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 IPR2025-00526
Patent No. 9,304,602

**DECLARATION OF DR. BENJAMIN B. BEDERSON, PH.D.,
IN SUPPORT OF
PETITION FOR *INTER PARTES* REVIEW
OF U.S. PATENT NO. 9,304,602**

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1. Independent Claim 1 68

a. [1pre]: "A system for capturing an event provided from an edge of a touch screen comprising:" 68

b. [1a]: "a device having a touch screen;" 72

c. [1b]: "at least one window located in the touch screen on an edge of the touch screen, wherein said at least one window functions independently of an interface of an application in use on the touch screen; and" 76

d. [1c]: "a processor;" 81

e. [1d]: "wherein a gliding action provided from outside of the touch screen towards inside of the touch screen, said gliding action at first interacting with said at least one window on the touch screen, is processed by said processor to cause an action assigned to said window, and" 83

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f. [1e]: "wherein said at least one window is located on the touch screen before said gliding action begins." 105

2. Claim 2: "The system of claim 1, wherein the system relates said gliding action to a function which is not related to a mouse function." 111

3. Claim 3: “The system of claim 1, wherein said at least one window comprises at least one bar located on said edge of the screen.” 111

4. Claim 4: “The system of claim 3, wherein said at least one bar extends along a substantial portion of an edge of the touch screen.” 113

5. Claim 5: “The system of claim 3, wherein said bar is in a form of a line.” 115

6. Claim 6: “The system of claim 5, wherein said action is displaying an interface on the screen.” 117

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10. Claim 10: “The system of claim 3, wherein said action is displaying a portion of an interface on the screen.” 122

11. Claim 11: “The system of claim 10, wherein during said gliding action, a length of the portion of the interface being displayed is substantially equal to a length of the gliding action.” 123

12. Claim 12: “The system of claim 1, wherein upon detecting said gliding action, the system displays an interface on said touch screen.” 123

13. Claim 13: “The system of claim 12, wherein upon detecting said gliding action, the system relates said gliding action to setting the location of said interface on said touch screen.” 123

14. Claim 17: "The system of claim 1, wherein during providing said gliding action, the system dynamically drags and shows an interface or a portion of an interface on the touch screen." 128

15. Claim 18: "The system of claim 1, wherein the processor relates a gliding action provided towards any arbitrary direction inside the screen to presenting a same interface." 128

16. Independent Claim 19 130

    a. [19pre]: "A system for capturing an event provided from an edge of a touch screen comprising:" 130

    b. [19a]: "a device having a touch screen;" 130

    c. [19b]: "a zone in form of a bar located in the touch screen on an edge of the touch screen; and" 130

    d. [19c]: "a processor;" 132

    e. [19d]: "wherein a gliding action provided from said zone of the touch screen towards any arbitrary direction inside the touch screen at first interacts with said zone, and wherein the processor executes a function related to said zone, and wherein said zone is present on said edge regardless of the interface of an application on said touch screen, and" 132

    f. [19e]: "wherein said zone is located on the touch screen before said gliding action begins." 135

17. Claim 21: "The system of claim 19, wherein upon detecting said gliding action, the system relates said gliding action to setting the location of an interface on the touch screen." 135

18. Claim 23: "The system of claim 19, wherein said zone is in a form of a visible or invisible line." 136

19. Claim 24: "The system of claim 23, wherein said function is displaying an interface on the screen." 136

20. Claim 25: "The system of claim 23, wherein said function is displaying a portion of an interface on the screen." 136

21. Claim 26: "The system of claim 23, wherein said function is displaying a portion of an interface on the screen, and wherein a length of said portion of the interface is substantially equal to a length of the gliding action." 137

22. Claim 27: "The system of claim 19, wherein said bar is visible or invisible." 137

23. Claim 28: "The system of claim 27, wherein said function is displaying an interface on the screen." 137

24. Claim 29: "The system of claim 27, wherein said function is displaying a portion of an interface on the screen." 138

25. Claim 30: "The system of claim 29, wherein during said gliding action, a length of the portion of the interface being displayed is substantially equal to a length of the gliding action." 138

26. Claim 31: "The system of claim 19, wherein during providing said gliding action, the system dynamically drags and shows an interface or a portion of an interface on the touch screen." 138

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28. Claim 33: "The system of claim 32, wherein said gliding action is provided from outside the touchscreen towards

inside the touch screen, wherein said gliding action at first interacts with said zone on said touch screen.” 140

29. Claim 34: “The system of claim 19, wherein said function is displaying a portion of an interface on the screen.” 140

30. Claim 35: “The system of claim 34, wherein during said gliding action, a length of the portion of the interface being displayed is substantially equal to a length of the gliding action.” 140

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3. Claim 18: "The system of claim 1, wherein the processor relates a gliding action provided towards any arbitrary direction inside the screen to presenting a same interface." 159

a. Motivation 160

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1. Independent Claim 1 163

a. [1pre]: "A system for capturing an event provided from an edge of a touch screen comprising:" 163

b. [1a]: "a device having a touch screen;" 166

c. [1b]: "at least one window located in the touch screen on an edge of the touch screen, wherein said at least one window functions independently of an interface of an application in use on the touch screen; and" 168

i. Motivation 175

ii. Expectation of Success 180

d. [1c]: "a processor;" 182

e. [1d]: "wherein a gliding action provided from outside of the touch screen towards inside of the touch screen, said gliding action at first interacting

with said at least one window on the touch screen, is processed by said processor to cause an action assigned to said window, and" 182

f. [1e]: "wherein said at least one window is located on the touch screen before said gliding action begins." 185

2. Claim 2 187

a. "The system of claim 1, wherein the system relates said gliding action to a function which is not related to a mouse function." 187

3. Claim 3 188

a. "The system of claim 1, wherein said at least one window comprises at least one bar located on said edge of the screen." 188

4. Claim 4 190

a. "The system of claim 3, wherein said at least one bar extends along a substantial portion of an edge of the touch screen." 190

5. Claim 5 191

a. "The system of claim 3, wherein said bar is in a form of a line." 191

6. Claim 6 191

a. "The system of claim 5, wherein said action is displaying an interface on the screen." 191

7. Claim 7 192

a. "The system of claim 5, wherein said action is displaying a portion of an interface on the screen." 192

8. Claim 8 194

a. "The system of claim 7, wherein during said gliding action, a length of the portion of the interface being displayed is substantially equal to a length of the gliding action." 194

9. Claim 9 195

a. "The system of claim 3, wherein said action is displaying an interface on the screen." 195

10. Claim 10 195

a. "The system of claim 3, wherein said action is displaying a portion of an interface on the screen." 195

11. Claim 11 196

a. "The system of claim 10, wherein during said gliding action, a length of the portion of the interface being displayed is substantially equal to a length of the gliding action." 196

12. Claim 12 196

a. "The system of claim 1, wherein upon detecting said gliding action, the system displays an interface on said touch screen." 196

13. Claim 13 196

a. "The system of claim 12, wherein upon detecting said gliding action, the system relates said gliding action to setting the location of said interface on said touch screen." 196

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a. "The system of claim 1, wherein said at least one window comprises more than one window located on one or more edges of the touch screen." 199

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a. "The system of claim 1, wherein the processor relates a gliding action provided towards any arbitrary direction inside the screen to presenting a same interface." 202

18. Independent Claim 19....204

a. [19pre]: "A system for capturing an event provided from an edge of a touch screen comprising:"....204

b. [19a]: "a device having a touch screen;"....204

c. [19b]: "a zone in form of a bar located in the touch screen on an edge of the touch screen; and"....204

d. [19c]: "a processor;"....205

e. [19d]: "wherein a gliding action provided from said zone of the touch screen towards any arbitrary direction inside the touch screen at first interacts with said zone, and wherein the processor executes a function related to said zone, and wherein said zone is present on said edge regardless of the interface of an application on said touch screen, and"....205

f. [19e]: "wherein said zone is located on the touch screen before said gliding action begins."....206

19. Claim 21 207

a. "The system of claim 19, wherein upon detecting said gliding action, the system relates said gliding action to setting the location of an interface on the touch screen." 207

20. Claim 22 207

a. "The system of claim 19, wherein said bar comprises more than one bar located on one or more edges of the touch screen." 207

21. Claim 23 207

a. "The system of claim 19, wherein said zone is in a form of a visible or invisible line." 207

22. Claim 24 208

a. "The system of claim 23, wherein said function is displaying an interface on the screen." 208

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a. "The system of claim 23, wherein said function is displaying a portion of an interface on the screen." 208

24. Claim 26 208

a. "The system of claim 23, wherein said function is displaying a portion of an interface on the screen, and wherein a length of said portion of the interface is substantially equal to a length of the gliding action." 208

25. Claim 27 209

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34. Claim 36 212

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I, Dr. Benjamin B. Bederson, Ph.D., declare as follows:

I. INTRODUCTION

1. I have been retained by Samsung Electronics Co., Ltd., and Samsung Electronics America, Inc. (collectively, "Samsung" or "Petitioners"), as an independent expert consultant in this proceeding before the United States Patent and Trademark Office.

2. I am over 21 years of age and, if I am called upon to do so, I would be competent to testify as to the matters set forth herein.

3. My compensation is in no way contingent on the nature of my findings, the presentation of my findings in testimony, or the outcome of any proceeding.

4. I understand that this proceeding involves U.S. Patent No. 9,304,602 ("the '602 patent," Ex. 1001). The application for the '602 patent was filed June 17, 2012, as U.S. Patent Application No. 13/516,737 ("the '737 application"). The '737 application is a national phase filing of PCT/IL2010/001075, filed on December 20, 2010. Ex. 1001, cover. The '602 patent also claims priority to the following United States and Israeli applications:

- U.S. Provisional Patent Application No. 61/294,382, filed January 12, 2010.
- Israeli Application No. 202852, filed December 20, 2009.

