8, 2018) cited as prior art in related U.S. Patent Nos. 9,723,184 and 9,811,184.

The electrical requirements of causing a “touch event” on a capacitive touchscreen were common knowledge to a POSITA. Ex. 1002 at ¶52. It also would have been common knowledge to a POSITA what types of materials can be used to transmit a touch signal from a human body to the touchscreen, and what types of materials could be used alone to cause a touch event when placed into contact with a capacitive touchscreen. *Id.* at ¶¶53.

C. Summary of the Disclosure of the Claimed Subject Matter

The '184 patent is directed to a virtual reality viewer that attempts to provide a solution for the same problem mentioned by Mr. Plagemann: generating screen inputs when “the touch sensitive display is concealed within the viewer enclosure, thereby making it difficult for a user to interact with the touch sensitive display of the device.” '184 patent at 2:10-12. The '184 patent additionally sought to avoid using magnets (usable with limited number of mobile devices) or other “dedicated input devices, like video game controllers, that connect to the electronic device within the viewer either by a wired plug like connection (e.g., USB or Apple compatible connector), or a wireless connection capabilities” to interact with the

touchscreen of a mobile device in a virtual reality viewer so that the viewer could be “configured for use with a wide variety of conventionally available smartphone devices.” *Id.* at 2:9–2:35.

The '184 patent discloses multiple embodiments of virtual reality viewers 10, 700. Ex. 1001. The embodiments of viewer 10 include inputs 26a–26d, 28a–28d, and 29a–29d that are fixed in the housing/enclosure 12 relative to the mobile electronic device 15. *Id.* at 5:23–6:67, Figs. 6A–B.

The input mechanisms are accessible from an exterior of a housing/enclosure 12 such that one or more touchscreen inputs 26a–26d within the interior of the housing/enclosure 12 are configured to contact the touchscreen of a mobile electronic device 15 in the housing/enclosure 12 and transfer a capacitive

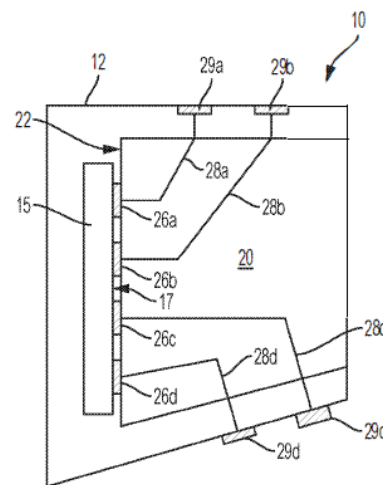


FIG. 6A

touch input to the touchscreen in response to a user interaction with one or more user inputs 29a–29d at the exterior. A cross-sectional view of a viewer with this embodiment is illustrated in Figure 6A.

The '184 patent also discloses a virtual reality viewer 700 having an input mechanism 715 that is moveable within the housing/enclosure. *Id.* at 7:14–10:44, Figs. 7A–F. In particular, the viewer 700 includes a lever 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 and the electrical shield 725. *Id.* at 7:14-10:44. “[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.” *Id.* at 8:30-50. Figures 7A and 7C show the non-actuated state, and Figures 7B and 7E show the actuated state. *Id.* at pages 7-9 and 11.

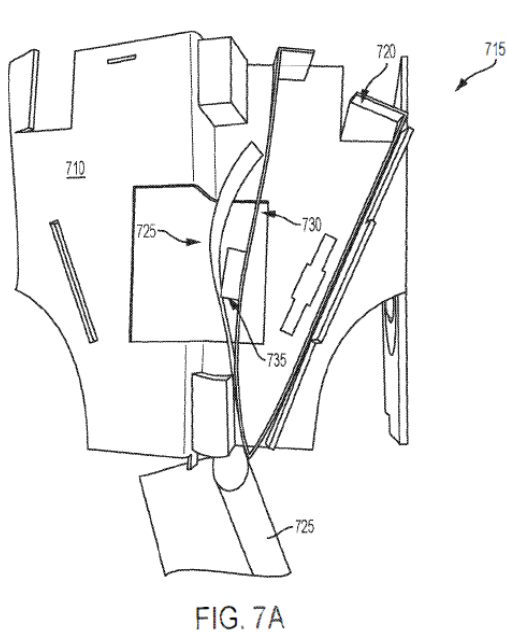


FIG. 7A

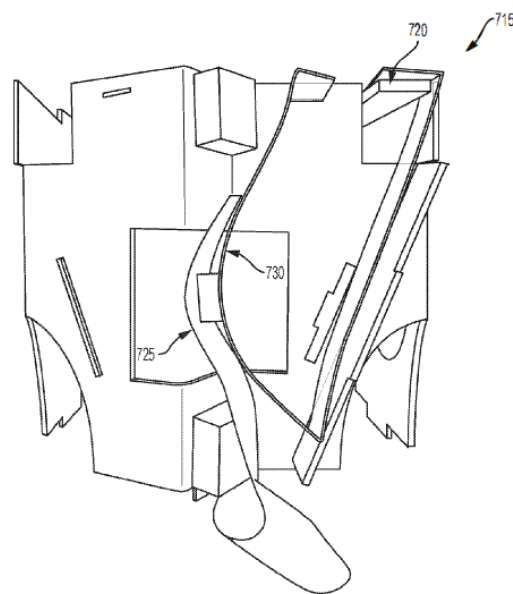


FIG. 7B

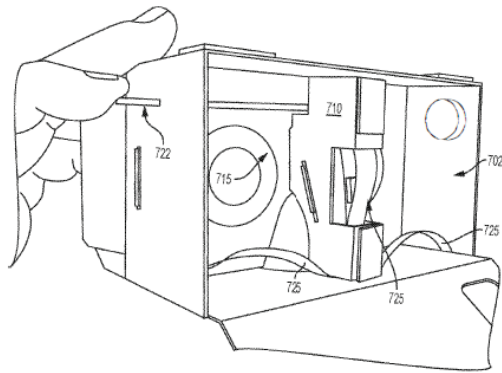


FIG. 7C

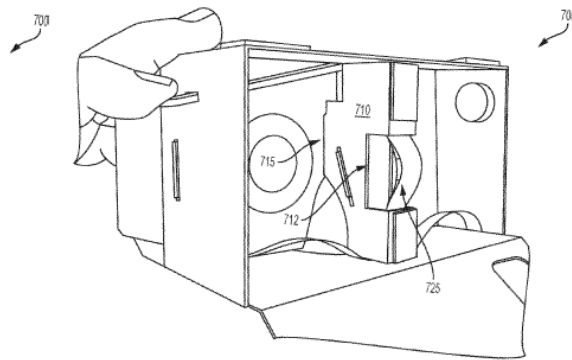


FIG. 7E

VI. CLAIM CONSTRUCTION UNDER 37 C.F.R. § 42.204(b)(3)

In accordance with 37 C.F.R. § 42.200(b), in a PGR, similar to an *Inter Partes* Review (“IPR”), claim terms are to be given their broadest reasonable construction consistent with the specification. *In re Cuozzo Speed Techs., LLC*, 793 F.3d 1268, 1276, 1279 (Fed. Cir. 2015), *aff’d*, 136 S.Ct. 2131, 2142 (2016); 37 C.F.R. § 42.100(b). “[C]laim terms need only be construed ‘to the extent necessary to resolve the controversy.’” *Wellman, Inc. v. Eastman Chem. Co.*, 642 F.3d 1355, 1361 (Fed. Cir. 2011) (citation omitted).

Petitioner believes that the following terms should be construed as provided, and that each of the remaining terms within the challenged claims can be given their plain and ordinary meaning, and that no constructions are needed “to resolve the controversy.”

A “user input that ... and has a first position and a second position” (’184 patent, claim 12). The “first position” and “second position” should be construed

as different positions, requiring the user input to move from the first position to the second position.

VII. PERSON HAVING ORDINARY SKILL IN THE ART

In view of the subject matter of the '184 patent, a person of ordinary skill in the art at the time of the alleged invention (“POSITA”) was a person having an undergraduate degree (or equivalent) in mechanical engineering or a related field, with knowledge of mechanical actuation systems and a basic understanding of touchscreen technology, and at least two years of experience of professional work experience as a mechanical engineer. Ex. 1002 at ¶34.

Kurtis Keller is well versed in the technology of the '184 patent, including virtual reality technology and the materials necessary to induce a touch event on a mobile device touchscreen, as of June 2014 and earlier. Ex. 1002 at ¶¶8-12.

VIII. OVERVIEW OF THE PRIOR ART

A. Overview of Gigaom

Gigaom is entitled “Why Google Cardboard is actually a huge boost for virtual reality.” Ex. 1007. On July 7, 2014, commenter “tobiasclaren” posted a comment suggesting the use of electrically-conductive tape with Cardboard to generate a capacitive touch. *Id.* Both the web page including the Gigaom article and the July 7, 2014 tobiasclaren comment were archived by archive.org on July 15, 2014, confirming that Gigaom was published with the comment from

tobiasclaren as of at least July 15, 2014. Exs. 1012 and 1013.

Gigaom is a media business that, among other activities, publishes an online newspaper featuring articles on a range of technology topics. Gigaom (Ex. 1007) is self-authenticating under at least Federal Rule of Evidence 902(6) as a “[p]rinted material purporting to be a newspaper or periodical.” *See also* F.R.E. 101(b)(6) (“a reference to any kind of written material or any other medium includes electronically stored information.”)

Further, the archived copies of Gigaom maintained by the Internet Archive (archive.org), Exs. 1012 and 1013, is additional evidence to authenticate Ex. 1007. F.R.E. 901(a) (“To satisfy the requirement of authenticating or identifying an item of evidence, the proponent must produce evidence sufficient to support a finding that the item is what the proponent claims it is.”). *See* Ex. 1024 at ¶¶6 and 7. Additionally, the Board can take judicial notice of the authenticity of archived documents and website from the Internet Archive. *Marten Transport, Ltd. v. Plattform Advertising, Inc.*, Case No. 14-2464-JWL (D. Kansas) (unpub. Op. dated April 29, 2016) (taking judicial notice of archived websites without need for declarations, and citing case “in which courts have taken judicial notice of sites from the Internet Archive while noting that other courts commonly take judicial notice of such sites. *See, e.g., Juniper Networks, Inc. v. Shipley*, 394 F. App'x 713, at *1 (Fed. Cir. 2010) (unpub. op.); *Erickson v. Nebraska Machinery Co.*, 2015

WL 4089849, at *1 n.1 (N.D. Cal. July 6, 2015); *Pond Guy, Inc. v. Aquascape Designs, Inc.*, 2014 WL 2863871, at *4 (E.D. Mich. June 24, 2014); *In re Methyl Tertiary Butyl Ether (MTBE) Prods. Liab. Litig.*, 2013 WL 6869410, at *4 n.65 (S.D.N.Y. Dec. 30, 2013), vacated in part for other reasons by 2015 WL 9777725 (S.D.N.Y. Dec. 7, 2015); *Martins v. 3PD, Inc.*, 2013 WL 1320454, at *16 n.8 (D. Mass. Mar. 28, 2013)”).

Gigaom displays a publication date of June 28, 2014 for the main article and July 7, 2014 for the tobiasclaren comment. These publication dates appear to be automatically generated by the computer(s) on which gigaom.com is operated at the time of publication, and therefore are not hearsay. *See United States v. Washington*, 498 F.3d 225, 231 (4th Cir. 2007) (computer generated information is not a statement by a person and therefore not hearsay).

In addition, the archived copies of Gigaom dated July 15, 2014 and maintained by the Internet Archive (archive.org) further evidence those publication dates and shows that Gigaom (Ex. 1012) and the tobiasclaren comment (Ex. 1013) were available on the world wide web at least on July 15, 2014 (the date of the archive). This archival date is before the earliest priority date for the ’184 patent. The Archive Date (July 15, 2014) of Exs. 1012 and 1013 is automatically generated by the computer(s) on which archive.com is operated at the time of archival, and therefore this date not hearsay. *See*

<https://archive.org/legal/affidavit.php> (describing computerized date stamp system of Internet Archive); *see also United States v. Washington*, 498 F.3d 225, 231 (4th Cir. 2007) (machine generated information is not a “statement” under FRE 801 and therefore cannot be hearsay); *U.S. v. Khoroizian*, 333 F.3d 498, 506 (Fed. Cir. 2003) (automatically generated time stamp on a fax was not a hearsay statement because it was not uttered by a person).

