

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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Microsoft Corporation and Nokia, Inc.,

Petitioners

v.

Global Touch Solutions, LLC,

Patent Owner

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IPR2015- 01148

Patent 7,498,749

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**PETITION FOR *INTER PARTES* REVIEW**

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## **EXHIBIT LIST**

Exhibit No.	Description
1001	U.S. Patent No. 7,498,749 (filed Oct. 30, 2007) (“’749 patent”)
1002	Prosecution history for the ’749 patent (“’749 prosecution history”)
1003	U.S. Patent No. 6,249,089 (filed Oct. 9, 1998) (“’089 patent”)
1004	U.S. Patent No. 6,125,286 (filed June 5, 1997) (“Jahagirdar”)
1005	U.S. Patent No. 4,053,789 (filed Aug. 27, 1976) (“Schultz”)
1006	U.S. Patent No. 5,329,577 (filed Dec. 29, 1992) (“Norimatsu”)
1007	William Buxton et al., <i>Issues and Techniques in Touch-Sensitive Tablet Input</i> , 85 PROC. SIGGRAPH CONF. ON COMPUTER GRAPHICS AND INTERACTIVE TECHS. 215, 215-24 (1985) (“Buxton”)
1008	U.S. Patent No. 4,963,793 (filed Mar. 8, 1988) (“DePauli”)
1009	U.S. Patent No. 4,764,708 (filed Dec. 8, 1986) (“Roudeski”)
1010	Reserved
1011	Expert Declaration of Dr. Horenstein (“Horenstein Decl.”)

## **I. Introduction**

Pursuant to 35 U.S.C. §§ 311-319 and 37 C.F.R. § 42, Microsoft Corporation (“Microsoft”) and Nokia Inc. (“Nokia”) hereby petition for *inter partes* review of claims 1, 2, 5-7, 14, 15, 21, and 23 (the “Challenged Claims”) of U.S. Patent No. 7,498,749 (“’749 patent”) (Ex. 1001), currently assigned to Global Touch Solutions, LLC (“Patent Owner”).

The ’749 patent is one of a family of patents relating to flashlights containing microchip-controlled touch-sensor switches. Ex. 1001 (’749 patent) at [63]. The earliest patent in the family had claims that focused on just that — flashlights containing microchips and touch sensors — and the prior art cited during prosecution was similarly related to flashlights and lights. *See* Ex. 1003 (’089 patent) at all claims. The continuation ’749 patent application — the sixth filing in a chain of continuations — however, includes claims that are broader than those issued in the earliest patent and is alleged to cover subject matter well beyond flashlights. *See* Ex. 1001 (’749 patent) at all claims.

Armed with these broader claims, Patent Owner now alleges in related lawsuits that the claims cover state-of-the-art tablet computers and mobile phones even though the patent nowhere mentions either type of device. *See Global Touch Solutions, LLC v. Microsoft Corp.*, No. 2:15-cv-00017 (E.D. Va. filed Aug. 1, 2014). In contrast, during prosecution of the ’749 application, the applicant did not



submit computer or telephone prior art, and the examiner did not cite any. Ex. 1001 ('749 patent) at [56]; *see generally* Ex. 1002 ('749 prosecution history). And the art that the examiner relied on was virtually the same art cited during prosecution of the five parent applications to which the '749 patent claims priority as a continuation. *See generally* Ex. 1002 ('749 prosecution history). Moreover, the examiner did not issue a substantive rejection before allowing the '749 patent. *See generally id.*

However, microchip-controlled user interfaces and touch sensors were well known in numerous applications, including computer and telephone prior art, at the time of the earliest possible priority date — October 9, 1998. Ex. 1011 (Horenstein Decl.) at ¶ 27. As discussed in detail below, the 1997 Jahagirdar reference disclosed a mobile phone with a microchip-controlled user interface and mechanical push-button switches. *Id.* at ¶ 29. And, well before the October 9, 1998 priority date, touch sensor technology was commonplace and widely recognized as a useful alternative to mechanical push buttons. *See id.* at ¶ 40. For example, Schultz, which granted in 1977, disclosed an improved touch sensor. *Id.* at ¶ 37. Thus, and as Dr. Horenstein demonstrates in his declaration (Ex. 1011), a skilled artisan at the time of the invention of the '749 patent would have had reason and motivation to combine Jahagirdar, which disclosed a microchip-controlled user interface, with Schultz, which taught touch sensor technology, the combination of

which satisfies each of the challenged claims. *Id.* at ¶ 47. Doing so would have yielded the benefits of touch-sensor technology and would have been a mere routine and trivial design choice. *See id.*

Highly analogous to the patent at issue are the facts of *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 407 (2007), where the Supreme Court reversed a Federal Circuit finding of nonobviousness because all of the elements of the claim at issue were known and worked in combination as would have been expected. *Id.* at 417 (“[W]hen a patent simply arranges old elements with each performing the same function it had been known to perform and yields no more than one would expect from such an arrangement, the combination is obvious.” (internal quotations omitted)).

Microsoft and Nokia therefore respectfully request review and cancellation of the Challenged Claims because, as shown below, and in light of the supporting Declaration of Dr. Horenstein, there is more than a reasonable likelihood that the Challenged Claims are unpatentable under 35 U.S.C. § 103(a).

## **II. Mandatory Notices**

### **A. Rule 42.8(b)(1) - Real Party-In-Interest**

Microsoft Corporation and Nokia Inc. (collectively, “Petitioner”) are the real parties-in-interest.

**B. Rule 42.8(b)(2) - Related Matters**

The '749 Patent is the subject of a pending patent-infringement action brought by Global Touch Solutions, LLC ("Patent Owner") against Petitioner, captioned *Global Touch Solutions, LLC v. Microsoft Corp.*, No. 2:15-cv-00017 (E.D. Va. filed Aug. 1, 2014). In the same action, Patent Owner also asserts U.S. Patent Nos. 7,265,494; 7,329,970; 7,994,726; 7,772,781; 7,781,980; 8,035,623; and 8,288,952.

Furthermore, Patent Owner currently asserts the '749 patent in four other lawsuits against other entities. *See Global Touch Solutions, LLC v. Vizio, Inc.*, No. 2:14-cv-00347 (E.D. Va. filed July 9, 2014); *Global Touch Solutions, LLC v. Apple Inc.*, No. 2:14-cv-00390 (E.D. Va. filed Aug. 1, 2014); *Global Touch Solutions, LLC v. Motorola Mobility LLC*, No. 2:14-cv-00391 (E.D. Va. filed Aug. 1, 2014); and *Global Touch Solutions, LLC v. Toshiba Corp.*, No. 2:14-cv-00346 (E.D. Va. filed July 9, 2014).

Additionally, filed by Petitioner concurrently with this Petition are four *Inter Partes Review* petitions directed to U.S. Patent Nos. 7,329,970; 7,994,726; 7,781,980; and 8,288,952, respectively. Petitions directed to U.S. Patent Nos. 7,265,494, 7,772,781, and 8,035,623, respectively, were also filed on April 10, 2015.

Finally, filed by Apple Inc., Motorola Mobility LLC, and Toshiba America Information Systems, Inc. (collectively, “Apple”) on May 11, 2015 is an *Inter Partes Review* petition directed to the ’749 patent. Four petitions directed to U.S. Patent Nos. 7,329,970; 7,994,726; 7,781,980; and 8,288,952, respectively, were also filed on that date.

**1. This Petition Is Not Redundant of Apple’s IPR Petition on the ’749 Patent**

On May 11, 2015, Apple filed IPR Petition No. 2015-01172, seeking cancellation of claims 21 and 23 of the ’749 patent. Apple’s petition is not redundant of Microsoft’s petition on this patent. First, the parties are different. Apple is not a party to Microsoft’s petition, and Microsoft is not a party to Apple’s petition. Second, the asserted prior art is different — indeed there is no prior art in common between the two petitions. Microsoft’s petition is based primarily on the Jahagirdar reference, which is directed to a portable telephone with two display screens. In contrast, Apple’s petition is based primarily on U.S. Patent No. 5,898,290 (filed Sept. 6, 1996), which is directed to an intelligent battery pack. Likewise, the supporting expert witnesses are different — Microsoft’s expert is Mark Horenstein, and Apple’s expert is Paul Beard. Third, the challenged claims are not identical. Apple’s petition challenges claims 21 and 23; Microsoft’s petition challenges those claims as well as claims 1-2, 5-7, and 14-15.

### **C. Lead and Back-Up Counsel and Service Information**

Petitioner submits herewith a power of attorney and designates the following counsel pursuant to 37 C.F.R. §§ 42.8(b)(3), 42.10(a) and 42.10(b). Service information is also shown in this chart:

<b>Lead Counsel</b>	<b>Back-Up Counsel</b>
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Petitioner agrees to accept service by email.

### **III. Payment of Fees**

The undersigned authorizes the Office to charge \$23,000 to Deposit Account No. 233050 for review of the nine Challenged Claims (\$9,000 under 37 C.F.R. § 42.15(a)(1) and (3), and \$14,000 under 37 C.F.R. § 42.15(a)(2) and (4)). The undersigned further authorizes the Office to charge this Deposit Account for any additional fees that might be due in connection with this Petition.

#### **IV. Requirements for *Inter Partes* Review**

##### **A. Rule 42.104(a) - Grounds for Standing**

Petitioner certifies that the '749 patent is available for, and Petitioner is not barred or estopped from requesting, *inter partes* review of any claim of the '749 patent.

##### **B. Rule 42.104 (b) - Challenge and Relief Requested**

Petitioner requests that the Challenged Claims (claims 1, 2, 5-7, 14, 15, 21, and 23) of the '749 patent be found unpatentable on the ground set forth below. The proposed ground presents art that was not previously considered during the prosecution of the '749 patent.

- U.S. Patent No. 6,125,286 (“Jahagirdar”) was filed on June 5, 1997, issued on September 26, 2000, and is prior art at least under 35 U.S.C. § 102(e). Ex. 1004 (Jahagirdar) at [22], [45].
- U.S. Patent No. 4,053,789 (“Schultz”) issued on October 11, 1977 and is prior art under at least 35 U.S.C. § 102(b). Ex. 1005 (Schultz) at [45].

<b>Ground</b>	<b>Challenged Claims</b>	<b>Statutory Basis for Challenge</b>
1	1, 2, 5-7, 14, 15, 21, and 23	Obvious under 35 U.S.C. § 103(a) by Jahagirdar in combination with Schultz.

##### **C. Rule 42.104(b)(5) — Evidence Relied Upon**

Petitioner relies on the foregoing-listed prior-art references and the expert declaration of Dr. Mark Horenstein (Ex. 1011). Exhibit 1011 includes Attachment

A which provides a helpful summary of Dr. Horenstein's opinions in claim chart form which are explained in detail in the declaration.

Dr. Horenstein holds a Ph.D. in Electrical Engineering from MIT, and is a Professor of Electrical Engineering at Boston University where he has been a faculty member since 1979. Ex. 1011 (Horenstein Decl.) at ¶¶ 2-3. Dr. Horenstein has authored two textbooks and two book chapters, and authored or co-authored over 50 journal articles and approximately 100 conference papers on topics in his fields of expertise, which include applied electromagnetics, electronic circuits, electrostatics, and micro-electromechanical systems (MEMS). *Id.* at ¶¶ 5-6. These disciplines include, *e.g.*, the topics of capacitive and photonic (*e.g.*, infrared) sensors, as well as micro-actuators and accelerometers, among others. *Id.* at ¶ 5. Dr. Horenstein has designed capacitive sensors, MEMS sensors, and infrared detection systems as part of various research projects. *Id.* at ¶ 8. He also developed the curriculum for a graduate course in power electronics in the Department of Electrical and Computer Engineering at Boston University, which includes detailed lectures and extensive laboratory experiments. *Id.*

## **V. Factual Background**

### **A. Summary of the '749 Patent**

At a high level of generality, the '749 patent describes "microchip controlled electrical current switching devices." Ex. 1001 ('749 patent) at col. 1 ll. 29-30.

More particularly, the '749 patent indicates that its invention relates to “intelligent hand-held flashlights having microchip controlled switches wherein said switches can be programmed to perform a variety of functions including, for example, turning the flashlight off after a pre-determined time interval, blinking, or dimming, etc.” *Id.* at col. 1 ll. 39-43.

The '749 patent explains several disadvantages of prior-art mechanical switches, particularly in relation to flashlights. *Id.* at col. 1 l. 50-col. 3 l. 42. For example the '749 patent describes that, “[i]n the typical flashlight, the effective life of the battery is only a few hours at most. Should the operator, after using the flashlight to find his/her way in the dark or for any other purpose, then fail to turn it off, the batteries will, in a very short time, become exhausted.” *Id.* at col. 1 ll. 54-59. The '749 patent further describes that certain prior art switches were prone to wear and tear: “[m]ost conventional flashlights, like those described above, are actuated by mechanical push or slide button-type switches requiring, of course, mechanical implementation by an operator. Over time, the switch suffers ‘wear and tear’ which impairs operation of the flashlight.” *Id.* at col. 3 ll. 3-7.