- Israeli Application No. 203090, filed December 31, 2009.
- Israeli Application No. 203560, filed January 27, 2010.
- Israeli Application No. 203922, filed February. 11, 2010.
- Israeli Application No. 205052, filed April 13, 2010.
- Israeli Application No. 205329, filed April 25, 2010.
- Israeli Application No. 206257, filed June 9, 2010.
- Israeli Application No. 207114, filed July 20, 2010.
- Israeli Application No. 207545, filed August 11, 2010.
- Israeli Application No. 207665, filed August 17, 2010.
- Israeli Application No. 208140, filed September 14, 2010.
- Israeli Application No. 208740, filed October 14, 2010.
- Israeli Application No. 208790, filed October 18, 2010.
- Israeli Application No. 209218, filed November 9, 2010.
- Israeli Application No. 209305, filed November 14, 2010.
- Israeli Application No. 209416, filed November 18, 2010.
- Israeli Application No. 209484, filed November 21, 2010.

5. I have been asked by Petitioners to provide my opinion whether the claims of the ’602 patent would have been obvious to a person of ordinary skill in the art at the time of the earliest claimed priority date of the ’602 patent. In

performing my analysis, I have been asked to assume that the priority date is December 20, 2009.[1] My opinions are set forth below.

6. Throughout this declaration, I refer to specific pages, figures, and/or line numbers of various exhibits. These citations are illustrative and are not intended to suggest that they are the only support for the propositions for which they are cited.

II. SUMMARY OF OPINIONS

7. This declaration considers claims 1-13, 15-19, and 21-36 of the ’602 patent. Below, I set forth the opinions I have formed, the conclusions I have reached, and the bases for these opinions and conclusions. I believe the statements contained in this declaration to be true and correct to the best of my knowledge.

8. Based on my experience, knowledge of the art at the time of the applicable priority date (I was instructed to assume a priority date of December 20, 2009), it is my opinion that claims 1-13, 15-19, and 21-36 of the ’602 patent would have been obvious to a person of ordinary skill in the art based on the asserted grounds discussed below.

[1] I provide no opinion whether the ’602 patent is entitled to this priority date. To the extent another priority date would apply, that would not change my opinion that claims 1-13, 15-19, and 21-36 of the ’602 patent would have been obvious.

9. I am being compensated for my time at my normal hourly rate. My compensation is in no way contingent upon the nature of my findings, the presentation of my findings in testimony, or the outcome of this proceeding.

III. QUALIFICATIONS AND BACKGROUND

10. I believe that I am well qualified to serve as a technical expert in this matter based upon my qualifications, discussed in detail below. A copy of my curriculum vitae is included as Exhibit 1004.

11. I am competent to prepare this declaration.

12. I received a Bachelor of Science degree in Computer Science with a minor in Electrical Engineering from Rensselaer Polytechnic Institute ("RPI") in 1986. I received a Master of Science degree and a Ph.D. in Computer Science from New York University ("NYU") in 1989 and 1992, respectively.

13. Since 1998, I have been a Professor of Computer Science at the University of Maryland ("UMD"), where I have had joint appointments at the Institute for Advanced Computer Studies and the College of Information Studies (Maryland's "iSchool") and am currently Professor Emeritus. I was also Associate Provost of Learning Initiatives and Executive Director of the Teaching and Learning Transformation Center from 2014 to 2018. I am a member and previous director of the Human-Computer Interaction Lab ("HCIL"), the oldest and one of the best known Human-Computer Interaction research groups in the country.

14. I am also co-founder and co-director of the International Children's Digital Library ("ICDL"), a web site launched in 2002 that provides the world's largest collection of freely available online children's books from around the world with an interface aimed to make it easy for children and adults to search and read children's books online. I was also co-founder and Chief Scientist of Zumobi, Inc., from 2006 to 2014, a Seattle-based startup that is a publisher of content applications and advertising platforms for smartphones. I was also co-founder and prior Chief Technology Officer of Hazel Analytics, a data analytics company whose product sends alerts in warranted circumstances. In addition, I have for more than 25 years consulted for numerous companies in the area of user interfaces, including Logitech, Microsoft, the Palo Alto Research Center, Sony, Lockheed Martin, and NASA Goddard Space Flight Center.

15. For more than 30 years, I have studied, designed, and worked in the field of computer science and human-computer interaction. My experience includes 30 years of teaching and research, with research interests in human-computer interaction and the software and technology underlying today's interactive computing systems. This includes the design and implementation of user interfaces and software applications using a wide range of technologies, including web servers and websites, databases, embedded systems, and mobile devices, including smartphones and PDAs. I have combined my hardware and

software skills throughout my career in Human-Computer Interface research, building various interactive electrical and mechanical systems that couple with software to provide an innovative user experience.

16. At UMD, my research has been in the area of Human-Computer Interaction ("HCI"), a field that relates to the development and understanding of computing systems to serve users' needs. Researchers in this field are focused on making universally usable, useful, efficient, and appealing systems to support people in their wide range of activities. My approach is to balance the development of innovative technology that serves people's practical needs. Example systems following this approach that I have built include Pad++ (1994 software for zoomable user interfaces), KidPad (1997 software to support children collaboratively writing stories), PadPrints (1998 software to graphically show interactive web browsing histories), PhotoMesa (2001 software for end users to browse personal photos), Pocket PhotoMesa (2004 software for browsing of personal photos on a mobile device), DateLens (2002 software for end users to use their mobile devices to efficiently access their calendar information), LaunchTile (2005 "home screen" software for mobile devices to allow users to navigate apps in a zoomable environment), SpaceTree (2001 software for end users to efficiently browse very large hierarchies), ICDL (as described above), and StoryKit (a 2009 iPhone app for children to create stories).

17. Many of my projects involved processing user inputs and interpreting them to determine what command they controlled. For example, in 2001 I wrote a paper[2] that describes PhotoMesa, a zoomable image browser using a novel 2D layout algorithm I called "quantum treemaps" to position the images on the screen in a way that attempted to fill the screen while keeping groups of related images together. As indicated in the figure below, PhotoMesa had a number of interactions that controlled the display of many hundreds of images at a time. Users could zoom in and out, pan from side to side, and show larger thumbnails through a combination of mouse clicks, drags, and hovers.

[2] Benjamin B. Bederson, *PhotoMesa: A Zoomable Image Browser Using Quantum Treemaps and Bubblemaps*, UIST '01: Proceedings of the 14th Annual ACM Symposium on User Interface Software and Technology (Nov. 2001), pp. 71-80, https://doi.org/10.1145/502348.502359.



Figure 1: Screen snapshot of PhotoMesa with over 500 images in 17 groups.

18. Another example was in software I wrote in 2004-2005 called LaunchTile, which included a Graphical User Interface for touch-screen mobile devices designed for one-handed use. LaunchTile, described in a 2005 paper,[3] allowed zooming and scrolling of multiple applications on a handheld touch-screen PDA. The interface offered a grid of applications that could be zoomed and

[3] Amy K. Karlson, Benjamin B. Bederson, and John SanGiovanni, *AppLens and launchTile: two designs for one-handed thumb use on small devices*, CHI '05: Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (2005), Association for Computing Machinery, New York, NY, USA, pp. 201-210. https://doi.org/10.1145/1054972.1055001.

scrolled. It included several different methods of navigating, including gestures as shown in the following figure from that paper where scrolling continued after a finger was lifted from the touch screen, and then slowed to a stop.



Figure 2. Screen area accessible with one hand.

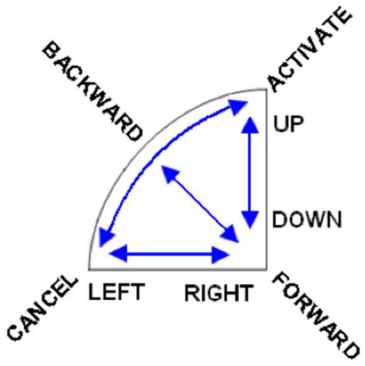


Figure 3. The gesture set.

19. My work has been published extensively in more than 160 technical publications, and I have given about 100 invited talks, including 9 keynote lectures. I have won a number of awards, including the Janet Fabri Memorial Award for Outstanding Doctoral Dissertation for my Ph.D. work in robotics and computer vision as well as the Brian Shackel Award for "outstanding contribution with international impact in the field of HCI" in 2007, and the Social Impact Award in 2010 from Association for Computing Machinery's ("ACM") Special Interest Group on Computer Human Interaction ("SIGCHI"). ACM is the primary international professional community of computer scientists, and SIGCHI is the primary international professional HCI community. I have been honored by both

professional organizations. I am an "ACM Distinguished Scientist," which "recognizes those ACM members with at least 15 years of professional experience and 5 years of continuous Professional Membership who have achieved significant accomplishments or have made a significant impact on the computing field." I am a member of the "CHI Academy," which is described as follows: "The CHI Academy is an honorary group of individuals who have made substantial contributions to the field of human-computer interaction. These are the principal leaders of the field, whose efforts have shaped the disciplines and/or industry, and led the research and/or innovation in human-computer interaction." The criteria for election to the CHI Academy are: (1) cumulative contributions to the field; (2) impact on the field through development of new research directions and/or innovations; and (3) influence on the work of others. I have received two "Test of Time" awards from IEEE InfoVis for my 2001 and 2002 work on visualizing hierarchies, including those containing digital photos.[4]

20. I have appeared on radio shows numerous times to discuss issues relating to user interface design and people's use and frustration with common technologies, web sites, and mobile devices. My work has been discussed and I

[4] https://ieeevis.org/year/2021/info/awards/test-of-time-awards; https://ieeevis.org/year/2022/info/awards/test-of-time-awards.

have been quoted by mainstream media around the world over 120 times, including by the NEW YORK TIMES, the WALL STREET JOURNAL, the WASHINGTON POST, NEWSWEEK, the SEATTLE POST-INTELLIGENCER, the INDEPENDENT, LE MONDE, NPR's *All Things Considered*, NEW SCIENTIST MAGAZINE, and MIT's TECHNOLOGY REVIEW.