Alternatively, the publication dates for Gigaom and the tobiasclaren comment (as shown in either Ex. 1007 or Exs. 1012–1013) fall within at least the residual hearsay exception of F.R.E. 807(a) and, for the reasons previously stated, satisfy elements (1)–(4) thereunder.

Accordingly, Gigaom,³ including the July 7, 2014 tobiasclaren comment, is prior art to all claims of the ’184 patent under Post-AIA § 102(a)(1), regardless of the priority of the claims.

The Gigaom article discusses the Google I/O keynote speech revealing Cardboard (Ex. 1010), and provides pictures of the Cardboard VR viewer in both assembled and disassembled form. Additionally, the comments section of the article includes a discussion of options for modifying Cardboard to include an

³ If Patent Owner objects to the admissibility of Gigaom or any other evidence, Petitioner will submit supplemental evidence pursuant to 37 C.F.R. §42.64(b)(2).

input mechanism for capacitive touch as an alternative to using the mobile device's magnetometer as required by Cardboard. On July 7, 2014, commenter tobiasclaren described an input mechanism including a metal tape extension at the separator between the eyes and extending to the exterior:

The gyro function is good, but better would be gyro + compass.

The alternative: A metal tape at the separator between the eyes.
It has contact with the touch screen.

If you touch this metal tape (alloy, or this small copper tape for Tiffany), is it the same like this "magnet click".

And the compass is full working.

Test it with a wire on every capacitive touch screen.

A POSITA would understand such metal extension to extend from an interior of the Cardboard housing/enclosure at the central separator or divider between the eyes to an exterior of Cardboard, such that it could be touched by a user to create the capacitive touch with a mobile device while the mobile device is in the housing/enclosure of Cardboard. Ex. 1002 at ¶59.

B. Overview of Tech#

Tech# is a video entitled *Use Google Cardboard without Magnetometer (enabling magnetic ring support to every device)*. Ex. 1008. The video was uploaded and published for public viewing onto Youtube.com on May 10, 2015 by Prince Aryajeet Ramteke, aka user "Tech#." See Ex. 1008. The video is a printed publication because it was publicly accessible as of May 10, 2015 at the website, youtube.com, to persons interested and ordinarily skilled in the art. The author of

Tech#, Mr. Ramteke, has submitted a declaration authenticating Ex. 1023 and confirming that he published that video on Youtube on May 10, 2015. Ex. 1023, ¶¶2-4. Tech# is therefore admissible and authenticated pursuant to F.R.E. 901(b)(1).

Accordingly, Tech# is prior art to claims 10 and 12-20 under Post-AIA § 102(a)(1).

Tech# teaches a modification of Cardboard to generate a touchscreen input:



Ex. 1008 at 0:15.

As previously discussed, Cardboard includes a magnetic input mechanism: “[a] washer on the side of the headset can be pushed up and down to create changes in the magnet’s field, which affects the phone’s compass. The Android

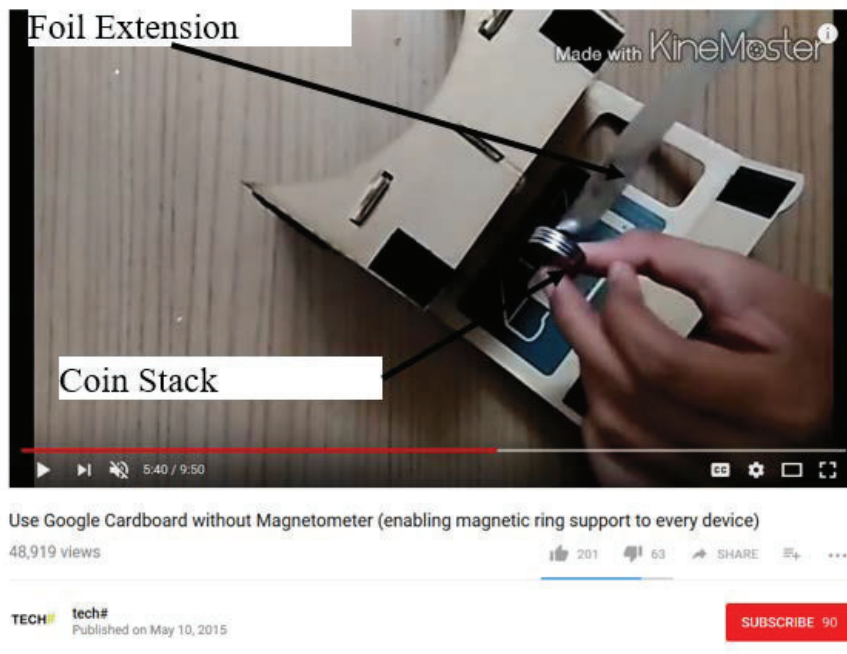
app that accompanies Cardboard treats that change in field as a click.” Ex. 1007 at 4.

Tech# discloses a modification to Cardboard to enable a capacitive touch input to the enclosed mobile device. Utilizing the sliding magnet/washer fixed to an exterior of the Cardboard enclosure, Tech# teaches attaching to the magnet an aluminum foil extension passing from an exterior of the housing/enclosure, through a cutout of the housing/enclosure and into an interior of the housing/enclosure:



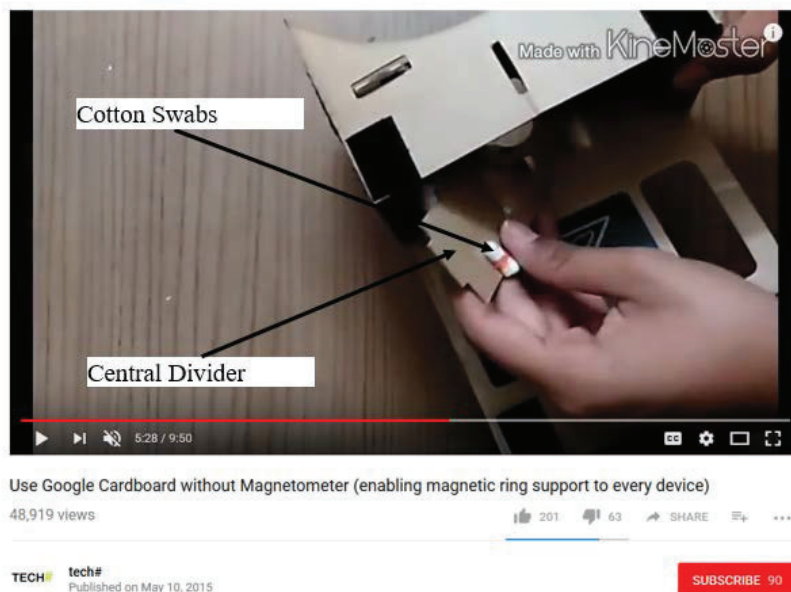
Id. at 7:18, annotated for emphasis.

A stack of coins is connected to the distal end of the aluminum foil extension opposite the magnet, and the foil is connected to the coins.

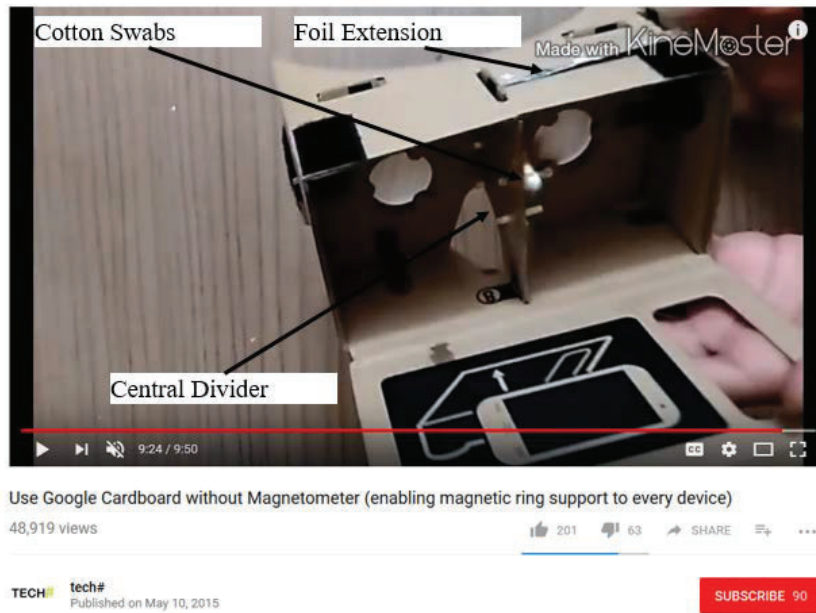


Id. at 5:40, annotated for emphasis.

Cotton swabs are fixed to the central divider such that they will be in contact with the touchscreen and with the coins, which are in contact with the foil, when the coins are pulled upwards.

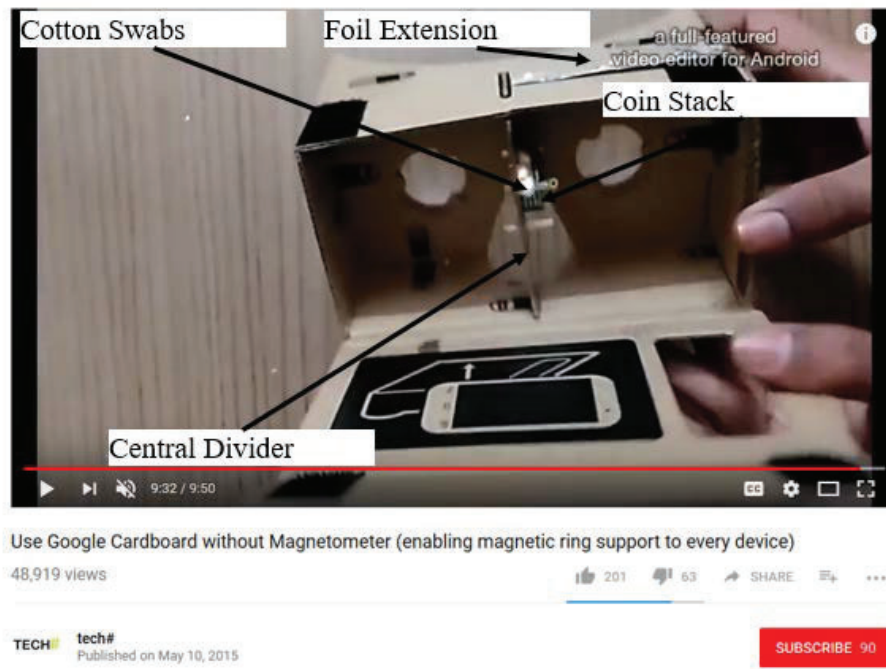


Id. at 5:28, annotated for emphasis.



Id. at 9:24, annotated for emphasis.

When the exterior magnet is moved downwards, a portion of the foil extension is pulled out of the housing/enclosure into an extended position relative to a default position. The coins are drawn/extended upward along the central divider and into contact with the moistened cotton swabs, which are fixed to the central divider.



Id. at 9:32, annotated for emphasis.

In this extended position, a capacitive touch is transferred from the user, through the proximal end of the foil extension attached to the magnet, through the foil extension to the distal end of the extension at the coin stack, and from the coin stack to the touchscreen via the cotton swabs, which are in contact with the touchscreen and the coin stack. Ex. 1002 at ¶¶66-67.

C. Overview of Compton

Compton is entitled “Head Mounted Display for Viewing Three Dimensional Images,” has U.S. Patent Publication No. 2013/0141360, was filed on November 2, 2012 and published on June 6, 2013. Ex. 1009. Compton further claims the benefit of U.S. Provisional Application No. 61/565,557 filed on

December 1, 2011. Accordingly, Compton is prior art to all claims under Post-AIA 35 U.S.C § 102(a)(2).