The '749 patent purports to address these problems by describing “a microchip controlled switch to manage both the current conducting functions and the MMI [man-machine-interface] functions in an electronic device, such as a flashlight, on a low current basis i.e. without the MMI device having to conduct or



switch high current.” *Id.* at col. 3 ll. 47-51. The ’749 patent explains that its microchip can be inserted into a flashlight “so that many functions, including but not limited to, delayed switching, dimming, automatic shut off, and intermittent activation may be inexpensively realized in an existing (nonintelligent) product, for example a prior art flashlight.” *Id.* at col. 3 l. 67-col. 4 l. 4. Further, “the MMI functions are controlled by very low current signals, using touch pads, or carbon coated membrane type switches” that minimize mechanical wear. *Id.* at col. 3 ll. 51-54.

However, as demonstrated below, all of the elements of the claimed invention of the ’749 patent were known before October 9, 1998, the earliest priority date arguable for the claims of the ’749 patent, and based on the teachings of the prior art, the combinations of those elements in the Challenged claims would have been obvious. Ex. 1011 (Horenstein Decl.) at ¶ 27.

#### **B. Prosecution History of the ’749 patent**

As filed on October 30, 2007, the ’749 patent application claimed priority to five earlier filed applications, the earliest of which was filed on October 9, 1998. Ex. 1001 (’749 patent) at [63]. While earlier applications in the ’749 patent family issued with claims directed to flashlights, the as-filed claims of the ’749 patent were drafted more broadly than their parents’ claims and were directed to an “electronic unit” and a “method of implementing a user interface.” *See, e.g., id.* at

claim 1, claim 21. For example, in contrast to the '749 patent, each claim of U.S. Patent No. 6,249,089 ("’089 patent"), the earliest parent, is directed to a "hand held flashlight." Ex. 1003 (’089 patent) at claims 1-15.

The application that resulted in the '749 patent included two independent claims and 23 dependent claims. Ex. 1002 (’749 prosecution history) at as-filed application dtd. Oct. 30, 2007. A portion of those claims were rejected on the grounds of nonstatutory double patenting over U.S. Patent No. 7,336,037. *Id.* at non-final rejection dtd. July 9, 2008. After a terminal disclaimer was filed, and the claims were amended to address formal matters, all 25 claims were allowed. *See generally* Ex. 1002 (’749 prosecution history).

During prosecution, the Examiner apparently did not consider either of Jahagirdar or Schultz in relation to the Challenged Claims. *See generally id.*

## **VI. Broadest Reasonable Construction**

Pursuant to Office rules, the claim terms of the '749 patent are to be given their broadest reasonable interpretation, as understood by a person of ordinary skill in the art at the time of the invention, consistent with the specification. 37 C.F.R. § 42.100(b). Thus, solely for the purposes of this proceeding and not for any litigation where a different claim-construction standard applies, the following discussion proposes constructions of terms and phrases used in the claims. Any claim term or phrase not included in the following discussion is to be given its

broadest reasonable interpretation in light of the '749 specification as commonly understood by those of ordinary skill in the art.

**A. “non-mains” (claims 7 & 15)**

The term “non-mains” would be understood by a person of ordinary skill in the art at the time of the invention to mean “not from the AC utility wiring system of a building.” Ex. 1011 (Horenstein Decl.) at ¶ 25.

Petitioner notes that the term “non-mains” does not appear in the written description. However, the term “mains” in the context of electrical systems refers to the AC utility wiring system of a building. *Id.* at ¶ 26. Accordingly, a power source that is “non-mains” refers to one that is not from the AC utility wiring system of a building (*i.e.*, a battery not connected to building wiring). *Id.*

**VII. Claims 1-4, 14, 16, 17, 19, 22-24, 26, 27, and 38-40 of the '749 Patent are Unpatentable as Obvious Over Jahagirdar Combined With Schultz**

**A. The Law of Obviousness**

The obviousness analysis is objective and determined against the following factual background: “Under § 103, [i] the scope and content of the prior art are to be determined; [ii] differences between the prior art and the claims at issue are to be ascertained; and [iii] the level of ordinary skill in the pertinent art resolved.”

*Graham v. John Deere Co. of Kan. City*, 383 U.S. 1, 17-18 (1966); *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 407 (2007) (“While the sequence of these questions might be reordered in any particular case, the factors continue to define the inquiry

that controls.”). Where available and pertinent, objective considerations of nonobviousness should also be considered, but Petitioner is not aware of any.

The obviousness analysis is “expansive and flexible,” taking into account “interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art.” *KSR*, 550 U.S. at 415, 417-18 (reversing Federal Circuit finding of nonobviousness for a claim directed to a position-adjustable pedal assembly with an electronic pedal position sensor attached to a fixed pivot point because all of the claimed elements were known and it was obvious to try a combination of these known elements to develop the claimed invention). In that regard, “when a patent simply arranges old elements with each performing the same function it had been known to perform and yields no more than one would expect from such an arrangement, the combination is obvious.” *Id.* at 417 (internal quotations omitted). Further, “if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond that person’s skill.” *Id.* at 401. Lastly, the analysis also recognizes that “[a] person of ordinary skill is also a person of ordinary creativity, not an automaton” and thus can be expected to “pursue the known options within his or her technical grasp.” *Id.* at 421.

## **B. Level of Ordinary Skill In The Art**

Dr. Horenstein considered the various factors involved in determining the level of ordinary skill (*see Daiicchi Sankyo Co. v. Apotex, Inc.*, 501 F.3d 1254, 1256 (Fed. Cir. 2007)), and concluded that, generally speaking, the relevant art area is electronic circuitry. Ex. 1011 (Horenstein Decl.) at ¶¶ 18, 21. In his opinion, an artisan of ordinary skill in this area at the time of the invention would have had a B.S. in electrical engineering or commensurate degree such as computer engineering, or alternatively, some coursework comparable in the area of circuit design, in combination with a year or two of practical experience with products containing electronic circuitry. *Id.* at ¶ 23.

As set out in the '749 patent, the area of “MMI” or man-machine interface (also sometimes referred to as “HCI” or human-computer interface) is also relevant to one of skill in the art. *Id.* at ¶ 21. While the relevant level of skill does not call for great expertise in this area, it would involve an appreciation of the types of user inputs relevant to the basic electronic circuitry of the '749 patent. *Id.*

As Dr. Horenstein further explains, by 1998, a person of ordinary skill in the art in this field of electronic circuitry would have been familiar with the distinction between push buttons and physical-touch sensors, and would have understood that a physical-touch sensor would have been useful in place of a push button type switch. *Id.* at ¶ 47. A person of ordinary skill would have understood that touch

sensor switches avoid problems of mechanical switches such as wear, accumulation of dirt or grease, and the like, especially in outdoor environments.

*Id.* Further, touch sensor switches had aesthetic advantages and also provided for a quick and convenient user interface. *Id.*

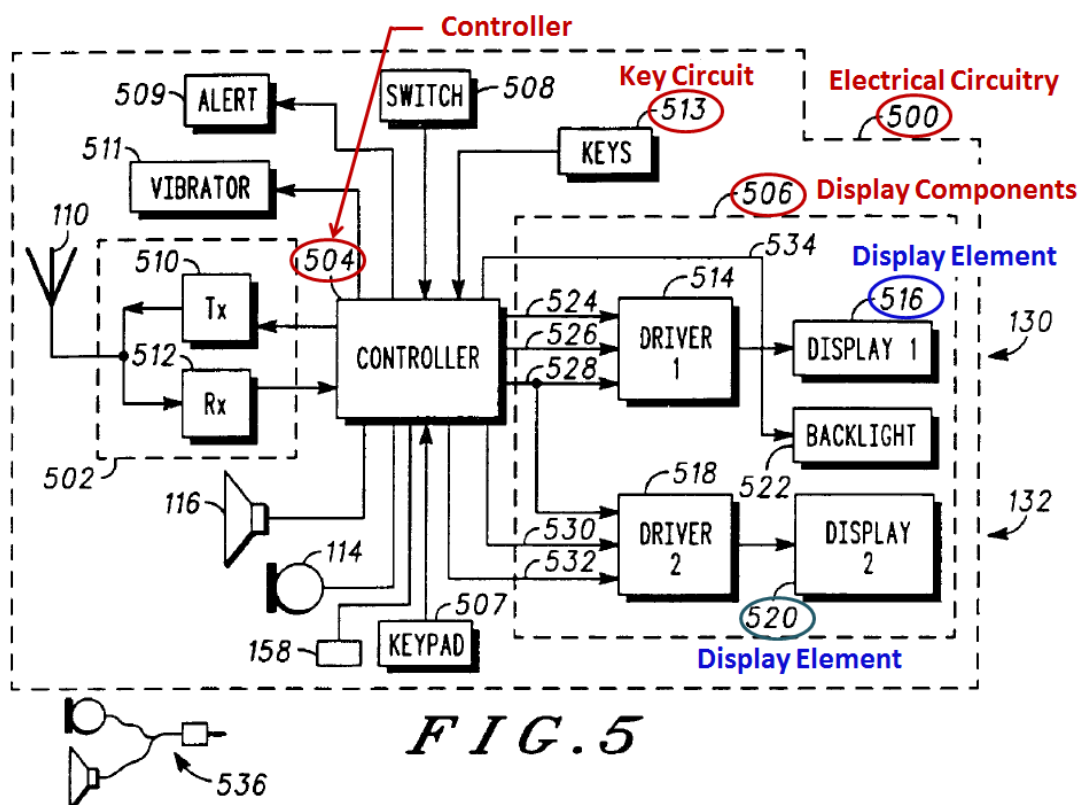
### **C. Overview of the Prior art**

As outlined above, the '749 patent is one of a family of patents relating to flashlights containing microchip-controlled touch-sensor switches. Ex. 1001 ('749 patent) at [63]. However, the '749 patent application — the sixth filing in its chain of continuations—includes claims that are broader than those issued in the earliest patent and purports to cover subject matter well beyond flashlights. *Compare* Ex. 1003 ('089 patent) at all claims, *with* Ex. 1001 ('726 patent) at all claims. Because of the breadth of these continuation claims, prior art outside of the scope of flashlight technology reads on the Challenged Claims.

#### **1. Scope and Content of U.S. Pat. No. 6,125,286 (“Jahagirdar”) (Exhibit 1004)**

Jahagirdar, entitled “Communication Device Having Multiple Displays and Method of Operating the Same,” was filed on June 5, 1997. Ex. 1004 (Jahagirdar) at [22], [54]. Jahagirdar, therefore, is prior art under at least 35 U.S.C. § 102(e). Like the '749 patent, Jahagirdar was directed to the field of electronic circuitry applied to MMIs. *Id.* at col. 3 ll. 59-67; Ex. 1011 (Horenstein Decl.) at ¶ 29.

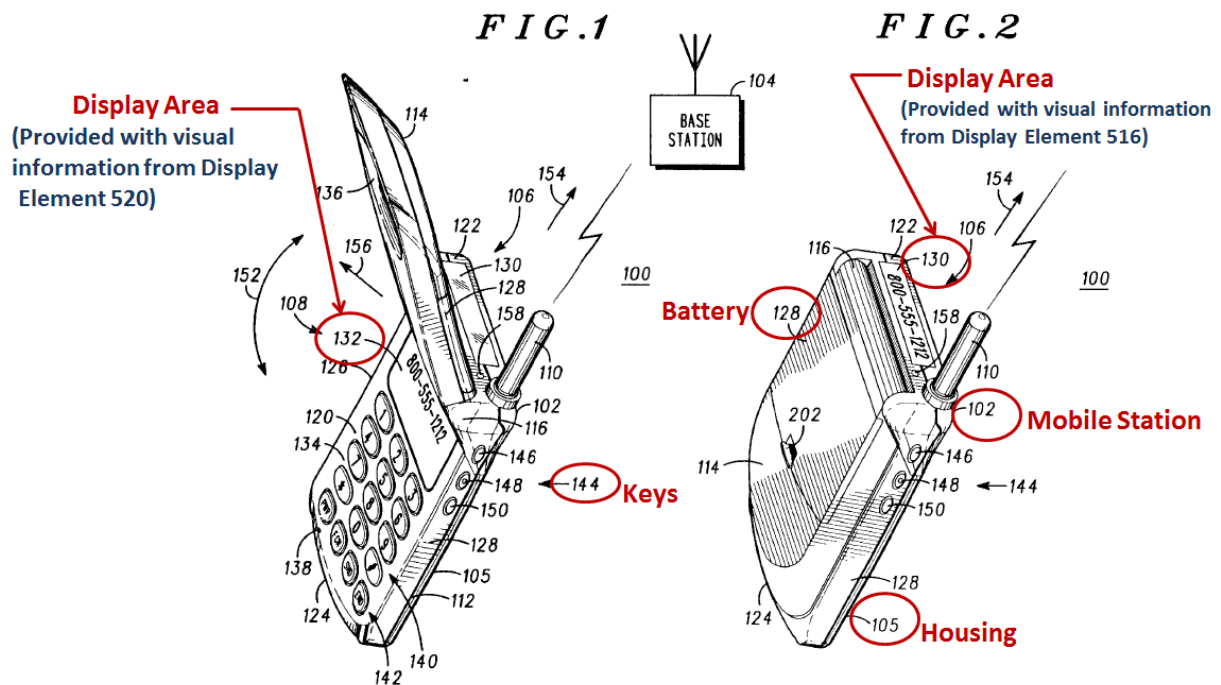
Specifically, Jahagirdar relates to a mobile phone that has a microchip-controlled user interface and mechanical push-button switches. *Id.*



As shown above in Figure 5 above, electrical circuitry 500 included a connection for a power source, such as battery 128: “[m]obile station 102 also includes a removable battery 128.” Ex. 1004 (Jahagirdar) at col. 3 l. 33; Ex. 1011 (Horenstein Decl.) at ¶ 31. Electrical circuitry 500 also included a connection for

an energy consuming load, such as display element 520. Ex. 1011 (Horenstein Decl.) at ¶ 31; Ex. 1004 (Jahagirdar) at col. 4 ll. 27-30. As shown in Figures 1 and 2 below, display element 520 provided visual information in display area 132:

“[d]isplay elements 516 and 520 provide visual information in display areas 130 and 132, respectively.” Ex. 1004 (Jahagirdar) at col. 4 ll. 40-41; Ex. 1011 (Horenstein Decl.) at ¶ 31.