21. I have designed, programmed, and publicly deployed dozens of user-facing software products that have cumulatively had millions of users. I am the co-inventor of 14 U.S. patents and 20 U.S. patent applications.

IV. MATERIALS CONSIDERED

22. In forming my opinions, I have reviewed the following documents, and any other document cited in this declaration.[5]

Exhibit	Description
Ex. 1001	U.S. Patent No. 9,304,602 to Ghassabian ("the '602 patent")
Ex. 1002	Excerpts from File History for U.S. Patent No. 9,304,602
Ex. 1005	U.S. Patent Application Publication No. 2009/0249247 A1 to Tseng et al. ("*Tseng*")
Ex. 1006	U.S. Patent Application Publication No. 2010/0302172 A1 to Wilairat ("*Wilairat*")

[5] Citations to page numbers are to the exhibit page number in the bottom right-hand corners (e.g., "Page *x* of *y*"), not original page numbers.

Exhibit	Description
Ex. 1007	Japanese Published Unexamined Patent Application No. 2003-195998 to Hisatomi ("*Hisatomi*")
Ex. 1008	Certified Translation of Japanese Published Unexamined Patent Application No. 2003-195998 to Hisatomi ("*Hisatomi*")
Ex. 1010	U.S. Patent Application Publication No. 2009/0094562 A1 to Jeong et al. ("*Jeong*")
Ex. 1011	U.S. Patent Application Publication No. 2010/0050076 A1 to Roth ("*Roth*")
Ex. 1012	Volker Roth & Thea Turner, *Bezel Swipe: Conflict-Free Scrolling and Multiple Selection on Mobile Touch Screen Devices*, CHI 2009 ~ Multimodal Mobile Interaction, pp. 1523-1526 (ACM 2009) ("*Bezel Swipe*")
Ex. 1013	U.S. Patent Application Publication No. 2011/0209099 A1 to Hinckley et al. ("*Hinckley*")
Ex. 1014	U.S. Patent Application Publication No. 2004/0109013 A1 to Goertz ("*Goertz*")
Ex. 1015	U.S. Patent Application Publication No. 2006/0209040 A1 to Garside et al. ("*Garside*")
Ex. 1016	U.S. Patent Application No. 2010/0105443 A1 to Vaisanen ("*Vaisanen*")
Ex. 1018	T-Mobile G1 User Manual (2009) ("*T-Mobile G1 User Manual*")
Ex. 1019	Samsung Galaxy User Manual (Samsung 2009) ("*Samsung GT-i7500 User Manual*")
Ex. 1020	User Guide palm pre plus (Palm Inc. 2009) ("*Palm Pre Plus User Guide*")
Ex. 1021	Edward C. Baig, *Palm Pre The Missing Manual* (O'Reilly Media Inc., 1st ed. Aug. 2009) ("*Palm Pre The Missing Manual*")

Exhibit	Description
Ex. 1022	Neonode N2 user guide (Neonode AB 2007) ("*Neonode N2 User Guide*")
Ex. 1023	Excerpt from Barron's *Dictionary of Computer and Internet Terms* (Barron's Educational Series, Inc., 10th ed. 2009) ("window")
Ex. 1024	Excerpt from *Microsoft Computer Dictionary* (Microsoft Press, 5th ed. 2002) ("window")
Ex. 1025	Excerpts from Jef Raskin, *The Humane Interface: New Directions for Designing Interactive Systems* (ACM Press, A Division of the Association for Computing Machinery (ACM) 2000)
Ex. 1026	IBM Simon Users Manual (IBM Corp. 1994)
Ex. 1027	Johnny Accot & Shumin Zhai, *More than dotting the i's — Foundations for crossing-based interfaces*, CHI 2002, Vol. 4, Issue 1, pp. 73-80 (ACM 2002) ("*Crossing-based Interfaces*")
Ex. 1028	Georg Apitz & François Guimbretière, *CrossY: A Crossing-Based Drawing Application*, UIST '04, Vol. 6, Issue 2, pp. 3-12 (ACM 2004) ("*CrossY*")
Ex. 1029	Apple Newton MessagePad Handbook (Apple Computer, Inc. 1995)
Ex. 1030	Apple Newton 2.0 User Interface Guidelines (Apple Press 1996)

23. I have also relied on my education, experience, research, training, and knowledge in the relevant art, and my understanding of any applicable legal principles described in this declaration.

24. All of the opinions contained in this declaration are based on the documents I reviewed and my knowledge and professional judgment. My opinions

have also been guided by my understanding of how a person of ordinary skill in the art would have understood the claims of the ’602 patent at the time of the earliest claimed priority date.

25. I reserve the right to supplement and amend any of my opinions in this declaration based on documents, testimony, and other information that becomes available to me after the date of this declaration.

V. LEGAL STANDARDS

26. I am not a lawyer. My understanding of the legal standards to apply in reaching the conclusions in this declaration is based on discussions with counsel for Petitioners, my experience applying similar standards in other patent-related matters, and my reading of the documents submitted in this proceeding. In preparing this declaration, I have tried to faithfully apply these legal standards to the challenged claims.

27. I have been informed that there are two ways in which prior art may render a patent claim unpatentable. First, I have been informed that the prior art can “anticipate” a claim. Second, I have been informed that the prior art can render a claim “obvious” to a person of ordinary skill in the art. I understand that a claim is patentable if it was not anticipated and would not have been obvious by the prior art at the effective filing date of the patent.

28. I have been informed that a dependent claim is a patent claim that refers back to another patent claim. I have been informed that a dependent claim includes all of the limitations of the claim to which it refers.

29. I have been asked to provide my opinions as to whether the cited prior art teaches or renders obvious claims 1-13, 15-19, and 21-36 of the '602 patent from the perspective of a person of ordinary skill in the art at the '602 patent's earliest claimed priority date in December 2009, as described in more detail below.

30. I have been informed that in *inter partes* review proceedings, such as this one, the party challenging the patent bears the burden of proving unpatentability by a preponderance of the evidence. I understand that a preponderance of the evidence means "more likely than not."

31. For purposes of this declaration, I have been asked to provide my opinions on issues regarding unpatentability. I have been informed of the following legal standards, which I have applied in forming my opinions.

A. Level of Ordinary Skill

32. I have been informed that a person of ordinary skill in the art is determined by considering several factors, including the (i) type of problems encountered in the art; (ii) prior art solutions to those problems; (iii) rapidity with which innovations are made; (iv) sophistication of the technology; and (v) educational level of active workers in the field.

33. I have been instructed to assume a person of ordinary skill in the art is not a specific real individual, but rather a hypothetical individual having the qualities reflected by the factors discussed above.

B. Prior Art

34. I have been advised and understand the information used to evaluate whether an invention was new and not obvious when made is generally referred to as "prior art." I understand that prior art includes patents and printed publications that existed before the earliest claimed priority date or the earliest filing date of the patent (which I have been informed is sometimes called the "effective filing date"). I have been informed and understand that a patent or published patent application is prior art if it was filed before the earliest filing date of the claimed invention and that a printed publication is prior art if it was publicly available before the earliest filing date.

C. Anticipation

35. I have been informed that under 35 U.S.C. § 102, a patent claim is unpatentable for anticipation if the claimed subject matter was patented or described in a printed publication before the effective filing date of the claimed invention. I have been informed that this is referred to as unpatentability by anticipation. I have been informed that a patent claim is anticipated under § 102 if a single prior art reference discloses all limitations of the claimed invention.

D. Obviousness

36. I have been informed that for obviousness under 35 U.S.C. § 103, a patent claim is unpatentable if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious to a person having ordinary skill in the art to which said subject matter pertains at the time the invention was made. I have been informed that this is referred to as unpatentability by obviousness.

37. I have been informed that a proper obviousness analysis includes the following:

a. Determining the scope and content of the prior art;

b. Ascertaining the differences between the prior art and the claims at issue;

c. Resolving the level of ordinary skill in the pertinent art; and

d. Considering evidence of secondary indicia of nonobviousness (if available).

38. I have been informed that the relevant time for considering whether a claim would have been obvious to a person of ordinary skill in the art is the time of invention. For my obviousness analysis, counsel for Petitioners instructed me to assume that the date of invention for the challenged claims is December 20, 2009. My opinions would not change if I assumed a later date of invention.

39. I have been informed that a reference may be modified or combined with other references or with a person of ordinary skill in the art's own knowledge if the person would have found the modification or combination obvious. I have also been informed that a person of ordinary skill in the art is presumed to know all the relevant prior art, and the obviousness analysis may take into account the inferences and creative steps that a person of ordinary skill in the art would employ.

40. I have been informed that whether a prior art reference renders a patent claim obvious is determined from the perspective of a person of ordinary skill in the art. I have also been informed that, while there is no requirement that the prior art contain an express suggestion to combine known elements to achieve the claimed invention, and while a suggestion to combine known elements to achieve the claimed invention may come from the prior art as a whole or individually and may consider the inferences and creative steps a person of ordinary skill in the art would employ, as filtered through the knowledge of one skilled in the art, obviousness grounds cannot be sustained by mere conclusory statements and must include some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.

41. In determining whether a prior art reference could have been combined with another prior art reference or other information known to a person

having ordinary skill in the art, I have been informed that the following principles may be considered:

a. A combination of familiar elements according to known methods is likely to be obvious if it yields predictable results;

b. The substitution of one known element for another is likely to be obvious if it yields predictable results;

c. The use of a known technique to improve similar items or methods in the same way is likely to be obvious if it yields predictable results;

d. The application of a known technique to a prior art reference that is ready for improvement to yield predictable results;

e. Any need or problem known in the field and addressed by the reference can provide a reason for combining the elements in the manner claimed;

f. A person of ordinary skill often will be able to fit the teachings of multiple references together like a puzzle; and

g. The proper analysis of obviousness requires a determination of whether a person of ordinary skill in the art would have a "reasonable expectation of success"—but not "absolute predictability" of success—in achieving the claimed invention by combining prior art references.