Compton is directed to a head mounted display device that displays three dimensional images from a mobile device. The Examiner relied on Compton in rejecting claims during prosecution of the '184 Patent and the '184 patent. *See, e.g.,* Ex. 1011 at 100-108 and Ex. 1004 at 76-82. The viewer of Compton includes a housing/enclosure, a mobile device holder, and a reflecting surface that reflects images displayed by the mobile device. To activate functions of the mobile device, the viewer includes multiple lever input mechanisms (510, 512, 610) and (511, 513, 611) and a slider input mechanism (520, 521 611), as shown in Fig. 6A of Compton below.

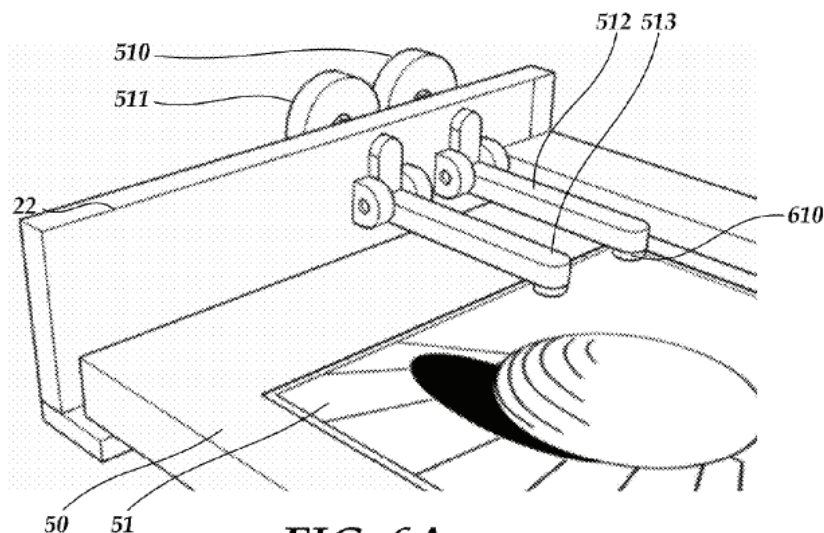


FIG. 6A

Ex. 1009 at page 7.

Each of multiple lever mechanisms includes a portion exterior to the housing/enclosure that is movable by a user (e.g., 510) to move a corresponding portion interior of the housing/enclosure (e.g., 512, 610) between a position spaced from and a position contacting a touchscreen display 51 of the mobile device.

Compton also discusses the nature of capacitive touchscreens and the types of materials (e.g., electrically conductive materials that increase or change the relative capacitance, or parasitic capacitance to ground, when contact is made with the capacitive sensors of the display) that suitable for use with capacitive displays. *Id.* at ¶ 0050. Compton notes that exemplary materials include a conductive fabric or a flexible material such as plastic embedded with conductive material such as metallic wires or grains. *Id.*

IX. DETAILED EXPLANATION AND SUPPORTING EVIDENCE UNDER 37 C.F.R. §§ 42.204(b)(4) AND (b)(5)

Pursuant to 37 C.F.R. § 42.204(b)(4) and (5), Petitioner provides in the following analysis detailed comparison of the claimed subject matter and prior art specifying where each claim limitation is found in the art and thus invalid under 35 U.S.C. §§ 102 and 103.

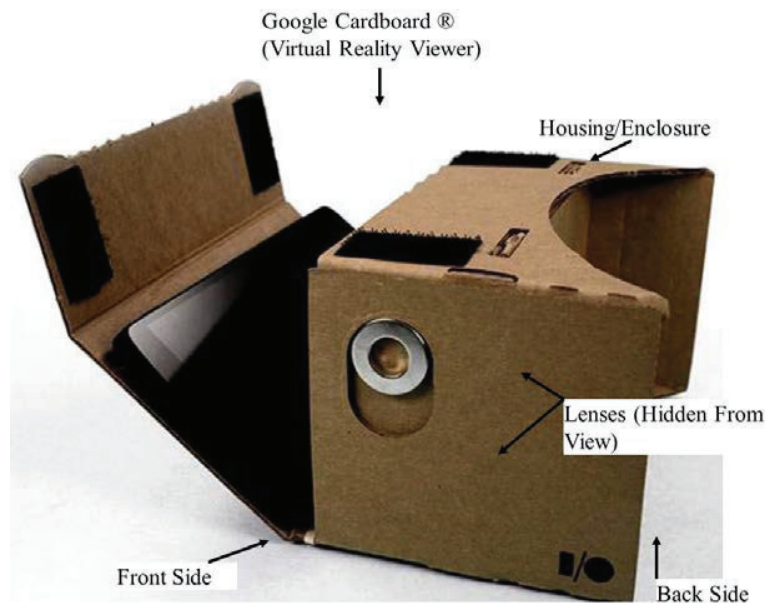
A. Ground 1: Gigaom Anticipates Claims 1–3, 6 and 8–10

As discussed in detail below, Gigaom discloses every element of the challenged claims 1–3, 6 and 8–10.

1. Claim 1

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

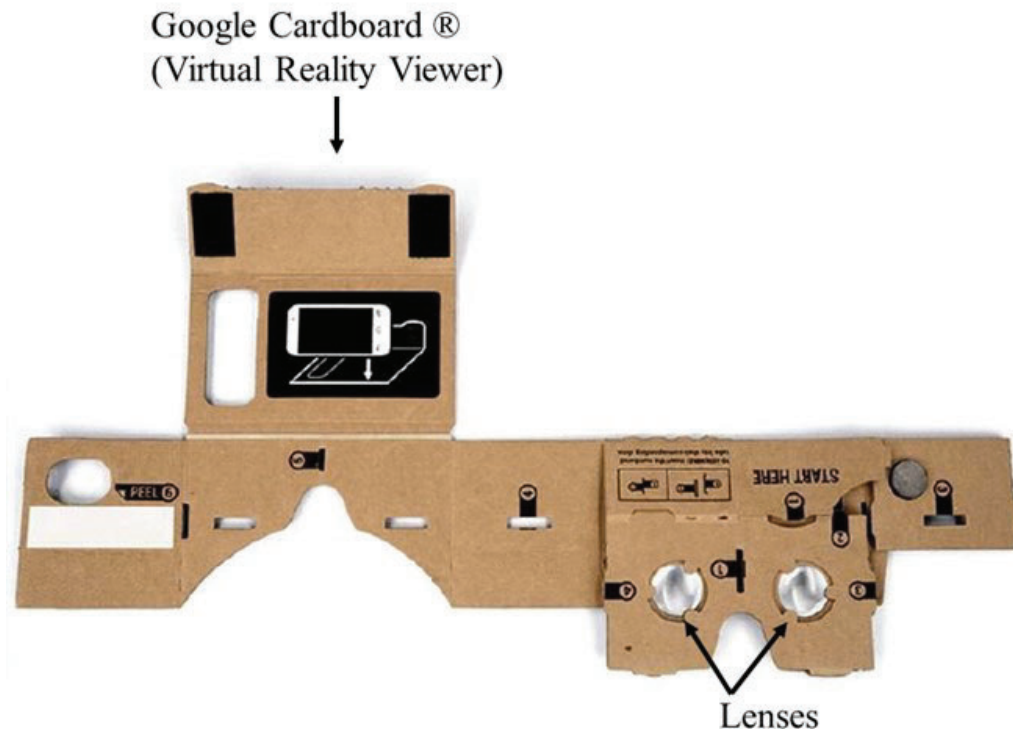
Gigaom demonstrates a modification of Cardboard to achieve a virtual reality viewer for a mobile electronic device that has a touchscreen.



Ex. 1007.

- 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;**

The Google Cardboard device disclosed in Gigaom includes a first lens and a second lens. The lenses face in the same direction and are spaced apart horizontally.



Ex. 1007.

- c. **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;**

The above figures of Gigaom illustrate an enclosure with a back side that is configured to be held both against and in proximity to a user's face. Ex. 1002 at ¶75. Also, as mentioned above, the front side of the enclosure is configured to receive a mobile phone and is opposite the back side such that the touchscreen of the mobile phone is viewable from the back side through the lenses. Ex. 1002 at ¶76.

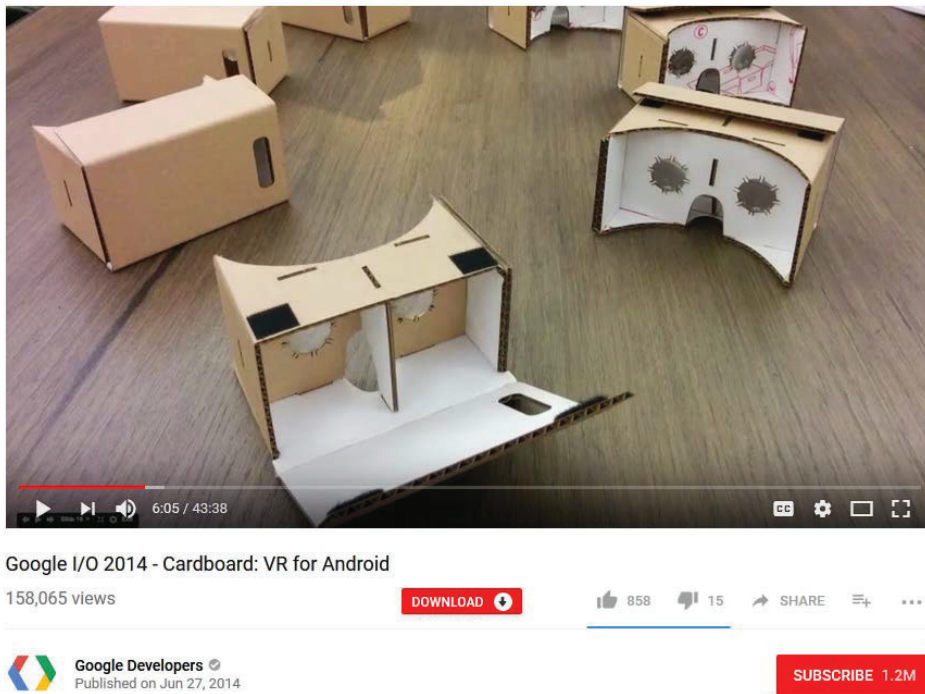
- d. A touchscreen input constructed of conductive material, wherein the touchscreen input is in physical contact with the touchscreen upon receipt of the mobile electronic device.**

The post from commenter tobiasclaren suggests modifying Cardboard with an elongate metal tape at the separator between the eyes:

The gyro function is good, but better would be gyro + compass.
*The alternative: A metal tape at the separator between the eyes.
It has contact with the touch screen.
If you touch this metal tape (alloy, or this small copper tape for Tiffany)(, is it the same like this “magnet click”.
And the compass if full working.
Test it with a wire on every capacitive touch screen.*

Ex. 1007, emphasis added.

A POSITA would have understood that the “separator between the eyes” referenced by commenter tobiasclaren was the center divider of Cardboard, which is shown clearly in Ex. 1010 at 6:05. Ex. 1002 at ¶80. As shown in the screenshot below, the center divider is oriented in a vertical direction that is perpendicular to the horizontal direction:



Ex. 1010 at 6:05; Ex. 1002 at ¶¶50 and 80.

A POSITA also would have understood that commenter tobiasclaren was suggesting placing metal tape vertically along the central divider, which would maximize adhesion and contact with the touchscreen of the mobile device. Ex. 1008; Ex. 1002 at ¶82. Additionally, a POSITA would have understood that commenter tobiasclaren was suggesting that part of the magnetic tape touchscreen input should extend to the exterior of the Cardboard enclosure so that the user could “touch this metal tape.” Ex. 1007, Ex. 1002 at ¶82.

A POSITA would have understood that that the metal tape is a touchscreen input, and that a portion of the metal tape at the center divider is in physical contact

with the touchscreen of the mobile device upon receipt of the mobile device. Ex. 1002 at ¶83.

2. Claim 2

Claim 2 depends from claim 1. Gigaom discloses claim 1 (Section IX.A.1) and the additional limitations of claim 2:

Further comprising a user input that is accessible from an exterior of the enclosure and is conductively coupled to the touchscreen input.