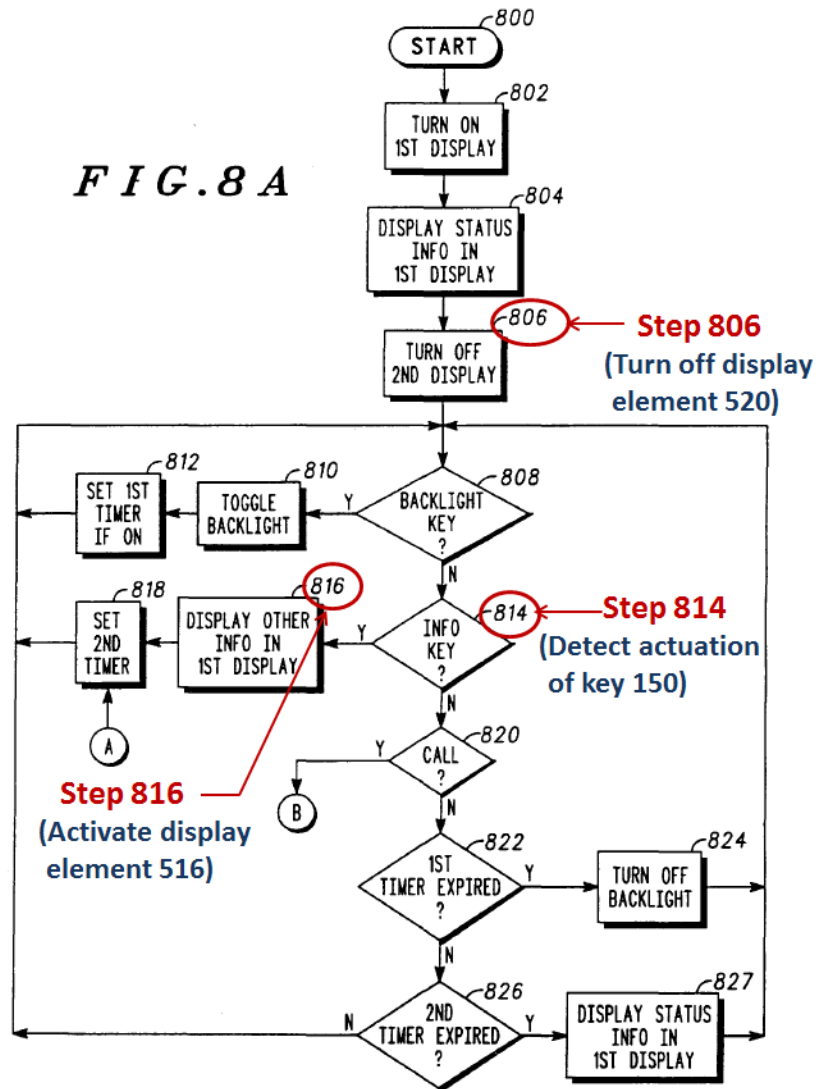
Referring to Figure 5 above, electrical circuitry 500 included a microchip (controller 504) and an electronic circuit (key circuit 513). Ex. 1004 (Jahagirdar) at col. 3 ll. 60-64; Ex. 1011 (Horenstein Decl.) at ¶ 31. Specifically, Jahagirdar explained that “[e]lectrical circuitry 500 includes . . . a key circuit 513.” *Id.*



Jahagirdar further explained that the “key circuit 513 provides signals to controller [504] in response to actuations of the plurality of keys 144.” Ex. 1004 (Jahagirdar) at col. 4 ll. 19-20. Jahagirdar’s user interface switch structure included the key circuit 513 and the plurality of keys 144 (*i.e.*, the at least one switch). *Id.* at col. 3 ll. 30-31; Ex. 1011 (Horenstein Decl.) at ¶ 32. As shown above in Figures 1 and 2, keys 144 were located on the outer housing of the mobile station 102 and could be used to control various functions of the mobile station 102 such as answering or terminating a call, forwarding a call to voicemail, or displaying information on one of the display areas. Ex. 1004 (Jahagirdar) at col. 6 ll. 40-45, col. 7 ll. 5-11, col. 7 ll. 16-20, figs. 1-2; Ex. 1011 (Horenstein Decl.) at ¶ 32.

Jahagirdar’s electrical circuitry 500 included a visible indicator (display element 516). Ex. 1004 (Jahagirdar) at col. 3 ll. 60-62, col. 4 ll. 27-30; Ex. 1011 (Horenstein Decl.) at ¶ 33. Specifically, display element 516 could provide an indicator activation function such as displaying visual information in display area 130. Ex. 1004 (Jahagirdar) at col. 5 ll. 54-57; Ex. 1011 (Horenstein Decl.) at ¶ 33. Further, Jahagirdar disclosed that its display element 516 was controlled by the microchip (controller 504) to provide its indicator activation function when a signal was received from key 150 (of keys 144 which are part of Jahagirdar’s user interface switch). *Id.* In relation to Figure 8A, inset below, Jahagirdar disclosed

“[i]f controller 504 detects an actuation of key 150 (step 814), controller 504 sends display data to driver 514, which sends display data to display element 516. For [sic] displaying new visual information in display area 130.” Ex. 1004 (Jahagirdar) at col. 5 ll. 54-57; Ex. 1011 (Horenstein Decl.) at ¶ 33.



Jahagirdar also disclosed that its indicator (display element 516) was active when the load (display element 520) was not activated by the user. Ex. 1004 (Jahagirdar) at col. 5 ll. 35-37; Ex. 1011 (Horenstein Decl.) at ¶ 34. Specifically,

in relation again to Figure 8A, above, Jahagirdar disclosed that prior to the key actuation detection (step 814) and the step of displaying a visible indicator (step 816), display element 520 was turned off at step 806. *Id.* Jahagirdar described that “[i]f power was previously enabled for driver 518 and display element 520, controller 504 disables power thereto (step 806).” *Id.* Because the load (display element 520) was already off at step 806, the indicator could have been active when the load was not activated by the user. Ex. 1011 (Horenstein Decl.) at ¶ 34.

Further, Jahagirdar’s controller 504 at least partially implemented the plurality of keys 144: “key circuit 513 provides signals to controller [504] in response to actuations of the plurality of keys 144.” Ex. 1004 (Jahagirdar) at col. 4 ll. 19-20; Ex. 1011 (Horenstein Decl.) at ¶ 34.

Additionally, Jahagirdar disclosed that its user interface had an automatic delayed deactivation of a function a predetermined period after the function was activated with an activation command received from its keys. Ex. 1011 (Horenstein Decl.) at ¶ 35. With reference again to Figure 8A above, after “controller 504 sends display data to driver 514, which sends display data to display element 516” at step 816, “[c]ontroller 504 sets a timer related to the new display information (step 818)” in order to automatically deactivate the visible indicator, display element 516, a predetermined period of time after it was activated. *Id.*; Ex. 1004 (Jahagirdar) at col. 5 ll. 55-65.

Jahagirdar also disclosed that its visible indicator (display element 516), in response to the controller 504 receiving a signal, could be activated to indicate conditions of the product. Ex. 1004 (Jahagirdar) at col. 5 ll. 59-61; Ex. 1011 (Horenstein Decl.) at ¶ 35. The visible indicator showed a state of the product or a condition of the product. Ex. 1011 (Horenstein Decl.) at ¶ 35. For example, Jahagirdar described that display element 516 displayed visual information such as “status information, and may include date and time information, battery status information such as a battery level indication and/or a low battery warning indication.” Ex. 1004 (Jahagirdar) at col. 5 ll. 59-61; Ex. 1011 (Horenstein Decl.) at ¶ 35. This status information showed a state or condition of the product. Ex. 1011 (Horenstein Decl.) at ¶ 35.

Lastly, with reference to Figures 1 and 2 above, Jahagirdar disclosed that keys 144 are integral with housing 105. Ex. 1005 (Jahagirdar) at col. 2 l. 13, figs. 1-2; Ex. 1011 (Horenstein Decl.) at ¶ 35.

## **2. Scope and content of the Touch Sensor References**

### **a) U.S. Patent No. 4,053,789 (“Schultz”)**

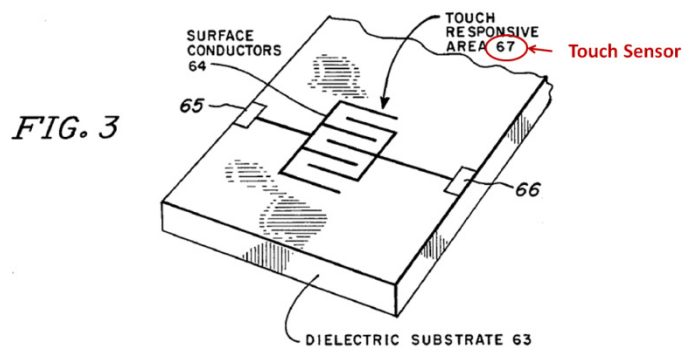
Schultz, entitled “Touch Actuated System Responsive to a Combination of Resistance and Capacitance,” issued on October 11, 1977. Ex. 1005 (Schultz) at [45], [54]. Schultz, therefore, is prior art under at least 35 U.S.C. § 102(b). Like the ’749 patent and Jahagirdar, Schultz was directed to the field of electronic

circuitry applied to MMI. Ex. 1005 (Schultz) at col. 1 ll. 27-31; Ex. 1011 (Horenstein Decl.) at ¶ 36. Specifically, Schultz disclosed “a reliable touch actuated system . . . responsive to the touch of an animal...[such as] humans beings pets and domestic animals.” *Id.*

With reference to Figure 3 inset below, Schultz disclosed a touch sensor type switch that includes a sense pad: touch responsive area 67. Ex. 1005 (Schultz) at col. 4 ll. 47-48; Ex. 1011 (Horenstein Decl.) at ¶ 37. When “an element, such as the human finger, across the conductors 34 and 35 [corresponding to touch responsive area 67] causes the voltage on conductor 36 to change state and be inverted by the inverter 41[, t]his inversion by inverter 41 combined with the pulse output 11 causes the flip-flop 43 to change state and activate the load 52.” Ex. 1005 (Schultz) at col. 4 ll. 30-35.

Schultz further described that its design was an improvement over prior art switches because it minimized inadvertent actuation. Ex. 1005

(Schultz) at col. 1 ll. 20-21; Ex. 1011 (Horenstein Decl.) at ¶ 38. “With the present system, a more reliable touch sensing mechanism is provided than is available by mere capacitive proximity type touch devices or purely resistive touch type



devices.” Ex. 1005 (Schultz) at col. 1 ll. 64-67. Specifically, “[t]he mere application of a short circuit between the conductors 34 and 35 does not provide the necessary charging delay of capacitor 60 and voltage which are necessary to actuate the present system. The inherent body capacitance 60 of an animal is required.” *Id.* at col. 4 ll. 35-40.

Schultz described that its touch sensor had an advantage over “[c]onventional electric switches which require movements [and] are susceptible to contamination and mechanical failures.” *Id.* at col. 1 ll. 17-19. Schultz further explained that its touch sensor “has no moving parts and is therefor not subject to the contamination and spurious types of operation.” *Id.* at col. 1 l. 68-col. 2 l. 1.

