

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SAMSUNG ELECTRONICS CO., LTD., AND SAMSUNG ELECTRONICS
AMERICA, INC.,

Petitioners,

v.

KEYLESS LICENSING LLC,

Patent Owner.

Case No. IPR2025-00528
U.S. Patent No. 11,503,144

**PETITION FOR *INTER PARTES* REVIEW
OF U.S. PATENT NO. 11,503,144**

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Ex. 1007	U.S. Provisional Application No. 60/463,844
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Ex. 1018	U.S. Provisional Application No. 60/536,564
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Ex. 1020	U.S. Provisional Application No. 60/557,140

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Ex. 1021	European Patent Application Pub. No. 1229428 to Pensjo, filed on February 2, 2001, and published on July 8, 2002 (“ <i>Pensjo</i> ”)
Ex. 1022	European Patent Application Pub. No. 1336949 to Bast, filed on February 18, 2003, and published on August 20, 2003 (“ <i>Bast</i> ”), including certified English translation and certification
Ex. 1023	International Patent Application Pub. No. 2004/070871 to Wedel et al., filed on February 4, 2004, and published on August 19, 2004 (“ <i>Wedel</i> ”)
Ex. 1024	Japanese Patent Application Pub. No. 2000-151774 to Yamaguchi, filed on November 9, 1998, and published on May 30, 2000 (“ <i>Yamaguchi</i> ”), including certified English translation and certification
Ex. 1025	U.S. Patent No. 5,848,356 to Jambhekar et al., filed on October 2, 1995, and issued on December 8, 1998 (“ <i>Jambhekar</i> ”)
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Ex. 1028	German Patent Application Pub. No. 10122229 to Dutta, filed on May 8, 2001, and published on December 13, 2001 (“ <i>Dutta</i> ”), including certified English translation and certification
Ex. 1029	U.S. Patent Application Pub. No. 2003/0022701 to Gupta, filed July 25, 2001, and published on January 30, 2003 (“ <i>Gupta</i> ”)
Ex. 1030	U.S. Patent No. 5,537,608 to Beatty et al., filed on June 2, 1995, and issued on July 16, 1996 (“ <i>Beatty</i> ”)
Ex. 1031	European Patent Application Pub. No. 0651544A2 to Allard et al., filed on October 28, 1994, and published on May 3, 1995 (“ <i>Allard</i> ”)
Ex. 1032	U.S. Patent Application Pub. No. 2002/0067346 to Mouton, filed on September 21, 2001, and published on June 6, 2002 (“ <i>Mouton</i> ”)

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Ex. 1033	U.S. Patent No. 6,751,487 to Rydbeck et al., filed on February 8, 2000, and issued on June 15, 2004 (“ <i>Rydbeck</i> ”)
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Ex. 1036	U.S. Patent Application Pub. No. 2003/0048257 to Mattila, filed on September 6, 2001, and published on March 13, 2003 (“ <i>Mattila</i> ”)
Ex. 1037	U.S. Patent Application Pub. No. 2001/0044281 to Peterzell et al., filed on June 15, 1998, and published on November 22, 2001 (“ <i>Peterzell</i> ”)
Ex. 1038	European Patent Application Pub. No. 1379101 to Erixon et al., filed on July 1, 2002, and published on January 7, 2004 (“ <i>Erixon</i> ”)
Ex. 1039	European Patent Application Pub. No. 0399176 to Tattari, filed on March 28, 1990, and published on November 28, 1990 (“ <i>Tattari</i> ”)
Ex. 1040	U.S. Patent Application No. 14/146,125 to Ghassabian, filed on January 2, 2014
Ex. 1041	U.S. Patent Application No. 10/553,575 to Ghassabian, filed on October 17, 2005
Ex. 1042	International Patent Application No. PCT/US2004/012082 to Ghassabian, filed on April 19, 2004
Ex. 1043	<i>Keyless Licensing LLC v. Samsung Electronics Co., Ltd. et al.</i> , Case No. 2:24-cv-00464-JRG, Plaintiff’s Infringement Contentions Cover Pleading (E.D. Tex. Jan. 5, 2023)
Ex. 1044	<i>Keyless Licensing LLC v. Samsung Electronics Co., Ltd. et al.</i> , Case No. 2:24-cv-00464-JRG, Plaintiff’s Infringement Contentions Claim Chart for U.S. Patent No. 11,503,144 (E.D. Tex. Oct. 9, 2024)
Ex. 1045	“Sony Ericsson P800 User’s Manual,” Federal Communications Commission (FCC) ID: PY77130501 – Sony Ericsson’s Application for

Exhibit	Description
	Equipment Authorization, Exhibit 8, published on October 15, 2002
Ex. 1046	“Microsoft Lumia 640 LTE – Full phone specifications,” first available on March 4, 2015, Wayback Machine URL: https://web.archive.org/web/20150304170913/https://www.gsmarena.com/microsoft_lumia_640_lte-7055.php
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Ex. 1051	U.S. Patent Application Pub. No. 2004/0204125 to Messel et al., filed on March 13, 2002, and published on October 14, 2004 (“ <i>Messel</i> ”)
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I. PRELIMINARY STATEMENT

Petitioners Samsung Electronics Co., Ltd., and Samsung Electronics America, Inc., request IPR of claims 1-5 and 7-20 of U.S. Patent No. 11,503,144, assigned to Patent Owner Keyless Licensing LLC. The patent relates to a data entry method for small electronic devices. Ex. 1001, 1:31-35, 1:66-2:3, 7:25-32. The claims of the '144 patent recite a variety of dimensional and touchscreen features, all of which were well known at the time of the invention. For example, the claims recite a “mobile phone device [that] does not include a physical key on the front surface” (claim 1), a “front surface ... [that] does not have a physical button” (claim 9), and a “display unit occupying practically the entire surface of the front surface” (claim 15). But these and the other features recited in the claims were all known to persons having ordinary skill in the art (POSITAs).

Years before the earliest claimed priority date of the '144 patent, the mobile device industry moved towards larger touch-based screens while removing physical buttons from the front surface in favor of a virtual interface. And many prior-art mobile devices, like *Bast*,¹ already included pocket-sized designs with

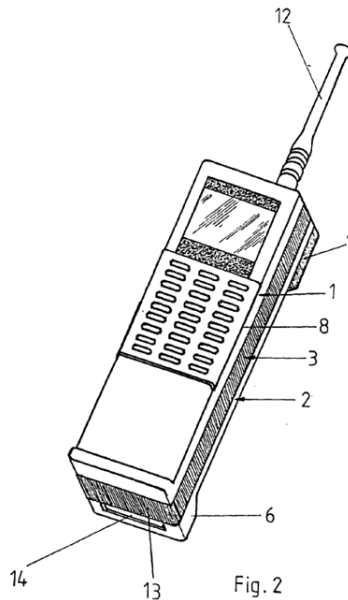
¹ In this IPR, Petitioners challenge Keyless's earliest claimed priority date of the '144 patent. *See* Section III.C. *Bast* was filed more than a year and published more

large touchscreen displays and buttonless front surfaces. The claimed features of the '144 patent were either taught by or obvious over the prior art. Therefore, Petitioners request that the Board institute IPR and cancel all challenged claims.

II. STATE OF THE ART

Early mobile phones (e.g., *Tattari*, below, dated 1990) were thick, bulky, and had small screens. Bederson, ¶¶69-71. Long before the alleged invention of the '144 patent, phone makers realized the benefits of moving away from these bulky designs and creating phones that were “thin,” have “touch sensitive display unit[s]” that “practically occup[y] the entire front surface,” and lack “components ... noticeably extended out from [the phone’s] housing,” as claimed in the '144 patent. Ex. 1001, 104:61, 104:64-65, 104:19, 104:23-28, 106:7-9.

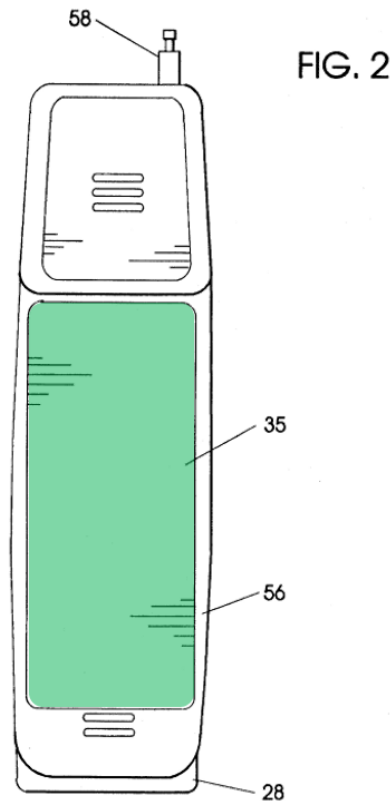
than six months before the earliest potential priority date of the '144 patent’s claims.



Tattari, Fig. 2.

As early as 1992, mobile-phone hardware and software became ripe for providing “display and user interface facilities necessary to execute many of the personal organizer applications found on personal computers.” *Beatty*, 1:15-18. IBM revealed a handset “that integrates the functionality of a personal computer with the communication possibilities of a cellular telephone to provide an apparatus with sophisticated computing as well as communication functions.” *Id.*, 1:31-35. The front of the IBM phone’s housing 56 is integrated with a speaker 52, a microphone 54, and a **user interface 35** featuring a touch overlay 26. *Id.*, 3:51-55. “User interface 35 extends through the housing 56 so that touch overlay 26 is exposed and accessible to the user.” *Id.*, 3:53-55. The components of the phone are

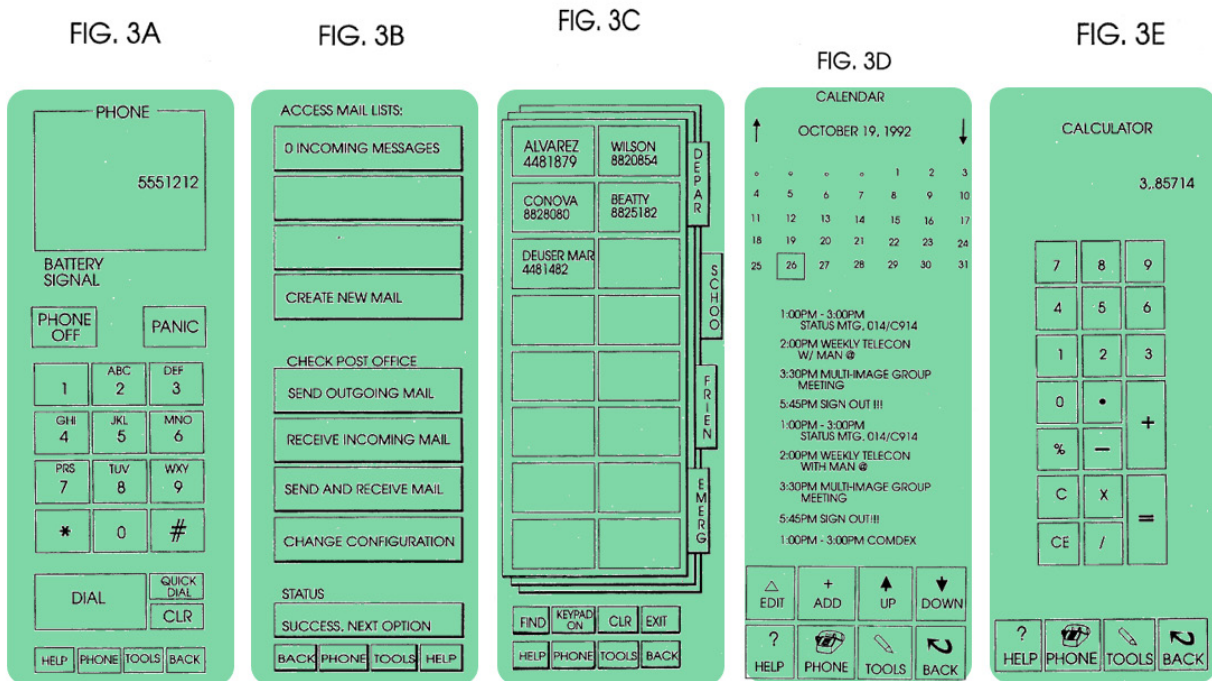
“integrate[d] ... into a portable, lightweight package which fits in the user’s hand or pocket.” *Id.*, 3:60-64.



Id., Fig. 2.²

User interface 35 can display various applications, e.g., “a phone emulation application,” “an electronic mail application,” “an address book simulation application,” “a calendar application,” “a calculator application,” etc. *Id.*, 4:11-28. It also provides “virtual keys,” such as “PHONE” and “TOOLS,” so that “the user may select an application for execution.” *Id.*, 4:36-41.

² All colors and colored text annotations added to figures unless otherwise noted.

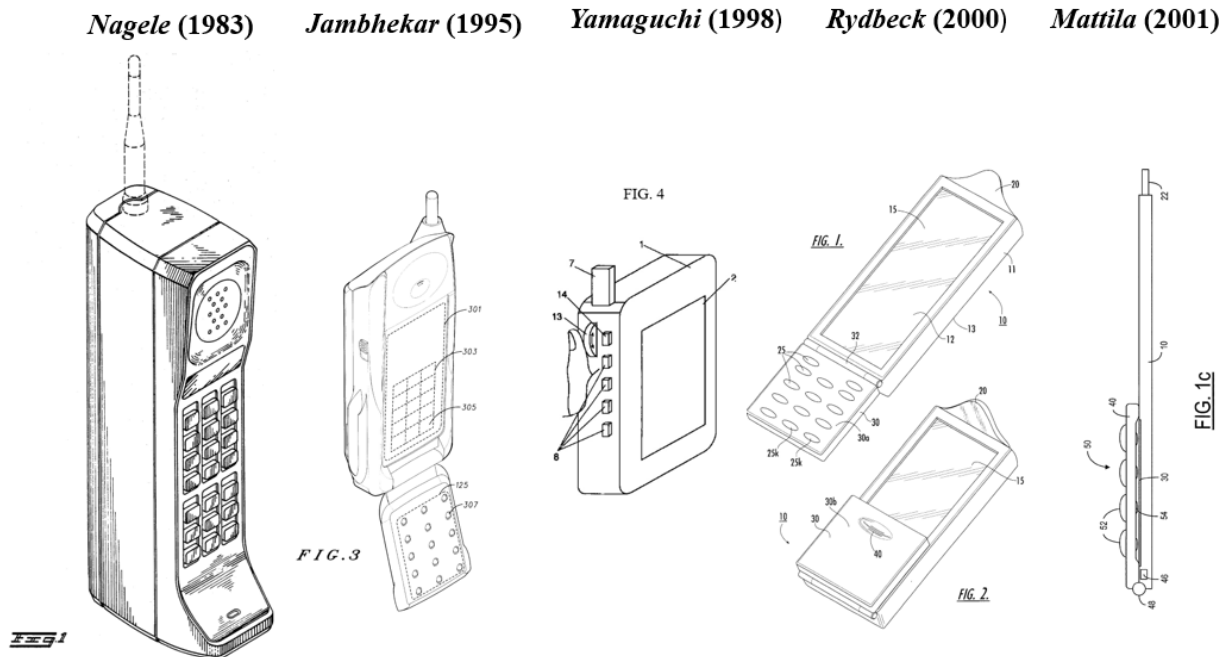


Id., Figs. 3A-3E.

A. Miniaturization and Portability

Phone makers continued to make phones smaller and thinner. *Dutta*, ¶[0002] (“A goal in the ongoing further development of portable terminals consists in continuously reducing its dimensions to make its transport as comfortable as possible.”); *Yamaguchi*, ¶[0007] (“a demand for a size such that the device can fit in a clothing pocket or the like from the perspective of making the device ‘easily portable anywhere’”); *Wedel*, 1:17-19 (“Still today, mobile phones are getting smaller and smaller and the size is generally considered to be an important factor for the end customer.”); *Bederson*, ¶72. “In only a couple of decades”—still before the earliest claimed priority date of the ’144 patent—“the dimensions of the

communication terminals have gone from briefcase size to ... pocket[-]size[d] phones.” *Wedel*, 1:14-17; *Bederson*, ¶72. The figures in Exhibits 1035 (Fig. 1), 1025 (Fig. 3), 1024 (Fig. 4), 1033 (Figs. 1-2), 1036 (Fig. 1c), respectively reproduced below, show this progression through the year 2001.



“The development in electronics has made it possible to miniaturiz[e] the components of the terminals, at the same time making the terminals capable of performing more advanced functions and services.” *Bederson*, ¶73; *Wedel*, 1:19-21. Benefiting from the advancement in component miniaturization and integration, mobile phones before the ’144 patent were capable of “rendering a very slim profile.” *Erixon*, ¶[0012]; see also *Peterzell*, ¶¶[0027] (“[A] very thin, low-profile rectangular prismatic cell battery is used.”), [0030] (“thinner lithium polymer batteries[] ... no thicker than most of the components within the phone

casing”). As early as 1998, five years before the ’144 patent, *Yamaguchi* disclosed a phone thickness of just 15mm. *Yamaguchi*, ¶¶[0009], [0015].

B. Full-Length Touchscreen and Buttonless Design

As mobile phones became “smaller, miniaturized, or ‘pocket-sized,’” this put strain on the phone’s display and keyboard. *Rydbeck*, 1:11-19. There was a “need for a small communications device that merges the functions of a personal digital assistant and a telephone, cellular or otherwise, while still providing a display that is large enough for practical information viewing and a keypad that is easy to use.” *Gupta*, ¶[0004]. For example, *Gupta* describes a “buttonless ... wireless radiotelephone for use in a cellular system.” *Id.*, ¶[0019]. The device has “a full-length touchscreen display” that “can display a keypad” in replacement of “a fixed keypad.” *Id.*, ¶¶[0051], [0017]. Thus, it “does not ... [require] a physical button or switch.” *Id.*, ¶[0020].

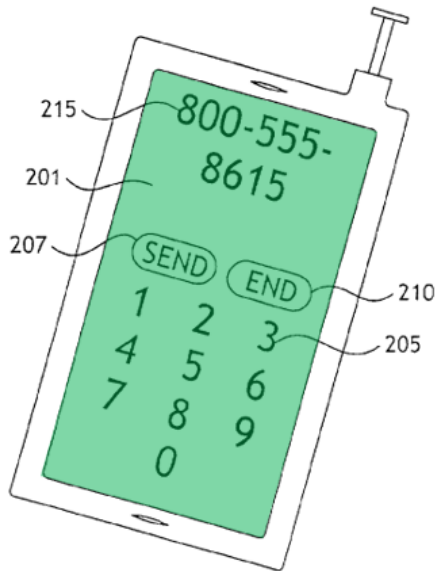


Fig. 2

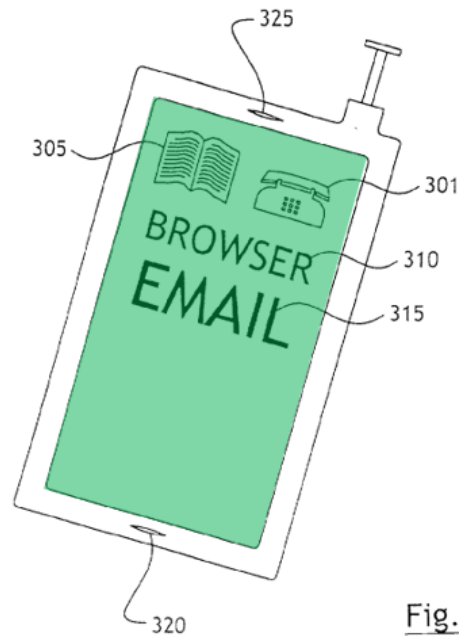
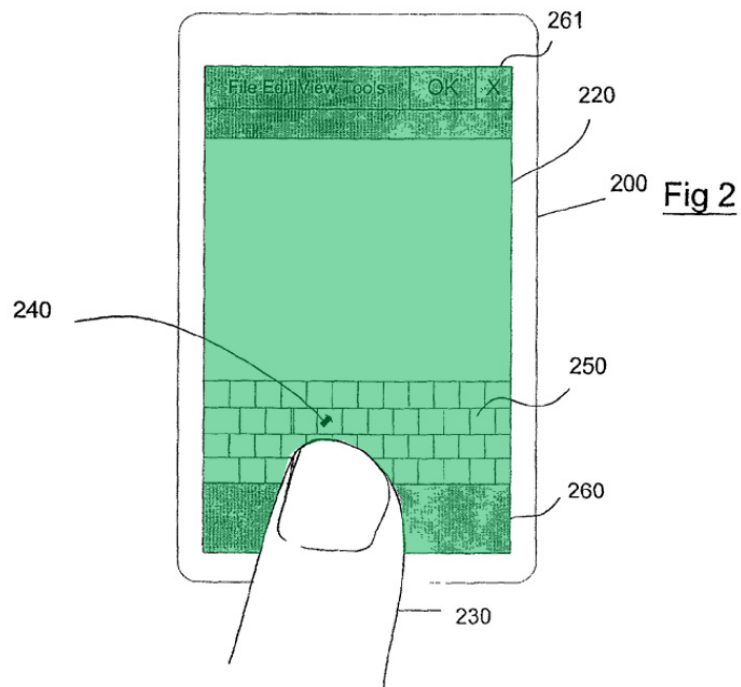


Fig. 3

Id., Figs. 2-3.