See supra Section IX.A.1; Ex. 1002 at ¶¶85-88.

3. Claim 3

Claim 3 depends from claims 1 and 2. Gigaom discloses claim 2 (Section IX.A.1 and IX.A.2) and the additional limitations of claim 3:

Further comprising a lead that conductively couples the touchscreen input to the user input, wherein a portion of the lead runs through a portion of the enclosure.

See supra Sections IX.A.1 and IX.A.2; Ex. 1002 at ¶¶89-93. The modification of Cardboard suggested by commenter tobiasclaren inherently discloses tape that runs through a portion of the enclosure. Ex. 1002 at ¶90. A POSITA would have understood commenter tobiasclaren's suggested modification to include tape on the central divider that extends through the cut-out slot where the center divider meets the top of the enclosure, thus providing access to the tape by the user when the mobile device is in the viewer. Ex. 1002 at ¶90.

Moreover, a POSITA would have understood that the metal tape discussed in the post from commenter tobiassclaren is a conductive lead that runs through a portion of the enclosure from the touchscreen through a portion of the enclosure for the user to touch. Ex. 1002 at ¶91.

4. Claim 8

Claim 8 depends from claim 1. Gigaom discloses claim 1 (Section IX.A.1) and the additional limitations of claim 8:

The first lens and the second lens are configured to facilitate a three-dimensional viewing experience.

See supra Section IX.A.1; Ex. 1002 at ¶¶94-97.

A POSITA would have understood that Google's Cardboard includes lenses that are configured to facilitate a three-dimensional viewing experience. Ex. 1002 at ¶95 Ex. 1008 at 15:13 to 16:00 (illustrating how Cardboard creates a three-dimensional viewing experience). Gigaom also explains that the lenses of Cardboard facilitate of three-dimensional viewing experience:

Cardboard works in basically the same way as Oculus: It has two lenses that focus your gaze on two screens, showing minute changes in viewpoint within the same picture. Put together, they are more than enough to trick your brain into believing what you are seeing is actually surrounding you....

Ex. 1007.

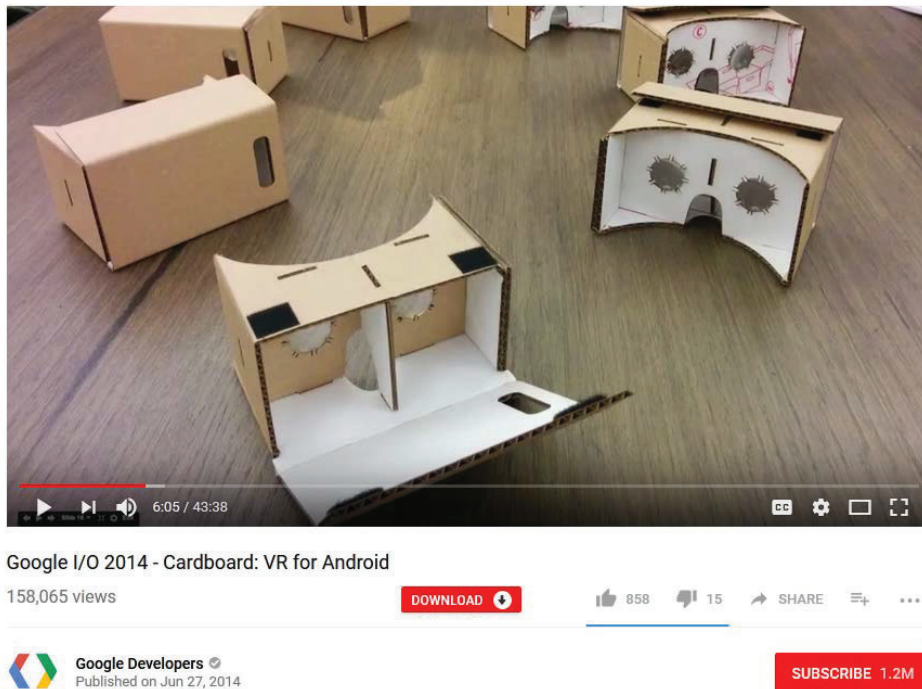
5. Claim 9

Claim 9 depends from claim 1. Gigaom discloses claim 1 (Section IX.A.1) and the additional limitations of claim 9:

The touchscreen input is generally centered between the first lens and the second lens in the horizontal direction.

See supra Section IX.A.1; Ex. 1002 at ¶¶98-101.

A POSITA would have understood that the “separator between the eyes” referenced by commenter tobiasclaren was the center divider of Cardboard, which is depicted clearly in Ex. 1010 at 6:05. Ex. 1002 at ¶99. As shown in the screenshot below, the center divider is generally centered between the first and second lenses in the horizontal direction:



Ex. 1010 at 6:05; Ex. 1002 at ¶100.

6. Claim 10

Claim 10 depends from claim 1. Gigaom discloses claim 1 (Section IX.A.1) and the additional limitations of claim 10.

A portion of the enclosure has a cut-out, and wherein at least a portion of the user input is accessible through the cut-out.

See supra Section IX.A.1; Ex. 1002 at ¶¶102-104.

B. Ground 2: Gigaom Renders Claims 2–11 Obvious

As discussed in detail below, Gigaom discloses and/or renders obvious every element of the challenged claims 2–11.

1. Claim 2

Claim 2 depends from claim 1. Gigaom discloses claim 1 (Section IX.A.1) and discloses and/or renders obvious the additional limitations of claim 2:

Further comprising a user input that is accessible from an exterior of the enclosure and is conductively coupled to the touchscreen input

See supra Section IX.A.1; Ex. 1002 at ¶¶106-109. To the extent it is argued that Gigaom lacks explicit disclosure of the limitations of claim 2, any difference between Gigaom and the claims would be minor and no more than a design choice. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 417 and 421 (2007) (“When a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, § 103 likely bars its patentability” and “[w]hen there is a design need or market pressure to solve a

problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp.”).

As commenter tobiasclaren noted, the user needs to “touch this metal tape” to create a touch event on the mobile device touchscreen. Ex. 1002 at ¶108. A POSITA would have been motivated to implement a design that makes the tape easily accessible to the user. Ex. 1002 at ¶108. A POSITA also would have understood that the design would be optimized by running the metal tape along the central divider and through the cut-out slot where the center divider meets the top of the enclosure. Ex. 1002 at ¶108.

2. Claim 3

Claim 3 depends from claims 1 and 2. Gigaom discloses and/or renders obvious claim 2 (Section IX.A.1, IX.A.2 and IX.B.1) and the additional limitations of claim 3 (Section IX.A.3):

Further comprising a lead that conductively couples the touchscreen input to the user input, wherein a portion of the lead runs through a portion of the enclosure.

See supra Sections IX.A.1, IX.A.2, IX.A.3 and IX.B.1; Ex. 1002 at ¶¶110-113.

3. Claim 4

Claim 4 depends from claim 1. Gigaom discloses claim 1 (Section IX.A.1) and discloses and/or renders obvious the additional limitations of claim 4:

Further comprising a second touchscreen input constructed of conductive material, wherein the second touchscreen input is generally centered between the first lens and the second lens in the horizontal direction and in physical contact with the touchscreen upon receipt of the mobile electronic device.

See supra Section IX.A.1; Ex. 1002 at ¶¶114-119.

A POSITA would have understood that as a matter of design choice at least one additional metal tape could be added to the virtual reality viewer to provide additional options for user input on the screen. Ex. 1002 at ¶116. Motivation for modifying Gigaom to include multiple touchscreen inputs can be found in Compton (Ex. 1008). Ex. 1002 at ¶116. Presented with the design proposed by commenter tobiasclaren, adding an additional input would be an obvious design choice. Ex. 1002 at ¶116. For example, a user may want to incorporate right-click and left-click functionality, and each side of the enclosure could include the same type of metal tape to achieve multiple input options, as evidenced by the multiple push buttons 510 and 511 and arms 512 and 513 of Fig. 6A of Compton.

Moreover, a POSITA would have understood that in order to optimize a two-input design using the metal tape proposed by commenter tobiasclaren, a second piece of metal tape could be placed vertically along the central divider and run through the bottom cut-out slot where the center divider meets the bottom of the enclosure. Ex. 1002 at ¶118. Thus, the first tape would be placed only on a top portion of the central divider and the second tape would be placed only a bottom

portion of the central divider. Ex. 1002 at ¶118. The first and second tape could then be run, for example, to opposite sides of the enclosure for easy access by the user. Ex. 1002 at ¶118. Such modification would include all elements of claim 4.

4. Claim 5

Claim 5 depends from claims 1 and 4. Gigaom discloses and/or renders obvious claim 4 (Sections IX.A.1 and IX.B.3) and the additional limitations of claim 5:

The touchscreen input is offset upwards in a vertical direction and the second touchscreen input is offset downwards in the vertical direction.

See supra Sections IX.A.1 and IX.B.3; Ex. 1002 at ¶¶120-122.

As discussed for claim 4, modifying Gigaom to incorporate multiple inputs would involve placing a first metal tape input on only on a top portion of the central divider and placing second tape input on only a bottom portion of the central divider. Ex. 1002 at ¶121. In such a configuration, the first tape input would be offset upwards in a vertical direction and the second tape input would be offset downwards in the vertical direction. Ex. 1002 at ¶121.

5. Claim 6

Claim 6 depends from claims 1 and 4. Gigaom discloses and/or renders obvious claim 4 (Sections IX.A.1 and IX.B.3) and the additional limitations of claim 6:

The user input is a metal or conductive polymer.

See supra Sections IX.A.1 and IX.B.3; Ex. 1002 at ¶¶123-125.

6. Claim 7

Claim 7 depends from claim 1. Gigaom discloses claim 1 (Section IX.A.1) and discloses and/or renders obvious the additional limitations of claim 7:

The touchscreen input is offset in the vertical direction.

See supra Section IX.A.1; Ex. 1002 at ¶¶126-130.

A POSITA would have understood that as a matter of design choice the portion of the metal tape touching the touchscreen could be offset vertically from vertical dead center between the lenses, or from the vertical dead center of the enclosure. Ex. 1002 at ¶128. First, a POSITA would have recognized that it is not necessary for the metal tape to extend all the way to the vertical center of the enclosure (or lenses) in order for the tape to function. Ex. 1002 at ¶128. The tape need only extend sufficiently to make contact with the touchscreen. Ex. 1002 at ¶128. Thus, the design would be optimized by using less tape and terminating the tape above the vertical center (and closer to the side edge of the touchscreen of the mobile device). Ex. 1002 at ¶128. Second, a POSITA would have recognized that the central divider may be more easily perceived by the viewer at the vertical center of the lenses. Ex. 1002 at ¶129. A POSITA would therefore be motivated to avoid potentially increasing the viewer's perception of the added tape input by not extending the tape to the vertical center of the lenses. Ex. 1002 at ¶129.

Regardless, whether the input is offset from the vertical center would have been nothing but a mere matter of simple design choice for a POSITA. Ex. 1002 at ¶127.

7. Claim 8

Claim 8 depends from claim 1. Gigaom discloses claim 1 (Section IX.A.1) and discloses and/or renders obvious the additional limitations of claim 8 (Section IX.A.4):

The first lens and the second lens are configured to facilitate a three-dimensional viewing experience.

See supra Sections IX.A.1 and IX.A.4; Ex. 1002 at ¶¶131-133.

8. Claim 9

Claim 9 depends from claim 1. Gigaom discloses claim 1 (Section IX.A.1) and discloses and/or renders obvious the additional limitations of claim 9 (Section IX.A.5):

The touchscreen input is generally centered between the first lens and the second lens in the horizontal direction.

See supra Sections IX.A.1 and IX.A.5; Ex. 1002 at ¶¶134-136. To the extent it is argued that Gigaom lacks explicit disclosure of the limitations of claim 9, any difference between Gigaom and the claims would be minor and no more than a design choice. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 417 and 421 (2007) (“When a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one.

If a person of ordinary skill can implement a predictable variation, § 103 likely bars its patentability” and “[w]hen there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp.”).