#### **b) Touch Sensors Prevalent in the Prior Art**

Petitioner notes that by the assumed priority date of the ’749 patent (1998), touch sensing was old technology with widely recognized functionality. Ex. 1011 (Horenstein Decl.) at ¶ 40. Touch sensors similar to that described in Schultz also had known applications in telephones, such as Jahagirdar’s mobile phone. *Id.* For example, Norimatsu, entitled “Telephone Having Touch Sensor For Responding to a Call,” issued on July 12, 1994. Ex. 1006 (Norimatsu) at [45], [54]. Figure 4 of Norimatsu, inset below, depicted a telephone handset 40 that included a touch sensor portion 191. Ex. 1006 (Norimatsu) at col. 4 l. 1; Ex. 1011 (Horenstein Decl.) at ¶ 41. Norimatsu described that “[t]he sensor portion, or mesh, 191 is

attached to part of the handset surface, which part is so selected that the user can most conveniently touch

thereon.” Ex. 1006 (Norimatsu)

at col. 4 ll. 9-12. Further, “when

the user touches the sensor

portion 191, the amplifier 194

produces a high-level signal

which is sent to the controller 15

as a detection signal.” *Id.* at col. 3 ll. 61-63. “[I]n response to the detection signal,

the controller 15 determines that the user has responded to a call and then stops the

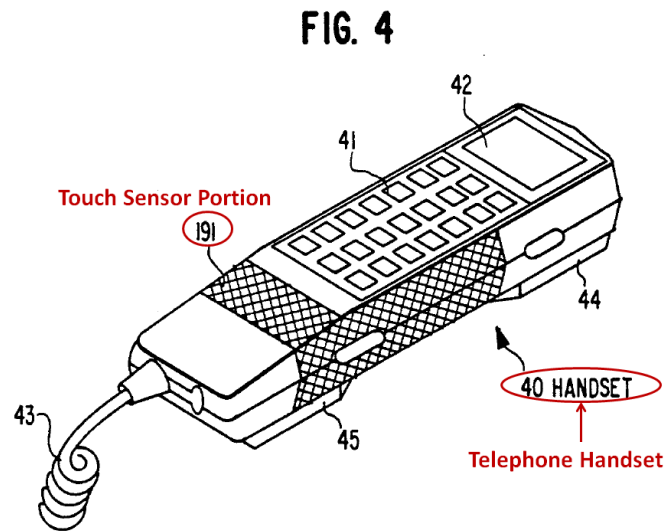
transmission of the signaling tone.” *Id.* at col. 3 ll. 65-68.

Norimatsu described the convenience of such touch sensors for the user:

“[a]nother object of the present invention is to provide a telephone in which the user can easily respond to a call by simply touching the telephone.” *Id.* at col. 1 ll.

34-36; Ex. 1011 (Horenstein Decl.) at ¶ 43.

Other benefits of touch sensing had long been recognized in the field. Ex. 1011 (Horenstein Decl.) at ¶ 44. For example, in the 1985 publication of “Issues and Techniques in Touch-Sensitive Tablet Input,” written by William Buxton et al., the authors highlighted that the “simple construction, [of touch sensors] with no



moving parts, leads to reliable and long-lived operation.” Ex. 1007 (Buxton) at p. 216.

Further, references which were cited in the prosecution of the ’749 patent, provide similar indications of the benefits of touch sensing. Ex. 1011 (Horenstein Decl.) at ¶ 45. For example, DePauli, which was entitled “Delayed Response Touch Switch Controller” and issued on October 16, 1990 disclosed that “[t]ouch control switching systems, especially for controlling illumination devices, have proven appealing due to their added convenience and aesthetics.” Ex. 1008 (DePauli) at [45], [54], col. 1 ll. 22-24. Further, Roudeski, which was entitled “Touch Control Lamp Socket Interior” and issued on August 16, 1988, taught that “[t]ouch controls are quick and convenient, and especially ideal for pre-schoolers and physically disabled persons, such as arthritics, who find it difficult, in view of their limited dexterity, to operate conventional light switches.” Ex. 1009 (Roudeski) at [45], [54], col. 1 ll. 16-20.

#### **VIII. Independent Claim 1 would have been obvious over Jahagirdar in combination with Schultz**

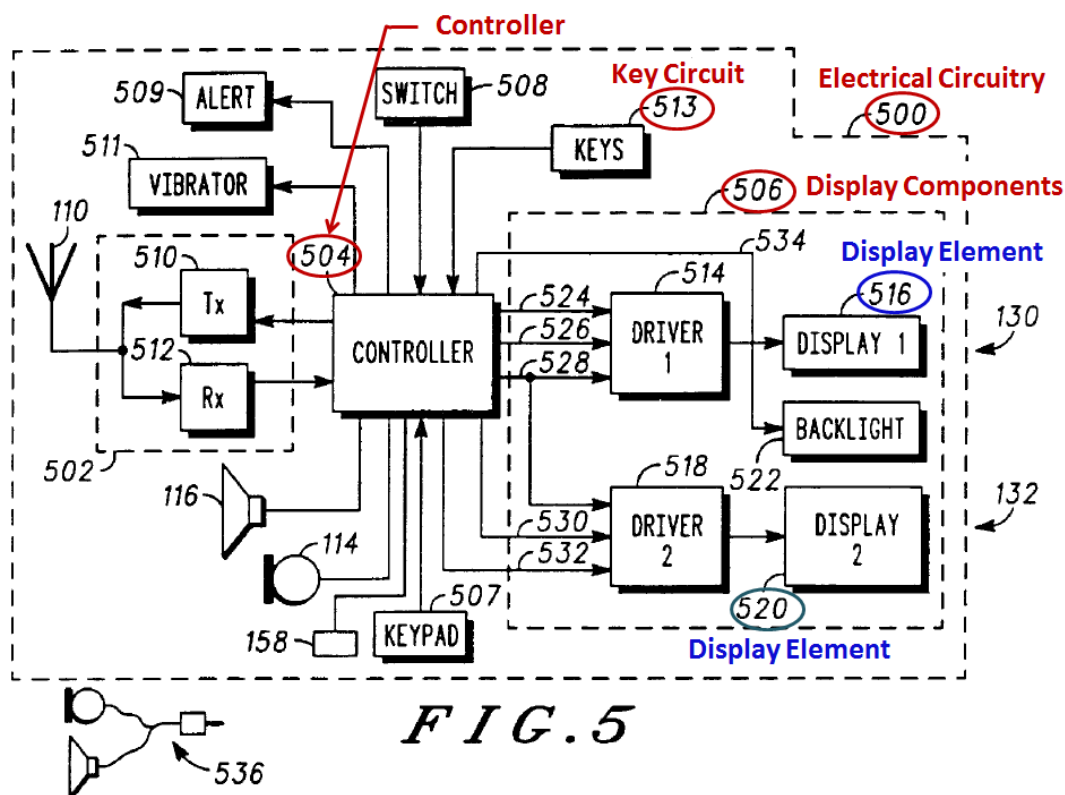
##### **A. Jahagirdar taught the limitations of claim 1’s preamble**

Preamble of independent claim 1: “*An electronic unit for use with a product comprising connections for a power source and at least one energy consuming load, said unit comprising:*”

Jahagirdar taught the preamble of claim 1. Ex. 1011 (Horenstein Decl.) at ¶ 49. Referring to Figure 5, as well as Figures 1 and 2, all below, Jahagirdar

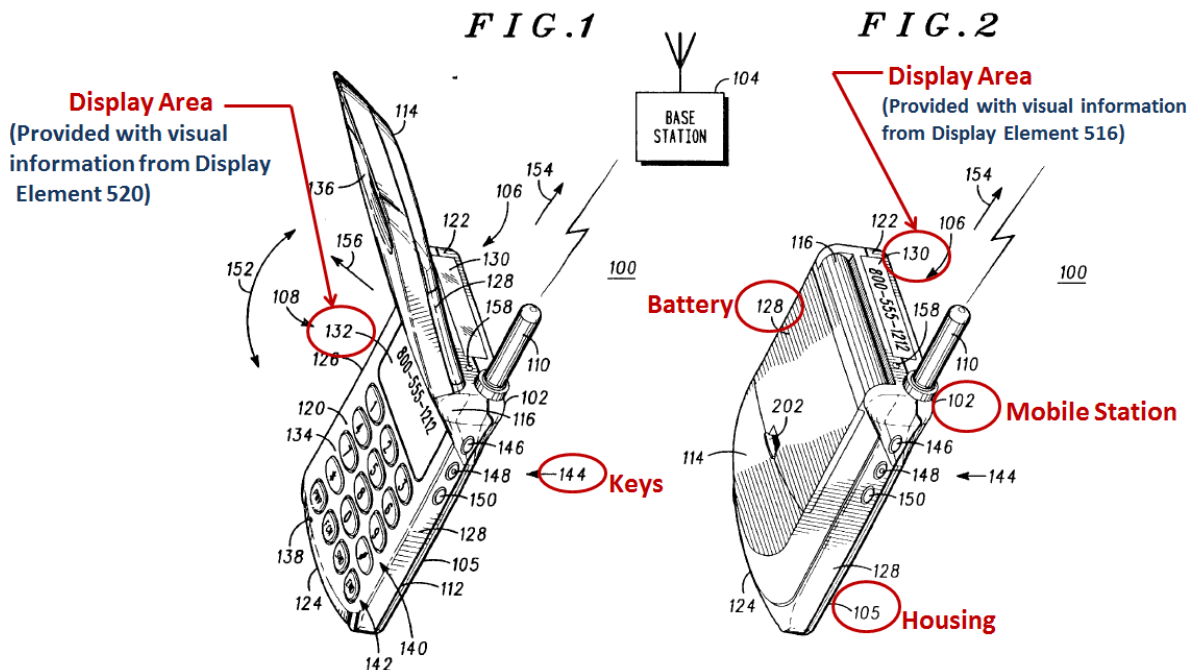


disclosed an electronic unit (electrical circuitry 500) for use with a product: mobile station 102 (a portable communication device). Ex. 1004 (Jahagirdar) at col. 1 l. 63-col. 2 l. 6, col. 3 ll. 30-31, figs. 1-2; Ex. 1011 (Horenstein Decl.) at ¶ 50.



Electrical circuitry 500 included a connection for a power source, such as battery 128: “[m]obile station 102 also includes a removable battery 128.” Ex. 1004 (Jahagirdar) at col. 3 l. 33; Ex. 1011 (Horenstein Decl.) at ¶ 51. Electrical circuitry 500 also included a connection for at least one energy consuming load (display element 520). Ex. 1004 (Jahagirdar) at col. 4 ll. 27-30; Ex. 1011 (Horenstein Decl.) at ¶ 51. As shown in Figures 1 and 2 below, the energy

consuming load (display element 520) provided visual information in display area 132: “[d]isplay elements 516 and 520 provide visual information in display areas 130 and 132, respectively.” Ex. 1004 (Jahagirdar) at col. 4 ll. 40-41; Ex. 1011 (Horenstein Decl.) at ¶ 51.



**B. Jahagirdar combined with Schultz renders obvious “a microchip connected to a user interface switch structure, said structure comprising at least one switch, being a touch sensor type switch that includes a sense pad”**

Recitation [a] of independent claim 1: “(a) a microchip connected to a user interface switch structure, said structure comprising at least one switch, being a touch sensor type switch that includes a sense pad;”

Jahagirdar in combination with Schultz renders obvious recitation [a]. Ex. 1011 (Horenstein Decl.) at ¶ 52. With reference again to Figure 5 above, electrical circuitry 500 included a microchip (controller 504) and an electronic circuit (key

circuit 513). *Id.* at ¶ 53; Ex. 1004 (Jahagirdar) at col. 3 ll. 60-67. Specifically, Jahagirdar explained that “controller 504 . . . is disposed in housing portion 112 on a printed circuit board (PCB).” *Id.* Further, Jahagirdar described that “[e]lectrical circuitry 500 includes . . . a key circuit 513.” *Id.*

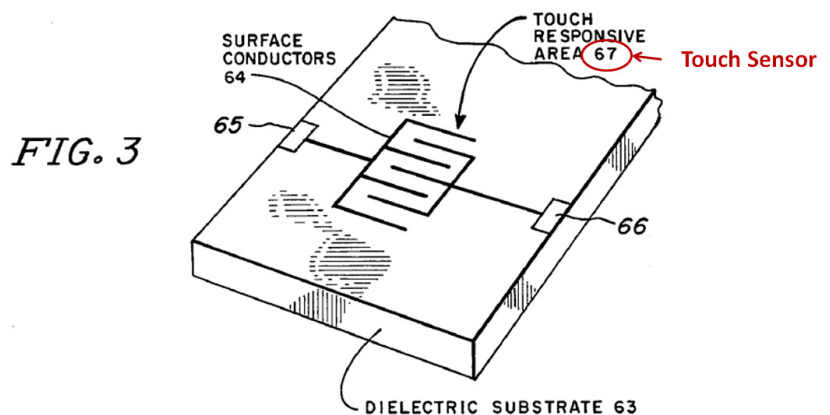
Jahagirdar further explained that the “key circuit 513 provides signals to controller [504] in response to actuations of the plurality of keys 144.” Ex. 1004 (Jahagirdar) at col. 4 ll. 19-20. Jahagirdar’s user interface switch structure included the key circuit 513 and the plurality of keys 144 (*i.e.*, the at least one switch). *Id.* at col. 3 ll. 30-31; Ex. 1011 (Horenstein Decl.) at ¶ 54. With reference to Figures 1 and 2, shown above, keys 144 were located on the outer housing of the mobile station 102 and could be used to control various functions of the mobile station 102 such as answering or terminating a call, forwarding a call to voicemail, or displaying information on one of the display areas. Ex. 1004 (Jahagirdar) at col. 6 ll. 40-45, col. 7 ll. 5-11, col. 7 ll. 16-20; Ex. 1011 (Horenstein Decl.) at ¶ 54.