Similarly, *Mouton* describes a mobile phone with “a touch sensitive display 220” that spans almost the phone’s entire front surface and is large enough to simultaneously display both a virtual keyboard and the entered data. *Mouton*, ¶[0022], Figs. 2-3; *see also id.*, Abstract, ¶[0001].



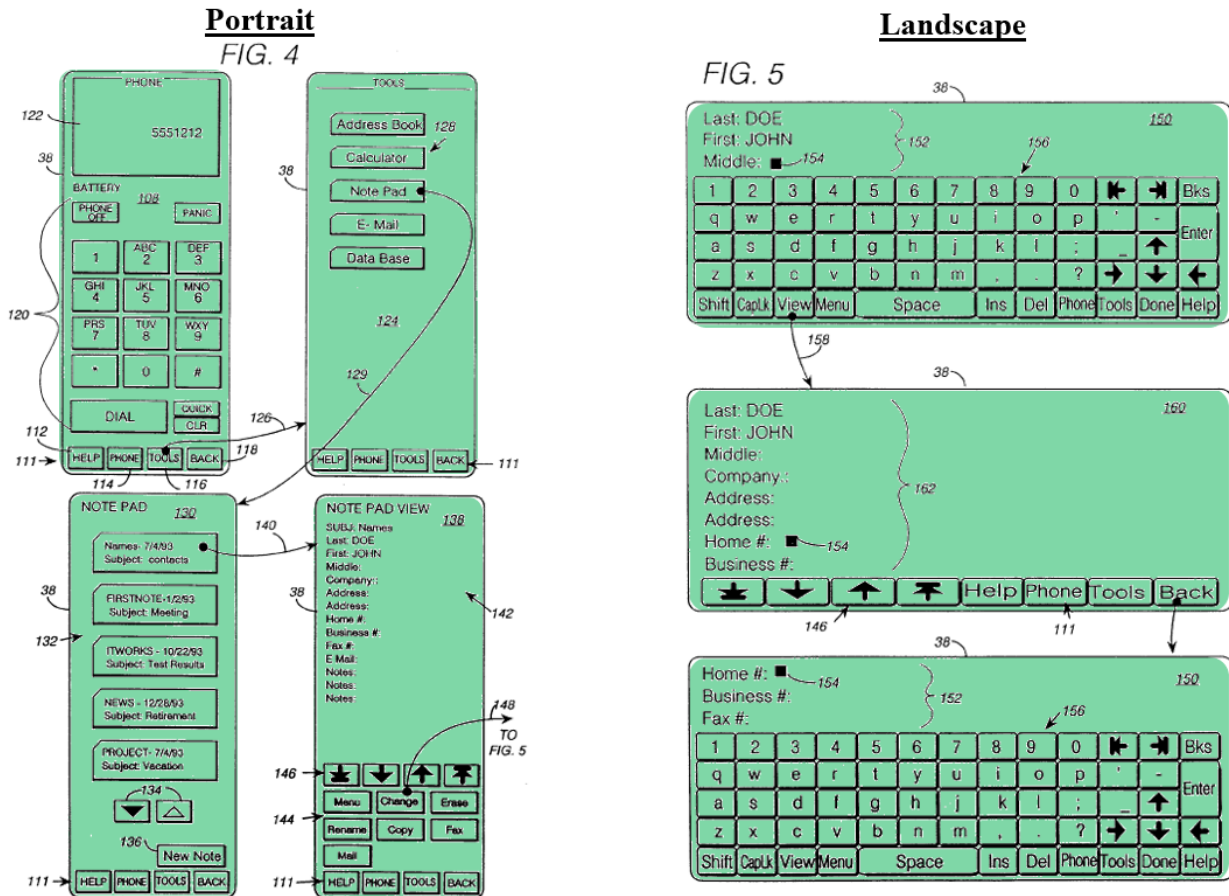
Id., Fig. 2.

The buttonless design and large touchscreen further reduce the phones' sizes, thereby mutually reinforcing the known design objectives of miniaturization and portability. Bederson, ¶¶74-76.

C. Versatile Display and Virtual Keyboard

In addition to the above hardware improvements, the display and input software had also been customized to better use the limited real estate of the shrinking mobile phones. Bederson, ¶77. For example, *Allard* discloses a mobile phone **touchscreen** that can switch between portrait and landscape orientations. *Allard*, 2:29-36, 7:37-40, Figs. 4-5. The portrait view is used for navigating between different applications and could render a simulated cellular phone

keyboard 120 for use with a phone application (*id.*, 6:46-7:40, Fig. 4), whereas the landscape view is used for editing messages and can display a full “qwerty” keyboard 156 that is collapsible to expand the area for data displaying (*id.*, 7:41-8:38, Fig. 5). A user can select specific virtual keys displayed on the **touchscreen** to switch the portrait/landscape view and collapse/restore the virtual keyboard. *Id.*, 7:34-40, 8:9-17, 8:39-9:10.

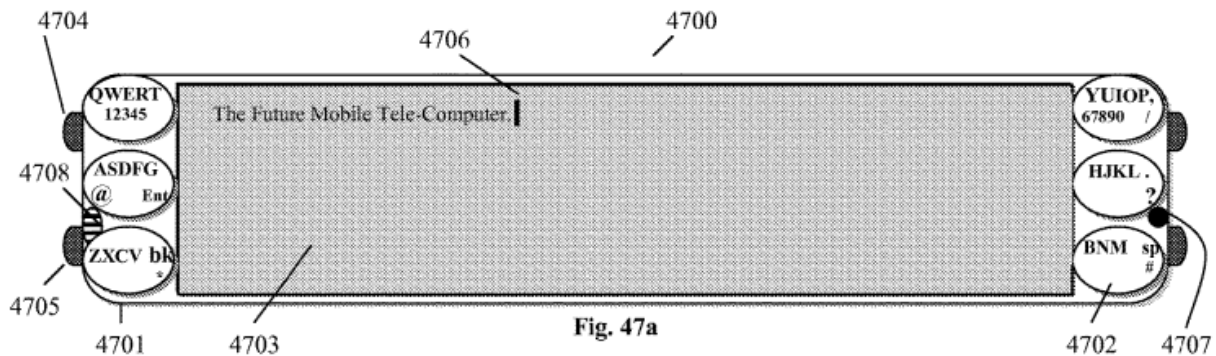


Id., Figs. 4-5.

III. THE '144 PATENT

A. Alleged Invention

The '144 patent purports to provide a data entry method for small electronic devices. Ex. 1001, 1:31-35, 1:66-2:3, 7:25-32. For example, Figure 47a shows a mobile phone 4700 “having two rows of keys 4701, 4702.” *Id.*, 69:42-46. “Use of few keys (e.g., [.] in two rows only) for data entry[] permits to integrate a wide display 4703 within said device.” *Id.*, 69:51-53. The phone includes a “microphone 4707 and ... a speaker 4708,” “[t]he distance between ... [which] may correspond to the distance between mouth and ear of a user.” *Id.*, 70:20-24. It “may also have other buttons such as the buttons 4704, 4705 for functions such as scrolling the document to upward/downward, to left/right, navigating a cursor 4706 within said display 4703, send/end functions, etc.” *Id.*, 69:56-61.



Id., Fig. 47a.

In another embodiment, Figure 68a shows an electronic device 6810 in which “a large display 6811 substantially covers the surface of at least one side of said electronic device.” *Id.*, 98:2-6.



Fig. 68a

Id., Fig. 68a.

In another embodiment, Figure 14 shows “a mobile phone 1400” with “[a] plurality of different icons 1411-1414 representing different applications ... displayed on the screen 1402 of said device.” *Id.*, 18:24-27. A user can open an application by selecting the corresponding icon. *Id.*, 18:27-34.

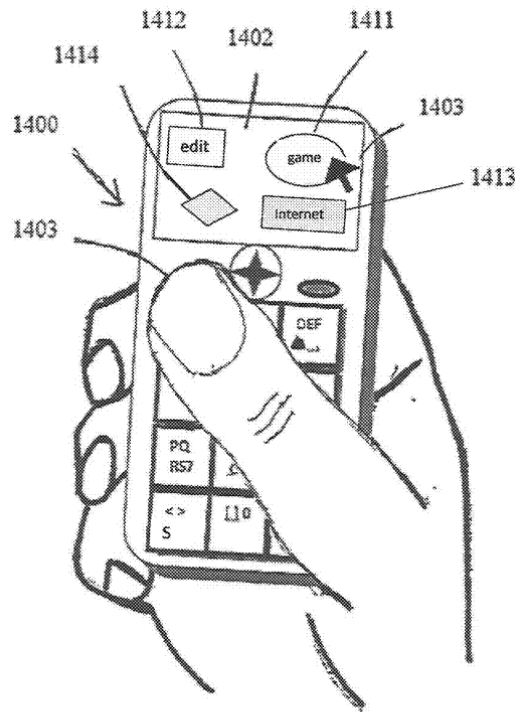


Fig. 14

Id., Fig. 14.

B. Prosecution History

During prosecution, to overcome the Examiner's prior-art rejections, the applicant amended the claims to add the limitations now recited in the issued claims, and argued:

[T]he cited prior art, Kubes, describes a mobile phone device ... wherein the antenna of the device is significantly extended out from the housing of the device, making it difficult to use in different positions (e.g., landscape position) and very cumbersome for portability. In addition, Kubes describes that the device has a standard 12-key keypad (having the digit keys 0 to 9), which confirms that Kubes'[s] device was adapted/designed to be used in portrait position

only, like any other mobile handset at the time of Kubes'[s] invention. Note that Kubes'[s] device is also very thick, which again confirms that the device was designed for use with one hand in vertical/portrait position only.

Ex. 1004, 362. But, the above features and benefits relied on by the applicant to gain allowance were well known in the art (*see* Section II) and taught by the references cited in this Petition (*see* Section VI), none of which was present before the Examiner.

C. The Claims of the '144 Patent Are Not Entitled to the Earliest Claimed Priority Date

The '144 patent asserts priority through nonprovisional applications and a PCT application to fourteen provisional applications, the earliest of which was filed on April 18, 2003. Ex. 1001, pp. 1-2. New contents were added to the fourteen provisional applications incrementally. Exs. 1007-1020.

In related litigation, Keyless asserts all the challenged claims “are entitled to a priority date at least as early as April 18, 2003, and possibly earlier than this date.” Ex. 1043, 9. Petitioners dispute this assertion.

1. Legal requirement for determining entitlement to priority to prior-filed application(s)

Under 35 U.S.C. § 120, a claim in a U.S. application is not entitled to the benefit of an earlier-filed U.S. application unless the subject matter of the claim is disclosed in the manner provided by 35 U.S.C. § 112 in the earlier-filed

application. *See, e.g., In re NTP, Inc.*, 654 F.3d 1268, 1277 (Fed. Cir. 2011). To comply with the written description requirement under 35 U.S.C. § 112, an application must “reasonably convey[] to those skilled in the art that the inventor had possession of” and “actually invented” the claimed subject matter. *Ariad Pharms., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1351 (Fed. Cir. 2010) (en banc); *accord Hologic, Inc. v. Smith & Nephew, Inc.*, 884 F.3d 1357, 1361 (Fed. Cir. 2018) (citing *Ariad*, 598 F.3d at 1351). “[T]he hallmark of written description is disclosure.” *Ariad*, 598 F.3d at 1351.

The test for adequate written description support “requires an objective inquiry into the four corners of the specification from the perspective of a person of ordinary skill in the art.” *Id.* Although the specification need not “recite the claimed invention *in haec verba*, a description that merely renders the invention obvious does not satisfy the [written description] requirement.” *Id.* at 1352. Instead, “[i]t is the disclosures of the applications that count. Entitlement to a filing date does not extend to subject matter which is not disclosed but would be obvious over what is expressly disclosed. It extends only to that which is disclosed.” *Lockwood v. Am. Airlines, Inc.*, 107 F.3d 1565, 1571-72 (Fed. Cir. 1997). Moreover, “the disclosure must describe the claimed invention with all its limitations.” *Tronzo v. Biomet, Inc.*, 156 F.3d 1154, 1158 (Fed. Cir. 1998); *see also Lockwood*, 107 F.3d at 1572.

2. No application before March 11, 2004, discloses the subject matter of claims 1-14

Independent claim 1 and its dependent claims 2-8 require “wherein said mobile phone device does not include a physical key on the front surface.” Ex. 1001, 104:20-24, 104:29-51. Independent claim 9 and its dependent claims 10-14 require “wherein said front surface of the mobile phone does not have a physical button.” *Id.*, 104:64-67, 105:10-30.

The earliest provisional application—No. 60/463,844—does not provide written description support for claims 1-14. Ex. 1007. The next eleven provisional applications also do not. *See* Exs. 1008-1018. At best, the 12th provisional application—No. 60/536,564—added Figure 110a to show “a mobile communication device 11000 comprising ... few keys (here, arranged in two rows 11001-11002) ..., along with a relating display unit 11003.” Ex. 1018, 131.

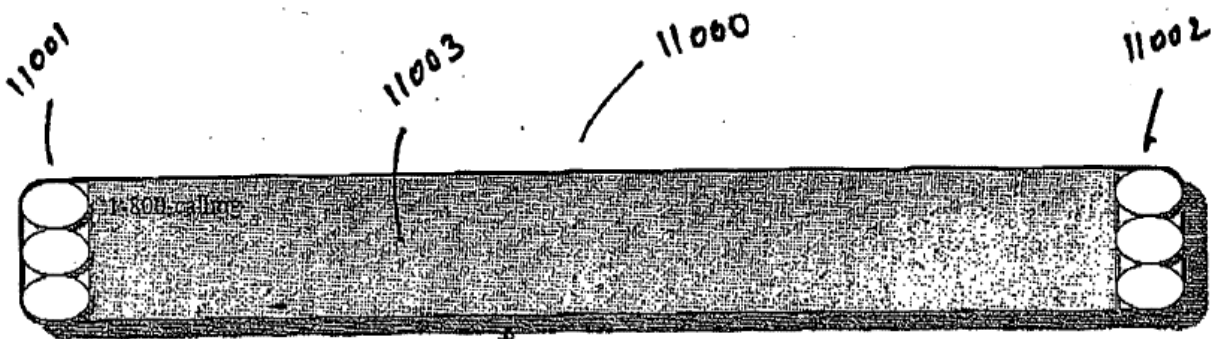


Fig. 110a

Id., 208 (Fig. 110a). But the device 11000 does not meet the claim limitations of not having a physical key or button on the front surface. And, even if Keyless

argues this would be rendered obvious by the '564 application, obviousness “does not satisfy the [written description] requirement.” *Ariad*, 598 F.3d at 1352; *Bederson*, ¶85. Thus, the '564 application does not disclose the above-quoted limitations of claims 1 and 9.

Moreover, even if Keyless *could* identify disparate disclosures across the first twelve provisional applications, separately describing all limitations of independent claims 1 and 9 (which Keyless cannot), Keyless cannot derive adequate written description support from combining them. *Novozymes A/S v. DuPont Nutrition Biosci. APS*, 723 F.3d 1336, 1349 (Fed. Cir. 2013) (explaining that the written description analysis requires “[t]aking each claim ... as an integrated whole rather than as a collection of independent limitations”); *see also Ariad*, 598 F.3d at 1352 (“[A] description that merely renders the invention obvious does not satisfy the [written description] requirement.” (citing *Lockwood*, 107 F.3d at 1571-72))).

Therefore, the first twelve provisional applications do not “describe the claimed invention with all its limitations.” *Tronzo*, 156 F.3d at 1158. Nor do they “indicate to a person skilled in the art that the inventor was ‘in possession’ of the invention as later claimed.” *PowerOasis, Inc. v. T-Mobile USA, Inc.*, 522 F.3d 1299, 1306 (Fed. Cir. 2008) (citation omitted).

To the extent any provisional application even arguably discloses the claim limitations of not having a physical key or button on the front surface, that did not happen until March 11, 2004, when the *13th provisional* was filed. *See* Ex. 1019, 136 (describing that Figure 116a shows “a large display 11611 [that] substantially covers the surface of at least one side of said electronic device”), 213 (Fig. 116a).³ Thus, claims 1-14 are not entitled to priority before March 11, 2004.

3. No application before January 22, 2017, discloses the subject matter of claims 3, 4, 12, 13, and 15-20

Independent claim 15 recites “wherein upon identifying an input corresponding to a sweeping action provided on a touch sensitive surface of said device, said processor displays plurality of other icons corresponding to plurality of other applications on said display unit.” Ex. 1001, 106:10-14. Dependent claims 3 and 12, and their respective further dependents 4 and 13, have substantially similar limitations. *Id.*, 104:31-39, 105:16-26.

Neither the ’144 patent’s specification nor any of its claimed priority applications (or the prosecution history of these priority applications) contain any

³ Petitioners reserve the right in litigation to challenge whether the March 11, 2004, provisional application (or, indeed, any application) provides adequate written description.

support for the limitations of claims 3, 4, 12, 13, and 15-20. Exs. 1001, 1005-1020, 1040-1042. Moreover, Keyless cannot combine the drawings with the text description, or combine different embodiments, to provide written description or to support priority claims. *Ariad*, 598 F.3d at 1352. The above claim limitations were first added during prosecution of the '144 patent by an amendment dated August 16, 2020. Ex. 1004, 359-360, 364. Thus, claims 3, 4, 12, 13, and 15-20 are not entitled to priority before the '144 patent's filing date, January 22, 2017.

4. No application before January 22, 2017, discloses the subject matter of claim 8

Dependent claim 8 recites “the thickness of the device is less than 20 percent of said [device's] width.” Ex. 1001, 104:50-51. This limitation was first introduced in the '144 patent's file history by the August 16, 2020, amendment. Ex. 1004, 361 (new claim 26), 364. Support for the “20 percent” feature appears nowhere in the '144 patent.

Specifically, neither the '144 patent's specification nor any of its claimed priority applications (or the prosecution history of these priority applications) describe anything about the dimensions of the thickness or width, let alone their ratio. Exs. 1001, 1005-1020, 1040-1042; Bederson, ¶87. Moreover, the '144 patent and the priority applications do not state that their figures are drawn to scale. *Id.* Rather, the '144 patent says the opposite—“It is to be understood that the drawings

are not necessarily drawn to scale, but that they are merely conceptual in nature.”

Ex. 1001, 24:64-66, 103:34-36. Thus, the drawings cannot disclose the dimensions or ratio of the thickness and width. *Hockerson-Halberstadt, Inc. v. Avia Grp. Int’l, Inc.*, 222 F.3d 951, 956 (Fed. Cir. 2000). Moreover, Keyless cannot use any obviousness teaching of the drawings or combine different embodiments to provide written description or to support priority claims. *Ariad*, 598 F.3d at 1352. Thus, claim 8 is not entitled to priority before the ’144 patent’s filing date, January 22, 2017.

5. The AIA provisions of 35 U.S.C. § 102 apply

The AIA applies to “any application for patent, and to any patent issuing thereon,” with a claim “that has an effective filing date on or after March 16, 2013.” *See* 35 U.S.C. § 100 (note); Pub. L. 112-29, sec. 3(n)(1), 125 Stat. 284, 293 (2011). Thus, because the ’144 patent claims subject matter with an effective filing date no earlier than January 22, 2017 (at least in claims 3, 4, 8, 12, 13, and 15-20), the AIA provisions apply to all claims in the ’144 patent.⁴

⁴ Petitioners note the references cited in this IPR qualify as prior art vis-à-vis the respective claims’ effective filing dates, regardless of whether the Board finds that AIA or pre-AIA law should apply.

D. Claim Construction

The Board construes claims per *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc). Claims must be construed only to the extent necessary to resolve a controversy. *Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017). Here, no terms need construction to resolve the controversy in this forum.⁵

⁵ Petitioners reserve the right to argue in an appropriate forum that certain limitations in the challenged claims are indefinite. Petitioners also reserve the right to challenge the priority date here and/or in other proceedings.

IV. STATEMENT OF PRECISE RELIEF REQUESTED

A. Prior Art

Ex. 1022	<i>Bast</i> , European Patent Application Publication No. EP1336949A1, filed on February 18, 2003, and published on August 20, 2003, is prior art under 35 U.S.C. § 102(a)(1), or otherwise prior art under pre-AIA 35 U.S.C. § 102(a) ⁶ .
Ex. 1023	<i>Wedel</i> , International Patent Application Publication No. WO 2004/070871, filed on February 4, 2004, and published on August 19, 2004, is prior art under 35 U.S.C. § 102(a)(1) and (a)(2), or otherwise prior art under pre-AIA 35 U.S.C. § 102(e).
Ex. 1025	<i>Jambhekar</i> , U.S. Patent No. 5,848,356, filed on October 2, 1995, and issued on December 8, 1998, is prior art under 35 U.S.C. § 102(a)(1) and (a)(2), or otherwise prior art under pre-AIA 35 U.S.C. § 102(a), (b), and (e).
Ex. 1026	<i>Benoit</i> , French Patent Application Publication No. 2830093, filed on September 25, 2001, and published on March 28, 2003, is prior art under 35 U.S.C. § 102(a)(1), or otherwise prior art under pre-AIA 35 U.S.C. § 102(a).