42. I have been informed that, when a work is available in one field, design alternatives and other market forces can prompt variations of it, either in the same field or in another. I have been informed that if a person of ordinary skill in the art could have implemented a predictable variation and would have seen the benefit of doing so, that variation is likely to have been obvious. I have been informed that, in many fields, there may be little discussion of obvious combinations, and in these fields, market demand—not scientific literature—may drive design trends. I have been informed that, when there was a design need or market pressure and there are a finite number of predictable solutions, a person of ordinary skill in the art would have had a good reason to pursue those known options.

43. I have been informed that the law permits the application of "common sense" in examining whether a claimed invention would have been obvious to a person skilled in the art. For example, I have been informed that combining familiar elements according to known methods and in a predictable way may suggest obviousness when such a combination would yield nothing more than predictable results. I understand, however, that a claim is not obvious merely because every claim element is disclosed in the prior art, and that a party asserting obviousness must still provide a specific motivation to combine or modify the

reference(s) as recited in the claims and explain why a person skilled in the art would have reasonably expected to succeed in doing so.

44. I have been informed that there is no rigid rule that a reference or combination of references must contain a "teaching, suggestion, or motivation" to combine references. But I also understand that the "teaching, suggestion, or motivation" test can be a useful guide in establishing a rationale for combining elements of the prior art. I have been informed that this test poses the question as to whether there is an express or implied teaching, suggestion, or motivation to combine prior art elements in a way that realizes the claimed invention, and that it seeks to counter impermissible hindsight analysis.

45. I am not aware of any evidence of secondary considerations that would support a determination of nonobviousness of the claimed subject matter in the '602 patent.

46. I have been informed that, in an obviousness analysis, prior art must be analogous prior art to the patent being considered. I have been informed that a prior art reference is considered to be analogous, or in the same field of art, if the reference is either (1) in the same field of endeavor as the challenged patent, regardless of the problems the challenged patent and the prior art address, or (2) reasonably pertinent to a particular problem being solved by the challenged patent.

VI. TECHNOLOGY BACKGROUND AND STATE OF THE PRIOR ART

47. By late 2009—the earliest claimed priority date for the '602 patent—touch-screen mobile devices from many manufacturers had experienced rapid market growth. Even before 2009, it was recognized that "[m]ore and more, people are on the run, using mobile communication devices to keep communicating." *Tseng*, [0003]. Mobile touch-screen devices had become a staple tool for people to "make and receive telephone calls, send and receive electronic mail, surf the web, and text with various friends and acquaintances." *Tseng*, [0003]. This partly resulted in the "tremendous expansion in computing power as well as increased affordability of computing devices" that "led to a reduction in the size of computing devices and [gave] rise to a new generation of mobile devices that are capable of performing functionality" that previously "required processing power that could be provided only by … desktop computers." *Vaisanen*, [0003]. As a result, "mobile computing devices having a small form factor [had] become ubiquitous and are used for execution of a wide range of applications." *Vaisanen*, [0003]. With this popularity, "[e]fforts [were] ongoing to support and increase the functionality of mobile terminals." *Jeong*, [0004].

48. Touch-screen devices, including smartphones, were not new in 2009. They dated back decades to at least the IBM Simon's release in the early 1990s. Ex. 1026, IBM Simon User Manual. Palm devices led the way for touch-screen-

based, keyboard-free personal digital assistants (PDAs), along with the Apple Newton and MessagePad devices and HP iPaq, in the 1990s and early 2000s. Ex. 1030, Apple Newton 2.0 User Interface Guidelines; Ex. 1029, Apple Newton User Guide. By the mid-to-late-2000s, touch-screen-driven phones, like the Samsung Galaxy GT-i7500 and Behold II phones; HTC G1, Hero, and Magic, phones; Motorola Droid line; Palm Pre series; Nokia's Symbian line; and Apple iPhone series became ever more prevalent with their larger touch screens.

49. Because "[t]he screens of mobile devices are necessarily small," it "limits the size of displayed pages and the space that can be devoted to user interface widgets such as scroll bars." *Bezel Swipe*,[6] 1. In addition, the smaller devices also have "smaller widgets [that] are harder to hit" or contact with a finger. *Bezel Swipe*, 1. One way that user interface designers sought to improve mobile devices was using various actions beyond just pointing and tapping. This led user

[6] *Bezel Swipe* is an ACM publication from the ACM's CHI 2009 conference, from April 4-9, 2009, which is a popular conference attended by POSITAs. I attended this conference where the *Bezel Swipe* paper was presented and discussed. *Bezel Swipe* was also distributed to conference attendees, including POSITAs, at least electronically and also made available on ACM's digital library on or about the time of the conference in April 2009.

interface designers to explore easier-to-interact-with interfaces that did not require tight precision of finger placement. These advancements, which included gesture-based actions such as gliding actions and pinching actions, allow the user to perform various operations. One such interface type allowed the user to slide from or over an activation window (e.g., button, bar, menu item) to activate it, such as described in *Crossing-based Interfaces*[7] and *CrossY*[8]. Ex. 1027, *Crossing-based Interfaces*; Ex. 1028, *CrossY*.

[7] *Crossing-based Interfaces* is an ACM publication from the ACM's CHI 2002 conference, from April 20-25, 2002, which is a popular conference attended by POSITAs. I attended this conference where the *Crossing-based Interfaces* paper was presented and discussed. *Crossing-based Interfaces* was also distributed to conference attendees, including POSITAs, in paper form and also made publicly available on ACM's digital library on or about the time of the conference in April 2002.

[8] *CrossY* is an ACM publication from the ACM's UIST '04 conference, from October 24-27, 2004, which is a popular conference attended by POSITAs. It was ACM's practice to provide presented papers to UIST attendees at or about the time of the conference and also make them available from ACM directly. *CrossY*

50. These concepts were recognized to benefit mobile devices having small screens. Persons of ordinary skill in the art knew that the benefits of crossing interfaces were achieved when a user "start[ed] [a swiping gesture] on the bezel and mov[ed] into the display." *Bezel Swipe*, 2; *see also Roth*, [0009], [0010], [0015], [0036], [0039], Fig. 2B; *Wilairat*, [0009], [0012], Fig. 1; *Hinckley*, [0072]-[0073], Fig. 6. In one example, a user's gliding gesture from outside the touch screen towards the interior of the touch screen, over the bar, "[was] recognized by detecting touches inside a thin rectangular area positioned flush against the display [screen] edge[]" as the gesture crossed into the touch screen. *Bezel Swipe*, 2, Figures 1, 2. This was known in the art to allow designers to use "a narrow target (the red bar) [being] positioned flush against the display edge" that is activated by a movement from outside of the screen onto the screen, such as shown below. *Bezel Swipe*, 1-2, Figures 1, 2; *see also Roth*, Fig. 2B.

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therefore would have been distributed to conference attendees, including POSITAs, in paper form and also made publicly available on ACM's digital library on or about the time of the conference in October 2004.

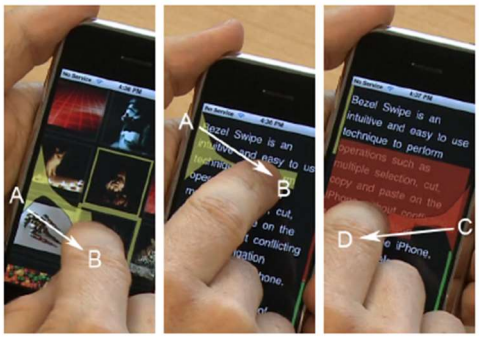


Figure 1. The Bezel Swipe prototype in action. Left panel: A swipe from A to B selects an image. Middle panel: A swipe from A to B marks the beginning of a text selection. Right panel: A swipe from C to D marks the end of the text selection.

Bezel Swipe, Figure 1.

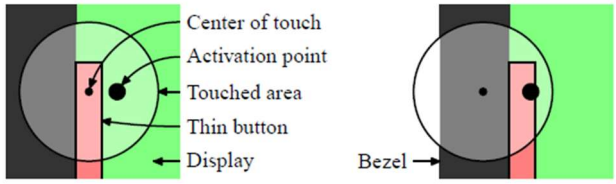


Figure 2. Touching narrow targets close to the bezel: a touch (large circle) centered on the target (left) may not activate it whereas a touch significantly overlapping the bezel (right) does.

Bezel Swipe, Figure 2.

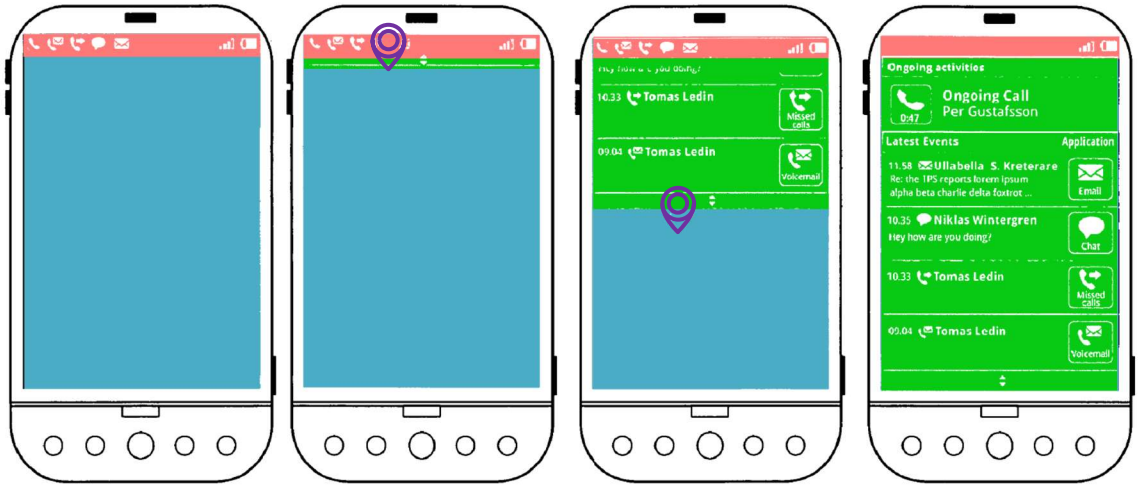
51. The state of the art recognized that these types of interactions "enable[d] the reliable activation of a button [activation line being crossed] that is so narrow that it would be difficult to activate by direct touch," such as tapping. *Bezel Swipe*, 2. This had several recognized benefits. For example, providing a thin activation window (e.g., bar or line) at an edge of the screen to indicate a function activated by gliding from the window into the touch screen (either starting on the window or from outside the touch screen over the window) "does not typically reduce the accessible display area" and "requires minimal display real estate." *Bezel Swipe*, 2; *Roth*, [0009], [0036] (edge activation windows "made small so as to not take up valuable space on the display"). The art recognized that such actions "can be more efficient than pointing tasks" (e.g., than the user directly tapping or long-pressing on the activation window), especially on small-screen devices, such as mobile phones. *Roth*, [0010].