As commenter tobiasclaren noted, the user needs to place the tape at the “separator between the eyes,” which a POSITA would recognize as the center divider of Cardboard. Ex. 1002 at ¶135. A POSITA also would have understood that the design would be optimized by running the metal tape along the central divider so that it is out of the wearer’s field of view. Ex. 1002 at ¶135. Ex. 1012 at 6:05.

9. Claim 10

Claim 10 depends from claim 1. Gigaom discloses claim 1 (Section IX.A.1) and discloses and/or renders obvious the additional limitations of claim 10 (Section IX.A.6):

A portion of the enclosure has a cut-out, and wherein at least a portion of the user input is accessible through the cut-out.

See supra Section IX.A.2 and IX.A.6; Ex. 1002 at ¶¶137-139.

10. Claim 11

Claim 11 depends from claim 1. Gigaom discloses claim 1 (Section IX.A.1) and discloses and/or renders obvious the additional limitations of claim 11:

The conductive material is a conductive foam or polymer.

See supra Section IX.A.1; Ex. 1002 at ¶¶140-145.

A POSITA would have recognized the modification of Cardboard proposed by commenter tobiasclaren resulted in metal tape being in direct contact with the touchscreen surface of the mobile device. Ex. 1002 at ¶142. A POSITA also would understand that such direct contact could risk scratching the surface of the touchscreen. Ex. 1002 at ¶142. Accordingly, a POSITA would have been motivated to modify the design to incorporate more touchscreen-friendly materials, such as conductive foam or polymer. Ex. 1002 at ¶142. For example, a foam of plastic, like that used at the tip of a stylus, could be placed between the metal tape and the touchscreen. Ex. 1002 at ¶143. Alternatively, the entire metal tape input could be substituted for an input made of more touchscreen-friendly conductive foam or polymer. Ex. 1002 at ¶144.

A POSITA would have recognized that suitable materials would include a variety of electrically conductive materials that increase or change the relative capacitance, or parasitic capacitance to ground, when contact is made with the capacitive sensors of the display. Ex. 1002 at ¶¶143-144; Ex. 1009 at ¶ 0050. Included in examples of such more suitable materials were conductive materials already known and used in stylus input devices for use with capacitive touchscreen devices. Ex. 1002 at ¶¶143-144. Such materials well-known to a POSITA would

have included conductive fabric, conductive foam, conductive polymers such as rubber, or other materials metalized to create or improve conductivity, such as metalized fabrics. Ex. 1002 at ¶¶143-144 (identifying exemplary prior art publications describing conductive stylus materials) *KSR*, 550 U.S. at 421 (“When there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp.”). Employing such materials would be a design choice, based on the well-known properties of the materials, to achieve a predictable result—to conduct a touch signal from a human body to the capacitive touchscreen. Ex. 1002 at ¶141. Ex. 1009 at ¶ 0050.

C. Ground 3: Tech# Anticipates Claims 12, 15–17, 19 and 20

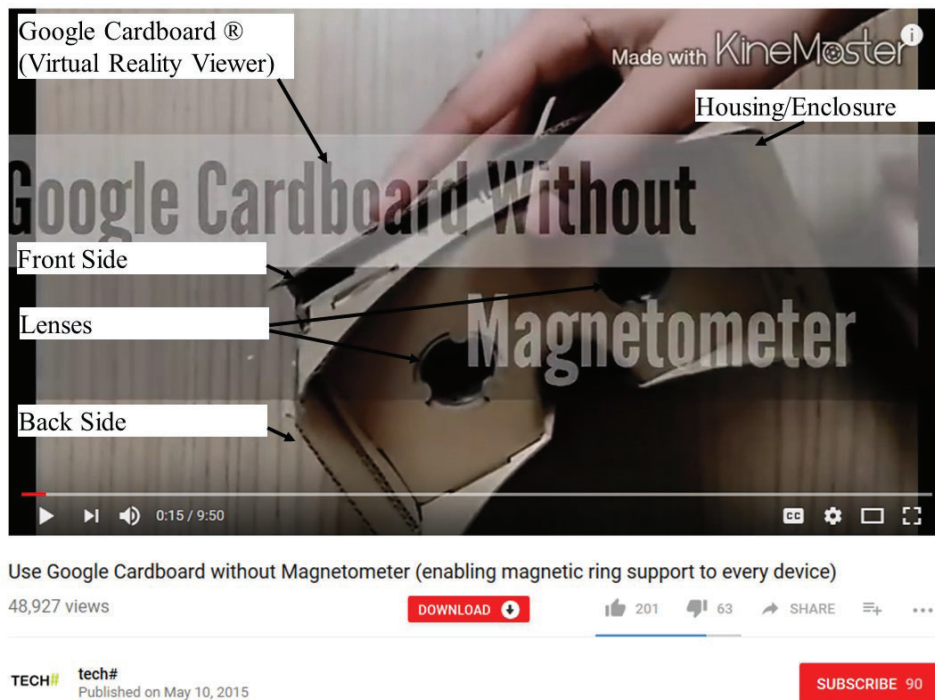
As discussed in detail below, Gigaom discloses every element of the challenged claims 12, 15–17, 19 and 20.

1. Claim 12

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

Tech# demonstrates a modification of Cardboard to achieve a virtual reality viewer for a mobile electronic device that has a touchscreen. Annotated snapshot of Tech# at time 0:15 below illustrates the Google Cardboard device that is for use

with a mobile electronic device, such as a mobile phone with a capacitive touch screen.



Ex. 1008 at 0:15; Ex. 1002 at ¶¶147-148.

- 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;**

The Cardboard enclosure disclosed in Tech# includes a first lens and a second lens. Ex. 1007 at 0:15. The lenses face in the same direction and are spaced apart horizontally. Ex. 1002 at ¶¶149-150.

- c. 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;**

The Cardboard viewer disclosed in Tech# includes an enclosure with a back side that is configured to be held both against and in proximity to a user's face.

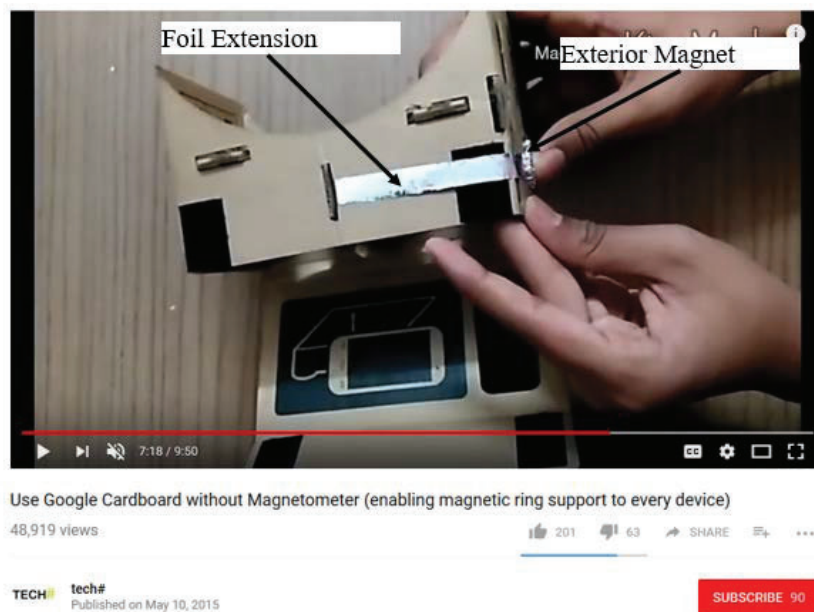
A mobile device inserted into the enclosure is centered in a horizontal direction and is directly in a user's field of view when looking through the lenses at a side of the enclosure opposite the touchscreen.



Ex. 1007 at 5:32; Ex. 1002 at ¶¶151-152.

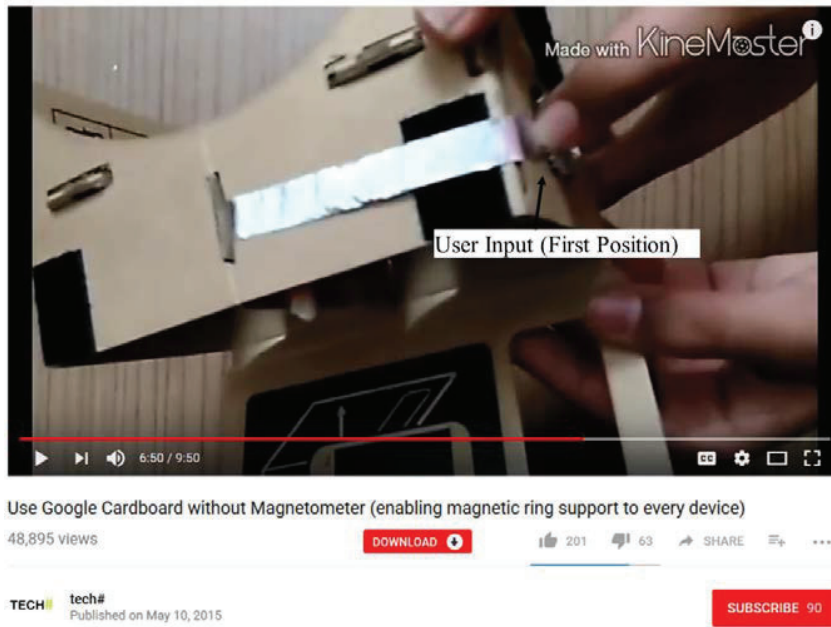
- d. **A user input that is accessible from an exterior of the enclosure and has a first position and a second position;**

Tech# discloses a user input that includes a magnet, magnetically fixed to an exterior of the Cardboard enclosure, and an aluminum foil extension conductively coupled to the magnet and passing from an exterior of the enclosure, through a cutout of the enclosure, and into an interior of the enclosure at the central divider between the eyes.



Ex. 1007 at 7:18, annotated for emphasis; Ex. 1002 at ¶153.

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



Ex. 1007 at 6:50, annotated for emphasis; Ex. 1002 at ¶153.

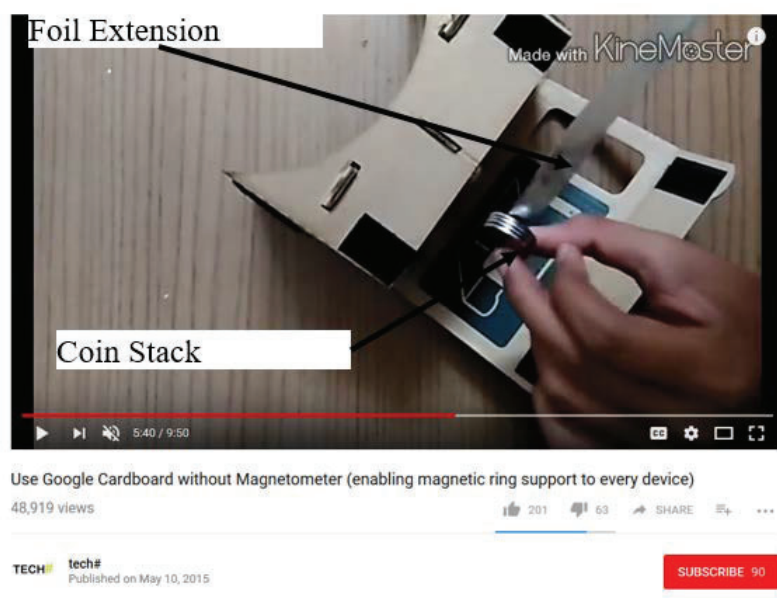


Id.

Accordingly, a POSITA would understand that the Tech# discloses a user input that is accessible from an exterior of the enclosure and has a first position and a second position. Ex. 1002 at ¶¶156-157.