⁶ Petitioners assert the AIA provisions of 35 U.S.C. § 102 should apply to all claims in the '144 patent. *See* Section III.C.5. But, to the extent the Board finds that pre-AIA law should apply, Petitioners also provide the pre-AIA basis for the asserted prior art.

None of the asserted prior art was submitted during prosecution (the applicant submitted no prior art), and the references do not appear on the face of the '144 patent. Ex. 1001, 1-2.

B. Grounds of Unpatentability

Claims 1-5 and 7-20 are unpatentable in view of the following grounds:

Ground	Claims	Statutory Basis	Prior Art
1B⁷	1, 2, 7, 8	35 U.S.C. § 103	<i>Bast</i> in view of <i>Wedel</i>
2B	3, 4, 15-19	35 U.S.C. § 103	<i>Bast</i> in view of <i>Wedel</i> and <i>Benoit</i>
3B	5, 9-11, 14	35 U.S.C. § 103	<i>Bast</i> in view of <i>Wedel</i> and <i>Jambhekar</i>
4B	12, 13, 20	35 U.S.C. § 103	<i>Bast</i> in view of <i>Wedel</i> , <i>Jambhekar</i> , and <i>Benoit</i>

V. LEVEL OF ORDINARY SKILL

A person having ordinary skill in the art would have had at least a bachelor's degree in electrical engineering, computer science, or a similar field and two to

⁷ For clarity in the records, Petitioners use the “B” nomenclature to distinguish the Grounds in this Petition from the Grounds in related petition IPR2025-00529, which are identified with “A”.

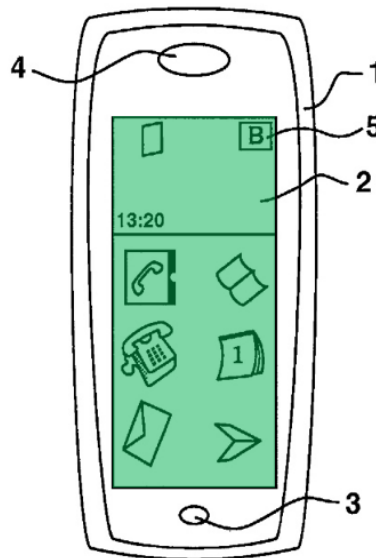
three years of experience designing or analyzing mobile devices and designing graphical user interfaces using touchscreens. Additional relevant work experience can compensate for less education, and vice versa. Bederson, ¶¶92-93.

VI. CLAIMS 1-5 AND 7-20 ARE UNPATENTABLE OVER THE PRIOR ART

A. Ground 1B: Claims 1, 2, 7, and 8 Are Obvious over *Bast* in View of *Wedel*

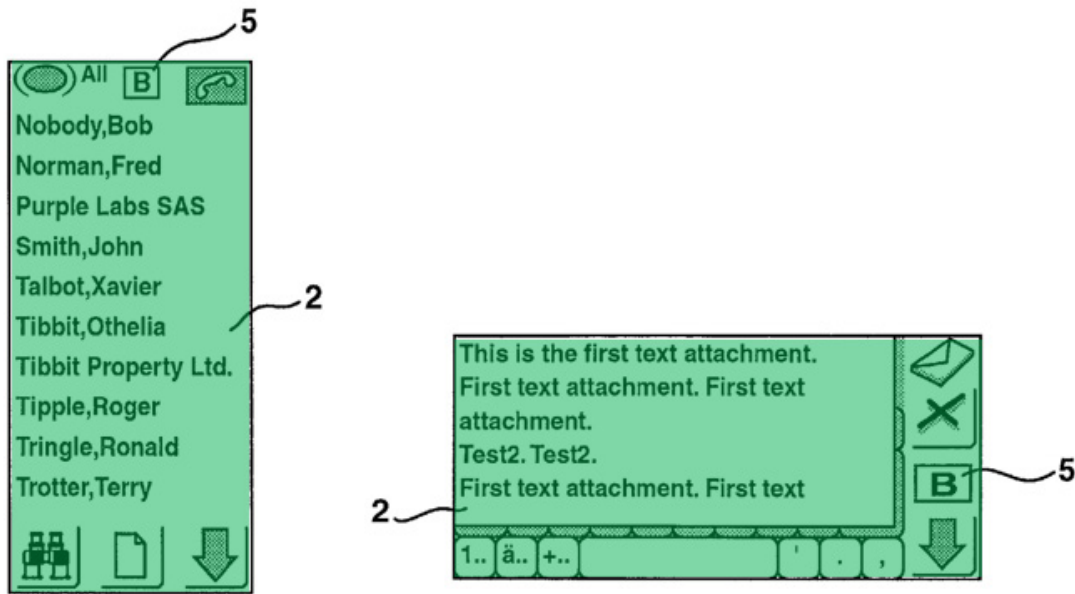
1. Overview of *Bast*

Bast discloses a mobile phone having a large touch screen 2, which “is a rectangular screen that is as large as possible.” *Bast*, ¶[0010]; Bederson, ¶¶229-30.



Bast, Fig. 1. “The information can be displayed on screen 2 either in vertical mode (portrait mode), as shown in Figure 2, or in horizontal mode (landscape mode), as shown in Figure 3.” *Id.*, ¶[0011]. The mobile phone contains accelerometers “for

detecting the tilt of the device,” and can “toggl[e] from one display mode to the other based on the detected tilt.” *Id.*, ¶[0001]; *see also id.*, ¶¶[0015]-[0016].

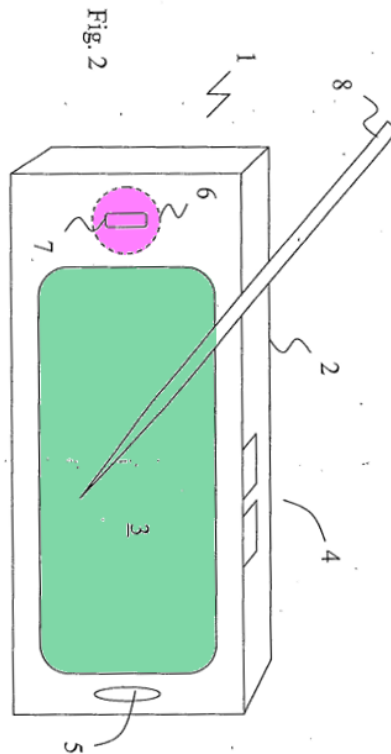


Id., Figs. 2-3.

Bast is analogous art because it is in the same field of endeavor as the '144 patent—a mobile device with a touchscreen. *Compare id.*, ¶[0010], Fig. 1, with Ex. 1001, Claims 1, 9; Bederson, ¶231; *In re Bigio*, 381 F.3d 1320, 1325-26 (Fed. Cir. 2004). *Bast* is also reasonably pertinent to the particular problem the '144 patent is concerned with because it deals with technologies relating to information input with a touch sensitive device. *Compare Bast*, Abstract, ¶¶[0001], [0010]-[0014], [0021], [0023]-[0024], Figs. 1-3, with Ex. 1001, 1:66-2:19, 21:60-63, 25:42-54, Claims 1, 9; Bederson, ¶231.

2. Overview of *Wedel*

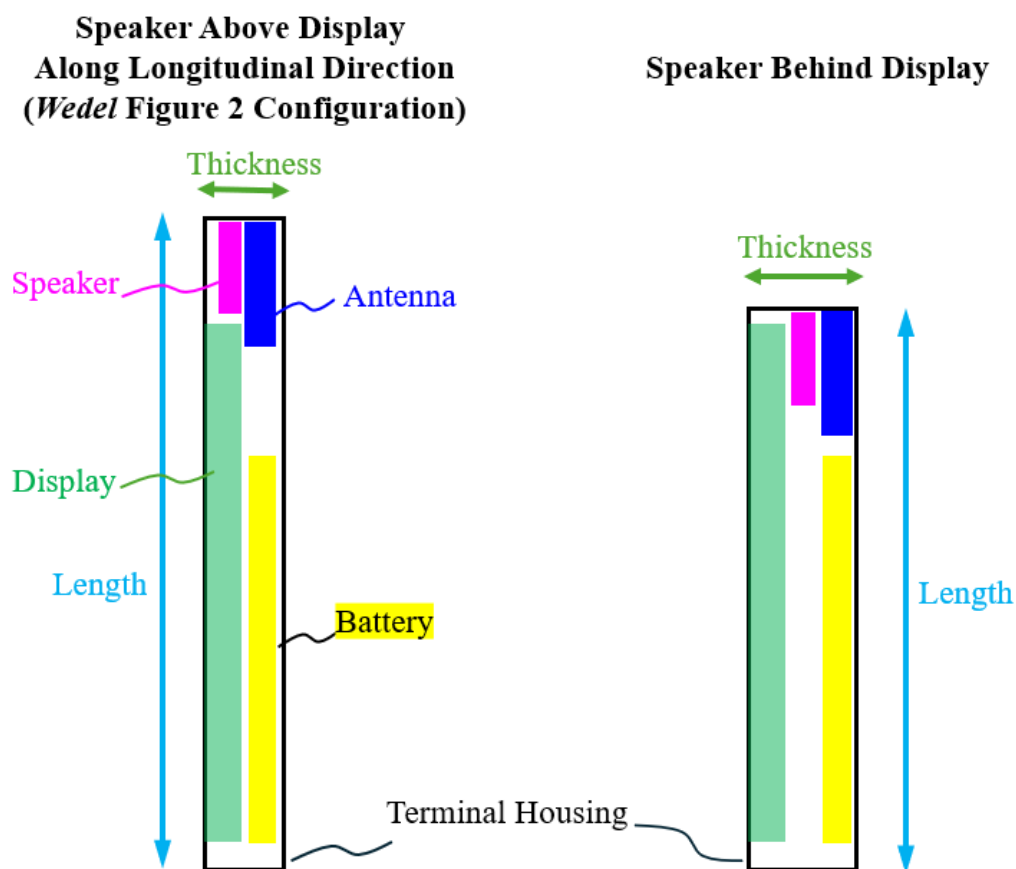
Wedel discloses in Figure 2 a state-of-the-art mobile terminal 1 (e.g., mobile phone) with a “display 3 occup[ying] a larger portion of the front side of the terminal.” *Wedel*, 2:3-5, Fig. 2; Bederson, ¶233. The terminal’s front surface is made free of physical keys “to allow for the display 3 to occupy a larger portion of the front side of terminal 1.” *Wedel*, 2:8-10. The display 3 is configured to render “a graphical user interface” to allow “data input,” and “[a] specific tool 8 may be provided for inputting data on a touch-sensitive screen of the display 3.” *Id.*, 2:6-8, 2:10-11. “[T]erminal 1 also includes a microphone 5 and a speaker 6, preferably arranged at opposite ends of the terminal 1.” *Id.*, 2:1-3. “[A] terminal output 7 is mounted on the front of the terminal above the display with the speaker 6 immediately behind the output 7.” *Id.*, 2:15-17. The terminal also has a built-in antenna (not show in Figure 2). *Id.*, 2:21-22.



Id., Fig. 2 (rotated clockwise 90 degrees).

Wedel proposes a combined speaker and antenna arrangement to reduce the dimensions of the state-of-the-art terminal in Figure 2. *Id.*, Abstract, 3:4-15, 3:19-21. This is illustrated by Dr. Bederson in the following schematic drawings (side cross-sectional view of the mobile terminal). Bederson, ¶234. Specifically, *Wedel* explains that the **speaker** and **antenna** are generally located at the upper portion of the terminal, while a battery is located at the lower portion. *Wedel*, 2:1-3, 2:15-17, 2:21-22, Fig. 2. *Wedel* discloses the terminal in Figure 2 “has the **speaker** position in the upper parts of the front of the terminal above the **display**,” thereby making the terminal “longer in its longitudinal extension than what would have been the case if only the **display** ... had defined the **length** of the terminal 1.” *Id.*, 2:17-21,

2:27-29. On the other hand, “[p]lacing the **speaker 6** behind the **display 3**” can reduce the terminal’s **length** but would “increase the **thickness** of the terminal 1 since it would have to compete with the **antenna** for the relevant space.” *Id.*, 2:23-25. “Therefore, both the **antenna** design and the **speaker** design, and their relative position, will affect the dimensions of the terminal.” *Id.*, 3:6-7.



Bederson, ¶234.

To “meet[] the general market demand for small size and light weight terminals,” *Wedel* proposes to modify the terminal in Figure 2 to integrate the **speaker** into the **antenna** “in a way that does not impede **antenna** performance.”

Wedel, 3:19-21, 3:25-27. Figure 11 shows an integrated structure in which a speaker 41 is positioned inside the cavity of a planar antenna element 31. *Id.*, 10:29-12:21, Fig. 11. The antenna-speaker assembly is mounted on a “[s]upport structure 100 [that] is preferably a Printed Circuit Board (PCB) carried in a chassis or housing of ... [the] terminal.” *Id.*, 11:11-13. This way, the “terminal or housing ... may be designed with a thickness basically defined by the distance between the [antenna’s] flexible film and the support structure, e.g.,] a PCB, since the thickness contribution from the speaker has been eliminated.” *Id.*, 13:5-8.

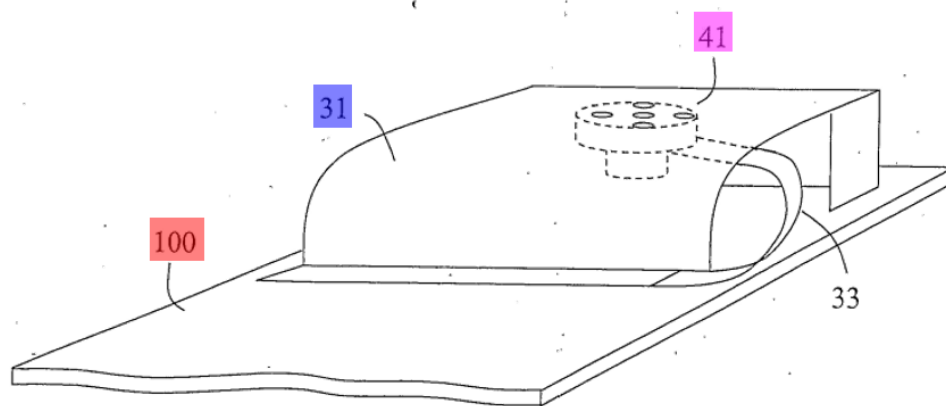


Fig. 11

Id., Fig. 11; Bederson, ¶235.

Wedel is analogous art because it is in the same field of endeavor as the '144 patent—a mobile device with a touchscreen. Compare *Wedel*, 2:3-11, Fig. 2, with Ex. 1001, Claims 1, 9; Bederson, ¶236. *Wedel* is also reasonably pertinent to the particular problem the '144 patent is concerned with because it deals with

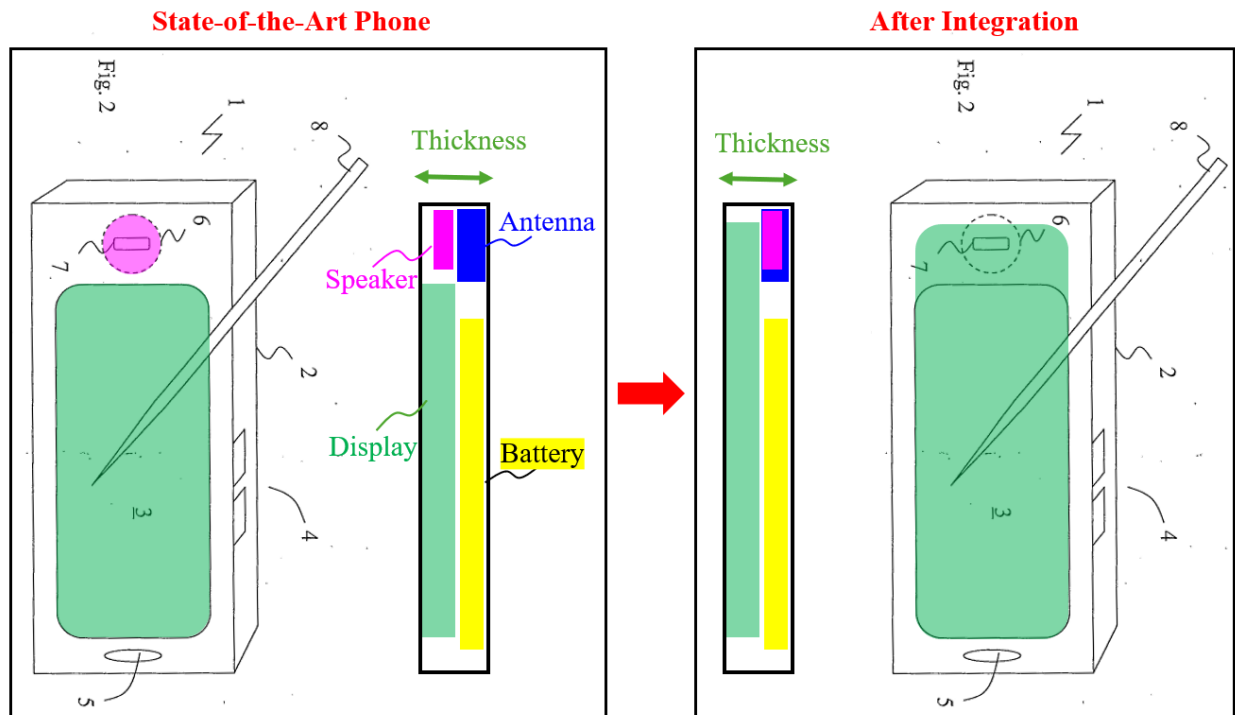
technologies relating to information input with a touch sensitive device. *Compare Wedel*, 1:26-2:11, Fig. 2, *with* Ex. 1001, 1:66-2:19, 21:60-63, 25:42-54, Claims 1, 9; Bederson, ¶236.

3. Rationale to Combine *Bast* and *Wedel*

It would have been obvious to a POSITA to apply *Wedel*'s teaching to make *Bast*'s touchscreen as large as possible while keeping the phone's size as small as possible. Bederson, ¶243. *Bast* teaches "[m]obile phones ... increasingly perform functions previously associated with a laptop computer," so "[t]he screen size is therefore essential." *Bast*, ¶[0002]. *Bast* therefore strives to make its touchscreen "as large as possible" and "use[] all the available space." *Id.*, ¶¶[0003], [0010]. On the other hand, *Bast* recognizes that mobile phones are "[s]mall terminals" and "size is a crucial element" in their design. *Id.*, ¶¶[0005]-[0006]. Thus, a POSITA working on improving *Bast* would have been searching for solutions to enlarge the touchscreen size without increasing the phone's dimensions. Bederson, ¶244.

To that end, *Wedel* teaches a way to enlarge the touchscreen without increasing the phone's thickness. Specifically, as illustrated by Dr. Bederson in the following schematic drawings, *Wedel* teaches that in the state-of-the-art mobile phones, the **speaker** is placed above the **touchscreen** along the longitudinal direction, thus preventing the **touchscreen** from taking more area on the front surface of the phone housing. *Wedel*, 2:15-21; Bederson, ¶245. *Wedel* proposes to

integrate the **speaker** into the **antenna** located in the back portion of the phone, thereby allowing the **touchscreen** to be made bigger without adding to the thickness of the phone. *Wedel*, Abstract, 1:26-28, 2:21-25, 13:5-8.



Wedel, Fig. 2; *Bederson*, ¶245. Led by *Wedel*'s teaching, a POSITA would have modified *Bast* to place its speaker behind its screen, so as to allow the touchscreen to use more space on the front surface of the phone housing. *Bederson*, ¶245.

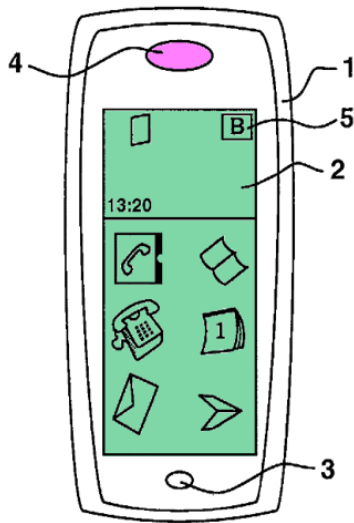
Doing so would fulfill *Bast*'s design goal of making "[t]he **touch screen** ... as large as possible to enable[] the input and display of data." *Bast*, ¶[0010]; *Bederson*, ¶246. As a result of *Wedel*'s teachings of how to place a speaker behind a screen without increasing a phone's thickness, this would be achieved without increasing the phone housing's dimensions. *Bederson*, ¶246. The modification

would thus be consistent with *Bast*'s recognition that "size is a crucial element" in mobile phone design. *Id.*

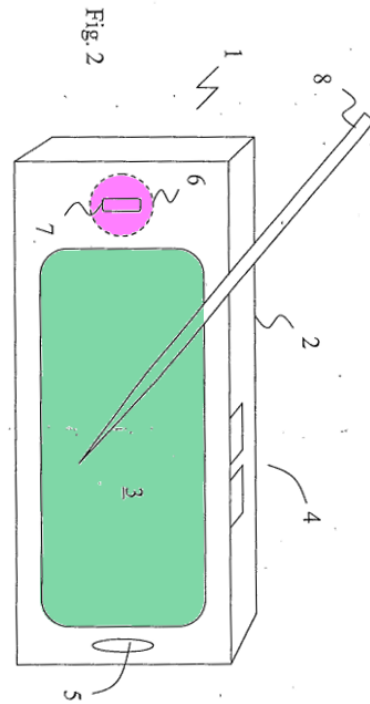
A POSITA would have considered the *Bast/Wedel* combination to be an example of (A) combining prior-art elements (e.g., *Bast*'s mobile phone and *Wedel*'s integrated antenna-speaker assembly behind a screen) according to known methods to yield predictable results (e.g., a touchscreen that is larger relative to the phone's size); (B) use of a known technique to improve similar devices in the same way (e.g., *Wedel*'s speaker placement teachings to *Bast*'s mobile phone); (C) applying a known technique to a known device ready for improvement (e.g., *Wedel*'s speaker placement teachings to *Bast*'s mobile phone) to yield predictable results; and/or (D) a teaching, suggestion, or motivation in the prior art that would have led one of ordinary skill to modify the mobile phone disclosed by *Bast* to arrive at a small device with a touchscreen practically occupying the entire front surface of the housing. Bederson, ¶247.