52. The principles behind this were well established years before and described in textbook-level materials in 2000. *Raskin*, 8-11. Fitts' Law estimates the amount of time it takes a user to activate a button or other object and depends, in part, on the "size" of the object to be activated. *Raskin*, 8-11. *Raskin* explains that, when the "effective size" of the object is increased (even if not physically increased), the user can activate the target easier and faster. *Raskin*, 8-11. In a well-known user interface example, Apple Macintosh-style menus, whose buttons reached to the edge of the screen, could be activated significantly faster than Microsoft Windows-style menus, which stopped before the edge of the screen. *Raskin*, 10-11. *Raskin* explains that occurs because the "effective size of the Macintosh target is large because you do not have to stop within the confines of the menu bar but rather can continue to move the [input device] any comfortable distance beyond that needed to put the cursor in the menu: The cursor stops at the edge of the display." *Raskin*, 9. In other words, the Windows-style menu was slower because the user had to precisely control where they placed the mouse cursor (e.g., stopped the mouse) to click the menu button, but the Macintosh-style menu stopped the mouse at the edge of the screen, which was still part of the button, thereby allowing the user more freedom (less precision) in the movement, making it easier and faster. *Raskin*, 9-11. POSITAs knew that crossing gestures, such as gliding or swiping actions from outside the screen to inside the screen, had

the same effective speed increase and interface improvement, but in the reverse direction. This is because, rather than effectively increasing the side of the target (menu button) at the *end* of the movement (as in Macintosh menus), the effective increase comes from the activation target (line or bar) being crossed because the user can use any length of movement (and even starting point) off the screen to cross over the crossing target to activate it. The touch-screen device registers all of these movements as the same because it first registers the touch on the screen when the user's finger moves onto the screen during the gliding action itself.

53. The state of the art recognized that this also applied to edge-based activations in touch-screen interfaces where a "continuous swiping motion may also begin from outside the display," making it more efficient. *Roth*, [0009], [0010], [0015], [0039], Fig. 2B; *Bezel Swipe*, 2 (explaining that "[t]he user starts a Bezel Swipe gesture on the bezel, which is the physical touch insensitive frame that surrounds the display. The finger is then swiped through a part of the display edge into the display …."). This effectively increases the size of the activation area, allowing the user to start the gliding gesture either on the activation point itself or outside of the touch screen because the device *registers* the user's touch as it first crosses into the touch-sensitive touch screen. *Bezel Swipe*, 1-2, Figures 1, 2; *Roth*, [0009], [0010], [0015], [0039], Fig. 2B.

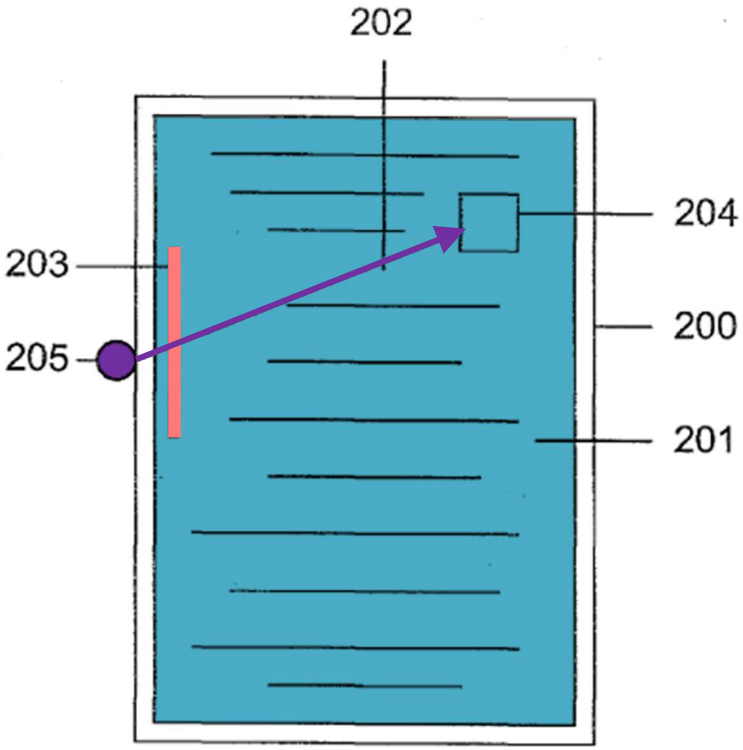
54. Such operations and teachings were well known in the prior art, as shown by the examples below where the state of the art shows a gliding or dragging gesture from the edge of or outside a touch screen, often across an activation window (e.g., line or bar), to perform an action, such as opening a menu.



Tseng, FIG. 2C (clarifying "finger swipe" gesture indicator[9]).[10]

[9] The shape of the purple drag/swipe gesture indicator (a circle with an arrow) is partially shown in the middle images of FIG. 2C, but shown more clearly in the left image of FIG. 2B. *See Tseng*, [0053] ("The first display in FIG. 2B also shows a large circle surrounded by a ring having a downward pointing arrow."), [0058] ("The second display shows, by a circle having a ring around it in the status bar, a selection by a user, such as by moving a pointer to the status bar and pressing a selection mechanism such as a trackball, or by directly pressing on the display with a fingertip on top of the status bar."). I have provided a clearer annotation of this gesture indicator in this declaration.

[10] All colors and colored annotations have been added to figures unless otherwise noted.



Roth, Fig. 2B.

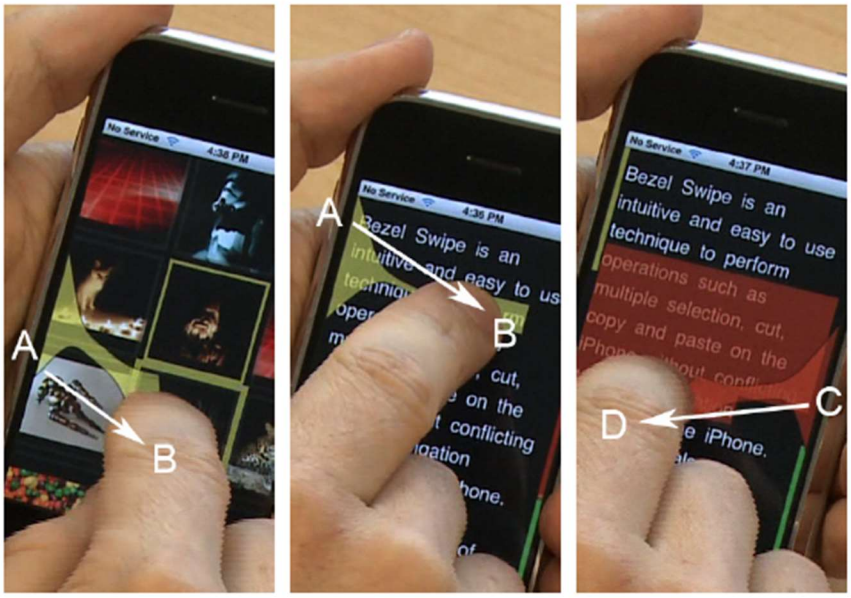
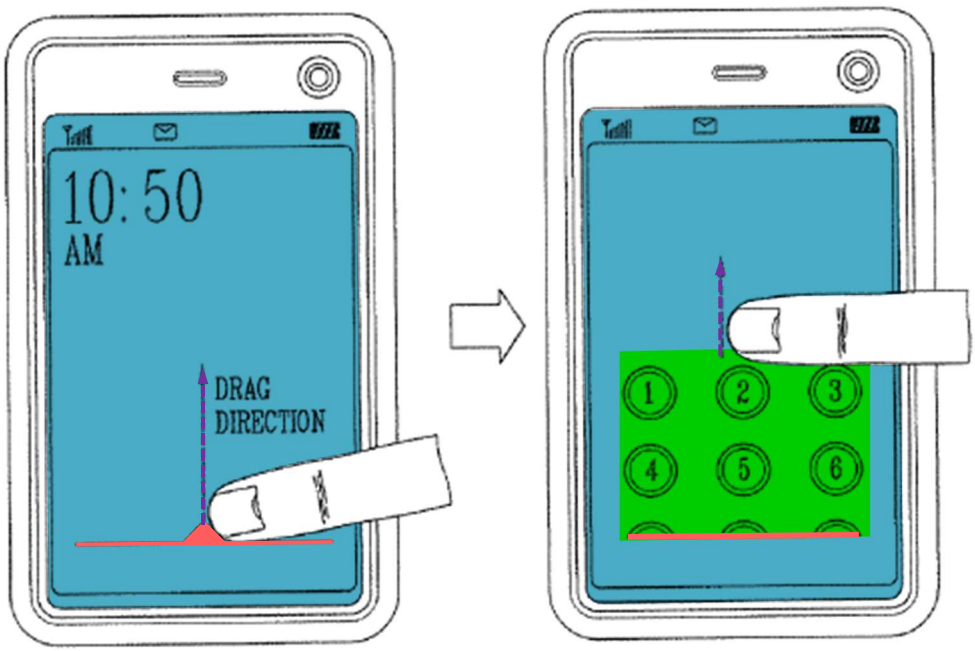
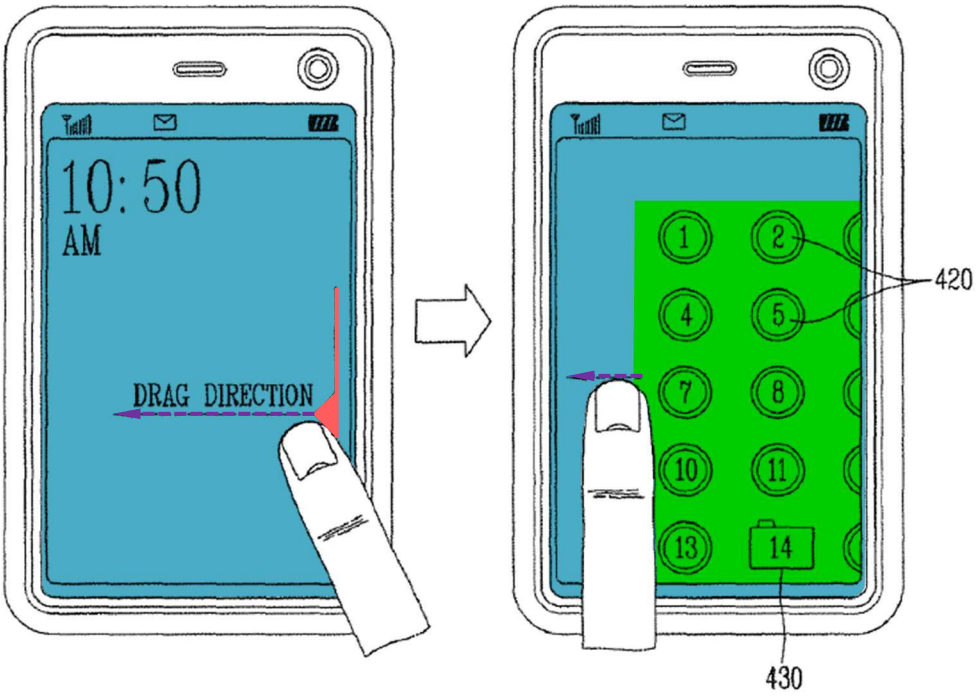