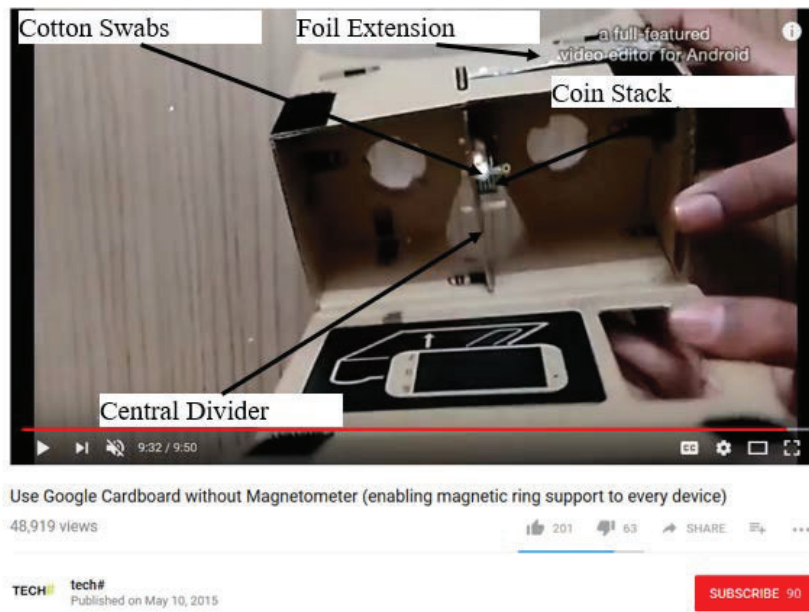
- e. **A touchscreen input conductively coupled to the user input and generally centered between the first lens and the second lens in the horizontal direction, wherein, upon receipt of the mobile electronic device, the touchscreen input is in physical contact with the touchscreen when the user input is in the second position.**

Tech# discloses a stack of coins that is conductively coupled to a distal end of the aluminum foil extension opposite the magnet, and the aluminum foil is conductively coupled to the magnet.



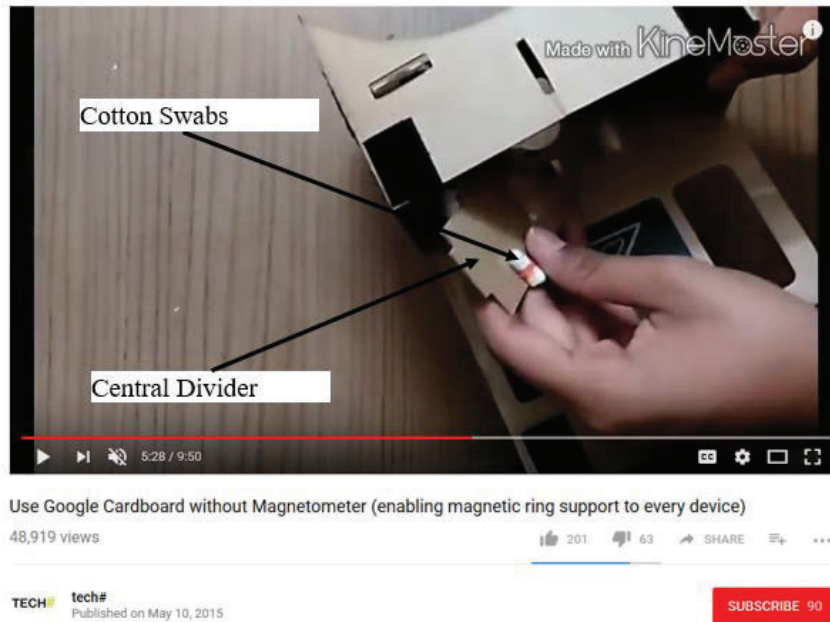
Ex. 1007 at 5:40, annotated for emphasis; Ex. 1002 at ¶¶159-160.

When the magnet at the exterior of the enclosure is moved downwards into the second position, the coins are drawn upward along the divider.



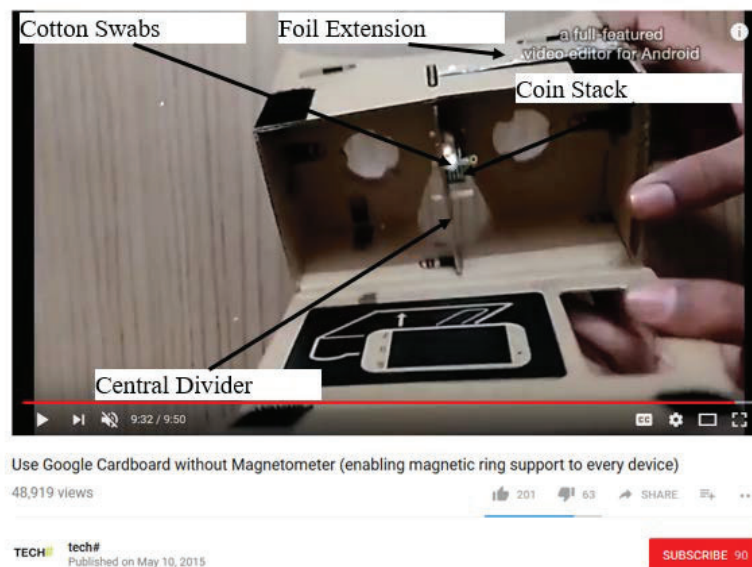
Ex. 1007 at 9:32, annotated for emphasis; Ex. 1002 at ¶159.

Tech# discloses moistened cotton swabs having a rounded surface and fixed to the central divider of the enclosure to thereby contact a central region of the touchscreen. Ex. 1007 at 3:36, 9:32, annotated for emphasis; Ex. 1002 at ¶158. As discussed below, *infra* in Section IX.D.1, a POSITA would have been motivated to improve the conductivity of the touchscreen input by replacing the swabs with any of a wide variety of alternative materials, such as a conductive polymer, that were well-known to a POSITA. Ex. 1002 at ¶161.



Ex. 1007 at 5:28, annotated for emphasis.

The contact occurs when the input mechanism is in the extended position/actuated state, when the exterior magnet is moved downward, and the coin stack is moved upwards to contact the swabs:



Ex. 1007 at 9:32, annotated for emphasis; Ex. 1002 at ¶¶160-161.

The touchscreen input swabs of Tech#, which are generally centered between the lenses horizontally, are conductively coupled to the user input magnet via the coins and foil. Ex. 1002 at ¶160. The touchscreen of a mobile device is in contact with the swabs of Tech# upon receipt of the mobile device. Ex. 1002 at ¶160. The swabs remain in contact with the touchscreen, and are conductively coupled with the user input, when the user input is in the second position. Ex. 1002 at ¶160.

Accordingly, Tech# discloses each and every limitation of claim 1 of the '184 patent. Ex. 1002 at ¶162.

2. Claim 15

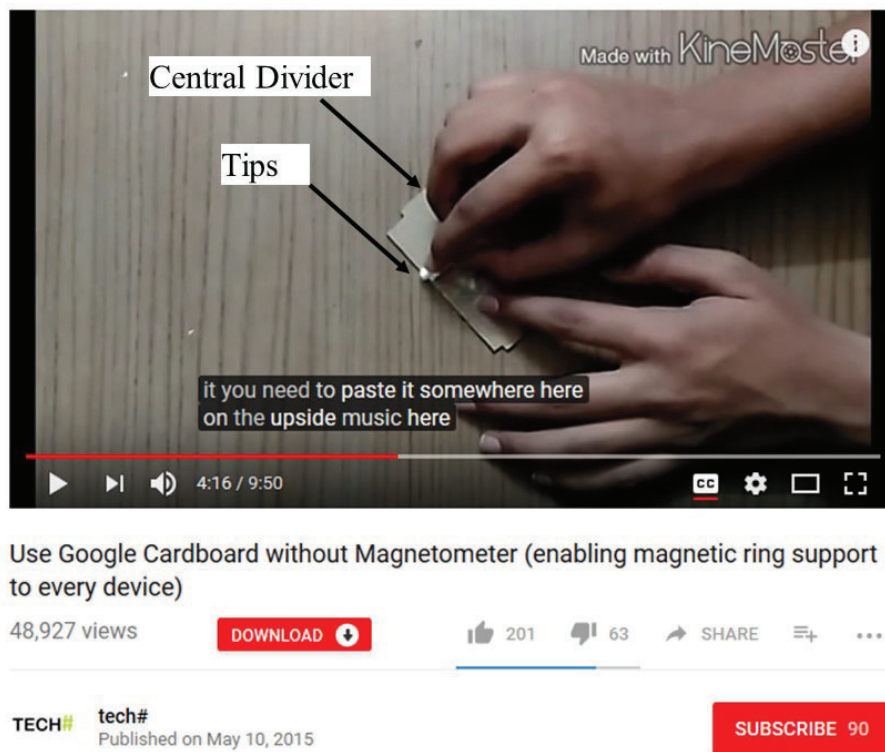
Claim 15 depends from claim 12. Tech# discloses claim 12 (Section IX.C.1)

and the additional limitations of claim 15:

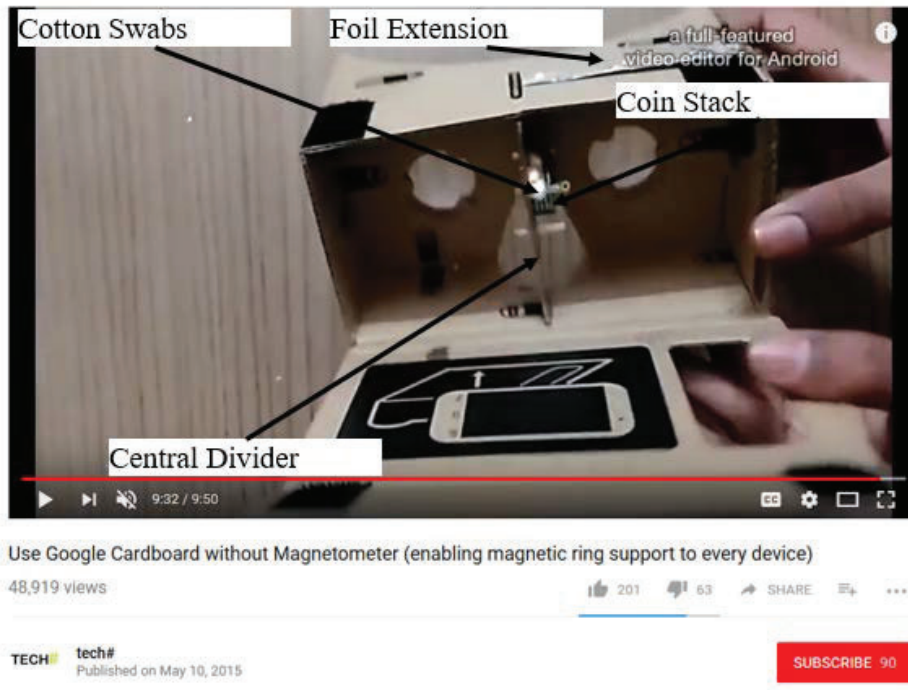
The touchscreen input is offset in a vertical direction.

See supra Section IX.C.1; Ex. 1002 at ¶¶163-165.

Tech# discloses attaching the cotton swabs to an upper portion a central divider, offset from the vertical dead center of the central divider.



Ex. 1007 at 4:16; Ex. 1002 at ¶164.



Ex. 1007 at 9:32, annotated for emphasis; Ex. 1002 at ¶164.

3. Claim 16

Claim 16 depends from claim 12. Tech# discloses claim 12 (Section IX.C.1) and the additional limitations of claim 16:

A portion of the enclosure has a cut-out, and wherein at least a portion of the user input is accessible through the cut-out.

See supra Section IX.C.1; Ex. 1002 at ¶¶166-168.

As shown below, Tech# includes a cut-out slot in an exterior wall of the enclosure, where the proximal end of the foil extension extends from within the enclosure, through the cut-out slot, to an exterior of the enclosure at the magnet, to be accessible by a user:



Id. at 7:13; Ex. 1002 at ¶167.

4. Claim 17

Claim 17 depends from claim 12. Tech# discloses claim 12 (Section IX.C.1) and the additional limitations of claim 17:

The touchscreen input is constructed of a conductive material.

See supra Section IX.C.1; Ex. 1002 at ¶¶169-171.

As explained in Tech#, the cotton swabs are sufficiently conductive when one makes the ends “a little wet.” Ex. 1007 at 9:30–9:40. A POSITA would recognize that the moistened cotton swabs taught by Tech# are a conductive material, despite not being an ideal material, as explained in Section IX.C.1.e; Ex. 1002 at ¶170.