A POSITA would have had a reasonable expectation of success for combining the teachings of *Bast* and *Wedel*. Bederson, ¶¶248-49. *Wedel* discloses its integrated antenna-speaker assembly can be used to improve the state-of-the-art mobile phone shown in Figure 2, which has a substantially similar architecture as the one in *Bast*'s Figure 1. Bederson, ¶248; compare *Bast*, ¶[0010], Fig. 1, with *Wedel*, 2:3-11, Fig. 2. Namely, both mobile phones have a substantially

rectangular-shaped housing, within which the **speaker**, **large touchscreen**, and microphone are located at the same relative locations. *Bast*, ¶¶[0003], [0010], Fig. 1; *Wedel*, 2:1-3, 2:10-11, 2:21-22, Fig. 2; Bederson, ¶248. Due to the structural similarity between *Bast*'s phone and the state-of-the-art phone that *Wedel* expressly intends to improve, a POSITA would have understood *Wedel*'s proposed adjustment to these components can be applied to *Bast*'s phone in the same way. Bederson, ¶¶248-49.



Bast, Fig. 1.

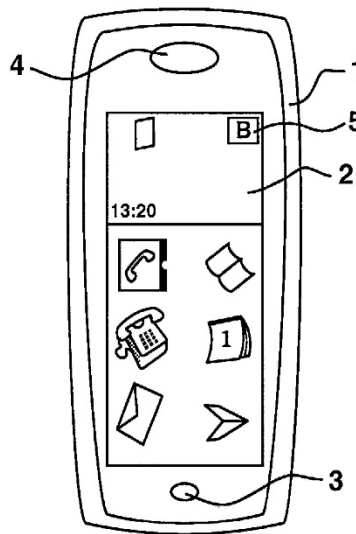


Wedel, Fig. 2.

4. Independent Claim 1

a. 1[pre]: “A mobile phone device, comprising:”

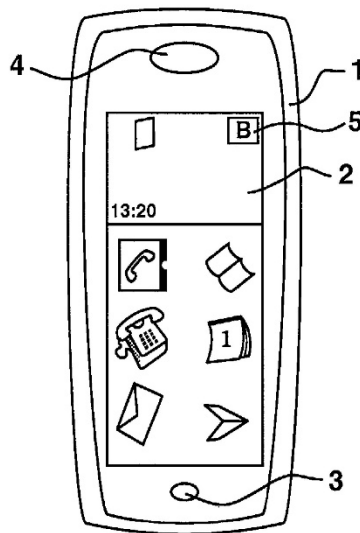
Bast discloses a mobile device that “combines the functions of a personal digital assistant (PDA) and a mobile telephone.” *Bast*, ¶[0010]; *see also Wedel*, 7:19-24 (“the combined antenna and speaker design ... is mainly described ... in the implementation in a mobile phone”); *Bederson*, ¶250.



Bast, Fig. 1.

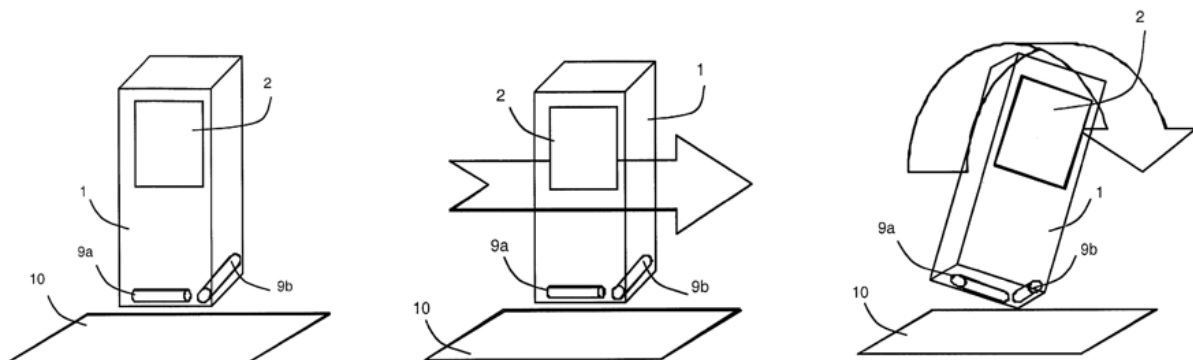
b. 1[a]: “a practically rectangular-shaped housing within which the components of a mobile phone are integrated, said housing having a front surface, a back surface and four side surfaces,”

Bast discloses 1[a] because *Bast* discloses its “phone retains a substantially rectangular shape,” as shown in Figure 1. *Id.*, ¶[0003]; *Bederson*, ¶251.



Bast, ¶[0010], Fig. 1. The mobile phone's components, e.g., microphone 3 and speaker 4, are integrated within the housing. *Id.*

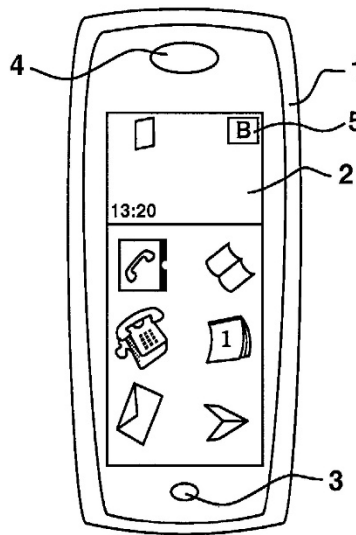
A POSITA would understand that because *Bast*'s phone has a substantially rectangular shape, it has a front surface, a back surface, and four side surfaces. *Bederson*, ¶252. For example, *Bast*'s Figures 6, 8, and 9 provide oblique views showing a rectangular-shaped mobile phone having a front surface and four side surfaces.



Bast, ¶[0009], Figs. 6, 8, 9. These surfaces would also be present in the mobile phone in Figure 1. *Id.*, ¶[0003], Fig. 1; Bederson, ¶252. *Bast*'s figures do not depict its back surface, but a housing including a back surface would be obvious to a POSITA (e.g., to retain and protect components of the phone as was routine and conventional in the art). Bederson, ¶252. A POSITA would have a reasonable expectation of success in using a housing having a front surface, a back surface, and four side surfaces, as this was the standard practice for mobile phone housings at the time of the invention. *Id.*

c. 1[b]: “wherein the length of the front surface approximately corresponds to the distance between the ear and the mouth of a user and”

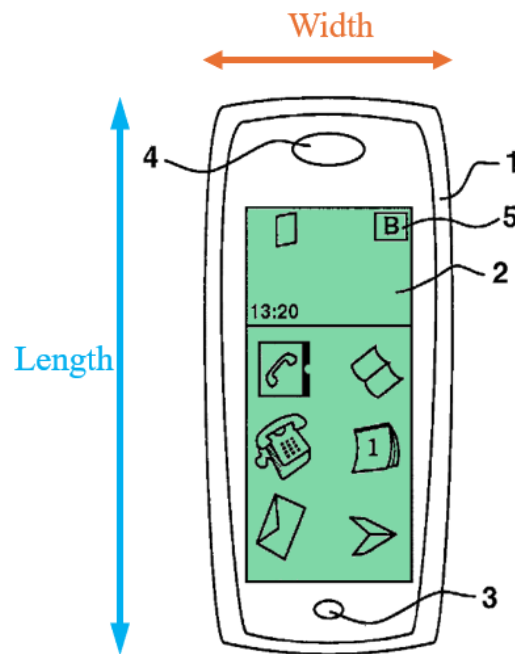
Bast discloses 1[b] because *Bast* discloses the phone's “substantially rectangular shape” is chosen “[f]or ergonomic reasons, particularly related to the distance between the user's mouth and ear.” *Bast*, ¶[0003]; Bederson, ¶253. A POSITA would understand this means the front surface of the mobile phone in *Bast*'s Figure 1 has a length approximately corresponding to a user's ear-to-mouth distance, such that the speaker 4 and microphone 3 at the opposite ends of the housing along the longitudinal direction can be positioned in proximity to an average user's ear and mouth respectively, when the terminal is used to make a phone call. Bederson, ¶253.



Bast, Fig. 1; *see also Dutta*, ¶[0003] (“the ideal size of a mobile phone is determined by the typical ear-to-mouth distance of the average user”); *Yamaguchi*, ¶[0005] (“[A]n ear is placed near the speaker part 5 or the mouth is placed near the microphone part 6 to perform audio input/output operations.”); *Rydbeck*, 8:57-59 (“a microphone located such that it is positioned proximate a user’s mouth when the user has said speaker adjacent his or her ear”).

d. 1[c]: “wherein the width of the front surface is substantially shorter than the length and”

Bast discloses 1[c] because *Bast* discloses “the phone retains a **substantially** rectangular shape.” *Bast*, ¶[0003] (emphasis added); *Bederson*, ¶254. Indeed, as shown in Figure 1, the **width** of the mobile phone’s front surface is substantially shorter than the **length**.



Bast, Fig. 1.

Moreover, the substantial difference between the phone housing’s **width** and **length** is also suggested by *Bast*’s design for the **touchscreen** display. Bederson, ¶255. First, *Bast* teaches the **touchscreen** is “substantially rectangular” to “enabl[e] a display in portrait mode ... and in landscape mode.” *Bast*, ¶[0001]; see also *id.*, ¶¶[0004], [0011], [0025], Claim 1. This means the **touchscreen**’s width is substantially shorter than its length, because otherwise there would have been no meaningful viewing difference between the portrait and landscape display modes. Bederson, ¶255. Second, *Bast* teaches the “rectangular **screen** ... is as large as possible” and “uses all the available space” (*Bast*, ¶¶[0003], [0010]), so a POSITA would understand the shape of the **touchscreen** tracks the shape of the housing’s

front surface. Bederson, ¶255. It follows that the housing’s front surface, like the touchscreen, has a width substantially shorter than its length. *Id.*

e. 1[d]: “wherein the housing has a thin thickness; and”

Bast discloses 1[d] or otherwise renders it obvious when combined with the knowledge of a POSITA for the reasons discussed here and for claim 8. Bederson, ¶¶256-62.

First, *Bast* alone discloses 1[d] in light of the applicant’s admissions. *Id.*, ¶¶257-59. The applicant of the ’144 patent stated during prosecution that a “thick” device is one that is designed “for use with one hand in [the] vertical/portrait position only.” *See* Section III.B (quoting Ex. 1004, 362); Bederson, ¶257. *Bast*, by contrast, teaches a mobile phone device capable of use “in [both] portrait mode (vertical) and landscape mode (horizontal)” and “with one hand” (*Bast*, Abstract, ¶[0006]), consistent with the claimed understanding of a “thin” device.

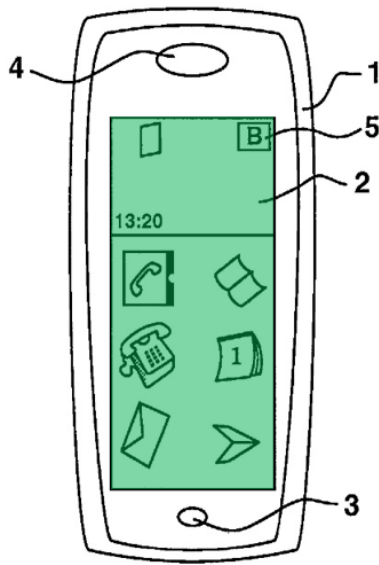


Figure 1

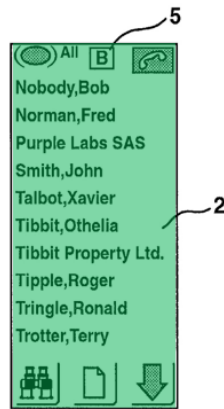


Figure 2

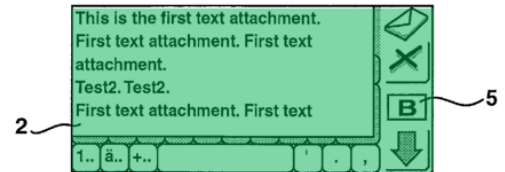


Figure 3

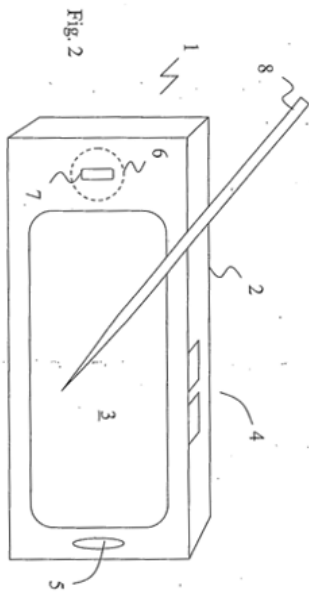
Id., Figs. 1-3; Bederson, ¶258. Applicant’s own admissions thus confirm that *Bast* meets 1[d]. Bederson, ¶258.

Further, the ’144 patent does not describe whether and how the “thin thickness” would be affected by the mobile phone’s internal components. *See generally* Ex. 1001; Bederson, ¶259. But even assuming the ’144 patent and *Bast* differ by their designs inside the phone housing, such difference would not prevent *Bast*’s housing from having the “thin thickness” contemplated by the ’144 patent because *Bast* uses “miniaturized” components “integrated” within a housing. *Bast*, ¶¶[0005], [0015]; Bederson, ¶259. Such components, including the accelerometers used by *Bast* for switching between the portrait and landscape modes, would not add to the thickness of *Bast*’s housing because they “are sufficiently small so as to have no direct impact on the volume of the device in which they are integrated.”

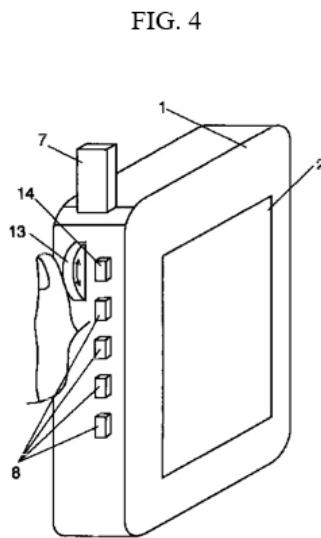
Bast, ¶¶0015]; Bederson, ¶259. Moreover, a POSITA would understand *Bast*'s housing thickness is unchanged by its combination with *Wedel*'s teaching because, as discussed in Section VI.A.3, moving *Bast*'s speaker into an existing antenna does not increase the device's thickness. Bederson, ¶259. Therefore, in a nutshell, *Bast*'s one-hand usability in both portrait and landscape positions discloses its mobile phone housing "has a thin thickness" in a way consistent with how the feature is contemplated by the '144 patent, and this is unaffected by *Bast*'s internal design or its combination with *Wedel*. *Id.*

Even assuming that *Bast* did not already disclose a housing that has a thin thickness, modifying it to have such would merely entail a simple and predictable alteration of the phone's dimensions based on the knowledge of a POSITA. Bederson, ¶¶260-62. At the time of the alleged invention, it was well known to make housings thin because there had long been "a demand for a size such that the device can fit in a clothing pocket or the like from the perspective of making the device 'easily portable anywhere'" and "a demand for a series of manipulations to be performable with one hand from the perspective of making the mobile-communication-information terminal device 'easy to manipulate.'" *Yamaguchi*, ¶¶0007]; see Section II.A; Bederson, ¶260. Particularly, mobile phones with large touchscreens had been routinely made thin to improve their portability and manipulability. Bederson, ¶260. For example, *Wedel*'s Figure 2 shows a state-of-

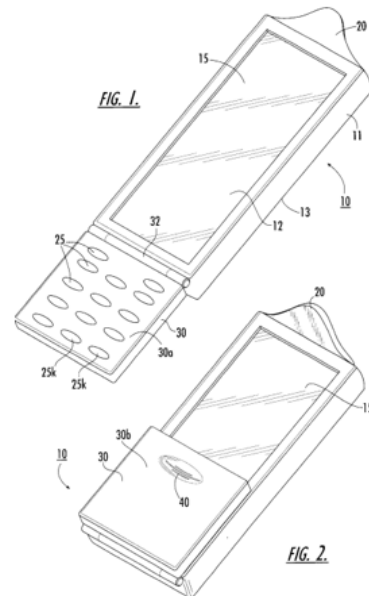
the-art mobile phone that has a large touchscreen and has “dimensions ... [of] pocket size.” *Wedel*, 1:14-17, 2:3-5, 2:10-11, Fig. 2. *Yamaguchi* describes a touchscreen mobile device suitable for “storing ... in a clothing pocket[and] holding ... with one hand,” that may have a “depth 15–25 mm”. *Yamaguchi*, ¶[0015], Fig. 4; *see also id.*, ¶¶[0009]-[0010], [0017], [0036]. And *Rydbeck* discloses a “smaller, miniaturized, or ‘pocket-sized’ wireless telephone[] ... which allows for [a] larger display[] over conventional devices.” *Rydbeck*, 1:11-19, Figs. 1-2; *see also id.*, 2:60-62, 4:24-44, 10:29-30.



Wedel, Fig. 2.



Yamaguchi, Fig. 4.

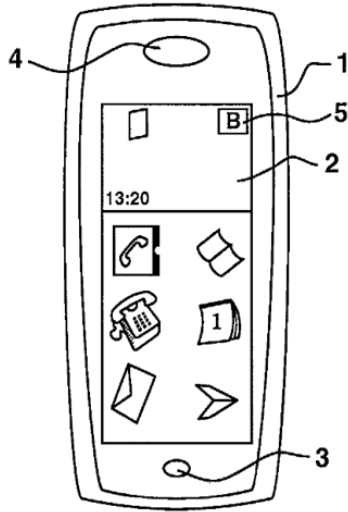


Rydbeck, Figs. 1-2.

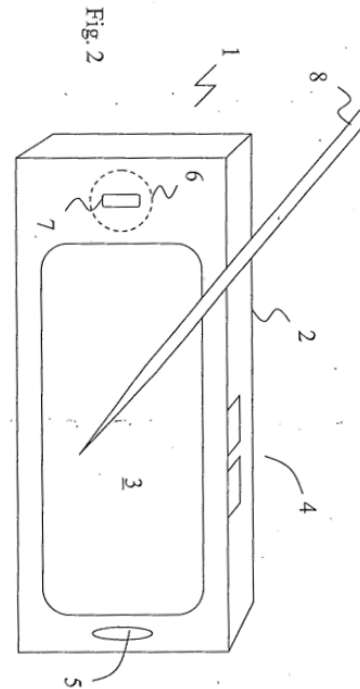
A POSITA would have found it obvious to use such slim design for *Bast*'s mobile phone because it would improve portability (allowing storage in a pocket)

and the ability to comfortably hold the phone in a single hand and interface with the device. *See, e.g.*, Bederson, ¶261; *Yamaguchi*, ¶¶[0009]-[0010], [0015]; *Dutta*, ¶¶[0002]-[0003], Figs. 2A-2B. A POSITA would have known that the thin housing helps achieve *Bast*'s goals of both making the touchscreen "as large as possible" and the phone suitable for "use[] with one hand." *Bast*, ¶¶[0006], [0010]. Namely, it allows the touchscreen to have a larger width while still making the phone ergonomically favorable for being gripped by one hand. Bederson, ¶261.

A POSITA would also have had a reasonable expectation of success in making *Bast*'s housing thin. Bederson, ¶262. This was made possible by the increasingly miniaturized phone components, like speakers and antennas. *Wedel*, 1:19-21; Bederson, ¶262. For example, *Wedel* discloses the use of "a low[-]profile, built in, radio antenna" in the state-of-the-art phone in Figure 2. *Wedel*, 9:29-31; *see also id.*, 2:30-3:1. *Bast* and *Wedel* are contemporaneous patent applications. *Bast*, p. 1 (filed in 2003); *Wedel*, p. 1 (claiming priority to a U.S. provisional application (Ex. 1047) filed in 2003). And *Bast* uses substantially the same architecture as the state-of-the art phone in *Wedel*'s Figure 2, as they both have a rectangular-shaped housing integrated with a large touchscreen, speaker, and microphone. *Compare Bast*, Fig. 1, *with Wedel*, Fig. 2. Thus, it would have been obvious to a POSITA to configure *Bast*'s phone housing like the thin, pocket-sized housing taught in *Wedel*. Bederson, ¶262.