Figure 1. The Bezel Swipe prototype in action. Left panel: A swipe from A to B selects an image. Middle panel: A swipe from A to B marks the beginning of a text selection. Right panel: A swipe from C to D marks the end of the text selection.

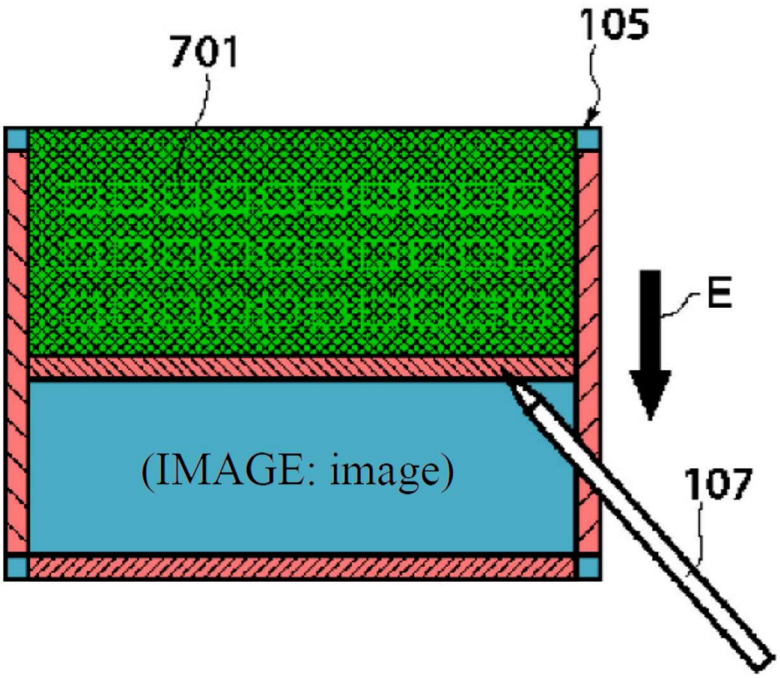
Bezel Swipe, Figure 1.



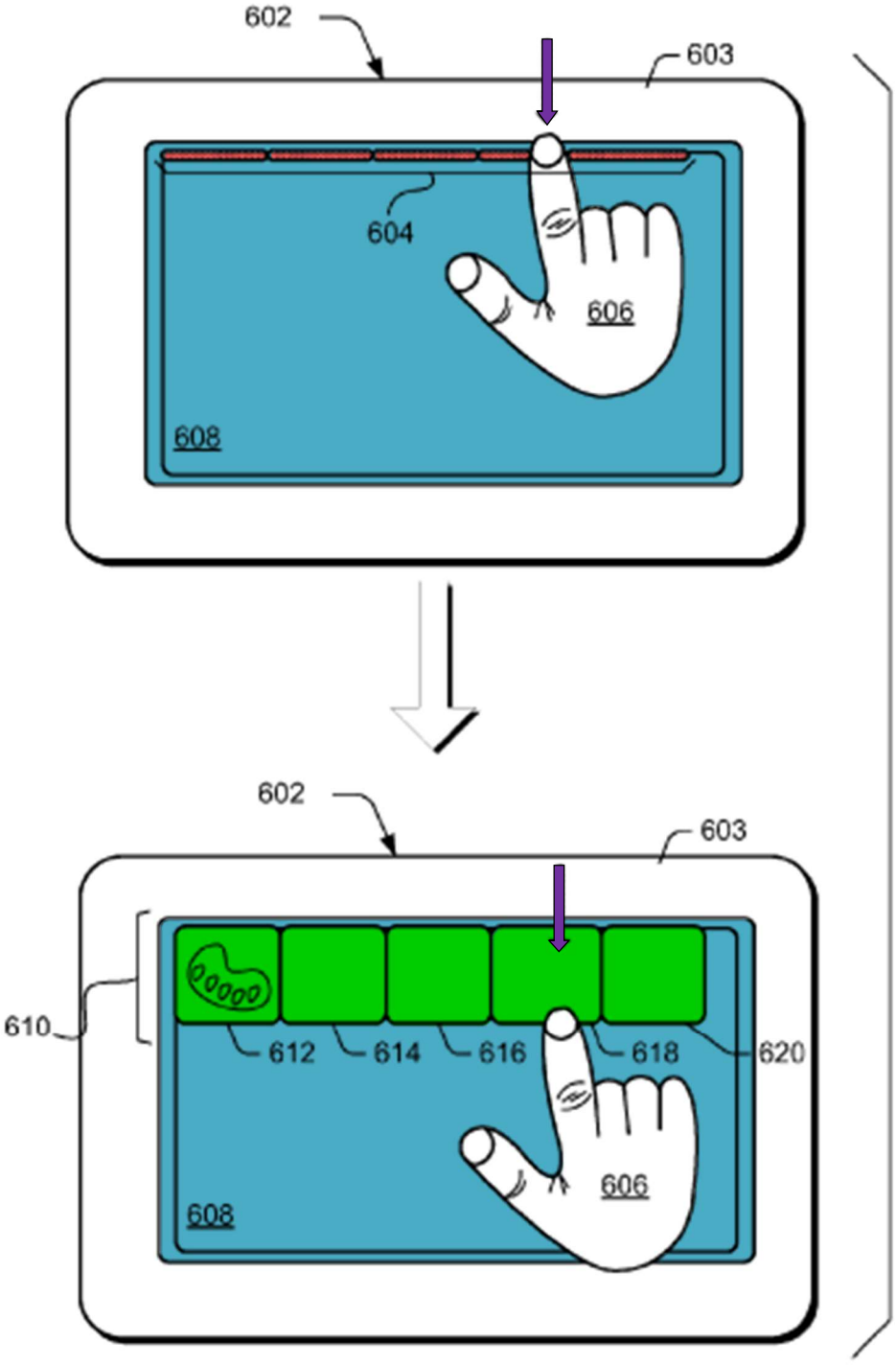
Jeong, FIG. 7B.



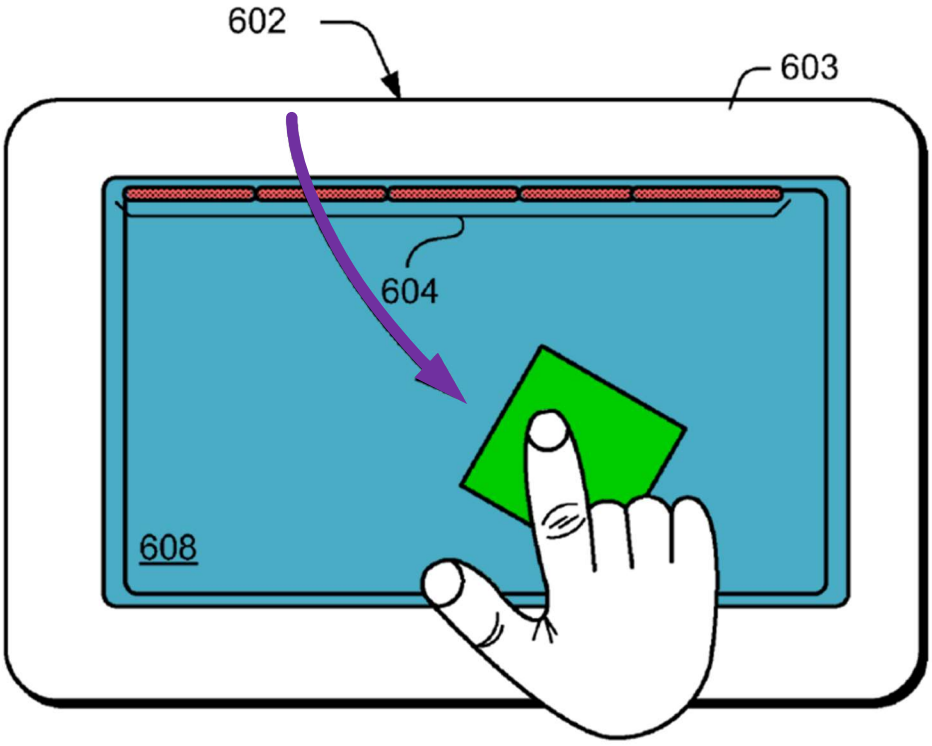
Jeong, FIG. 7C.