5. Claim 19

Claim 19 depends from claim 12. Tech# discloses claim 12 (Section IX.C.1)

and the additional limitations of claim 19:

Further comprising a lead that conductively couples the touchscreen input to the user input, wherein a portion of the lead runs through a portion of the enclosure.

See supra Section IX.C.1; Ex. 1002 at ¶¶172-174.

Tech# discloses an aluminum strip, which is the conductive lead that conductively couples the touchscreen input (cotton swabs) to the user input (foil-wrapped sliding washer) and runs through the cut-out on the top wall of the enclosure. Ex. 1002 at ¶173.

6. Claim 20

Claim 20 depends from claim 12. Tech# discloses claim 20 (Section IX.C.1)

and the additional limitations of claim 20:

The user input is a metal or conductive polymer.

See supra Section IX.C.1; Ex. 1002 at ¶¶175-177.

Tech# discloses a user input in the form of an exterior, sliding washer that is wrapped by the aluminum foil. Ex. 1002 at ¶176.

D. Ground 4: Tech# Renders Claims 12–20 Obvious

As discussed in detail below, Tech# discloses and/or renders obvious every element of the challenged claims 12–20.

1. Claim 12

To the extent it is argued that Tech# lacks explicit disclosure of one or more limitations of claims 12 of the '184 patent, any difference between Tech# and the claims would be minor and no more than a design choice. *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 417 and 421 (2007) (“When a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, § 103 likely bars its patentability” and “[w]hen there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp.”).

Moreover, a POSITA would have been motivated to modify Tech# to provide a more accurate, consistent, and durable input mechanism for capacitive touch. Ex. 1002 at ¶182. For example, a POSITA would have recognized that the moistened cotton swabs taught by Tech# are not ideal material for inducing a touch event and thus would have been motivated to substitute the material of the swabs with a more suitable material. Ex. 1002 at ¶181. For example, moistened cotton swabs might lose their electrical conductivity as they dry out or wear out after only a few use cycles, and wet swabs might soil the screen of the user’s mobile device. Ex. 1002 at ¶181.

It would have been obvious to modify Tech# to substitute the material of the swabs with a more suitable material. Ex. 1002 at ¶182. Examples of such more suitable materials were conductive materials already known and used in stylus input devices for use with capacitive touchscreen devices. Ex. 1002 at ¶183. Such materials well-known to a POSITA would include conductive fabric, conductive foam, conductive polymers such as rubber, or other materials metalized to create or improve conductivity, such as metalized fabrics. Ex. 1002 at ¶183 (identifying exemplary prior art publications describing conductive stylus materials) *KSR*, 550 U.S. at 421 (“When there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp.”). Employing such materials would be a design choice, based on the well-known properties of the materials, to achieve a predictable result—to conduct a touch signal from a human body to the capacitive touchscreen. Ex. 1002 at ¶183.

A POSITA would have understood that, as explained in *Compton*, suitable materials for inducing a touch event on a capacitive display included any “electrically conductive material that increases or changes the relative capacitance, or parasitic capacitance to ground, when contact is made with the capacitive sensors of the display.” Ex. 1009 at ¶ 0050.

2. Claim 13

Claim 13 depends from claim 12. Tech# discloses and/or renders obvious claim 12 (Sections IX.C.1 and IX.D.1) and the additional limitations of claim 13:

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

a second touchscreen input conductively coupled to the second user input, wherein, upon receipt of the mobile electronic device, the second touchscreen input is in physical contact with the touchscreen when the second user input is in the second position.

See supra Sections IX.C.1 and IX.D.1; Ex. 1002 at ¶¶185-188.

As discussed above, each of the elements of the single input of claim 12 is disclosed by Tech# or obvious in view of Tech#. *See* IX.C.1 and IX.D.1. Claim 13 requires a plurality of such mechanisms. Adding an additional input mechanism could be accomplished, for example, by adding the same input mechanism structure from Tech# to the other side of the central divider. Ex. 1002 at ¶186.

The desire to add additional input mechanism features is a design choice by a POSITA. Ex. 1002 at ¶186. As is the location of the touchscreen input with respect to the enclosure or lenses (*e.g.*, the vertical positioning). Ex. 1002 at ¶187. For example, doing so would offer users the option of a left-handed or right-handed input mechanisms, or VR designers the possibility of receiving multiple, different screen inputs (for example, button “A” or “B” or both). Ex. 1002 at ¶187.

Physically, adding additional input mechanisms would have been a matter of merely duplicating known, existing parts. Ex. 1002 at ¶186.

3. Claim 14

Claim 14 depends from claims 12 and 13. Tech# discloses and/or renders obvious claim 13 (Sections IX.C.1, IX.D.1 and IX.D.2) and the additional limitations of claim 14:

The touchscreen input is offset upwards in a vertical direction and the second touchscreen input is offset downwards in the vertical direction.

See supra Sections IX.C.1, IX.D.1 and IX.D.2; Ex. 1002 at ¶¶189-190.

4. Claim 15

Claim 15 depends from claim 12. Tech# discloses and/or renders obvious claim 12 (Sections IX.C.1 and IX.D.1) and the additional limitations of claim 15 (Section IX.C.2):

The touchscreen input is offset in a vertical direction.

See supra Sections IX.C.1, IX.C.2 and IX.D.1; Ex. 1002 at ¶¶191-193.

5. Claim 16

Claim 16 depends from claim 12. Tech# discloses and/or renders obvious claim 12 (Sections IX.C.1 and IX.D.1) and the additional limitations of claim 16 (Section IX.C.3):

A portion of the enclosure has a cut-out, and wherein at least a portion of the user input is accessible through the cut-out.

See supra Sections IX.C.1, IX.C.3 and IX.D.1; Ex. 1002 at ¶¶194-196.

6. Claim 17

Claim 17 depends from claim 12. Tech# discloses and/or renders obvious claim 12 (Sections IX.C.1 and IX.D.1) and the additional limitations of claim 17 (Section IX.C.4):

The touchscreen input is constructed of a conductive material.

See supra Sections IX.C.1, IX.C.4 and IX.D.1; Ex. 1002 at ¶¶197-199.

7. Claim 18

Claim 18 depends from claims 12 and 17. Tech# discloses and/or renders obvious claim 17 (Sections IX.C.1, IX.C.4, IX.D.1 and IX.D.6) and the additional limitations claim 18.

The conductive material is a conductive foam or polymer.

See supra Sections IX.C.1, IX.C.4, IX.D.1 and IX.D.6; Ex. 1002 at ¶¶200-201.

A POSITA would have recognized that suitable materials would include a variety of electrically conductive materials that increase or change the relative capacitance, or parasitic capacitance to ground, when contact is made with the capacitive sensors of the display. Ex. 1002 at ¶200; Ex. 1009 at ¶ 0050. A POSITA would have recognized that exemplary materials may include a conductive fabric or a flexible material such as plastic embedded with conductive material such as metallic wires or grains. Ex. 1002 at ¶200; Ex. 1009 at ¶ 0050.

Employing such materials would be a design choice, based on the well-known properties of the materials, to achieve a predictable result—to transmit a touch signal from a human body to the touchscreen. Ex. 1002 at ¶¶200-201.

8. Claim 19

Claim 19 depends from claim 12. Tech# discloses and/or renders obvious claim 12 (Sections IX.C.1, IX.C.5 and IX.D.1) and the additional limitations claim 19.

Further comprising a lead that conductively couples the touchscreen input to the user input, wherein a portion of the lead runs through a portion of the enclosure.

See supra Sections IX.C.1, IX.C.5 and IX.D.1; Ex. 1002 at ¶¶202-204.

A POSITA would have understood that the foil disclosed in Tech# is a lead that runs through a portion of the enclosure and conductively couples the touchscreen input and user input. Ex. 1002 at ¶203.

9. Claim 20

Claim 20 depends from claim 12. Tech# discloses and/or renders obvious claim 12 (Sections IX.C.1, IX.C.6 and IX.D.1) and the additional limitations of claim 20.

The user input is a metal or conductive polymer.

See supra Sections IX.C.1, IX.C.6 and IX.D.1; Ex. 1002 at ¶¶205-207.

E. Ground 5: Tech# and Compton Render Claims 12-20 Obvious.

As discussed above, Tech# is directed to a virtual reality viewer that provides a mechanism for actuating the capacitive touchscreen of a mobile device while the mobile device is in the viewer. This was a known problem, as noted during the June 2014 Google I/O event (Ex. 1010 at 19:14–19:49) and as admitted in the background of the '184 patent; Ex 1001 at 2:9–36. See also, Ex. 1002 at ¶208.

Like Tech#, Compton is also directed to a virtual reality (augmented reality) device. Ex. 1009 at ¶¶28-31; Ex. 1002 at ¶¶69, 213 and 214. Also like Tech#, the device of Compton is designed to receive a mobile device, which generates the virtual content to be viewed. Ex. 1002 at ¶69. Additionally, Compton, like Tech#, is directed specifically to input mechanisms for causing a touch event at a touchscreen of the mobile device while the mobile device is in a viewer. Ex. 1002 at ¶¶69, 70 and 214.

Tech# and Compton are analogous art and a POSITA would have been motivated to look to the teachings of Compton to improve the input mechanism disclosed in Tech#, resulting in a more accurate, precise and/or stable input mechanism capable of causing more accurate, precise, and consistent capacitive responses at the touchscreen. Ex. 1002 at ¶¶212 and 213. Substituting one input mechanism for another would have been a mere matter of simple design choice for

a POSITA. Ex. 1002 at ¶¶215 and 216; *KSR*, 550 U.S. at 417 and 421 (“When a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, § 103 likely bars its patentability” and “[w]hen there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp.”).

1. Claim 12

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

See supra Section IX.C.1.a and IX.D.1; Ex. 1002 at ¶209.

- 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 supra Section IX.C.1.b and IX.D.1; Ex. 1002 at ¶210.

- c. 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;**

See supra Section IX.C.1.c and IX.D.1; Ex. 1002 at ¶211.

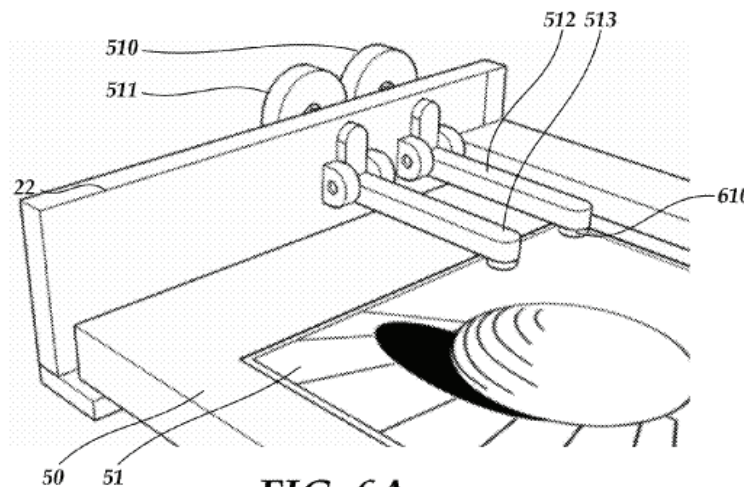
- d. **A user input that is accessible from an exterior of the enclosure and has a first position and a second position;**

See supra Section IX.C.1.d and IX.D.1; Ex. 1002 at ¶¶212-216.

- e. **A touchscreen input conductively coupled to the user input and generally centered between the first lens and the second lens in the horizontal direction, wherein, upon receipt of the mobile electronic device, the touchscreen input is in physical contact with the touchscreen when the user input is in the second position.**

See supra Section IX.C.1.e and IX.D.1; Ex. 1002 at ¶¶217-220.

Compton discloses a rocker arm 512 having a tip 610 (touchscreen input) that is a capacitive touch sensor for touching a touchscreen.



Ex. 1009 at page 7. *Id.* at ¶¶ 0048-0059, Fig. 6A; Ex. 1002 at ¶214.