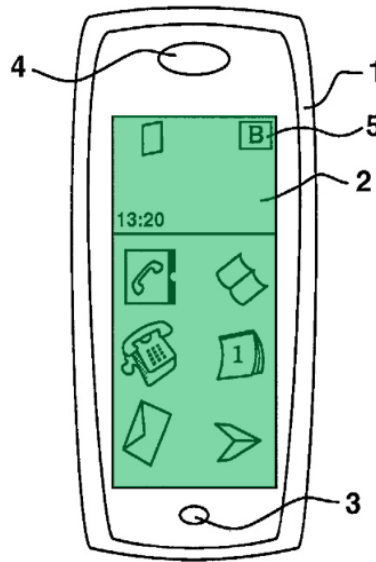
Bast, Fig. 1.



Wedel, Fig. 2.

- f. 1[e]: “a display unit integrated within the front surface of said housing wherein said display unit practically covers the entire front surface of said housing;”

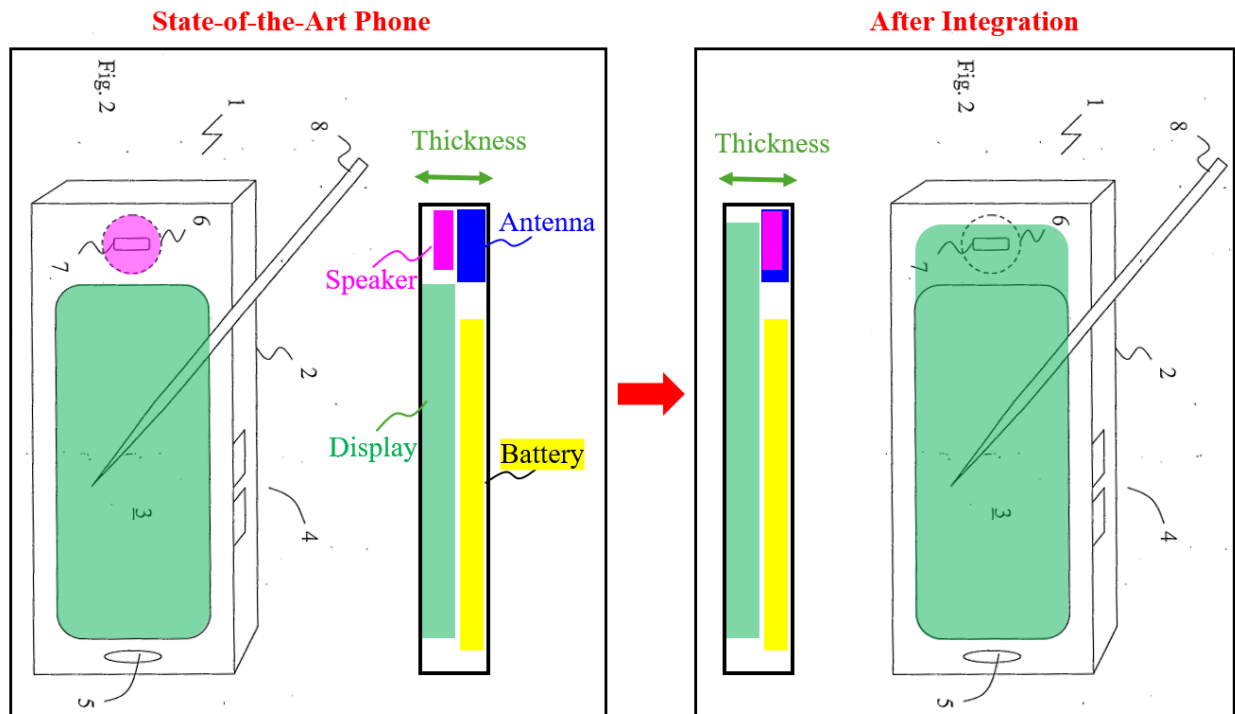
Bast discloses or *Bast/Wedel* renders obvious 1[e]. Bederson, ¶¶263-64. *Bast* discloses its “housing 1 [is] equipped, on the front face, with a large screen 2, which can be a touch screen,” “to enable[] the input and display of data.” *Bast*, ¶[0010].



Id., Fig. 1; Bederson, ¶263. A POSITA would understand *Bast*’s touchscreen practically covers the entire front surface of the housing because *Bast* expressly teaches making the display area “as large as possible” and “use[] all the available space” on the housing’s front surface. *Bast*, ¶¶[0010], [0003]; Bederson, ¶263. As explained by Dr. Bederson, in view of the state of the art at the time of the alleged invention of the ’144 patent, a POSITA would appreciate the touchscreen shown in *Bast*’s Figure 1 has a size much larger than many earlier phones and is made to practically use all the possibly available real estate on the front surface of the housing. Bederson, ¶263.

Moreover, in view of *Wedel*’s teaching, it would have been obvious to a POSITA at the time of the alleged invention to continue to expand the screen of *Bast* consistent with Figure 1 to provide even more viewing area for content and to

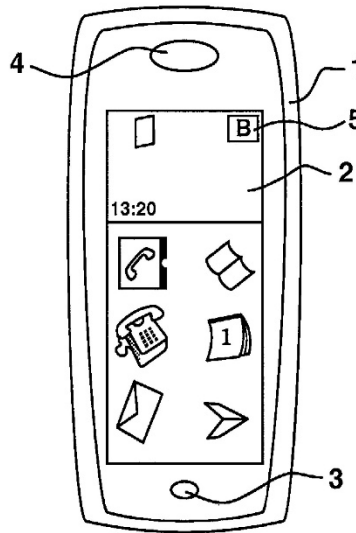
increase the touchable area for data input (e.g., by selecting icons or typing on a virtual keyboard). Bederson, ¶264. To achieve that goal, as discussed in Section VI.A.3, it would have been obvious to apply *Wedel*'s teaching to *Bast*, so that the speaker on *Bast*'s phone is placed behind its screen. Bederson, ¶264. In the resulting *Bast/Wedel* phone, the **display** would be even bigger than in Figure 1 of *Bast* and practically cover the entire front surface of the phone's housing, as taught by *Wedel* and illustrated by Dr. Bederson. *Id.*



Wedel, Fig. 2; Bederson, ¶264.

g. 1[f]: “wherein said mobile phone device does not include a physical key on the front surface, and”

Bast discloses 1[f]. Bederson, ¶265. First, *Bast*’s Figure 1 shows the mobile phone’s front surface has no physical keys. *Bast*, ¶[0010].

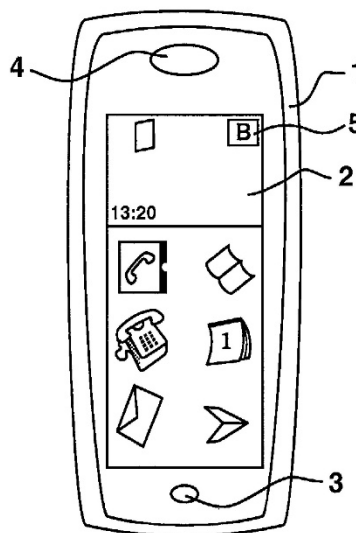


Id., Fig. 1. Moreover, a POSITA would have understood that *Bast*’s phone is designed to not require any physical keys. Bederson, ¶265. Like the buttonless design well known in the art (*see* Section II.B), *Bast* discloses the “touch screen 2 is ... [used] to enable[] the input and display of data, ... and the display of program and function icons, settings icons, a virtual keypad for numbering[,] etc.” *Bast*, ¶[0010]. *Bast* also discloses a user can switch between the portrait and landscape display modes by “tilt[ing]” the phone or pressing “a virtual toggle button.” *Id.*, Abstract, ¶¶[0001], [0012], [0024]. Therefore, no physical key is required to input data or control the phone’s settings and functions. Bederson, ¶265. And, rather

than disturb *Bast*'s buttonless input/output interface, the combination of *Bast* with *Wedel* encourages its retention. *Id.* *Wedel* teaches removing physical keys from the phone's front surface "to allow for the display 3 to occupy a larger portion of the front side of terminal 1." *Wedel*, 2:8-10; Bederson, ¶265.

- h. 1[g] "wherein said components of the mobile phone are integrated within said housing such that none of said components is noticeably extended out from said housing."**

Bast discloses 1[f]. Bederson, ¶¶266-67. First, *Bast*'s figures show it adopts a mobile phone architecture in which no components are noticeably extended out from the housing. Bederson, ¶266. For example, like the '144 patent's Figure 68a, *Bast*'s Figure 1 shows the mobile phone has no components (such as an antenna or buttons) noticeably extended out from the housing.

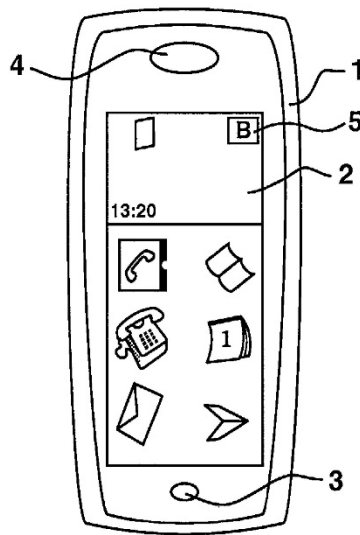


Bast, Fig. 1; *compare id.*, with Ex. 1001, Fig. 68a. The only components exposed on the front surface are not noticeably extended out because the touch screen 2 is flat, and the speaker 4 and microphone 3 at best are recessed rather than extended out from the housing. Bederson, ¶266. And *Bast* does not suggest the phone’s back surface has any noticeably extended components. *Id.*

Second, although *Bast* discloses the mobile phone may have “[a] small mechanical switch (not shown) disposed at the base of the housing” for manually calibrating the terminal’s orientation (*Bast*, ¶[0020]), the mechanical switch’s omission from the drawings indicates to POSITAs that it is not “noticeably” extended out. *Id.*, Figs. 1, 6, 8, 9; Bederson, ¶267. Additionally, *Bast* discloses the manual calibration mode and mechanical switch are optional because the phone can also be calibrated automatically. *Bast*, ¶¶[0018]-[0019], [0021]; Bederson, ¶267. A POSITA would have found it advantageous to provide the automatic calibration mode only because it not only reduces the manufacturing cost but also simplifies the mobile phone’s usage. Bederson, ¶267.

5. Claim 2: “The device of claim 1, wherein said practically rectangular shape has rounded corners.”

Bast discloses the additional limitations of claim 2. Bederson, ¶269. Figure 1 of *Bast* (shown below) depicts the housing with rounded corners:

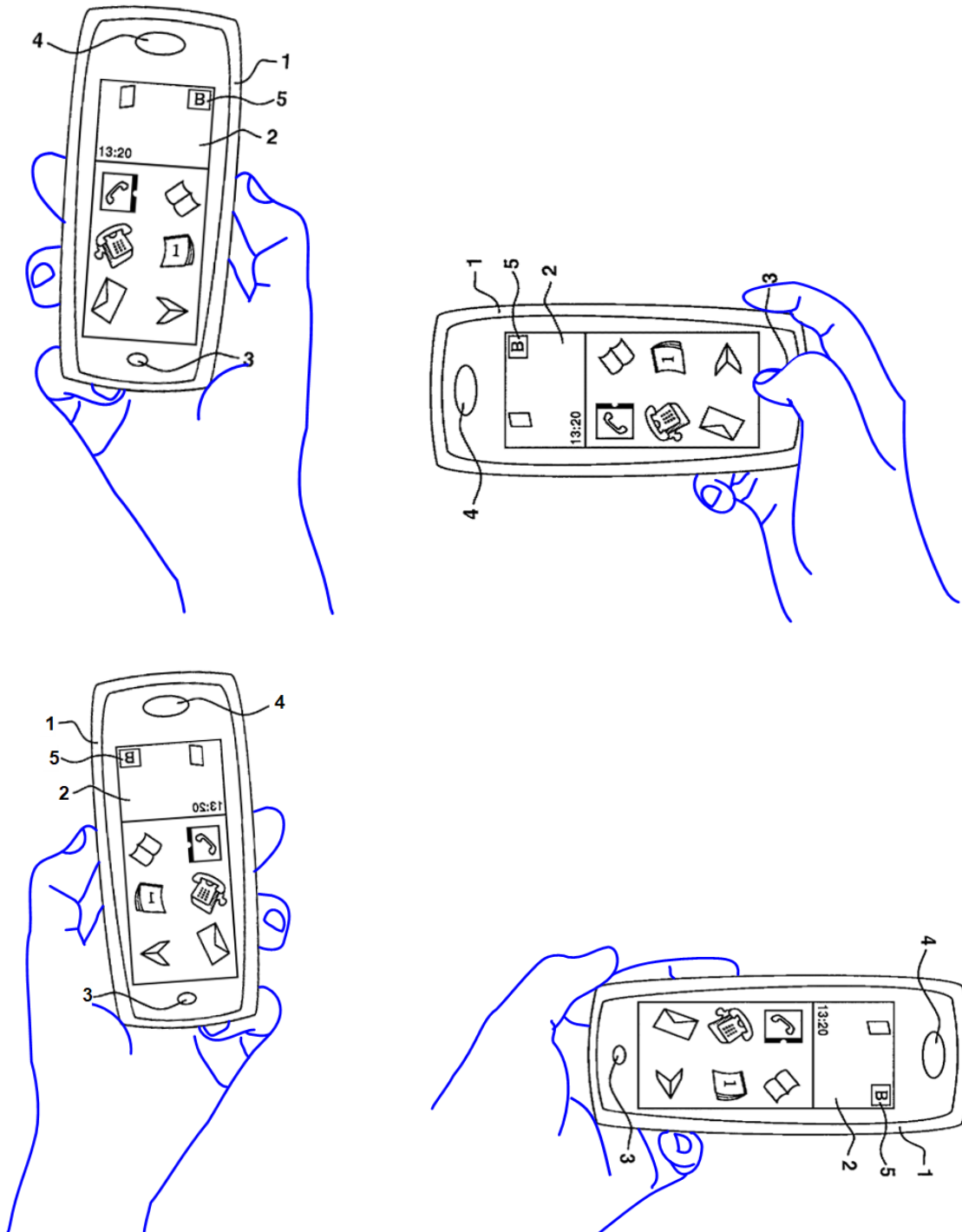


Bast, Fig. 1; Bederson, ¶269.

Even assuming that *Bast* did not already disclose rounded corners, a POSITA would have found it obvious to make the corners rounded “[f]or ergonomic reasons,” as taught by *Bast*. *Bast*, ¶[0003]; Bederson, ¶270.

Specifically, in addition to making the phone’s shape correspond to “the distance between the user’s mouth and ear” (*id.*), *Bast*’s Figure 1 also shows the phone’s housing has curved sides such that it can be easily gripped by a user’s hand. *Bast*, Fig. 1; Bederson, ¶270. Moreover, *Bast* aims to design a phone that allows “the user to change the tilt of the device without changing their grip.” *Bast*, ¶[0006]. As illustrated by Dr. Bederson below, to grip *Bast*’s phone with one hand (in either portrait or landscape direction), a user’s hand muscle and finger joints need to tightly press against the phone’s corners. And, when the user changes the phone’s

orientation with the same hand (right or left), the corners of the phone would inevitably slide through the palm and fingers.



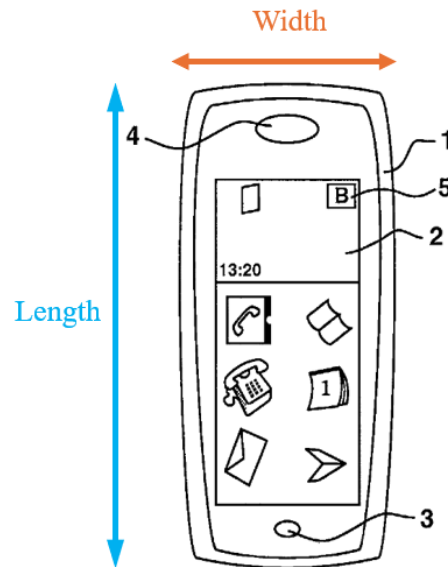
Bederson, ¶270. A POSITA would have appreciated that having rounded corners in these cases would be ergonomically more friendly—making the phone more comfortable for a user to hold and making it easier to tilt the phone with one hand. *Id.* Moreover, rounded corners were well known and widely used in the art. *See* Sections II, II.B (see *Beatty*, Fig. 2; *Gupta*, Figs. 2-3; *Mouton*, Fig. 2); *Dutta*, Figs. 2A-2B (showing a rectangular-shaped mobile phone with rounded corners). Therefore, a POSITA would have been motivated to modify *Bast*’s phone housing to have rounded corners. Bederson, ¶270.

A POSITA would also have a reasonable expectation of success in doing so, because it would have been a negligible change to the housing’s shape and external appearance, particularly because the phone already has streamlined side surfaces. Bederson, ¶271 (discussion of *Bast*’s Figure 1). And doing so would have had only negligible effect on the internal space of the housing, so it would not affect the components integrated therein. Bederson, ¶271. Finally, the rounded corners could be easily manufactured by slightly curving the corners of the mold for the housing. *Id.*

6. Claim 7: “The device of claim 1, wherein the width of the device is approximately half of said length.”

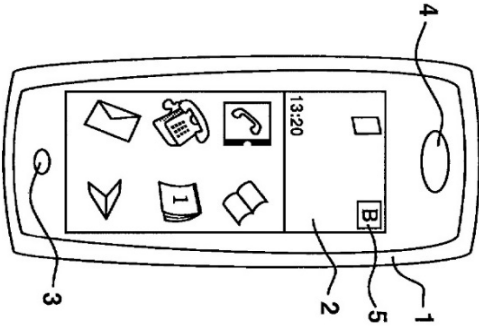
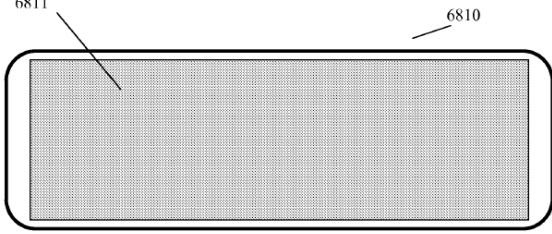
Bast discloses or otherwise renders obvious the additional limitations of claim 7 when combined with the knowledge of a POSITA. Bederson, ¶¶272-76.

For example, *Bast* discloses a mobile phone depicting a **width** of the front surface that is approximately half of the **length**.



Bederson, ¶272 (annotating *Bast*, Fig. 1).

Indeed, the relative width and length dimensions of phones depicted in the drawings of *Bast* are consistent with the relative width and length dimensions of phones depicted in the drawings of the '144 patent. Bederson, ¶273.

Drawings from <i>Bast</i>	Drawings from '144 Patent
 <i>Bast</i>, Fig. 1.	 Fig. 68a Ex. 1001, Fig. 68a.

A POSITA would have thus understood *Bast* to disclose a width of the device that is approximately half of the length. Bederson, ¶274.

Even assuming that *Bast* did not already disclose a width of the device that is approximately half of the length, a POSITA would have found it obvious to modify *Bast* to include these relative dimensions, which were well known to POSITAs at the time of the alleged invention. *See, e.g.*, Bederson, ¶275; *Rydbeck*, 4:39-43 (teaching that “pocket[-]” or “palm”-sized mobile devices “[t]ypically[] ... are less than about 8-10 inches in length and less than about 4 inches in width”); *Yamaguchi*, ¶¶[0034], [0036] (teaching a mobile phone 100-150mm in length, 60-75mm in width, and 15-25mm in depth); Ex. 1045, 188 (disclosing a rectangular, touchscreen mobile device has 117mm in length and 59mm in width, i.e., a 50.4% width/length ratio); *see also* Ex. 1045, 9, 123; Bederson, ¶275.

Modifying *Bast* to have the dimensions of claim 7 would merely entail a simple and predictable alteration of the phone's dimensions based on the knowledge of a POSITA. Bederson, ¶276. A POSITA would have found it obvious to use such dimensions because it would improve portability (allowing storage in a pocket) and the ability to comfortably hold the phone in a single hand and interface with the device. *See, e.g.*, Bederson, ¶276; Section II.A; *Rydbeck*, 4:39-43; *Yamaguchi*, ¶¶[0009]-[0010], [0015]. Moreover, having the width of the device be approximately half of the length is consistent with a form factor that is comfortable for holding the phone during telephone calls. For example, such dimensions permit *Bast*'s "ergonomic" design of correlating the housing length to a user's mouth-to-ear distance while still allowing the device to be comfortably held in a user's hand. Bederson, ¶276. A POSITA would have known of this size ratio, had a motivation to use it, and would have had a reasonable expectation of success in achieving it. *Id.*

7. Claim 8: "The device of claim 1, wherein the thickness of the device is less than 20 percent of said width."

Bast/Wedel renders obvious the additional limitations of claim 8. Bederson, ¶¶277-80. A POSITA would have found it obvious to use a thickness of the device that is less than 20 percent of the width. *Id.*, ¶277.