Hisatomi, FIG. 7.



Hinckley, Fig. 6.



Hinckley, Fig. 8.

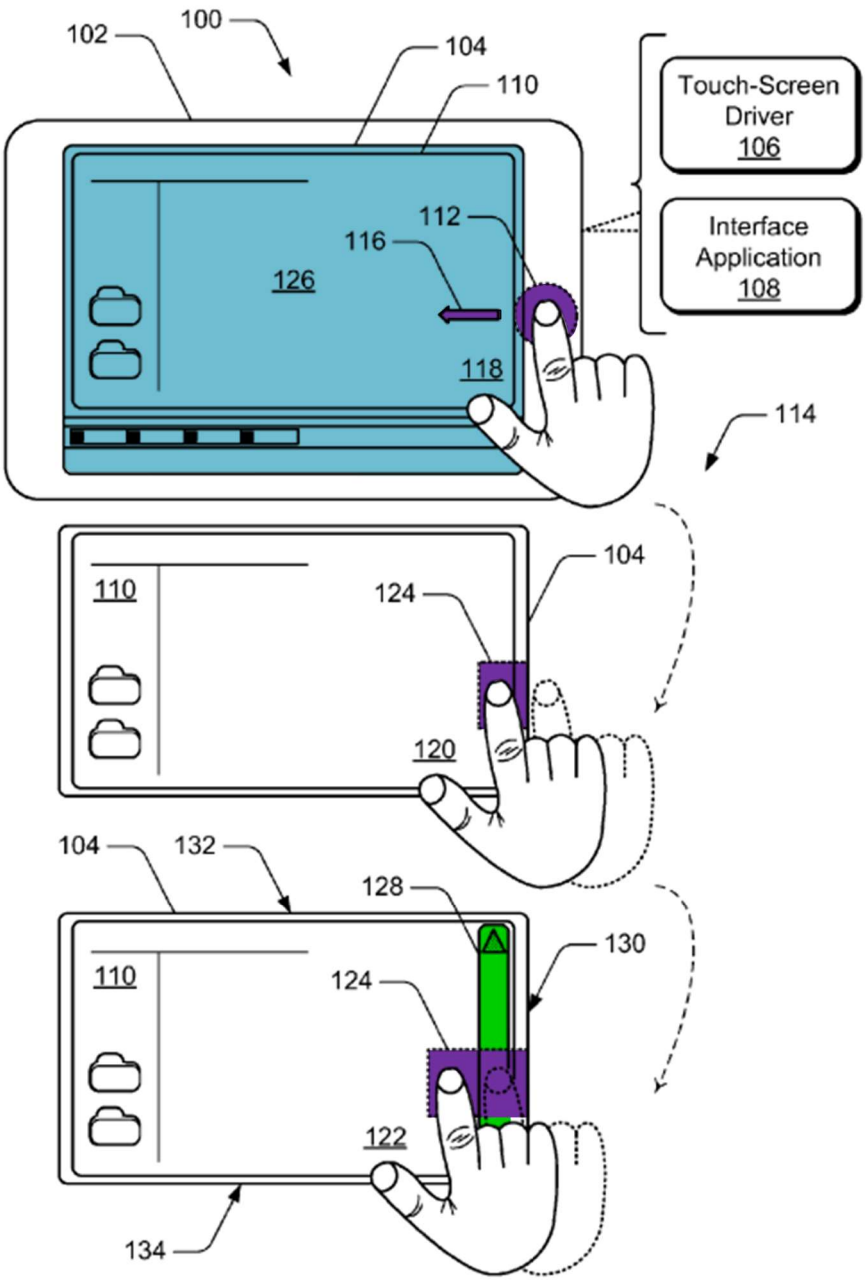
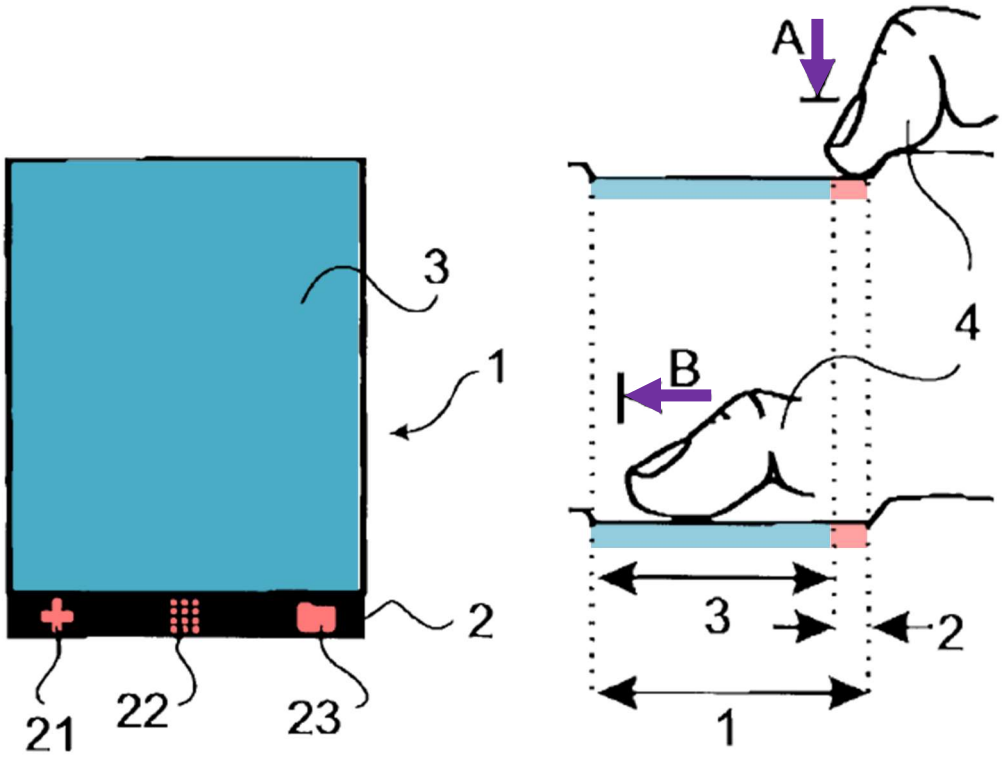


Fig. 1

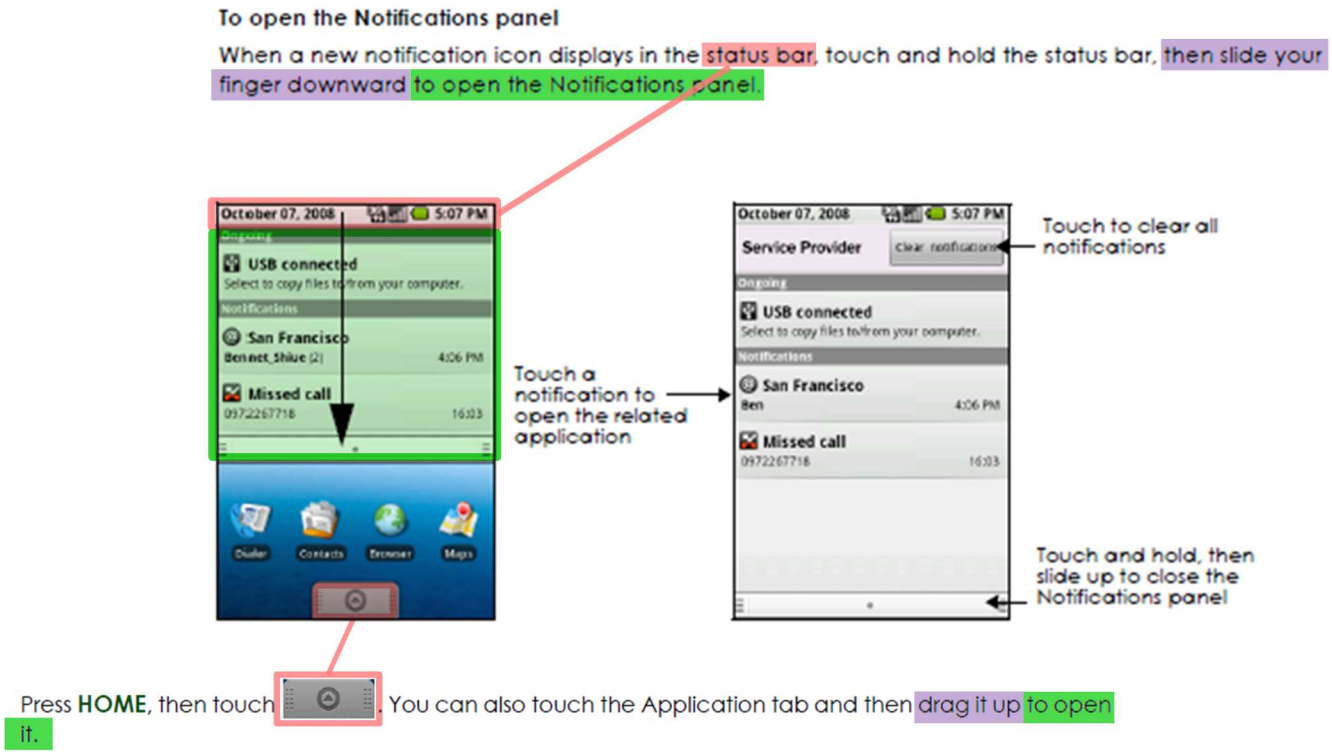
Wilairat, Fig. 1.