Jahagirdar did not disclose that any of keys 144 were touch sensor type switches. *Id.* at ¶ 55. However, touch sensors were well known in the art by the priority date of the ’749 patent. *Id.* Based on known teachings, one of ordinary skill in the art as of 1998 would have sought to incorporate touch sensors into keys 144 so as to form a user interface switch structure comprising a touch sensor type switch that includes a sense pad. *Id.*

In that regard, Schultz disclosed “a reliable touch actuated system . . . responsive to the touch of an animal...[such as] human beings, pets and domestic animals.” Ex. 1005 (Schultz) at col. 1 ll. 27-31. Specifically, with reference to Figure 3 inset below, Schultz disclosed a touch sensor type switch having a sense pad (touch responsive area 67). *Id.* at col. 4 ll. 46-47; Ex. 1011 (Horenstein Decl.) at ¶ 56. When “an element, such as the human finger, across the conductors 34 and 35 [corresponding to touch responsive area 67] causes the voltage on conductor 36 to change state and be inverted by the inverter 41[, t]his inversion by inverter 41 combined with the pulse output 11 causes the flip-flop 43 to change state and activate the load 52.” Ex. 1005 (Schultz) at col. 4 ll. 30-35.

Schultz further described that its design was an improvement over the prior art because it minimized inadvertent actuation. Ex. 1005 (Schultz) at col. 1 ll. 20-

21; Ex. 1011 (Horenstein Decl.) at ¶ 57. “With the present system, a more reliable touch sensing mechanism is provided than is available by mere capacitive proximity type touch devices or purely resistive touch type devices.” Ex. 1005 (Schultz) at col. 1 ll. 64-67. Specifically, “[t]he mere application of a short circuit



between the conductors 34 and 35 does not provide the necessary charging delay of capacitor 60 and voltage which are necessary to actuate the present system. The inherent body capacitance 60 of an animal is required.” *Id.* at col. 4 ll. 35-40. In other words, both physical contact and capacitance is required to actuate Schultz’s switch. Ex. 1011 (Horenstein Decl.) at ¶ 57.

One of ordinary skill in the art would have been motivated to combine the features of Schultz with the method and system of Jahagirdar to arrive at claim 1 of the ’749 patent, (1) to minimize accidental actuation; (2) to eliminate the problems of contamination and mechanical failures associated with switches having moving parts; and (3) to enhance convenience and aesthetics for the user. *Id.* at ¶ 58.

In that regard, “if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill.” *KSR*, 550 U.S. at 417. Schultz described that its touch sensor was more reliable than prior art capacitive and resistive type sensors because both physical contact and capacitance were required to actuate the switch. Ex. 1005 (Schultz) at col. 1 ll. 64-67, col. 4 ll. 35-40; Ex. 1011 (Horenstein Decl.) at ¶ 59. For this reason, one of ordinary skill in the art would have recognized that Schultz’s touch sensor would have improved the mobile station of Jahagirdar. Ex. 1011 (Horenstein Decl.) at ¶ 59. Because Schultz’s

touch sensor required inherent body capacitance to actuate, one of ordinary skill would have sought to incorporate Schultz's touch sensors into Jahagirdar's keys in order to avoid accidental actuations. *Id.* Specifically, without incorporation of Schultz's touch sensors, Jahagirdar's keys could be actuated merely by the phone contacting another object, but not necessarily the user's finger. *Id.* at ¶ 60. For example, if the phone was in the user's pocket, and the user bumped into something, keys 144 could inadvertently be actuated. *Id.* Schultz's touch sensor avoided this issue by requiring inherent body capacitance to actuate. *Id.* Accordingly, because providing a touch sensor to the mobile station of Jahagirdar would not have been beyond that person's skill, it would have been obvious to incorporate touch sensors into Jahagirdar's keys 144 in order to avoid accidental actuations. *Id.*

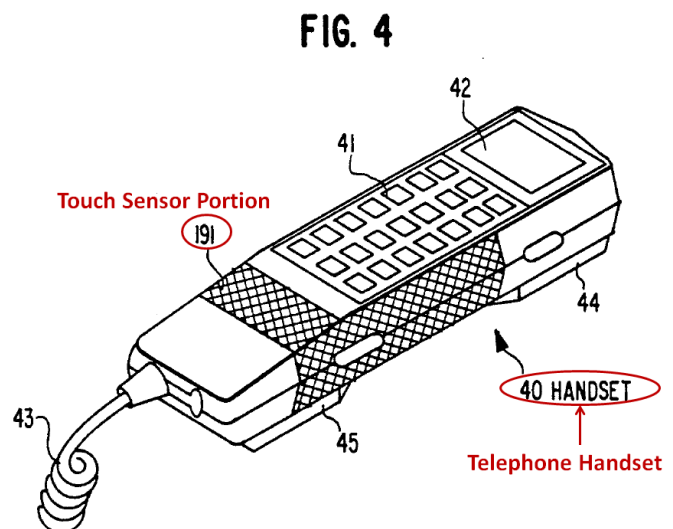
Schultz also described that its touch sensor had an advantage over "[c]onventional electric switches which require movements [and] are susceptible to contamination and mechanical failures." Ex. 1005 (Schultz) at col. 1 ll. 17-19; Ex. 1011 (Horenstein Decl.) at ¶ 61. Schultz explained that its touch sensor "has no moving parts and is therefor not subject to...contamination and spurious types of operation." Ex. 1005 (Schultz) at col. 1 l. 67-col. 2 l. 1. One of ordinary skill in the art would have recognized that Schultz's features would have improved the mobile station of Jahagirdar. Ex. 1011 (Horenstein Decl.) at ¶ 61. Since providing

a touch sensor to the mobile station of Jahagirdar would not have been beyond that person's skill, it would have been obvious to incorporate touch sensors into Jahagirdar's keys 144 in order to eliminate the problems of contamination and mechanical failures that were associated with switches that have moving parts, such as keys 144. *Id.* (citing Ex. 1007 (Buxton) at p. 216 ("simple construction, with no moving parts, leads to reliable and long-lived operation.")).

Avoiding issues of contamination and mechanical failure would have been especially important for portable devices, such as Jahagirdar's mobile phone, because mobile phones would commonly have been used in environments, such as the outdoors, where exposure to dust and dirt would have been common. *Id.* at ¶ 62. Also, mobile phones were often put in a user's pocket, as they are today. *Id.* Furthermore, buttons on a mobile phone such as Jahagirdar's would have been pressed repeatedly for years, and there would have been an incentive to minimize mechanical failure. *Id.*

Further, touch sensors such as those disclosed in Schultz would have enhanced the convenience and aesthetics of Jahagirdar. *Id.* at ¶ 63. For example, in relation to its telephone, Norimatsu described that incorporation of a touch sensor into a telephone provided convenience to the user: "[a]nother object of the present invention is to provide a telephone in which the user can easily respond to a call by simply touching the telephone." Ex. 1006 (Norimatsu) at col. 1 ll. 34-36;

Ex. 1011 (Horenstein Decl.) at ¶ 63. Specifically, with reference to Figure 4 inset below, Norimatsu disclosed a telephone handset 40 that included a touch sensor portion 191. Ex. 1011 (Horenstein Decl.) at ¶ 64; Ex. 1006 (Norimatsu) at col. 4 ll. 1-2. Norimatsu described that “[t]he sensor portion, or mesh, 191 is attached to part of the handset surface, which part is so selected that the user can most conveniently touch thereon.” Ex. 1006 (Norimatsu) at col. 4 ll. 9-12. Further, “when the user touches the sensor portion 191, the amplifier 194 produces a high-level signal which is sent to the controller 15 as a detection signal.” *Id.* at col. 3 ll. 61-63. “[I]n response to the detection signal, the controller 15 determines that the user has responded to a call and then stops the transmission of the signaling tone.” *Id.* at col. 3 ll. 65-68.



In another example, DePauli disclosed that “[t]ouch control switching systems, especially for controlling illumination devices, have proven appealing due to their added convenience and aesthetics.” Ex. 1008 (DePauli) at col. 1 ll. 22-24. Further, Roudeski taught that “[t]ouch controls are quick and convenient, and especially ideal for pre-schoolers and physically disabled persons, such as



arthritics, who find it difficult, in view of their limited dexterity, to operate conventional light switches.” Ex. 1009 (Roudeski) at col. 1 ll. 16-20.

Moreover, as the Supreme Court has stated, “when a patent simply arranges old elements with each performing the same function it had been known to perform and yields no more than one would expect from such an arrangement, the combination is obvious.” *KSR*, 550 U.S. at 417 (internal quotations omitted). Here, Jahagirdar and Schultz demonstrate that the elements of claim 1 were well known, and the combinations of the techniques described therein would have yielded no more than one would expect from such an arrangement. Ex. 1011 (Horenstein Decl.) at ¶ 66.

Incorporating a touch sensor into Jahagirdar would have asked little of a person of ordinary skill, because a touch sensor would have improved Jahagirdar in the same way a touch sensor would have improved any such electronic device. *Id.* at ¶ 59. While the claim does not specify the details of the claimed touch sensor, Schultz’s touch sensor could have been integrated into Jahagirdar’s keys 144 in multiple ways depending upon what might have been convenient or desirable. *Id.* at ¶ 66. For example, Jahagirdar’s keys 144 could have been replaced in their entirety by one, two, three, or more touch sensors. *Id.* The functions performed by keys 144 could have instead been performed by a different number of touch sensors, such as one or two touch sensors. *Id.* These various configurations would

have been trivial adjustments for one of skill in the art. *Id.* (citing Ex. 1007 (Buxton)). This further supports a finding that the subject matter of claim 1 would have been obvious at the effective date of the '749 patent. *Id.*

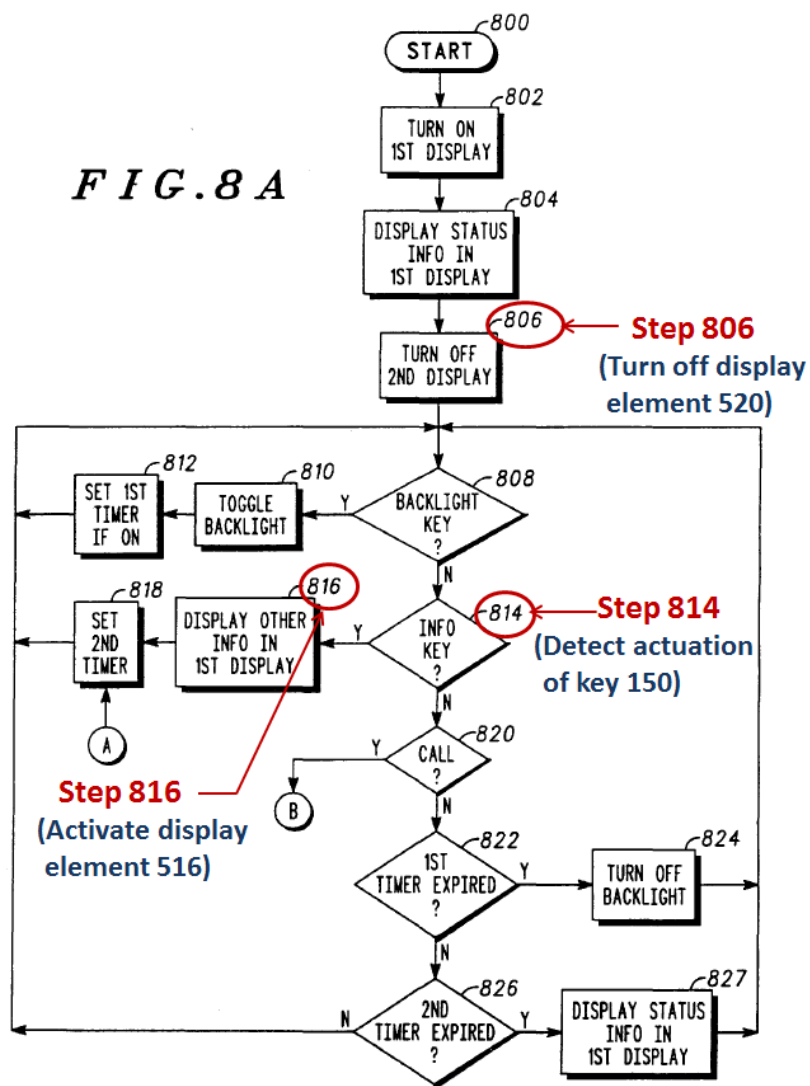
**C. Jahagirdar taught a “visible indicator . . . [that provided] an indicator activation function when a signal is received through said user interface switch, wherein the indicator is active when the load is not activated by the user”**

Recitation [b] of independent claim 1: “(b) a visible indicator controlled by the microchip to provide at least an indicator activation function when a signal is received through said user interface switch, wherein the indicator is active when the load is not activated by the user;”

Jahagirdar taught all elements of recitation [b]. Ex. 1011 (Horenstein Decl.) at ¶ 67. The electrical circuitry 500 of mobile station 102 included a visible indicator (display element 516). *Id.* at ¶ 68; Ex. 1004 (Jahagirdar) at col. 3 ll. 60-62, col. 4 ll. 27-30. And reference again to Figures 1 and 2 above, “[d]isplay elements 516 and 520 provide visual information in display areas 130 and 132, respectively.” Ex. 1004 (Jahagirdar) at col. 4 ll. 40-41; Ex. 1011 (Horenstein Decl.) at ¶ 68. Specifically, display element 516 could have provided an indicator activation function such as displaying visual information in display area 130. Ex. 1011 (Horenstein Decl.) at ¶ 68; Ex. 1004 (Jahagirdar) at col. 5 ll. 54-57.