In particular, a POSITA would also have found it obvious to modify the shape and size of the *Bast/Wedel* device based on *Wedel* and the knowledge of a POSITA. *Id.*, ¶278. *Wedel* teaches a technique for making “pocket[-]size[d] phones” (*Wedel*, 1:14-17, 1:19-21, 3:19-27, 9:29-31, 13:5-8), and it was well known that pocket-sized phones can have the claimed thickness ratio. For example, more than four years before *Bast*, *Yamaguchi* taught a mobile phone that is approximately 75mm in width and as thin as 15mm in depth, thus having a thickness that is about 20 percent of said width. *Yamaguchi*, ¶¶[0015], [0034], [0036]; *Bederson*, ¶278. *Yamaguchi* notes “a demand for a size such that the device can fit in a clothing pocket or the like from the perspective of making the device ‘easily portable anywhere.’” *Yamaguchi*, ¶[0007]; *Bederson*, ¶278.

Mobile devices disclosed after *Yamaguchi*—but still prior to claim 8’s effective filing date, January 22, 2017 (*see* Section III.C.4) and prior to March 11, 2004 (*see* Section III.C.2)—continued to emphasize the importance of decreasing the thickness of mobile devices, thus creating a motivation to decrease below a thickness that is 20 percent of the width. *See, e.g., Dutta*, ¶[0002]; *Bederson*, ¶279; Section II.A. Indeed, it was well known before January 22, 2017, that mobile phones with touchscreens and lacking physical keys on the front surface could have less than a 20% thickness/width ratio. *E.g., Ex. 1046* (disclosing a 2015

touchscreen mobile device that is 72.2mm in width and 8.8mm in thickness, i.e., a 12.2% thickness/width ratio); Bederson, ¶279.

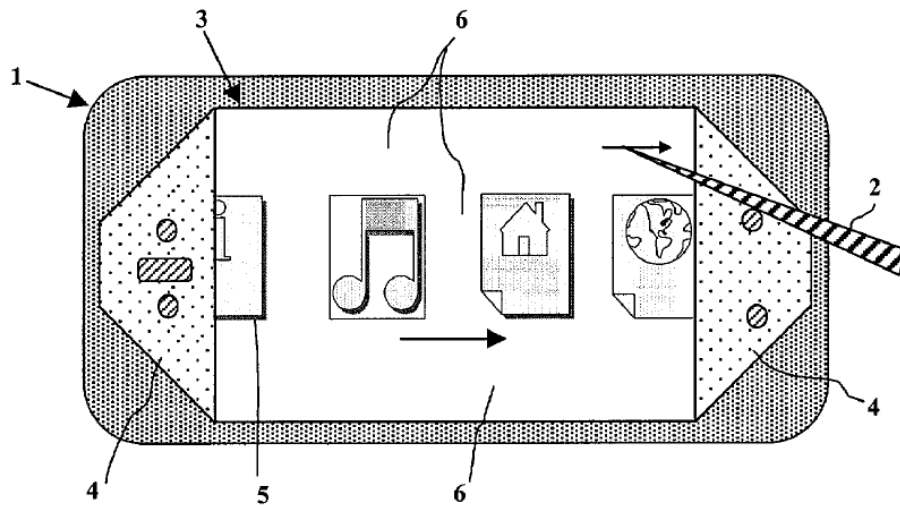
A POSITA would have been motivated to configure *Bast/Wedel*'s mobile phone to be thin (including having a thickness that is less than 20 percent of the width) to make the phone easier to slip into a pocket and be gripped by one hand, both features described by *Bast* and *Wedel* as being desired by customers. *Bast*, ¶[0006]; *Wedel*, 1:14-17; Bederson, ¶280. A POSITA would have a reasonable expectation of success in doing so given *Wedel*'s teachings of using miniaturized components (e.g., the low-profile, built-in, planar antenna) and improving their integration (e.g., the integrated antenna-speaker assembly). *Wedel*, 1:6-9, 1:19-21, 2:30-3:1, 3:19-21, 9:29-31, 13:5-8; Bederson, ¶280. Indeed, the '144 patent itself discloses no special arrangement of the internal components needed to achieve any of its claimed dimensions or size ratios, confirming that such was well within the level of skill in the art at the time. *See generally* Ex. 1001; Bederson, ¶280.

B. Ground 2B: Claims 3, 4, and 15-19 Are Obvious over *Bast* in View of *Wedel* and *Benoit*

1. Overview of *Benoit*

Benoit is directed to “a human-machine interface on a touch screen, for example[,] on a personal digital assistant (PDA).” *Benoit*, Abstract; Bederson, ¶¶101-02. *Benoit* teaches a method for navigating and launching an application on

a touchscreen device. *Benoit*, 1:3-7. Specifically, “[t]o launch a program, one scrolls through a series of icons on the screen and then highlights the suitable icon for launching that program.” *Id.*, Abstract. “Scrolling is achieved by using the PDA’s stylus (or a finger) in the control area to indicate a move in the direction of the scroll.” *Id.* Once a suitable icon is located, “a brief touch of the stylus [or the finger] on the icon” opens the corresponding program. *Id.*, 5:22-23.



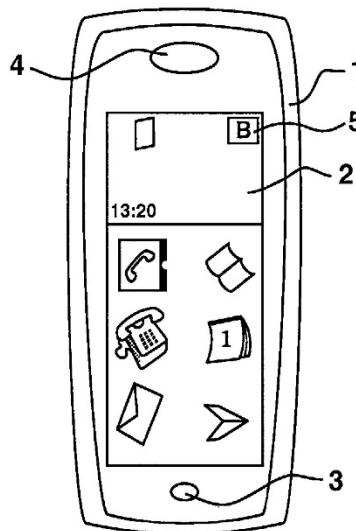
Id., Fig. 1.

Benoit is analogous art at least because it is in the same field of endeavor as the '144 patent—a mobile device with a touchscreen. *Compare Benoit*, Abstract, 1:3-3:24, *with* Ex. 1001, Claims 1, 9, 15; *Bederson*, ¶103. *Benoit* is also reasonably pertinent to the particular problem the '144 patent is concerned with because it deals with technologies relating to information input with a touch sensitive device.

Compare Benoit, Abstract, 1:3-3:24, with Ex. 1001, Abstract, 1:66-2:19, 21:60-63, 25:42-54, Claims 1, 9, 15; *Bederson*, ¶103.

2. Rationale to Combine *Bast*, *Wedel*, and *Benoit*

Bast/Wedel's mobile phone “combines the functions of a personal digital assistant (PDA)” and can “display a desktop in the form of icons corresponding to the various applications programmed in the terminal.” *Bast*, ¶[0010].



Id., Fig. 1. It therefore would have been logical for a POSITA working on improving *Bast/Wedel* to consult *Benoit*'s teaching of navigating and launching applications on a PDA. *Benoit*, 1:4-6; *Bederson*, ¶282. During this effort, a POSITA would have found it obvious to modify *Bast/Wedel* to include *Benoit*'s teaching of (1) swiping the screen to scroll through the application icons, and (2) briefly touching an icon to launch an application linked to the icon. *Bederson*, ¶282. Doing so would simplify the process of navigating and launching

applications in *Bast/Wedel*'s device, thereby improving user experience. *Id.*

Moreover, it would extend the control area for application navigation, "so as to distribute the touch points and prevent the premature wear of the touch screen over the defined areas." *Benoit*, 2:9-16.

Applying *Benoit*'s teaching to *Bast/Wedel* would have yielded a predictable result. Bederson, ¶283. *Benoit* discloses its application navigating and launching method "can be applied to any communication tool comprising a touch screen and a data processing unit." *Benoit*, 1:6-7. *Bast/Wedel*'s mobile phone has the same hardware environment because it comprises a touch sensitive display and a central processing unit. *Bast*, ¶¶[0010], [0013]. Thus, it is ready for improvement according to *Benoit*'s known technology. Bederson, ¶283. Namely, a POSITA would merely need to update *Bast/Wedel*'s software to implement *Benoit*'s teaching of swiping the screen to scroll through the series of application icons and briefly touching an icon to launch the corresponding application. *Id.*

A POSITA would have considered modifying *Bast/Wedel* with the teaching of *Benoit* to be an example of (A) combining prior-art elements (e.g., *Bast/Wedel*'s mobile phone and *Benoit*'s human-machine interface for a PDA) according to known methods to yield predictable results (e.g., configure *Bast/Wedel*'s software such that the application icons displayed on *Bast/Wedel*'s touchscreen can be scrolled by a user by touching the touchscreen and moving in the intended scroll

direction); (B) use of a known technique (e.g., *Benoit*'s teaching of scrolling application icons and launching an application by touching its icon) to improve similar devices (e.g., *Bast/Wedel*'s mobile phone capable of displaying a series of application icons) in the same way; (C) applying a known technique to a known device ready for improvement (e.g., *Bast/Wedel*'s mobile phone that has all the necessary hardware such as a large touchscreen and central processing unit) to yield predictable results (e.g., configure the central processing unit to enable *Benoit*'s application navigating and launching method on the touchscreen); and/or (D) a teaching, suggestion, or motivation in the prior art that would have led one of ordinary skill to modify the mobile phone disclosed by *Bast/Wedel* to allow users to scroll through the series of application icons displayed on *Bast/Wedel*'s touchscreen and launch an application by touching its icon. Bederson, ¶284.

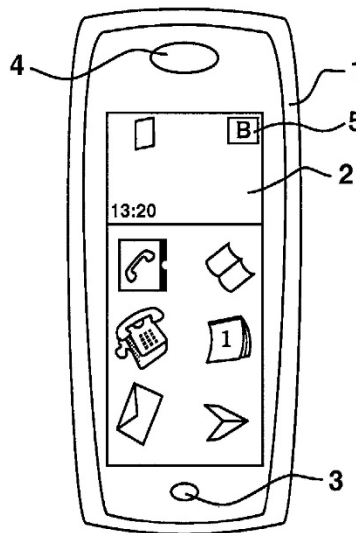
A POSITA would have a reasonable expectation of success in updating *Bast/Wedel*'s software to incorporate *Benoit*'s features of swiping and launching applications. Bederson, ¶285. Such software modifications were well within the skill of the art and are taught by *Benoit. Id.*; *Keynetik, Inc. v. Samsung Elecs. Co.*, No. 2022-1127, 2023 WL 2003932, at *2 (Fed. Cir. Feb. 15, 2023) (“Normally, once the function to be performed by software has been identified, writing code to achieve that function is within the skill of the art.” (citing *Fonar Corp. v. Gen. Elec. Co.*, 107 F.3d 1543, 1549 (Fed. Cir. 1997))). The '144 patent itself discloses

no special software programming or algorithms needed to achieve this claimed feature, confirming that such was well within the level of skill in the art at the time. *See generally* Ex. 1001; Bederson, ¶285.

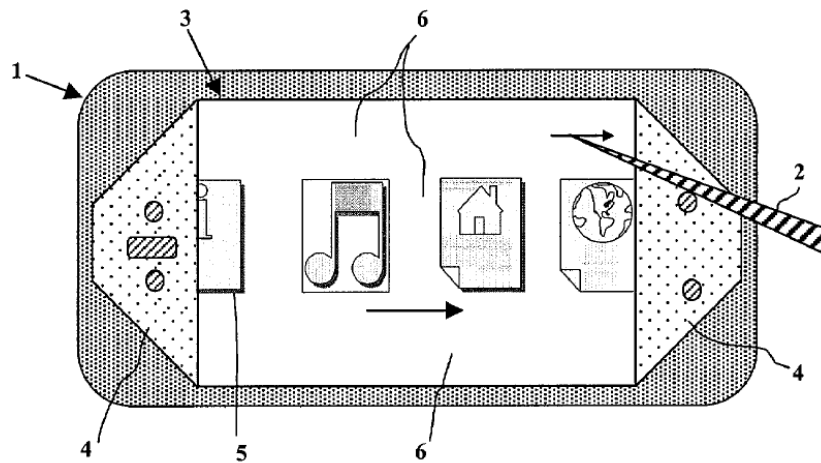
3. Claim 3

- a. 3[a]: “[The] device of claim 1, wherein plurality of icons corresponding to plurality of applications are displayed on said display unit, and”

Bast discloses the additional limitations of 3[a]. Bederson, ¶286. *Bast* discloses the mobile phone has a touchscreen configured to “display a desktop in the form of icons corresponding to the various applications programmed in the terminal.” *Bast*, ¶[0010].



Id., Fig. 1. Similarly, *Benoit* discloses a touchscreen interface displaying a series of icons representing applications. *Benoit*, 4:13-20.



Id., Fig. 1.

- b. 3[b]: “wherein upon providing a sweeping action on said display unit, plurality of other icons corresponding to plurality of other applications are displayed on said display unit.”

Bast/Wedel/Benoit renders obvious the additional limitations of 3[b].

Bederson, ¶¶287-88. *Benoit* discloses a method for scrolling the application icons by using a stylus or a finger on the touchscreen “to indicate a move in the direction of the scroll.” *Benoit*, Abstract. As shown in *Benoit*’s Figure 1, this can be done by “a touch followed by a directional movement.” *Id.*, 2:21-3:2. Here, the **touch and directional movement** constitute a **sweeping action**. A **first plurality of icons** would be displayed pre-scroll (i.e., before the sweeping action), while a **second plurality of applications** would be displayed post-scroll (after the sweeping action).

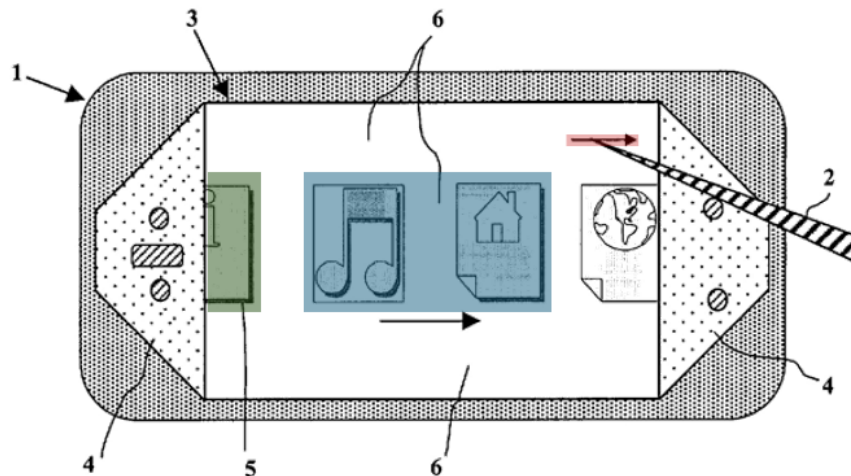


FIGURE 1

Bederson, ¶287 (citing *Benoit*, Fig. 1); *see also Benoit*, Fig. 3.

For the reasons discussed in Section VI.B.2, it would have been obvious to a POSITA to modify *Bast/Wedel* to include this feature from *Benoit*. *See* Section VI.B.2. Moreover, a POSITA would have been particularly interested in adopting *Benoit*'s teaching to provide a convenient way of navigating the application icons when there are too many of them to fit in *Bast/Wedel*'s screen. Bederson, ¶288.

4. Claim 4: “The device of claim 3, wherein upon providing a predefine interaction with an icon, said corresponding application is opened on the display unit.”

Bast/Wedel/Benoit renders obvious the additional limitations of claim 4.

Bederson, ¶289. *Bast* does not expressly disclose how to open the applications displayed on its touchscreen (*Bast*, ¶[0010], Fig. 1), but *Benoit* discloses “a brief touch on an icon launches an application linked to the icon.” *Benoit*, 3:5-8; *see also id.*, 5:1-2, 5:9-16 (teaching that an icon may be “identified and selected,” and the

icons are capable of “launching an application”), 5:22-23 (“An application launch command is characterized by a brief touch of the stylus on the icon.”). For the reasons discussed in Section VI.B.2, it would have been obvious to a POSITA to modify *Bast/Wedel* to implement *Benoit*’s teaching about launching an application by touching its corresponding icon. *See* Section VI.B.2. Moreover, a POSITA would have been motivated to implement such application launching method because it is easy and simple for a user to operate, and is a natural way for opening an application after scrolling/swiping a series of application icons on a touchscreen. *Bederson*, ¶289. A POSITA would also have a reasonable expectation of success for doing so because *Bast/Wedel*’s touchscreen is capable of receiving a touch command and its central processing unit can be configured to translate the touch command into a trigger signal for launching an application. *Id.*

5. Independent Claim 15

a. 15[pre]: “A mobile phone device, comprising:”

Bast discloses 15[pre] for the same reasons discussed for 1[pre]. *Bederson*, ¶290.

b. 15[a]: “a body having a practically rectangular shape;”

Bast discloses 15[a] for the same reasons discussed for 1[a]. *Bederson*, ¶291.

c. 15[b]: “a processor; and”

Bast discloses 15[b] because *Bast* discloses the mobile phone includes a central processing unit.

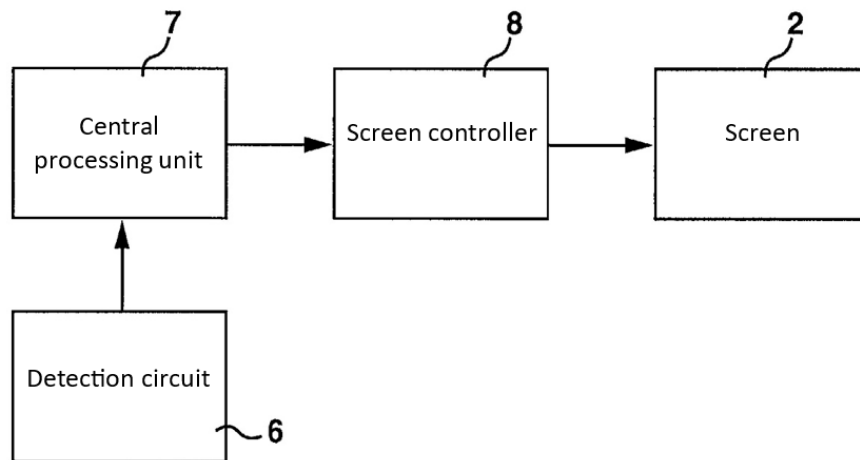


Figure 4

Bast, Fig. 4; Bederson, ¶292. *Bast* teaches the central processing unit is used to control the display of the portrait and landscape modes. *Bast*, ¶¶[0013]-[0014], [0016], [0019]-[0023].

d. 15[c]: “a display unit, said display unit occupying practically the entire surface of the front surface of said device is integrated within said device;”

Bast/Wedel renders obvious 15[c] for the same reasons discussed for 1[e].
Bederson, ¶293.

- e. **15[d]: “wherein plurality of icons corresponding to a plurality of applications are displayed by said processor on said display unit; and”**

Bast discloses 15[d]. Bederson, ¶294. For the same reasons discussed for 3[a], both *Bast* and *Benoit* disclose a plurality of icons corresponding to a plurality of applications can be displayed on a touchscreen. *See* Section VI.B.3.a. Moreover, *Bast* teaches its central processing unit transmits images to a screen controller for displaying in the portrait or landscape mode. *Bast*, ¶[0013].

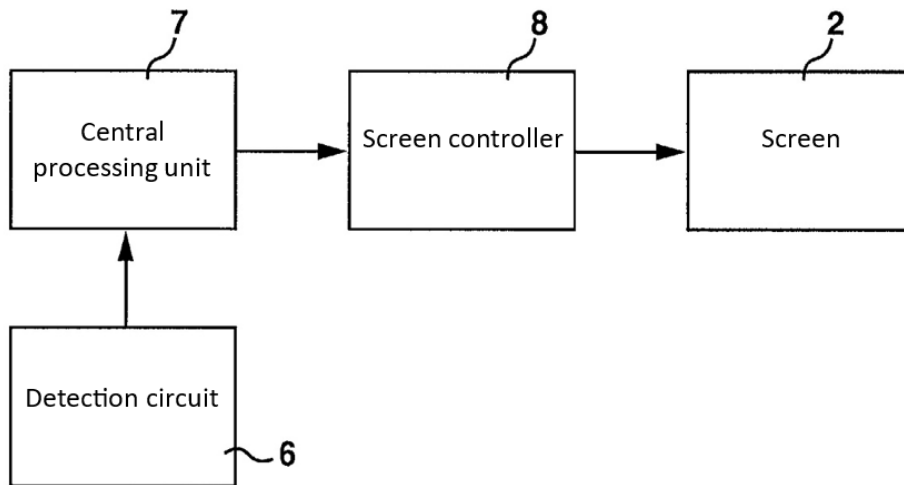


Figure 4

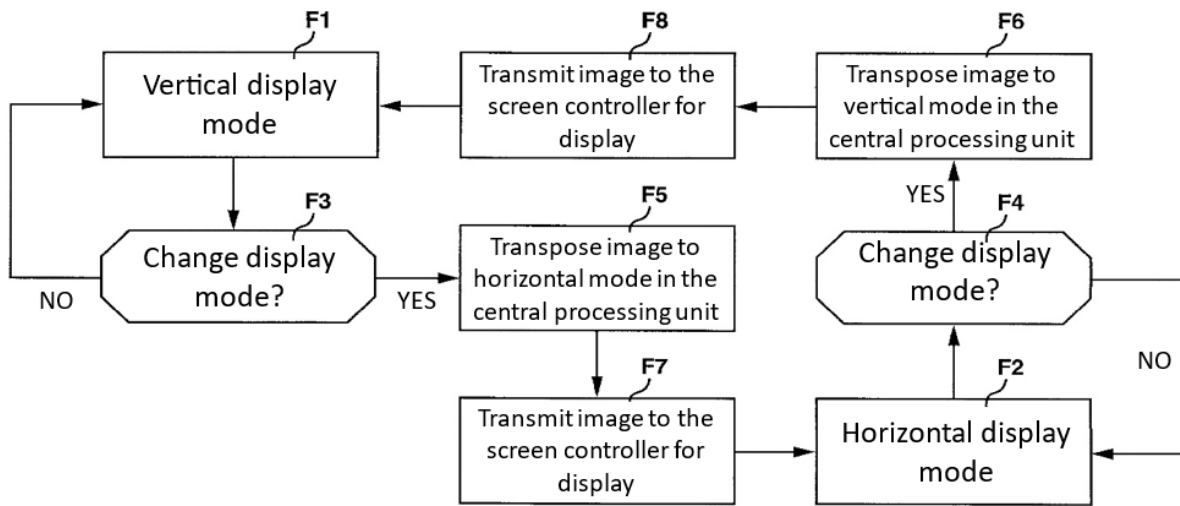


Figure 5

Id., Figs. 4-5. Therefore, a POSITA would understand the central processing unit is used to display the application icons. Bederson, ¶294.