Compton describes materials suitable for use in inducing a touch event on capacitive touchscreens:

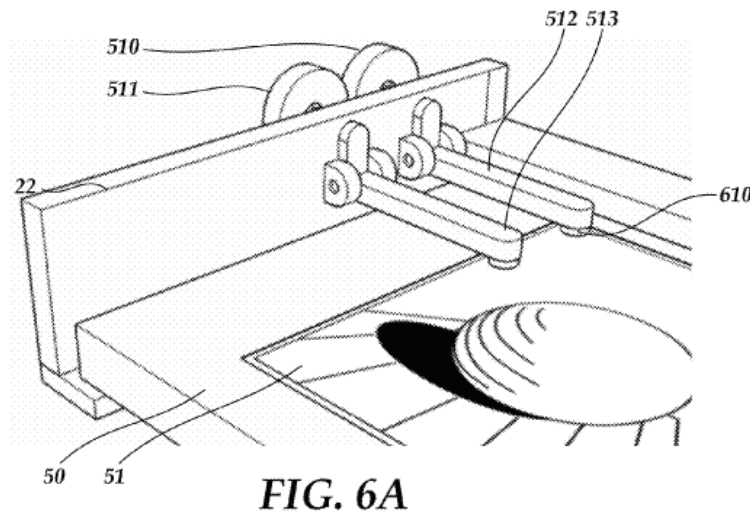
For example, in the case of a capacitive screen, which is a type of touch sensitive screen that employs capacitive touch sensors to detect viewer interactions, tips 610 and 611 are made of an electrically conductive material that increases or changes the relative capacitance, or parasitic capacitance to ground, when contact is made with the capacitive sensors of the display. In some embodiments, tips 610-611 include a contact surface made, at least in part, of a conductive fabric. Such a conductive fabric may increase flexibility of the tip to enlarge the point of contact with the display and thereby enhance electrical coupling at the point of contact. In some embodiments the tip may be made of a flexible material such as plastic embedded with conductive material such as metallic wires or grains.

Ex. 1009 at ¶ 0050; Ex. 1002 at ¶217.

A POSITA would have recognized that the teachings of Compton would be useful in improving the viewer of Tech#. Ex. 1002 at ¶¶212-213. For example, a POSITA would have recognized that the materials disclosed for the tip 610 in Compton would be an improvement over the swab material disclosed in Tech# and would therefore have been motivated to incorporate one of such materials into the design of Tech#. Ex. 1002 at ¶213.

In addition to teaching suitable materials for use as a touchscreen input, Compton also teaches an input mechanism. In particular, Compton discloses a button 510 (user input) connected to a rocker arm 512 having a tip 610 (user input) that is a capacitive touch sensor for touching a touchscreen. Ex. 1009 at ¶¶0048 and 0049. Pushing button 510 actuates the lever 512, which causes the tip 610 to move from a first position in which the tip is not in contact with the touchscreen to

a second position in which the tip 610 is in contact with the touchscreen. *Id.* at ¶¶ 0048-0059, Fig. 6A; Ex. 1002 at ¶214.



It would have been obvious to a POSITA to modify Tech# to replace the user input and touchscreen input of Tech# with the user input and touchscreen input (collectively, 510, 512 and 610) of Compton such that the button 510 is generally centered on the top surface of the viewer and the rocker 512 is positioned vertically, whereby the tip 610 would move toward the mobile device when the button is pressed. Ex. 1002 at ¶215. A POSITA would have recognized that such a combination would be an improvement to the design of Tech#. *Id.* at ¶213.

For example, a POSITA would have recognized that the materials of the tip 610 is an improvement over the swab material identified in Tech#. *Id.* at ¶213. Additionally, the rocker of Compton is more durable and mechanically reliable than the homemade design of Tech#. *Id.* at ¶¶212 and 213. And the rocker of

Compton readily accommodates mobile devices of different thicknesses compared to Tech#. *Id.* Finally, it would have been obvious to locate the input mechanism of Compton at the central divider (as in Tech#) so that it does not obstruct the user's view of the mobile device screen during use. *Id.* at ¶¶218 and 219.

Accordingly, by modifying Tech# to replacing the input mechanism of Tech# with the input mechanism (510, 512 and 610) of Compton located at the central divider, the modified Tech# would include an input mechanism that is accessible from an exterior of the enclosure and is moveable within the interior between at least a first position and an extended position.

2. Claim 13

Claim 13 depends from claim 12. Tech# and Compton disclose and/or render obvious claim 12 (Sections IX.C.1, IX.D.1 and IX.E.1) and the additional limitations of claim 13 (Section IX.D.2):

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

a second touchscreen input conductively coupled to the second user input, wherein, upon receipt of the mobile electronic device, the second touchscreen input is in physical contact with the touchscreen when the second user input is in the second position.

See supra Sections IX.C.1, IX.D.1, IX.D.2, IX.E.1; Ex. 1002 at ¶¶221-224.

Claim 13 requires a plurality of user inputs and touchscreen inputs. A desire to add an additional user/touchscreen input combination would have been a mere

design choice by a POSITA. Ex. 1002 at ¶222. For example, offering users the option of a left-handed or right-handed input mechanisms, or VR designers the possibility of receiving multiple, different screen inputs (for example, a left, a right, or a double touch). Ex. 1002 at ¶22. Compton does exactly this:

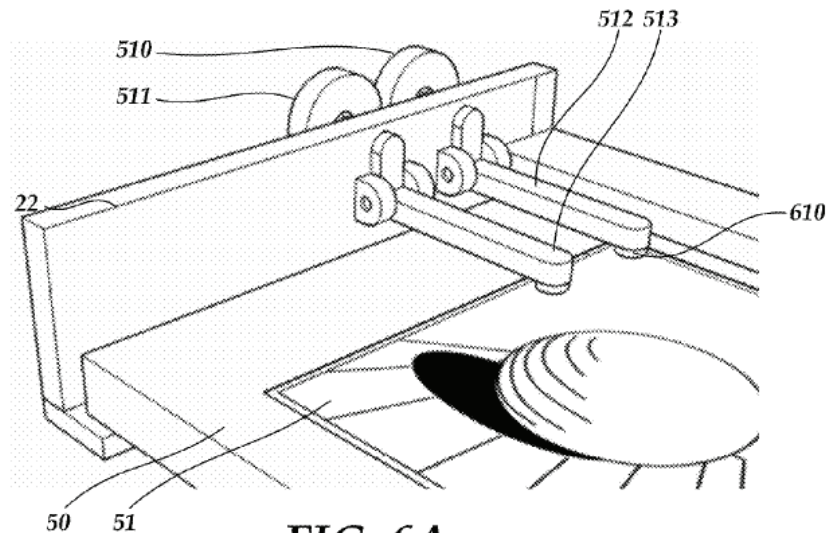


FIG. 6A

Ex. 1009 at page 7; Ex. 1002 at ¶¶222-223.

Compton discloses multiple lever input mechanisms (510, 512, 610) and (511, 513, 611) and a slider input mechanism (520, 521 611), as shown in Fig. 6A of Compton above. Ex. 1009 at ¶¶0048 and 0049; Ex. 1002 at ¶223. Physically, implementing this simple design choice would involve nothing more than adding both of the disclosed input mechanisms of Compton to the device of Tech# (e.g., one on each side of the central divider). Ex. 1002 at ¶¶222-223.

3. Claim 14

Claim 14 depends from claims 12 and 13. Tech# and Compton disclose and/or render obvious claim 13 (Sections IX.C.1, IX.D.1, IX.D.2, IX.E.1 and IX.E.2) and the additional limitations of claim 14 (Section IX.D.3):

The touchscreen input is offset upwards in a vertical direction and the second touchscreen input is offset downwards in the vertical direction.

See supra Sections IX.C.1, IX.D.1, IX.D.2, IX.D.3, IX.E.1 and IX.E.2; Ex. 1002 at ¶¶225-227.

4. Claim 15

Claim 15 depends from claim 12. Tech# and Compton disclose and/or render obvious claim 12 (Sections IX.C.1, IX.D.1 and IX.E.1) and the additional limitations of claim 15 (IX.C.2 and IX.D.4):

The touchscreen input is offset in a vertical direction.

See supra Sections IX.C.1, IX.C.2, IX.D.1, IX.D.4 and IX.E.1; Ex. 1002 at ¶¶228-230.

5. Claim 16

Claim 16 depends from claim 12. Tech# and Compton disclose and/or render obvious claim 12 (Sections IX.C.1, IX.D.1 and IX.E.1) and the additional limitations of claim 16 (IX.C.3, IX.D.5):

A portion of the enclosure has a cut-out, and wherein at least a portion of the user input is accessible through the cut-out.

See supra Sections IX.C.1, IX.C.3, IX.D.1, IX.D.5 and IX.E.1; Ex. 1002 at ¶¶231-233.

6. Claim 17

Claim 17 depends from claim 12. Tech# and Compton disclose and/or render obvious claim 12 (Sections IX.C.1, IX.D.1 and IX.E.1) and the additional limitations of claim 17 (IX.C.4, IX.D.6):

The touchscreen input is constructed of a conductive material.

See supra Sections IX.C.1, IX.C.4, IX.D.1, IX.D.6 and IX.E.1; Ex. 1002 at ¶¶234-236.

7. Claim 18

Claim 18 depends from claims 12 and 17. Tech# and Compton disclose and/or render obvious claim 17 (Sections IX.C.1, IX.C.4, IX.D.1, IX.D.6, IX.E.1 and IX.E.6) and the additional limitations of claim 18 (IX.D.7):

The conductive material is a conductive foam or polymer.

See supra Section Sections IX.C.1, IX.C.6, IX.D.1, IX.D.6, IX.D.7, IX.E.1 and IX.E.6; Ex. 1002 at ¶¶237-238.

8. Claim 19

Claim 19 depends from claim 12. Tech# and Compton disclose and/or render obvious claim 12 (Sections IX.C.1, IX.D.1 and IX.E.1) and the additional limitations of claim 19 (IX.C.5, IX.D.8):

Further comprising a lead that conductively couples the touchscreen input to the user input, wherein a portion of the lead runs through a portion of the enclosure.

See supra Sections IX.C.1, IX.C.5, IX.D.1, IX.D.8 and IX.E.1; Ex. 1002 at

¶¶239-241.

Additionally, a POSITA would recognized that this limitation is also met where Tech# is modified to replace the user input and touchscreen input of Tech# with the user input and touchscreen input (collectively, 510, 512 and 610) of Compton. Ex. 1002 at ¶¶239-240. Specifically, the rocker 512 and element connecting the rocker 512 and button 510 inherently include a lead that runs through the enclosure and conductively couples the tip 610 to the button 510. Ex. 1002 at ¶¶239-240.

9. Claim 20

Claim 20 depends from claim 12. Tech# and Compton disclose and/or render obvious claim 12 (Sections IX.C.1, IX.D.1 and IX.E.1) and the additional limitations of claim 20 (IX.C.6 and IX.D.9).

The user input is a metal or conductive polymer.

See supra Sections IX.C.1, IX.C.6, IX.D.1, IX.D.9 and IX.E.1; Ex. 1002 at

¶¶242-244.

X. CONCLUSION

For all the above reasons, PGR of Claims 1-20 of the '184 patent is respectfully requested.

Dated: January 15, 2018

Respectfully submitted,

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CERTIFICATE OF COMPLIANCE

Pursuant to 37 C.F.R. §§ 42.24 *et seq.*, the undersigned certifies that this Petition complies with the 18,700 word type-volume limitation. The brief was prepared in Times New Roman 14-point font, double spaced, using Microsoft Word and contains 13,203 words as indicated by Word, excluding the table of contents, table of authorities, mandatory notices under § 42.8, certificate of compliance, certificate of service, or appendix of exhibits or claim listing.

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**CERTIFICATE OF SERVICE ON PATENT OWNER
UNDER 37 C.F.R. § 42.205(a)**

Pursuant to 37 C.F.R. §§ 42.6(e) and 42.205, the undersigned certifies that on January 15, 2018 a complete and entire copy of this Petition for Post Grant Review been served via Federal Express overnight delivery upon the following attorney of record for the Patent Owner identified on U.S. PAIR:

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