Jahagirdar disclosed that its display element 516 was controlled by the controller 504 (microchip) to provide its indicator activation function when a signal was received from key 150 (of keys 144 which were part of Jahagirdar’s

user interface switch). Ex. 1011 (Horenstein Decl.) at ¶ 68; Ex. 1004 (Jahagirdar) at col. 5 ll. 54-65.



Jahagirdar also disclosed that its indicator (display element 516) was active when the load (display element 520) was not activated by the user. Ex. 1004 (Jahagirdar) at col. 5 ll. 35-37; Ex. 1011 (Horenstein Decl.) at ¶ 69. Specifically, in relation again to Figure 8A, above, Jahagirdar disclosed that prior to the key actuation detection (step 814) and the step of displaying a visible indicator (step 816), display element 520 was turned off at step 806. *Id.* Jahagirdar described that “[i]f power was previously enabled for driver 518 and display element 520, controller 504 disables power thereto (step 806).” *Id.* Because the load, display element 520, was already off at step 806, the indicator could be active when the load was not activated by the user. Ex. 1011 (Horenstein Decl.) at ¶ 69.

**D. Jahagirdar combined with Schultz renders obvious “the microchip . . . implement[ing] the touch sensor...and... automatic delayed deactivation...indicat[ing] conditions of the product...[or] a touch sensor . . . [that is] integral”**

Recitation [c] of independent claim 1: “(c) wherein the microchip at least partially implements the touch sensor switch and the user interface has at least one of: (i) an automatic delayed deactivation of a function a predetermined period after the function was activated with an activation command received from the touch sensor switch; (ii) the indicator, in response to the microchip receiving a user interface switch signal, activated to indicate conditions of the product; and (iii) a touch sensor switch sense pad being integral with a housing of the product.”

Jahagirdar in combination with Schultz renders obvious recitation [c]. Ex. 1011 (Horenstein Decl.) at ¶ 70. As already described in relation to recitation [a], Jahagirdar’s controller 504 at least partially implemented the plurality of keys 144: “key circuit 513 provides signals to controller [504] in response to actuations of the

plurality of keys 144.” *Id.* at ¶ 71; Ex. 1004 (Jahagirdar) at col. 4 ll. 19-20.

Further, as described above, touch sensors were well known in the art by the priority date of the ’749 patent. Ex. 1011 (Horenstein Decl.) at ¶ 71. Based on known teachings, and with reference to the reasons described in Recitation [a], one of ordinary skill in the art as of 1998 would have sought to incorporate touch sensors into keys 144 such that the microchip (controller 504) at least partially implemented the touch sensor switch. *Id.*

Additionally, Jahagirdar disclosed that its user interface had an automatic delayed deactivation of a function a predetermined period after the function was activated with an activation command received from its keys. *Id.* at ¶ 72. With reference again to Figure 8A above, after “controller 504 sends display data to driver 514, which sends display data to display element 516” at step 816, “[c]ontroller 504 sets a timer related to the new display information (step 818)” in order to automatically deactivate the visible indicator, display element 516, a predetermined period of time after it was activated. Ex. 1004 (Jahagirdar) at col. 5 ll. 55-65; Ex. 1011 (Horenstein Decl.) at ¶ 72. As already described above, one of ordinary skill in the art as of 1998 would have sought to incorporate touch sensors into the keys. Ex. 1011 (Horenstein Decl.) at ¶ 72. Accordingly, Jahagirdar as modified by Schultz, would have been capable of activating a function in response to an activation command received from the claimed touch sensor switch. *Id.*

Further, Jahagirdar disclosed that its visible indicator (display element 516), in response to the controller 504 receiving a switch signal from the user interface, could be activated to indicate conditions of the product. Ex. 1004 (Jahagirdar) at col. 5 ll. 59-61; Ex. 1011 (Horenstein Decl.) at ¶ 73. Jahagirdar also disclosed that its visible indicator could show a state of the product or a condition of the product. *Id.* For example, Jahagirdar described that display element 516 displayed visual information such as “status information, and may include date and time information, battery status information such as a battery level indication and/or a low battery warning indication.” *Id.* This status information showed a state or condition of the product. Ex. 1011 (Horenstein Decl.) at ¶ 73.

Lastly, with reference to Figures 1 and 2 above, Jahagirdar disclosed that keys 144 were integral with housing 105. *Id.* at ¶ 74; Ex. 1004 (Jahagirdar) at col. 2 l. 13, figs. 1-2. As already described herein, it would have been obvious to incorporate Schultz’s touch sensors into Jahagirdar. Ex. 1011 (Horenstein Decl.) at ¶ 74. Doing so would have resulted in a touch sensor switch sense pad that was integral with the housing 105 of the mobile station 102. *Id.*

**IX. Jahagirdar combined with Schultz renders obvious that the user interface has at least two of “automatic delayed deactivation...indicat[ing] conditions of the product; and...a touch sensor . . . [that is] integral”**

Claim 2: “An electronic unit according to claim 1, wherein the user interface has at least two features selected from the group consisting of: (i) an automatic delayed deactivation of a function a predetermined period after the

*function was activated with an activation command received from the touch sensor switch; (ii) the indicator, in response to the microchip receiving a user interface switch signal, activated to indicate conditions of the product; and (iii) a touch sensor switch sense pad being integral with a housing of the product.”*

Jahagirdar in combination with Schultz renders obvious all of the limitations of claim 2. Ex. 1011 (Horenstein Decl.) at ¶ 75. Specifically, as described above in relation to claim 1, Jahagirdar’s user interface (as modified by Schultz) has all three of (i) an automatic delayed deactivation of a function a predetermined period after the function was activated with an activation command received from the touch sensor switch; (ii) a visible indicator that, in response to the controller receiving a signal, activated to indicate conditions of the product; and (iii) keys 144 that are integral with a housing of the mobile station 102. *Id.* at ¶ 76; *see supra* Section VIII. Accordingly, for all the same reasons describe above in relation to claim 1, all of the limitations of claim 2 are disclosed. *Id.*

**X. Jahagirdar disclosed that “the indicator, in response to the microchip receiving a user interface switch signal, [could be] activated to indicate conditions of the product.”**

Claim 5: “An electronic unit according to claim 1, wherein the user interface offers at least a feature comprising the indicator, in response to the microchip receiving a user interface switch signal, activated to indicate conditions of the product.”

Jahagirdar disclosed all of the limitations of claim 5, rendering claim 5 obvious. Ex. 1011 (Horenstein Decl.) at ¶ 77. As described above in relation to claim 1, Jahagirdar disclosed a feature including its indicator, which in response to

the controller 504 receiving a signal, could be activated to indicate conditions of the product. *Id.* at ¶ 78; *see supra* Section VIII. Jahagirdar disclosed that its visible indicator (display element 516) could show a state of the product or a condition of the product. Ex. 1004 (Jahagirdar) at col. 5 ll. 59-61; Ex. 1011 (Horenstein Decl.) at ¶ 78. For example, Jahagirdar described that display element 516 displayed visual information such as “status information, and may include date and time information, battery status information such as a battery level indication and/or a low battery warning indication.” *Id.* This status information showed a state or condition of the product. Ex. 1011 (Horenstein Decl.) at ¶ 78.

**XI. Jahagirdar disclosed “a touch sensor switch sense pad being integral with a housing of the product.”**

Claim 6: “*An electronic unit according to claim 1, wherein the user interface offers at least a feature comprising a touch sensor switch sense pad being integral with a housing of the product.*”

Jahagirdar disclosed all of the limitations of claim 6, rendering claim 6 obvious. Ex. 1011 (Horenstein Decl.) at ¶ 79. As described above in relation to recitation [c] of claim 1, and with reference to Figures 1 and 2 above, Jahagirdar disclosed the feature that keys 144 were integral with housing 105. *Id.* at ¶ 80; Ex. 1004 (Jahagirdar) at col. 2 l. 13, figs. 1-2. Accordingly, as modified by Schultz, Jahagirdar disclosed a touch sensor switch pad that is integral with mobile station 102’s housing. Ex. 1011 (Horenstein Decl.) at ¶ 80.



**XII. Jahagirdar disclosed that “the power source is non-mains and the indicator gives at least an indication of a power supply level.”**

Claim 7: “An electronic unit according to claim 1, wherein the power source is non-mains and the indicator gives at least an indication of a power supply level.”

Jahagirdar disclosed all of the limitations of claim 7, rendering claim 7 obvious. Ex. 1011 (Horenstein Decl.) at ¶ 81. As an initial matter, with reference to Section VI.A, above, the term “non-mains” would be understood by a person of ordinary skill in the art at the time of the invention to mean “not from the AC utility wiring system of a building.” *Id.* at ¶ 82.

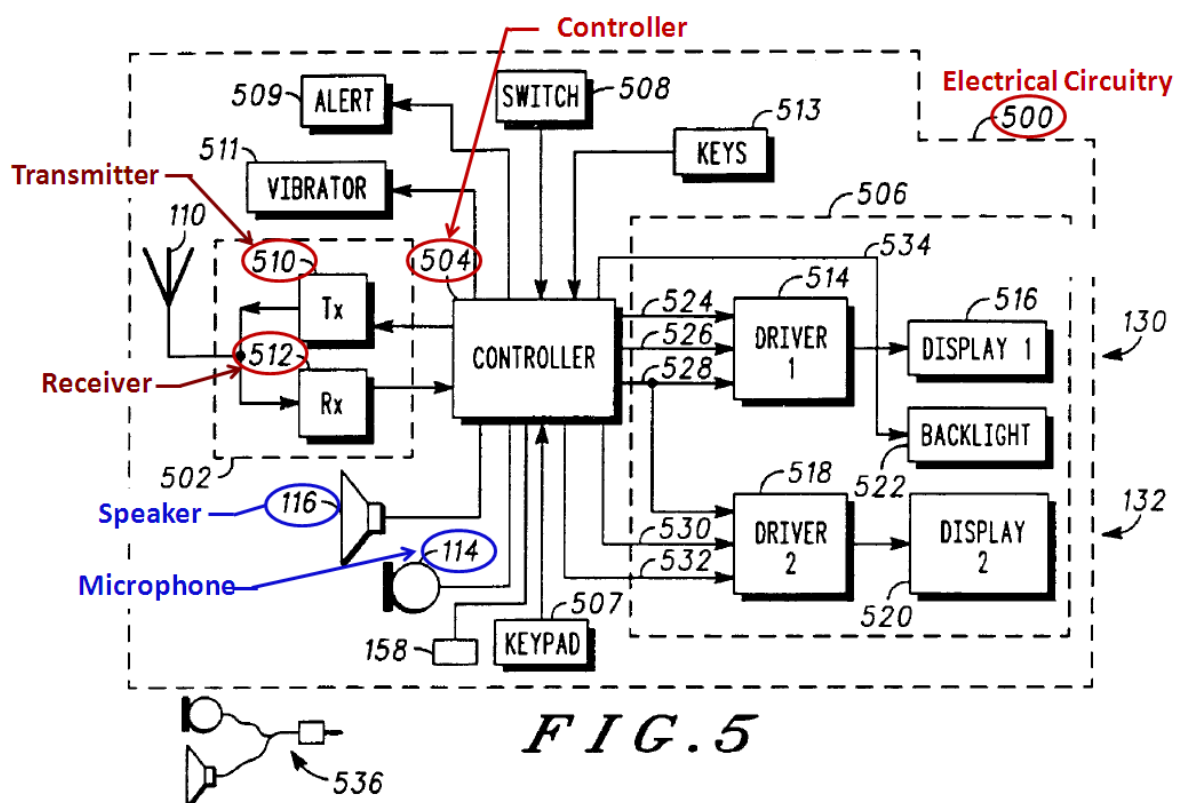
As described above in relation to the preamble of claim 1, Jahagirdar disclosed that its power source was a removable battery 128: “[m]obile station 102 also includes a removable battery 128.” Ex. 1004 (Jahagirdar) at col. 3 l. 33; Ex. 1011 (Horenstein Decl.) at ¶ 83. Accordingly, because battery 128 was non-mains, Jahagirdar’s power source was non-mains. Ex. 1011 (Horenstein Decl.) at ¶ 83.

Jahagirdar further described that the indicator, display element 516, provided an indication of a power supply level: “battery status information such as a battery level indication and/or a low battery warning indication.” Ex. 1004 (Jahagirdar) at col. 5 ll. 60-61; Ex. 1011 (Horenstein Decl.) at ¶ 84.