- f. **15[e]: “wherein upon identifying an input corresponding to a sweeping action provided on a touch sensitive surface of said device, said processor displays plurality of other icons corresponding to plurality of other applications on said display unit.”**

Bast/Wedel/Benoit renders obvious 15[e]. Bederson, ¶295. As discussed for 1[e], *Bast* discloses a touchscreen for displaying information. *See* Section VI.A.4.f. Moreover, *Bast/Wedel/Benoit* renders obvious “wherein upon identifying an input corresponding to a sweeping action provided on a touch sensitive surface of said device, said processor displays plurality of other icons corresponding to plurality of other applications on said display unit,” for the reasons discussed in connection with 3[b]. It would have been obvious to a POSITA that a central processing unit

as disclosed in *Bast* performs the “display[ing] plurality of other icons corresponding to plurality of other applications on said display” because that was the standard way phones carried out processes at the time. Bederson, ¶295.

Therefore, *Bast/Wedel/Benoit* renders obvious 15[e]. *Id.*

6. Claim 16: “The device of claim 15, wherein said display unit is touch sensitive and wherein said sweeping action is provided on said display unit.”

Bast/Wedel/Benoit renders obvious the additional limitations of claim 16.

Bederson, ¶297. As discussed in connection with 15[e], *Bast* discloses a touch sensitive display unit, and *Benoit* discloses the sweeping action is made by touching and making a directional movement on the touch sensitive display unit.

See Section VI.B.3.b.

7. Claim 17: “The device of claim 15, wherein upon providing a predefined interaction with an icon, the corresponding application is opened on the screen.”

The additional limitations of claim 17 are substantially similar to those of claim 4, and they are disclosed by *Benoit* for the same reasons discussed for claim 4. Bederson, ¶298.

8. Claim 18: “The device of claim 15, wherein said device does not include a physical key on the front surface of the device.”

The additional limitations of claim 18 are substantially similar to those of 1[f], and thus they are disclosed by *Bast* for the same reasons discussed for 1[f].
Bederson, ¶299.

9. Claim 19: “The device of claim 15, wherein said components of the mobile phone are integrated within the body such that none of said components is noticeably extended out from said the body.”

The additional limitations of claim 19 are substantially similar to those of 1[g], and they are disclosed by *Bast* for the same reasons discussed for 1[g].
Bederson, ¶300.

C. Ground 3B: Claims 5, 9-11, and 14 Are Obvious over *Bast* in View of *Wedel* and *Jambhekar*

1. Overview of *Jambhekar*

Jambhekar discloses a mobile phone having a rectangular-shaped touchscreen display. *Jambhekar*, 4:22-23, 4:52-61, Fig. 3. Like *Bast*, *Jambhekar*’s touchscreen display can display information “vertically in a portrait mode, or horizontally in a landscape mode.” *Id.*, 4:23-25; Bederson, ¶¶108-10. *Jambhekar* discloses virtual keyboards are provided in these display modes to enable text input. For example, Figures 5F-5H depict a virtual keyboard provided in a portrait

mode for a user to look up a phone book directory by first typing a partial name and then selecting from entries matching the name. *Jambhekar*, 6:1-2, 6:19-31.

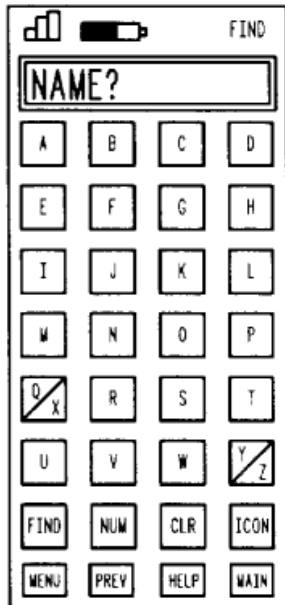


FIG. 5F

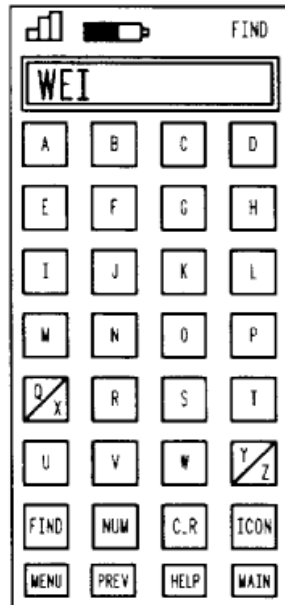


FIG. 5G

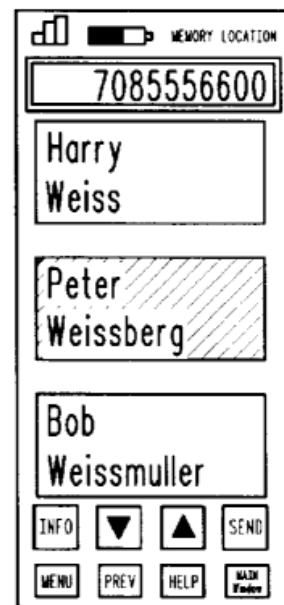


FIG. 5H

Id., Figs. 5F-5H. And Figures 8A-8C depict a virtual keyboard provided in a landscape mode for a user to type and view a text message. *Id.*, 7:41-48.

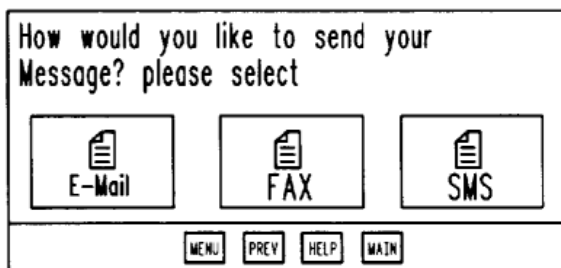


FIG. 8A

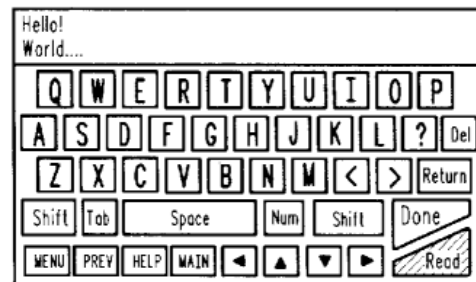


FIG. 8B

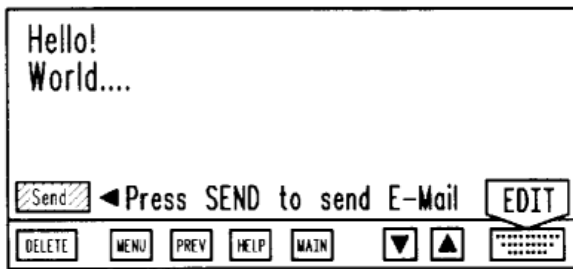


FIG. 8C

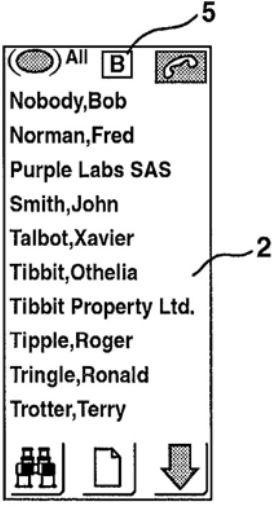
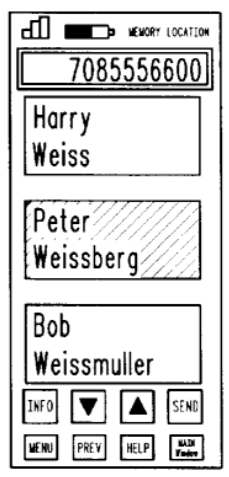
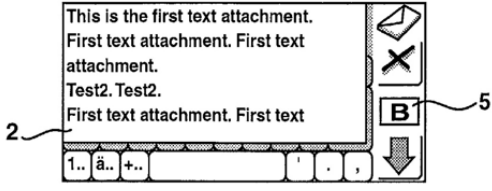
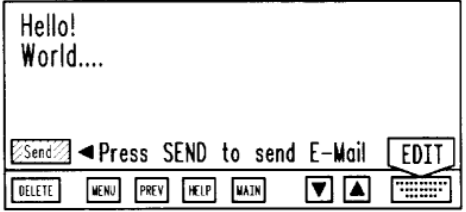
Id., Figs. 8A-8C.

Jambhekar is analogous art at least because it is in the same field of endeavor as the '144 patent—a mobile device with a touchscreen. *Compare id.*, 2:20-25, 4:22-23, 4:37-61, Fig. 3, *with* Ex. 1001, Claims 1, 9, 15; Bederson, ¶111. *Jambhekar* is also reasonably pertinent to the particular problem the '144 patent is concerned with because it deals with technologies relating to information input with a touch sensitive device. *Compare Jambhekar*, 4:22-25, 6:1-7:59, Figs. 4-8, *with* Ex. 1001, Abstract, 1:66-2:19, 21:60-63, 25:42-54, Claims 1, 9, 15; Bederson, ¶111.

2. Rationale to Combine *Bast*, *Wedel*, and *Jambhekar*

In view of *Jambhekar*'s teaching, a POSITA would have been motivated to provide virtual keyboards in *Bast/Wedel*'s portrait and landscape modes to facilitate text input. Bederson, ¶302. Particularly, both *Bast/Wedel* and *Jambhekar* disclose mobile phones having a touchscreen with portrait and landscape display modes. *Bast*, Abstract, ¶¶[0010]-[0011], Figs. 2-3; *Jambhekar*, 2:20-25, 4:23-25,

4:44-52, Figs. 3-8. *Bast/Wedel* discloses its portrait mode is “most suitable for viewing a directory” with “a large number of short pieces of information constituting a list, such as a name list,” while its landscape mode “is more suitable for viewing text” and “images.” *Bast*, ¶[0011]. Likewise, *Jambhekar* uses the portrait mode for telephone functions such as looking up the phone book directory, and uses the landscape mode for messaging functions such as viewing and entering a text message. *Jambhekar*, 1:64-65, 2:4-6, 4:44-52, 6:1-42, 7:41-59.

Mode	<i>Bast</i>	<i>Jambhekar</i>
Portrait	 Figure 2	 FIG. 5 H
Landscape	 Figure 3	 FIG. 8 C

Because *Bast/Wedel* and *Jambhekar* both use the portrait and landscape modes for the same purpose, a POSITA would have considered *Jambhekar*'s teaching—providing virtual keyboards in the portrait and landscape modes to enable text input in these display modes—relevant to improving *Bast/Wedel*'s mobile phone. Bederson, ¶302.

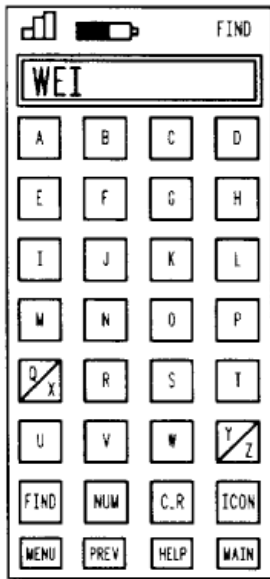


FIG. 5G

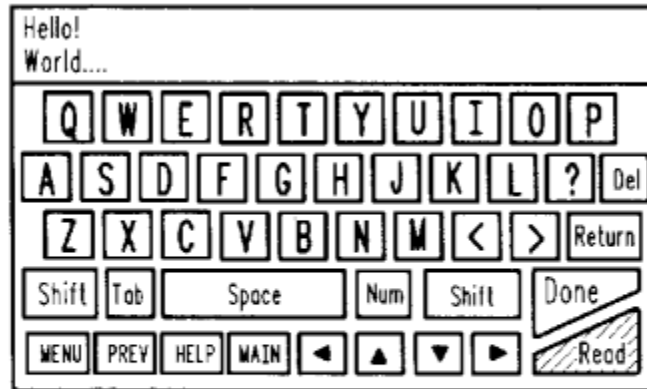


FIG. 8B

Jambhekar, Figs. 5G, 8B.

Making this modification to *Bast/Wedel* would be a logical extension of its existing input methods. Bederson, ¶303. For example, *Bast/Wedel* already uses “a virtual keypad for numbering.” *Bast*, ¶[0010]. A POSITA would have contemplated expanding it to virtual alphanumeric and/or QWERTY keyboards for text input, as they were routinely used in the art. *See* Section II; Bederson, ¶303. Doing so would be appealing because some customers preferred to use keyboards similar to those used with the computers. Bederson, ¶303. Moreover, *Bast/Wedel* enables users to “writ[e] by means of a stylus.” *Bast*, ¶[0010]. *Bast* does not describe how the stylus can be used, but it would have been obvious to write by using the stylus to click a virtual keyboard, as *Jambhekar* teaches “a stylus or

writing implement” can be used together with its virtual keyboards. *Jambhekar*, 2:45-47. Additionally, to the extent *Bast*’s stylus was originally designed for use as a handwriting tool, it would have been desirable to configure *Bast/Wedel* to offer *Jambhekar*’s virtual alphanumeric and/or QWERTY keyboards as an alternative input method, so that customers can have more choices. Bederson, ¶303. Indeed, it was common to provide both handwriting means and virtual keyboards in a mobile phone. *Jambhekar*, 5:43-47, 8:22-24, Figs. 5G, 8B, 10C, 11B. These virtual keyboards can serve as a back-up when the handwriting means fails. Bederson, ¶303.

Moreover, applying *Jambhekar*’s teaching to *Bast/Wedel* would improve its functions. Bederson, ¶304. Both *Bast/Wedel* and *Jambhekar* are directed to sophisticated mobile phones that provide applications (e.g., texting, e-mail, etc.) beyond the traditional phone-dialing functions. *Bast*, ¶¶[0010]-[0011]; *Jambhekar*, 2:20-25. *Jambhekar* recognized the tension between the mobile phone’s “small display and ... fixed data input keypad” and “wireless data service such as e-mail [that] requires extensive display of received messages as well as extensive user data input from either a pen or a keyboard” (*Jambhekar*, 1:31-36), and sought to provide a phone user interface for “more convenient operation by the user” to navigate the various applications (*id.*, 1:45-49). A POSITA therefore would have been prompted by *Jambhekar*’s teaching to fuse a versatile virtual keyboard into

Bast/Wedel's portrait and landscape display modes to allow a seamless user experience in viewing and inputting information in these modes. *See* Section II.C; *Bederson*, ¶304.

For example, as illustrated by *Jambhekar*, when making a phone call, *Bast/Wedel*'s “virtual keypad for numbering” may not be enough if a user needs to enter the contact's name to search for the corresponding phone number in the phone directory. *Bast*, ¶[0010].

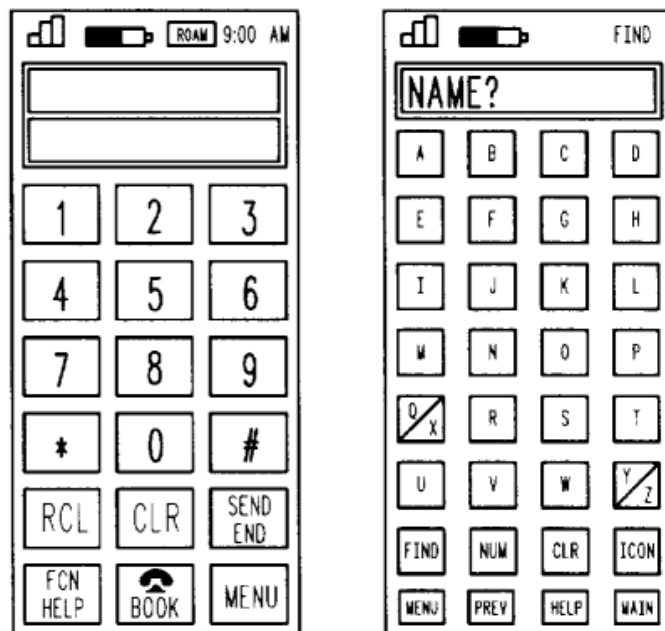


FIG. 5E **FIG. 5F**

Jambhekar, 6:21-23, Figs. 5E-5F. Thus, it would have been obvious to also provide a virtual QWERTY keyboard in *Bast/Wedel* as a supplement to the virtual numerical keypad to allow a user to more easily enter a contact's name or other queries. *Bederson*, ¶305.

A POSITA would have considered modifying *Bast/Wedel*'s mobile phone to incorporate *Jambhekar*'s virtual keyboards to be an example of (A) combining prior-art elements (e.g., *Bast/Wedel*'s mobile touchscreen phone) according to known methods (e.g., the orientation-aligned virtual keyboards of *Jambhekar*) to yield predictable results; (B) use of a known technique (*Jambhekar*'s virtual keyboards in portrait and landscape directions) to improve similar devices (*Bast/Wedel*'s mobile phone capable of detecting the housing orientation and rotating the display between portrait and landscape directions) in the same way; (C) applying a known technique (*Jambhekar*'s virtual keyboards in portrait and landscape directions) to a known device ready for improvement (e.g., *Bast/Wedel*'s mobile phone that has all the necessary hardware, such as a large touchscreen and central processing unit, and is capable of displaying information in portrait and landscape modes) to yield predictable results; and/or (D) a teaching, suggestion, or motivation in the prior art that would have led one of ordinary skill to modify *Bast/Wedel*'s mobile phone to provide virtual alphanumerical or QWERTY keyboards for inputting text in the portrait and landscape display modes. Bederson, ¶306.

A POSITA would have had a reasonable expectation of success for implementing *Jambhekar*'s virtual keyboards in *Bast/Wedel*'s portrait and landscape display modes. Bederson, ¶307. This would only require combining

prior-art elements and applying *Jambhekar*'s known technique to improve similar devices (*Bast/Wedel*'s mobile phone with touchscreen) in the same way. *Id.*

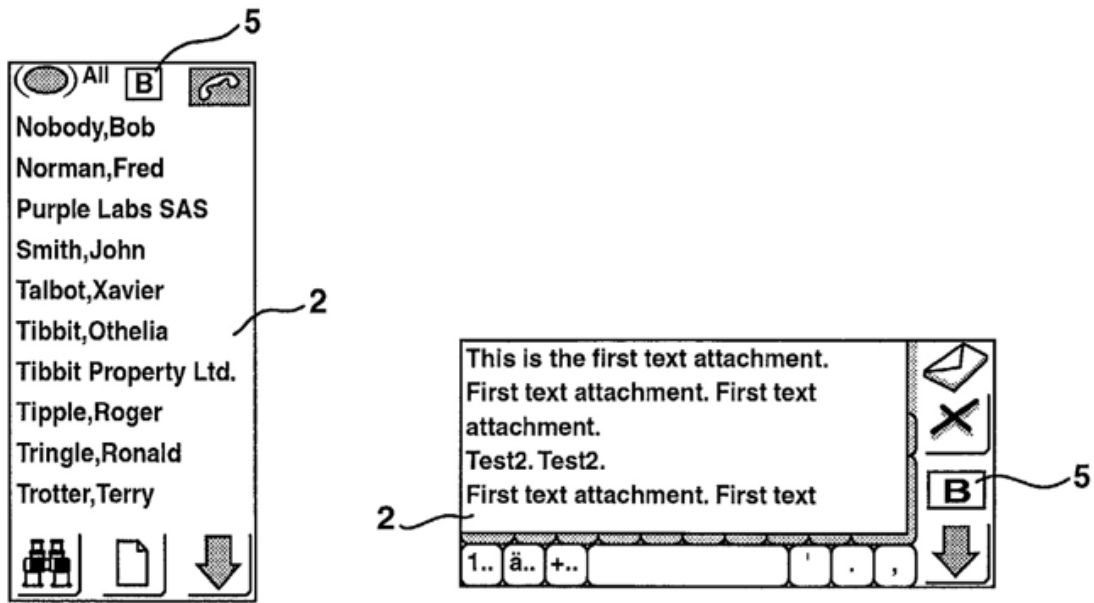
Moreover, the modification would only involve updating *Bast/Wedel*'s input software. *Id.* Since *Bast/Wedel* already enables a virtual keypad for numbers, adding the virtual alphanumeric/QWERTY keyboards would be a relatively minor and straightforward extension to the existing input software. *Id.* Such software modifications were well within the skill of the art. *Id.*; *Keynetik*, 2023 WL 2003932, at *2. Further, *Bast/Wedel* already provided the essential hardware environment (touchscreen, central processing unit, screen controller, etc.) for implementing the modification. *Bast*, ¶¶[0010], [0013], Figs. 1, 4; *Bederson*, ¶307.