**XIII. Jahagirdar disclosed that “the product comprises RF circuitry and/or audible sound signal generating electronics.”**

Claim 14: “An electronic unit according to claim 1, wherein the product comprises RF circuitry and/or audible sound signal generating electronics.”

Jahagirdar disclosed all of the limitations of claim 14, rendering claim 14 obvious. Ex. 1011 (Horenstein Decl.) at ¶ 85. Jahagirdar described that the mobile station 102 also uses “radio frequency (RF) signals to provide wireless communications and features such as paging, telephone, and short messaging features.” *Id.* at ¶ 86; Ex. 1004 (Jahagirdar) at col. 2 ll. 7-10. With reference to the circuitry shown in Figure 5, inset below, Jahagirdar described that “[r]eceiver 512 receives RF signals through antenna 110 and demodulates the RF signals.” Ex. 1004 (Jahagirdar) at col. 4 ll. 2-4; Ex. 1011 (Horenstein Decl.) at ¶ 86.



Jahagirdar also disclosed that its product, mobile station 102, includes audible sound signal generating electronics such as a microphone and a speaker:

“[e]lectrical circuitry 500 [that] includes . . . microphone 114, and speaker 116.”

Ex. 1004 (Jahagirdar) at col. 3 ll. 60-64; Ex. 1011 (Horenstein Decl.) at ¶ 87.

Jahagirdar further described that “[m]icrophone 114 and speaker 116 are coupled to controller 504 through audio circuitry (not shown).” Ex. 1004 (Jahagirdar) at col. 4 ll. 11-13. Jahagirdar also indicated that audio signals were generated that passed between receiver 512 and speaker 116 and microphone 114 and transmitter 510 via controller 504. *Id.* at col. 4 ll. 4-11 (describing how controller receives information including voice information from receiver 512 and sends it to transmitter 510); Ex. 1011 (Horenstein Decl.) at ¶ 87. Accordingly, Jahagirdar taught the claimed audible sound signal generating electronics. Ex. 1011 (Horenstein Decl.) at ¶ 87.

#### **XIV. Jahagirdar disclosed “a non-mains power source.”**

Claim 15: “*An electronic unit according to claim 1, wherein power source is a non-mains power source.*”

Jahagirdar disclosed all of the limitations of claim 15, rendering claim 15 obvious. Ex. 1011 (Horenstein Decl.) at ¶ 88. With reference to Section VI.A, above, the term “non-mains” would be understood by a person of ordinary skill in the art at the time of the invention to mean “not from the AC utility wiring system of a building.” *Id.* at ¶ 89.

Further, as described above in Section VIII.A Jahagirdar disclosed that its power source was a removable battery 128: “[m]obile station 102 also includes a

removable battery 128.” Ex. 1004 (Jahagirdar) at col. 3 l. 33; Ex. 1011 (Horenstein Decl.) at ¶ 90. Accordingly, because battery 128 was non-mains, Jahagirdar’s power source was non-mains. Ex. 1011 (Horenstein Decl.) ¶ 90.

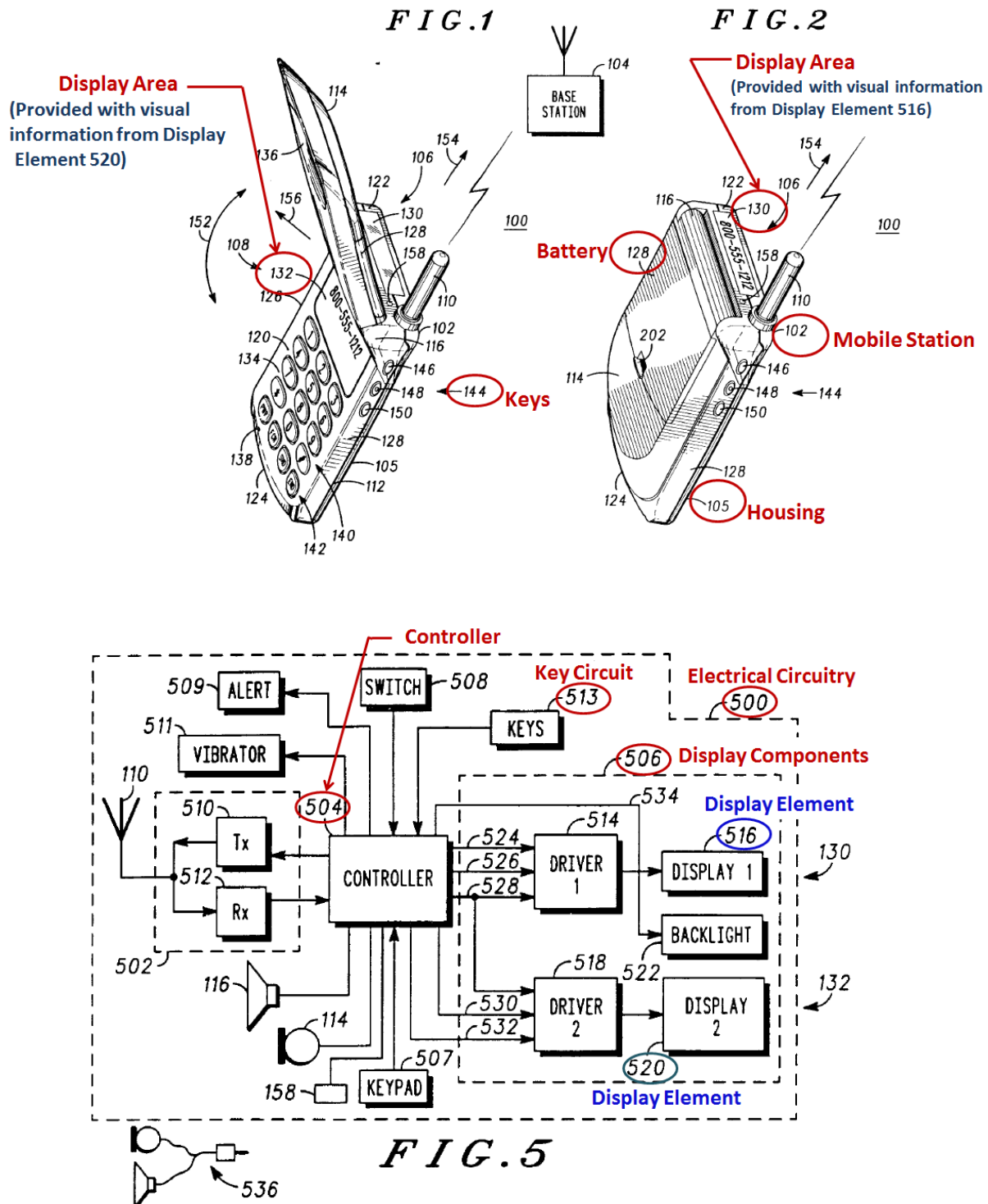
**XV. Independent Claim 21 would have been obvious over Jahagirdar in combination with Schultz**

**A. Jahagirdar taught the limitations of claim 21’s preamble**

Preamble of independent claim 21: “*A method of implementing a user interface for a product comprising connections for a power supply and at least one energy consuming load,*”

Jahagirdar taught the preamble of claim 21. Ex. 1011 (Horenstein Decl.) at ¶ 91. Referring to Figures 1, 2, and 5 below, Jahagirdar disclosed a product, mobile station 102 (a portable communication device) that included electrical circuitry 500. Ex. 1004 (Jahagirdar) at col. 1 l. 63-col. 2 l. 6, col. 3 ll. 30-31, figs. 1-2; Ex. 1011 (Horenstein Decl.) at ¶ 92. Jahagirdar further explained that electrical circuitry 500 included a “key circuit 513 [that] provides signals to controller [504] in response to actuations of the plurality of keys 144.” Ex. 1004 (Jahagirdar) at col. 4 ll. 19-20; Ex. 1011 (Horenstein Decl.) at ¶ 92. Jahagirdar’s user interface included the key circuit 513 and the plurality of keys 144 (*i.e.*, the at least one switch). Ex. 1004 (Jahagirdar) at col. 3 ll. 30-31; Ex. 1011 (Horenstein Decl.) at ¶ 92. Keys 144 were located on the outer housing of the mobile station 102 and could be used to control various functions of the mobile station 102 such as answering or terminating a call, forwarding a call to voicemail, or displaying

information on one of the display areas. Ex. 1004 (Jahagirdar) at col. 6 ll. 40-45, col. 7 ll. 5-11, col. 7 ll. 16-20; Ex. 1011 (Horenstein Decl.) at ¶ 92.



Electrical circuitry 500 included a connection for a power supply, such as battery 128: “[m]obile station 102 also includes a removable battery 128.” Ex. 1004 (Jahagirdar) at col. 3 l. 33; Ex. 1011 (Horenstein Decl.) at ¶ 93. Electrical circuitry 500 also included a connection for at least one energy consuming load (display element 520). Ex. 1004 (Jahagirdar) at col. 4 ll. 27-30; Ex. 1011 (Horenstein Decl.) at ¶ 93. Jahagirdar’s energy consuming load (display element 520) provided visual information in display area 132: “[d]isplay elements 516 and 520 provide visual information in display areas 130 and 132, respectively.” Ex. 1004 (Jahagirdar) at col. 4 ll. 40-41; Ex. 1011 (Horenstein Decl.) at ¶ 93.

**B. Jahagirdar combined with Schultz renders obvious “a touch sensor user interface switch and a visible indicator”**

Recitation [a] of independent claim 21: “*using at least a touch sensor user interface switch and a visible indicator,*”

Jahagirdar in combination with Schultz renders obvious recitation [a]. Ex. 1011 (Horenstein Decl.) at ¶ 94. As an initial matter, Jahagirdar already disclosed a visible indicator: display element 516. *Id.* at ¶ 95. With reference again to Figures 1 and 2 above, “[d]isplay elements 516 and 520 provide visual information in display areas 130 and 132, respectively.” *Id.*; Ex. 1004 (Jahagirdar) at col. 4 ll. 40-41.

Further, as described above, Jahagirdar disclosed a user interface of mobile station 102 that included a plurality of keys 144. Ex. 1004 (Jahagirdar) at col. 3 ll.

30-31, figs. 1-2; Ex. 1011 (Horenstein Decl.) at ¶ 96. Jahagirdar also explained that “[e]lectrical circuitry 500 includes . . . a key circuit 513.” Ex. 1004 (Jahagirdar) at col. 3 ll. 60-64; Ex. 1011 (Horenstein Decl.) at ¶ 96. “[K]ey circuit 513 provides signals to controller [504] in response to actuations of the plurality of keys 144.” Ex. 1004 (Jahagirdar) at col. 4 ll. 19-20.

Jahagirdar did not disclose that any of keys 144 included a touch sensor so as to form a touch sensor user interface switch. Ex. 1011 (Horenstein Decl.) at ¶ 97. However, touch sensors were well known in the art by the priority date of the ’749 patent. *Id.* Based on known teachings, one of ordinary skill in the art as of 1998 would have sought to incorporate touch sensors into keys 144 so as to form a touch sensor user interface capable of being used. *Id.*

In that regard, Schultz disclosed “a reliable touch actuated system . . . responsive to the touch of an animal...[such as] human beings, pets and domestic animals.” Ex. 1005 (Schultz) at col. 1 ll. 27-31. Specifically, with reference to Figure 3 inset below, Schultz disclosed a touch sensor user interface switch (touch responsive area 67). Ex. 1005 (Schultz) at col. 4 ll. 46-47; Ex. 1011 (Horenstein Decl.) at ¶ 98. When “an element, such as the human finger, across the conductors 34 and 35 [corresponding to touch responsive area 67] causes the voltage on conductor 36 to change state and be inverted by the inverter 41[, t]his inversion by

inverter 41 combined with the pulse output 11 causes the flip-flop 43 to change state and activate the load 52.” Ex. 1005 (Schultz) at col. 4 ll. 30-35.

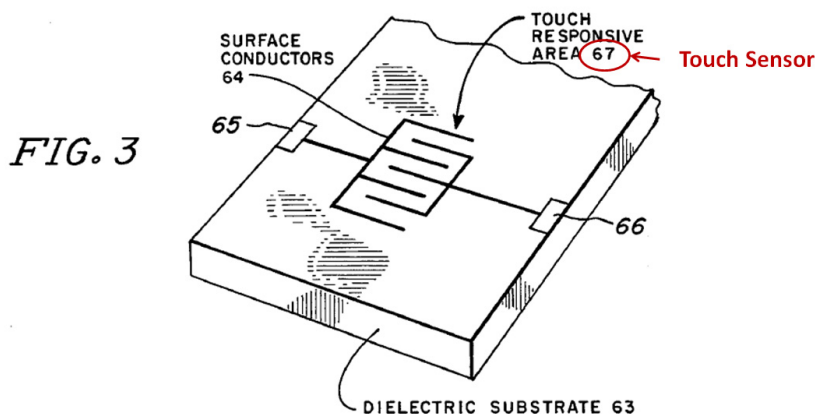
Schultz further described that its design was an improvement over the prior art because it minimized inadvertent actuation. Ex. 1005 (Schultz) at col. 1 ll. 20-21; Ex. 1011 (Horenstein

Decl.) at ¶ 99. “With the present system, a more reliable touch sensing mechanism is provided than is available by mere

capacitive proximity type touch devices or purely resistive touch type devices.”

Ex. 1005 (Schultz) at col. 1 ll. 64-67. Specifically, “[t]he mere application of a short circuit between the conductors 34 and 35 does not provide the necessary charging delay of capacitor 60 and voltage which are necessary to actuate the present system. The inherent body capacitance 60 of an animal is required.” *Id.* at col. 4 ll. 35-40. In other words, both physical contact and capacitance were required to actuate Schultz’s switch. Ex. 1011 (Horenstein Decl.) at ¶ 99.

One of ordinary skill in the art would have been motivated to combine the features of Schultz with the method and system of Jahagirdar to arrive at claim 21 of the ’749 patent, (1) to minimize accidental actuation; (2) to eliminate the





problems of contamination and mechanical failures associated with switches having moving parts; and (3) to enhance convenience and aesthetics for the user. *Id.* at ¶ 100.

In that regard, “if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill.” *KSR*, 550 U.S. at 417. Schultz described that its touch sensor was more reliable than prior art capacitive and resistive type sensors because both physical contact and capacitance were required to actuate the switch. Ex. 1005 (Schultz) at col. 1 ll. 64-67, col. 4 ll. 35-40; Ex. 1011 (Horenstein Decl.) at ¶ 101. For this reason, one of ordinary skill in the art would recognize that Schultz’s touch sensor would have improved the mobile station of Jahagirdar. Ex. 1011 (Horenstein Decl.) at ¶ 101. Because Schultz’s touch sensor requires inherent body capacitance to actuate, one of ordinary skill would have sought to incorporate Schultz’s touch sensors into Jahagirdar’s keys in order to avoid accidental actuations. *Id.* Specifically, without incorporation of Schultz’s touch sensors, Jahagirdar’s keys could be actuated merely by the phone contacting another object, but not necessarily the user’s finger. *Id.* at ¶ 102. For example, if the phone was in the user’s pocket, and the user bumped into something, or sat down in the right orientation, keys 144 could inadvertently be actuated. *Id.*

Schultz's touch sensor avoids this issue by requiring inherent body capacitance to actuate. *Id.* Accordingly, because providing a touch sensor to the mobile station of Jahagirdar would not have been beyond that person's skill, it would have been obvious to incorporate touch sensors into Jahagirdar's keys 144 in order to avoid accidental actuations. *Id.*

Schultz also described that its touch sensor had an advantage over "[c]onventional electric switches which require movements [and] are susceptible to contamination and mechanical failures." Ex. 1005 (Schultz) at col. 1 ll. 17-19; Ex. 1011 (Horenstein Decl.) at ¶ 103. Schultz explained that its touch sensor "has no moving parts and is therefor not subject to... contamination and spurious types of operation." Ex. 1005 (Schultz) at col. 1 l. 67-col. 2 l. 1. One of ordinary skill in the art would recognize that Schultz's features would have improved the mobile station of Jahagirdar by replacing mechanical keys with touch sensors. Ex. 1011 (Horenstein Decl.) at ¶ 103. Since providing a touch sensor to the mobile station of Jahagirdar would not have been beyond that person's skill, it would have been obvious to incorporate touch sensors into Jahagirdar's keys 144 in order to eliminate the problems of contamination and mechanical failures that were associated with switches that have moving parts, such as keys 144. Ex. 1011 (Horenstein Decl.) at ¶ 104 (citing Ex. 1007 (Buxton) at p. 216 ("simple construction, with no moving parts, leads to reliable and long-lived operation.")).

Avoiding issues of contamination and mechanical failure would have been especially important for portable devices, such as Jahagirdar's mobile phone, because mobile phones were (as they are today) commonly used in environments, such as the outdoors, dusty rooms, or around spilled liquids, where contaminants to keys were common. *Id.* at ¶ 105. Also, mobile phones were often put in a user's pocket, as they are today. *Id.* Further, buttons on a mobile phone were pressed repeatedly for years, so such phones had to be designed to minimize mechanical failure of the keys. *Id.*

Further, touch sensors such as those disclosed in Schultz would have enhanced the convenience and aesthetics of Jahagirdar. *Id.* at ¶ 106. For example, in relation to its telephone, Norimatsu described that incorporation of a touch sensor into a telephone provided convenience to the user: “[a]nother object of the present invention is to provide a telephone in which the user can easily respond to a call by simply touching the telephone.” Ex. 1006 (Norimatsu) at col. 1 ll. 34-36; Ex. 1011 (Horenstein Decl.) at ¶ 106. Specifically, with reference to Figure 4 inset below, Norimatsu disclosed a telephone handset 40 included a touch sensor portion 191. Ex. 1006 (Norimatsu) at col. 4 l. 1; Ex. 1011 (Horenstein Decl.) at ¶ 106. Norimatsu described that “[t]he sensor portion, or mesh, 191 is attached to part of the handset surface, which part is so selected that the user can most conveniently touch thereon.” Ex. 1006 (Norimatsu) at col. 4 ll. 9-12. Further, “when the user

touches the sensor portion 191, the amplifier 194 produces a high-level signal which is sent to the controller 15 as a detection signal.” *Id.* at col. 3 ll. 61-63.

“[I]n response to the detection signal, the controller 15 determines that the user has responded to a call and then stops the transmission of the signaling tone.” *Id.* at col. 3 ll. 65-68.

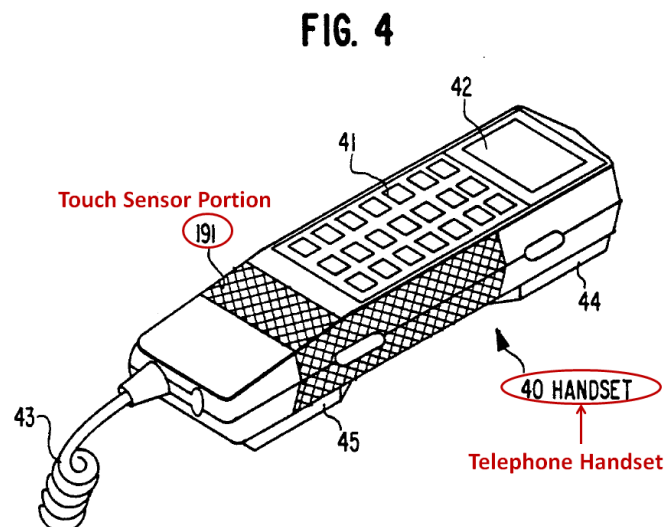
In another example, DePauli disclosed that “[t]ouch control switching systems, especially for controlling illumination devices, have proven appealing due to their added convenience and aesthetics.” Ex. 1008 (DePauli) at col. 1 ll. 22-24.

Further, Roudeski taught that “[t]ouch controls are quick and convenient, and especially ideal for pre-schoolers and physically disabled persons, such as arthritics, who find it difficult, in view of their limited dexterity, to operate conventional light switches.” Ex.

1009 (Roudeski) at col. 1 ll. 16-20.

Moreover, as the Supreme Court has stated, “when a patent simply arranges old elements with each performing the same function it had been known to perform and

yields no more than one would expect from such an arrangement, the combination is obvious.” *KSR*, 550 U.S. at 417 (internal quotations omitted). Here, Jahagirdar



and Schultz demonstrate that the elements of claim 21 were well known, and the combinations of the techniques described therein would have yielded no more than one would expect from such an arrangement. Ex. 1011 (Horenstein Decl.) at ¶ 109.

Incorporating a touch sensor into Jahagirdar would have asked little of a person of ordinary skill, because a touch sensor would have improved Jahagirdar in the same way a touch sensor would have improved any such electronic device. *Id.* at ¶ 101. While the claim does not specify the details of the claimed touch sensor, Schultz's touch sensor could have been integrated into Jahagirdar's keys 144 in multiple ways depending upon what might have been convenient or desirable. *Id.* at ¶ 109. For example, Jahagirdar's keys 144 could have been replaced in their entirety by one, two, three, or more touch sensors. *Id.* The functions performed by keys 144 could instead be performed by a different number of touch sensors, such as one or two touch sensors. *Id.* These various configurations would have been trivial adjustments for one of skill in the art. *Id.* (citing Ex. 1007 (Buxton)). This further supports a finding that the subject matter of claim 21 would have been obvious at the effective date of the '749 patent. *Id.*

**C. Jahagirdar taught “activating the indicator in response to a user interface switch activation signal...when the load is not activated by the user...performing an automatic delayed deactivation of a function”**

Recitation [b] of independent claim 21: “*wherein the method includes the steps of: (a) activating the indicator in response to a user interface switch activation signal; (b) activating the indicator when the load is not activated by the user; (c) performing an automatic delayed deactivation of a function that was activated in response to an activation signal received via the user interface switch.*”

Jahagirdar taught all elements of recitation [b]. Ex. 1011 (Horenstein Decl.) at ¶ 110. Jahagirdar disclosed that its display element 516 was activated in response to a user interface switch activation signal received from key 150 (of keys 144 which were part of Jahagirdar’s user interface). *Id.* at ¶ 111; Ex. 1004 (Jahagirdar) at col. 5 ll. 54-65. Specifically, in relation to Figure 8A, inset below, Jahagirdar disclosed “[i]f controller 504 detects an actuation of key 150 (step 814), controller 504 sends display data to driver 514, which sends display data to display element 516. For [sic] displaying new visual information in display area 130.” Ex. 1004 (Jahagirdar) at col. 5 ll. 54-57; Ex. 1011 (Horenstein Decl.) at ¶ 111.



“[i]f power was previously enabled for driver 518 and display element 520, controller 504 disables power thereto (step 806).” *Id.* Because display element 520 was already off at step 806, activation of the visible indicator at step 816 could occur when the load was not activated by the user. Ex. 1011 (Horenstein Decl.) at ¶ 112.

Lastly, Jahagirdar disclosed that its user interface had an automatic delayed deactivation of a function activated in response to an activation signal received via the user interface switch. *Id.* at ¶ 113. With reference again to Figure 8A above, after “controller 504 sends display data to driver 514, which sends display data to display element 516” at step 816, “[c]ontroller 504 sets a timer related to the new display information (step 818)” in order to automatically deactivate the visible indicator, display element 516, a predetermined period of time after it was activated. *Id.*; Ex. 1004 (Jahagirdar) at col. 5 ll. 55-65.

**XVI. Jahagirdar in combination with Schultz renders obvious that “the touch sensor switch sense pad is integral with the product housing.”**

Claim 23: “*The method of claim 21, wherein the touch sensor switch sense pad is integral with the product housing.*”

Jahagirdar in combination with Schultz renders obvious all of the limitations of claim 23. Ex. 1011 (Horenstein Decl.) at ¶ 114. With reference to Figures 1 and 2 above, Jahagirdar disclosed that keys 144 were integral with housing 105. *Id.* at ¶ 115; Ex. 1004 (Jahagirdar) at col. 2 l. 13; figs. 1-2. As already described in



Section XV, it would have been obvious to incorporate Schultz’s touch sensors into Jahagirdar. Ex. 1011 (Horenstein Decl.) at ¶ 115. Doing so would have resulted in a touch sensor switch sense pad that was integral with the housing 105 of the mobile station 102. *Id.*

**XVII. The Challenged Claims Would Have Been Obvious Under the Construction of “Energy Consuming Load” Advanced by Apple**

In an IPR petition seeking cancellation of certain claims of the ’726 patent (IPR No. 2015-01171, filed May 11, 2015), Apple Inc. and Motorola Mobility LLC (collectively, “Apple”) proposed to construe the term “energy consuming load” to mean “any part of the product that consumes energy.” Even if the PTAB explicitly adopts Apple’s proposed construction, the Challenged Claims would have been obvious on the same grounds proposed by Microsoft in this Petition. Ex. 1011 (Horenstein Decl.) at ¶ 116. The claimed load is display element 520 in Jahagirdar. *Id.* at ¶ 117; Ex. 1004 (Jahagirdar) at fig. 5. Jahagirdar’s display element 520 was a part of the product (mobile station 102) as illustrated, and the display element 520 consumed energy, because it was, for example, an LED or LCD device, and because it received power under the direction of the controller 504. Ex. 1011 (Horenstein Decl.) at ¶ 117; Ex. 1004 (Jahagirdar) at col. 4 ll. 43-46. Thus, Jahagirdar’s display element 520 meets the construction “any part of the product that consumes energy.” Ex. 1011 (Horenstein Decl.) at ¶ 117.

## **XVIII. Conclusion**

For the foregoing reasons, Petitioner has shown that there is a reasonable likelihood that the Challenged Claims of the '749 patent are unpatentable under 35 U.S.C. § 103(a). Therefore, the Board should institute a trial and cancel these claims.

Dated: May 12, 2015

Respectfully submitted,

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## **CERTIFICATE OF SERVICE**

The undersigned certifies service pursuant to 37 C.F.R. §§ 42.6(e) and 42.105(b) on the Patent Owner by Federal Express, overnight delivery, a copy of this Petition for *Inter Partes* Review and supporting materials at the correspondence address of record for the '749 patent:

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