3. Claim 5: “The device of claim 1, wherein said device is adapted to display text entered through a keyboard in landscape direction and in portrait direction on said display unit when the device is used, respectively, in landscape position and in portrait position.”

Bast/Wedel/Jambhekar renders obvious the additional limitations of claim 5.

Bederson, ¶308. *Bast* discloses a mobile phone having a touchscreen “enabling a display in portrait mode when the device is vertical and in landscape mode when the device is horizontal.” *Bast*, ¶[0001]; *see also id.*, Abstract, ¶¶[0023]-[0024].

Bast teaches the portrait and landscape modes are suitable for displaying different types of text information. *Id.*, ¶[0011].



Id., Figs. 2-3. Moreover, for the reasons discussed in Section VI.C.2, it would have been obvious to implement *Jambhekar*'s virtual keyboards in *Bast/Wedel*'s portrait and landscape display modes to provide a convenient way for users to enter text information in these modes. Bederson, ¶308.

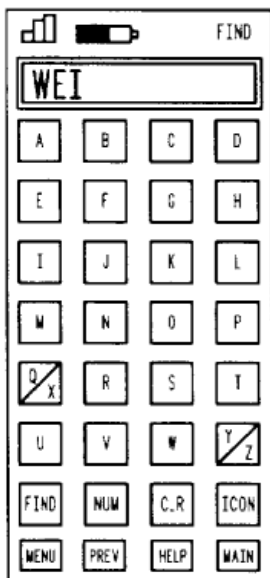


FIG. 5G

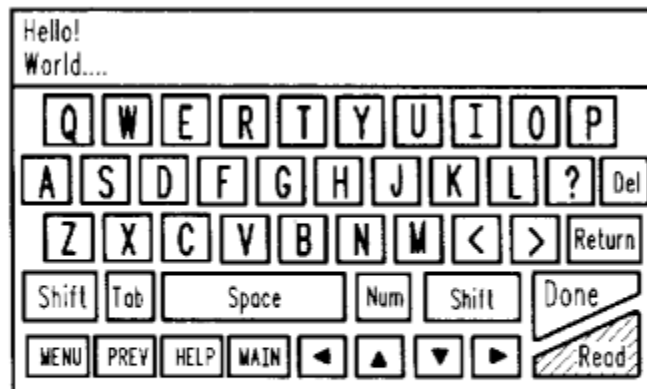


FIG. 8B

Jambhekar, Figs. 5G, 8B.

4. Independent Claim 9

a. 9[pre]: “A mobile phone, comprising:”

Bast discloses 9[pre] for the same reasons as it discloses 1[pre]. *Bederson*, ¶309.

b. 9[a]: “a body having a practically rectangular shape, said body having a front surface, a back surface and four side surfaces,”

9[a] is substantially similar to 1[a], and is disclosed or rendered obvious by *Bast* for the same reasons discussed in connection with 1[a]. *Bederson*, ¶310.

c. 9[b]: “wherein the length of the front surface of the mobile phone corresponds to the distance between the ear and the mouth of a user and”

9[b] is substantially similar to 1[b], and is disclosed by *Bast* for the same reasons discussed in connection with 1[b]. *Bederson*, ¶311.

d. 9[c]: “wherein the width of the front surface of the mobile phone is significantly shorter than the length, and”

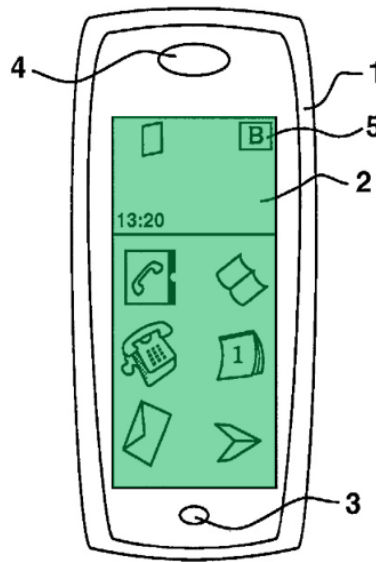
9[c] is substantially similar to 1[c], and is disclosed by *Bast* for the same reasons discussed in connection with 1[c]. *Bederson*, ¶312.

e. 9[d]: “wherein said body has a thin thickness;”

9[d] is substantially similar to 1[d], and is disclosed by *Bast* or rendered obvious by *Bast* when combined with the knowledge of a POSITA for the same reasons discussed in connection with 1[d] and claim 8. *Bederson*, ¶313.

f. 9[e]: “a touch sensitive display unit;”

Bast discloses 9[c] because *Bast* teaches the mobile phone has a “touch screen 2.” *Bast*, ¶[0010].



Id., Fig. 1; Bederson, ¶314.

g. 9[f]: “a virtual keyboard to enter text; and”

Bast/Wedel/Jambhekar renders obvious 9[f]. Bederson, ¶315. *Jambhekar* teaches providing virtual keyboards in portrait and landscape display modes to enable text input.

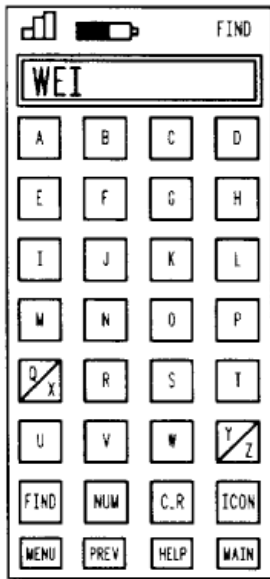


FIG. 5G

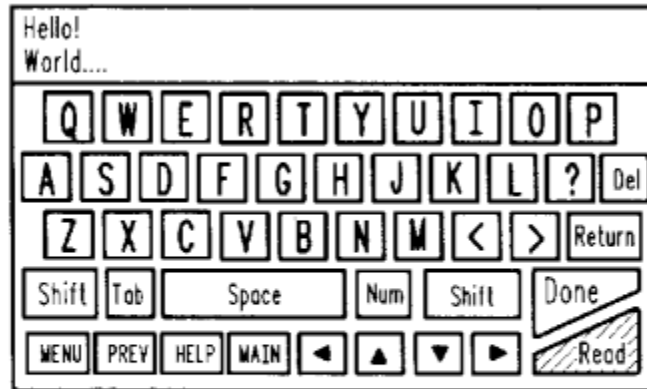
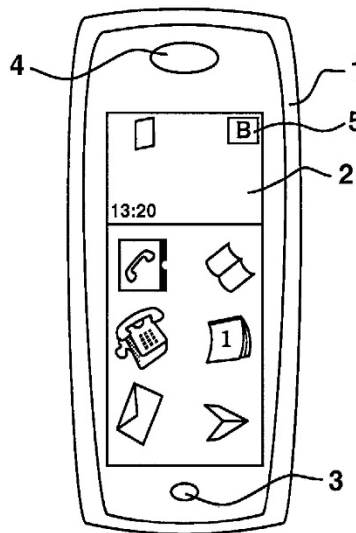


FIG. 8B

Jambhekar, Figs. 5G, 8B. And, for the reasons discussed in Section VI.C.2, a POSITA would have found it obvious to implement these virtual keyboards in *Bast/Wedel*'s portrait and landscape display modes as well. *Bederson*, ¶315.

h. 9[g]: “a microphone and a speaker;”

Bast discloses 9[g] because *Bast* discloses the mobile phone “includes a microphone 3 and a speaker 4.” *Bast*, ¶[0010].



Id., Fig. 1; Bederson, ¶316.

- i. **9[h]: “wherein said display unit, practically occupying the entire front surface of the mobile phone, is integrated within said mobile phone and”**

9[h] is substantially similar to 1[e], and is rendered obvious by *Bast* in view of *Wedel* for the same reasons discussed in connection with 1[e]. Bederson, ¶317.

- j. **9[i]: “wherein said front surface of the mobile phone does not have a physical button and wherein said mobile phone does not have a physical keyboard to enter text, and”**

Bast discloses 9[i]. Bederson, ¶318. For the reasons discussed in Section VI.A.4.g for 1[f], *Bast*’s mobile phone does not have a physical button on the front surface, and it is designed to not require any physical key for inputting data or controlling the phone’s settings and functions. Bederson, ¶318 (citing *Bast*’s teaching in ¶[0010]). Moreover, for the reasons discussed in Section VI.C.2, it

would have been obvious to combine *Jambhekar*'s teaching with *Bast/Wedel* to provide virtual keyboards in the portrait and landscape display modes to enable text input. In view of this, a POSITA would have found it unnecessary to include any physical keyboard in the phone. Bederson, ¶318. Without the physical keyboard, the phone would be thinner and less bulky, thereby meeting *Bast/Wedel*'s demand for pocket-sized phones. See Section II.B; *Wedel*, 1:14-17; Bederson, ¶318.

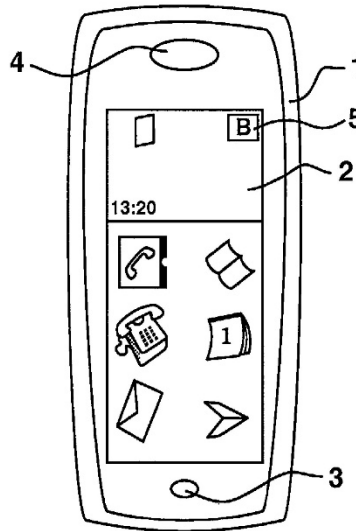
- k. **9[j]: “wherein said display unit is adapted to display text, entered through the virtual keyboard, in landscape direction and in portrait direction when the mobile phone is used, respectively, in landscape position and in portrait position.”**

9[j] is substantially similar to claim 5, and is rendered obvious by *Bast/Wedel/Jambhekar* for the same reasons discussed in connection with claim 5. Bederson, ¶319.

- 5. **Claim 10: “The mobile phone of claim 9, wherein the distance between said microphone and said speaker corresponds to the distance between the ear and the mouth of a user.”**

Bast discloses the additional limitations of claim 10. Bederson, ¶¶321-22. For the reasons discussed in Section VI.A.4.c for 1[b], in view of *Bast*'s teaching regarding ergonomic design, a POSITA would understand the speaker 4 and microphone 3 in *Bast*'s mobile phone are positioned in proximity to an average

user's ear and mouth respectively, such that the phone's length approximately corresponds to a user's ear-to-mouth distance.



Bast, ¶[0003], Fig. 1; *Bederson*, ¶321; *see also Dutta*, ¶[0003]; *Yamaguchi*, ¶[0005]; *Rydbeck*, 8:57-59.

The modification taught by *Wedel* moves *Bast*'s speaker behind the screen of the phone, but does not require changing the speaker's position in the longitudinal direction. *Bederson*, ¶322. Accordingly, the *Bast/Wedel/Jambhekar* mobile phone would retain the same speaker-to-microphone distance taught in *Bast. Id.*

6. Claim 11: “The mobile phone of claim 9, wherein said practically rectangular shape has rounded corners.”

The additional limitations of claim 11 are substantially similar to those of claim 2, and they are disclosed or rendered obvious by *Bast* for the same reasons discussed in connection with claim 2. Bederson, ¶323.

7. Claim 14: “The mobile phone of claim 9, wherein said components of the mobile phone are integrated within the body such that none of said components is significantly extended out from the body.”

The additional limitations of claim 14 are substantially similar to those of 1[g], and they are disclosed by *Bast* for the same reasons discussed in connection with 1[g]. Bederson, ¶324.

D. Ground 4B: Claims 12, 13, and 20 Are Obvious over *Bast* in View of *Wedel*, *Jambhekar*, and *Benoit*

1. Rationale to Combine *Bast*, *Wedel*, *Jambhekar*, and *Benoit*

For the reasons discussed in Sections VI.C.2 and VI.B.2 respectively, it would have been obvious to modify *Bast/Wedel*’s mobile phone to implement *Jambhekar*’s virtual keyboards and *Benoit*’s method of swiping the screen to scroll through the series of application icons. A POSITA would have been motivated to add both functions to *Bast/Wedel*’s mobile phone to merge their respective benefits. *See* Sections VI.B.2, VI.C.2; Bederson, ¶326. The resulting product would be able to meet the customers’ diverse requirements. Bederson, ¶326. A POSITA would have a reasonable expectation of success for doing so because it

only involves combining prior-art elements according to known methods—updating *Bast/Wedel*’s software to carry out the respective functions taught by *Jambhekar* and *Benoit*. Bederson, ¶326. At the time of the ’144 patent, it was common to update the phone software to add new features cumulatively. *Id.* And, because the functions taught by *Jambhekar* and *Benoit* do not have any overlap or conflict, a POSITA would reasonably expect the software update to be a straightforward and routine task well within the skill of the art. *Id.*; *Keynetik*, 2023 WL 2003932, at *2.

2. Claim 12

- a. 12[a]: “The mobile phone of claim 9, wherein plurality of icons corresponding to plurality of applications are displayed on said display unit, and”**

The limitations of 12[a] are substantially similar to those of 3[a], and they are disclosed by *Bast* for the same reasons discussed for 3[a]. Bederson, ¶327.

- b. 12[b]: “wherein upon providing a sweeping action on said display unit, plurality of other icons corresponding to plurality of other applications are displayed on said display unit.”**

The limitations of 12[b] are substantially similar to those of 3[b], and they are rendered obvious by *Bast/Wedel/Benoit* for the same reasons discussed for 3[b]. Bederson, ¶328. Moreover, as discussed in Section VI.D.1, it would have been obvious to combine the respective teachings of *Jambhekar* and *Benoit* with *Bast/Wedel*’s mobile phone.

3. Claim 13: “The mobile phone of claim 12, wherein upon providing a predefine interaction with an icon, the corresponding application is opened on the screen.”

The additional limitations of claim 13 are substantially similar to those of claim 4, and they are disclosed by *Benoit* for the same reasons discussed for claim 4. Bederson, ¶329.

4. Claim 20: “The device of claim 15, wherein said display unit is adapted to display text entered through a keyboard in landscape direction and in portrait direction on said display unit when the device is used, respectively, in landscape position and in portrait position.”

The additional limitations of claim 20 are substantially similar to those of claim 5, and they are rendered obvious by *Bast/Wedel/Jambhekar* for the same reasons discussed for claim 5. Bederson, ¶330. Moreover, as discussed in Section VI.D.1, it would have been obvious to combine the respective teachings of *Jambhekar* and *Benoit* with *Bast/Wedel*’s mobile phone.

VII. DISCRETIONARY DENIAL IS NOT WARRANTED

A. Denial of Institution Is Not Warranted Under *Fintiv*

Consistent with *Sotera Wireless, Inc.*, Petitioners hereby stipulate “that, if the PTAB institutes inter partes review, Petitioner[s] ‘will not pursue in [*Keyless Licensing LLC v. Samsung Electronics America, Inc., et al.*, Case No. 2:24-cv-00464-JRG (E.D. Tex.)] the specific grounds [asserted in IPR2025-00528], or ... any other ground ... that was raised or could have been reasonably raised in an IPR

(i.e., any ground that could be raised under §§ 102 or 103 on the basis of prior art patent or printed publications).”” *Sotera Wireless, Inc. v. Masimo Corp.*, IPR2020-01019, Paper 12 at 13-14 (PTAB Dec. 1, 2020) (precedential as to § II.A)

The Director’s Interim Procedure for Discretionary Denials in AIA Post-Grant Proceedings with Parallel District Court Litigation (“Interim Procedure”⁸) directs that “the PTAB will not discretionarily deny institution of an IPR or PGR in view of parallel district court litigation where a petitioner stipulates not to pursue in a parallel district court proceeding the same grounds as in the petition or any grounds that could have reasonably been raised in the petition.” Interim Procedure, 3, 7-8. Petitioners have so stipulated.

Denial of institution is not warranted under *Fintiv*.

B. Denial of Institution Is Not Warranted Under § 325(d)

During prosecution, the Examiner did not consider, let alone rely on, any of the prior art asserted in this Petition. Thus, the Examiner did not consider the same (or substantially the same) prior art and arguments presented here. The Board should not exercise its discretion to deny institution under 35 U.S.C. § 325(d).

⁸ Available at

https://www.uspto.gov/sites/default/files/documents/interim_proc_discretionary_denials_aia_parallel_district_court_litigation_memo_20220621_.pdf.

VIII. MANDATORY NOTICES

A. Real Parties-in-Interest

The real parties-in-interest are Samsung Electronics Co., Ltd., and Samsung Electronics America, Inc.

B. Related Matters

This Petition is related to IPR2025-00529.

Keyless asserted the '144 patent in *Keyless Licensing LLC v. Samsung Electronics America, Inc. et al.*, Case No. 2:24-cv-00464 (E.D. Tex). Petitioners are not aware of any other judicial or administrative matter that would affect, or be affected by, a decision in this proceeding.

On its face, the '144 patent purports to claim priority to the following U.S. Patent Applications: U.S. Application Nos. 14/146,125 and 10/553,575 (both abandoned); International Application No. PCT/US2004/012082; and now-expired U.S. Provisional Application Nos. 60/463,844; 60/466,594; 60/468,028; 60/474,447; 60/475,533; 60/482,706; 60/482,998; 60/496,702; 60/500,602; 60/504,331; 60/510,885; 60/536,564; 60/552,968; 60/557,140. According to the records of the U.S. Patent and Trademark Office, U.S. Patent Application Nos. 17/871,945 and 17/872,301 (both abandoned) claim priority to the '144 patent.

C. Lead and Backup Counsel, and Service Information

Lead Counsel	Backup Counsel
Joshua L. Goldberg, Reg. No. 59,369 joshua.goldberg@finnegan.com Finnegan, Henderson, Farabow, Garrett & Dunner, LLP 901 New York Avenue NW Washington, DC 20001-4413 Phone: 202-408-6092 Fax: 202-408-4400	Daniel C. Cooley, Reg. No. 59,639 daniel.cooley@finnegan.com Finnegan, Henderson, Farabow, Garrett & Dunner, LLP 1875 Explorer Street Suite 800 Reston, VA 20190-6023 Tel: 571-203-2700 Fax: 202-408-4400 Tyler M. Akagi, Reg. No. 74,264 tyler.akagi@finnegan.com Finnegan, Henderson, Farabow, Garrett & Dunner, LLP 901 New York Avenue NW Washington, DC 20001-4413 Tel: 202-408-4000 Fax: 202-408-4400 Chen Zang, Reg. No. 81,568 chen.zang@finnegan.com Finnegan, Henderson, Farabow, Garrett & Dunner, LLP 901 New York Avenue NW Washington, DC 20001-4413 Phone: 202-408-4416 Fax: 202-408-4400

Lead Counsel	Backup Counsel
	Kevin D. Rodkey, Reg. No. 65,506 kevin.rodkey@finnegan.com Finnegan, Henderson, Farabow, Garrett & Dunner, LLP 271 17th Street NW Suite 1400 Atlanta, GA 30363-6209 Phone: 404-653-6484 Fax: 404-653-6444

Please address all correspondence to counsel at the addresses above.

Petitioners consent to electronic service by email at the above email addresses.

IX. GROUNDS FOR STANDING

Petitioners certify that the '144 patent is available for IPR, and that
Petitioners are not barred or estopped from requesting IPR challenging the patent
claims on the grounds identified herein.

X. CONCLUSION

For the reasons above, Petitioners request institution of *inter partes* review
and cancellation of each challenged claim. The Office may charge any required
fees to Deposit Account No. 06-0916.

Date: February 14, 2025

By: /Joshua L. Goldberg/
Joshua L. Goldberg, Lead Counsel
Reg. No. 59,369

CERTIFICATION OF WORD COUNT

Pursuant to 37 C.F.R. § 42.24(a)(1)(i), the undersigned hereby certifies that the foregoing PETITION FOR *INTER PARTES* REVIEW contains 13,736 words, excluding the parts of this Petition that are exempted under 37 C.F.R. § 42.24(a), as measured by the word-processing system used to prepare this paper.

Date: February 14, 2025

By: /Joshua L. Goldberg/
Joshua L. Goldberg, Lead Counsel
Reg. No. 59,369

CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. §§42.6(e) and 42.105(a), the undersigned certifies that on February 14, 2025, a copy of the foregoing **Petition for *Inter Partes* Review of U.S. Patent No. 11,503,144, Petitioners' Notice Ranking Petitions for *Inter Partes* Review of U.S. Patent No. 11,503,144, the associated powers of attorney, and Exhibits 1001-1026, 1028-1033, 1035-1047, 1051** were served by FedEx International on the correspondence address of record indicated in the Patent Office's public Patent Center system for U.S. Patent No. 11,503,144:

Benjamin Firooz Ghassabian
2567 Avenue De La Resistance
Toulon, - 83000
FRANCE

A courtesy copy of the foregoing was also served by FedEx Priority Overnight on litigation counsel:

Robert F. Kramer
KRAMER ALBERTI LIM & TONKOVICH LLP
950 Tower Lane, Suite 1725
Foster City, CA 94404

Date: February 14, 2025

By: /William Esper/
William Esper
Legal Assistant and PTAB Coordinator
FINNEGAN, HENDERSON, FARABOW,
GARRETT & DUNNER, LLP