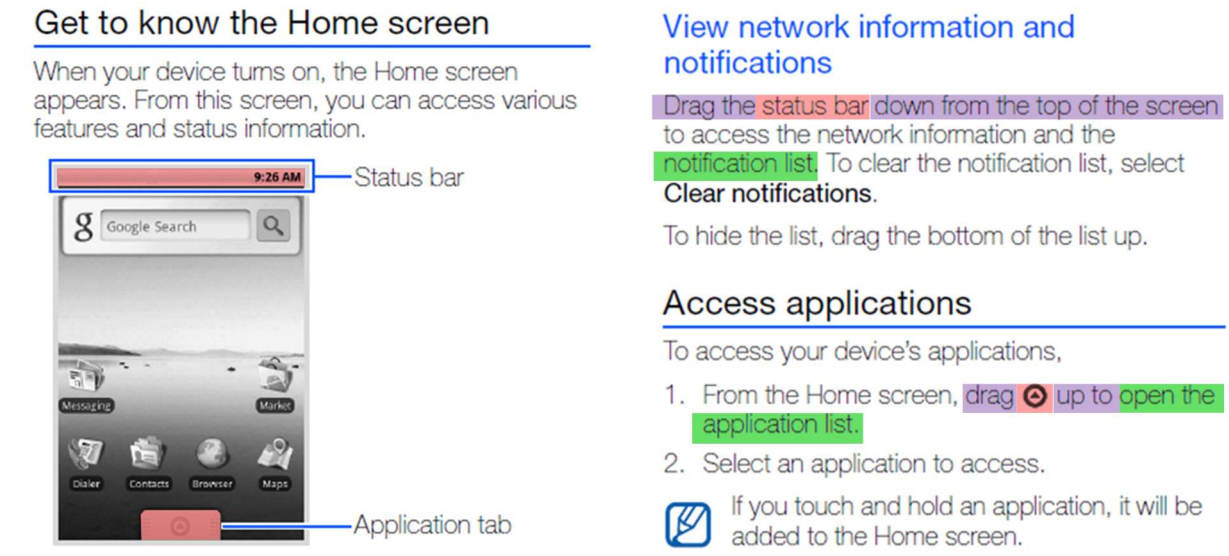
Goertz, Figs. 1, 2.

55. Finger-based gliding and swiping gestures were staple actions users could use to perform functions on mobile touch-screen devices by 2009. POSITAs would have known that several devices released by HTC and Samsung allowed a user to swipe from a bar or window on the edge of a device's touch screen towards the inside of the touch screen to perform an action. The excerpts from the HTC G1 user manual and Samsung GT-i7500 user manual below show that these devices included at least two such options: (1) swiping down from a status bar to display a notifications interface, and (2) swiping up from an applications tab to display an applications menu interface. POSITAs would have also recognized that because

these devices had housings or bezels that were not touch sensitive, a gesture starting on the bezel and crossing over the bar or window towards the inside of the touch screen would also activate these functions, as explained in *Bezel Swipe*, *Roth*, and *Wilairat*. The operation of the device (e.g., dragging down over the status bar or up over the application tab) did not depend on the gesture's starting location on the status bar or application tab if the first location touched by a finger when moving from off-to-on screen was the status bar or application tab. In other words, the size of the status bar and application tab was effectively increased because the user could start the gliding gesture anywhere on the status bar or the housing outside of the touch screen and then move onto the middle of the touch screen from the status bar or application tab.



T-Mobile G1 User Manual, 27-29.



Samsung GT-i7500 User Manual, 30-31.

56. Other device manufacturers, such as Palm and Neonode, implemented similar activations by implementing swiping or gliding gestures starting off the touch screen and moving onto the touch screen across a bar or window to open a menu interface:



Palm Pre Plus User Guide, 20, 25;

see also Palm Pre The Missing Manual, 51-52.

1.13 Vertical areas:

1. The left part of the screen is called the Start menu sweep area.
2. The middle part of the screen is called the Keyboard sweep area.
3. The right part of the screen is called the Tools menu sweep area.

In the vertical areas you start the sweep at the very bottom of the screen. Sweep upwards. The sweep should be about half the height of the screen.

A sweep in the left part of the screen opens the start menu. A sweep in the middle opens the keyboard and a sweep in the right part of the screen opens the tools menu.



Neonode N2 User Guide, 7.

See also Goertz, [0047], [0071], Fig. 2 (describing Neonode phone having "menu area" outside of the screen and separate from "display area"; "FIG. 2 shows that any one of these three functions 21, 22, 23 can be activated when the touch sensitive area 1 detects a movement of an object 4 with its starting point A within the representation of a function on the menu area 2 and with a direction B from the menu area 2 to the display area 3.").

57. As shown by the numerous examples above, the state of the art was well developed both in discussion of and implementation of a user performing a gliding action from a window at an edge of a touch screen towards the inside of the touch screen to activate functions, such as pull-down interfaces. It was also well recognized, as explained in *Bezel Swipe*, *Roth*, *Wilairat*, and the known device implementations of the HTC, Samsung, and Neonode devices, that the user's touch registers on the touch screen to initiate the system's response to the gliding action.

58. As I explain above, however, the actual gliding action itself could—and likely would—begin outside of the touch screen on the bezel, which is not touch sensitive, because this allows for an easier and more convenient user interaction to activate the notifications panel, applications menu, keyboard, or other interface action caused by the gliding gesture in the same way that the Macintosh menus provided for easier and faster activation than Windows menus, as discussed above.

VII. THE '602 PATENT

A. Alleged Invention of the '602 Patent

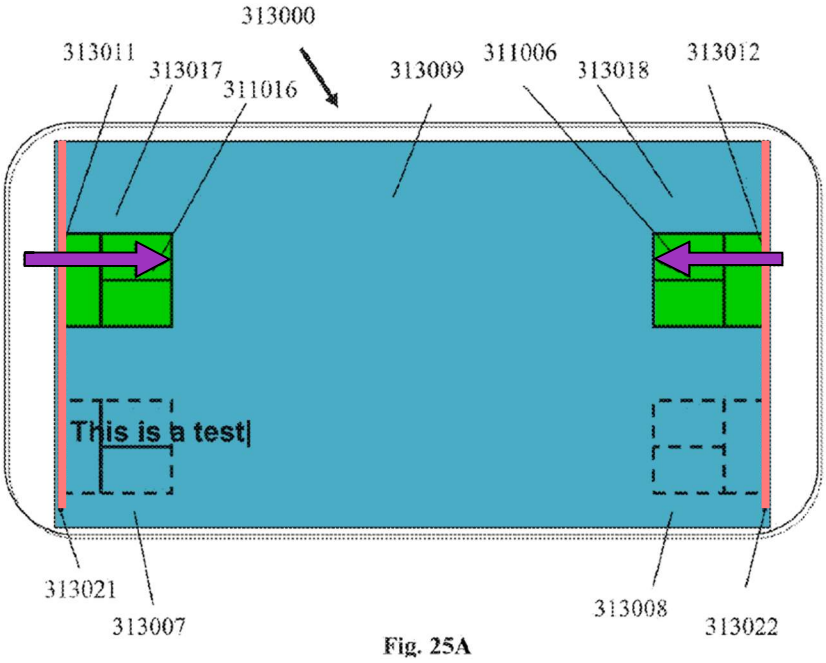
59. The '602 patent relates to user interfaces on mobile devices. Ex. 1001, Figs. 25A-25B. Figs. 25A-25B describe a "schematic illustration of recalibrating the keys of [a] first keypad."[11] Ex. 1001, 13:50-52. The '602 patent explains that,

> for calibration purpose[s], the user may first provide a predefined interaction such as a gliding action beginning/departing from, for example, a predefined edge of the touch sensitive surface such as the touch screen of the device towards inside of the sensitive surface/screen. According to one method, the system may locate at least one portion of the (first) keypad on for example said side on the surface/screen or it may locate said at least one corresponding portion on the location where the user removes his finger from the screen after providing the gliding action, etc.

Ex. 1001, 60:14-24. As shown in Fig. 25A, "[i]f the user desire[s] to change the location of (a portion of) said keypad, he may provide a gliding action 311006

[11] My summary of the '602 patent describes what I believe is the description most similar to the claims. I take no position whether the claims are fully disclosed or enabled by this disclosure.

departing from the edge 313012 of the screen (e.g. obviously, the gliding action may begin from out of the screen but the system considers the departing point from the edge of the screen) towards his desired location inside the screen." Ex. 1001, 60:39-49. The '602 patent explains that, "[d]uring the gliding action, the system may dynamically show and drag the corresponding portion[] of the keypad on the screen." Ex. 1001, 60:52-54. In Fig. 25A, "the sides of the touch[-]sensitive surface may include a portion on each side used only/mainly by the system, in form of a bar 313021, and a bar 313022 (e.g.) on each corresponding side of the screen such that said gliding action(s) begin(s) from said bar(s) and not from a portion of the screen which is also used by other means/functions such as the mouse."



Ex. 1001, Fig. 25A (annotated).

B. Prosecution History

60. I understand that U.S. Patent Application No. 13/516,737, which led to the '602 patent, was filed as a national stage application of international application no. PCT/IL2010/001075. Ex. 1002, 377.

61. I understand from my review of the excerpts[12] of the '602 patent's file history (Ex. 1002) that the U.S. Patent and Trademark Office Examiner issued several rejections of the claims, and that the applicant made several amendments

[12] I have been informed that the excerpted material includes the substantive office actions and responses.

during prosecution to attempt to avoid the prior art. *See* Ex. 1002, 331, 306, 255, 217 (Office Actions); Ex. 1002, 320, 296, 280, 241, 204, 188 (Amendments and Responses). The claims of the '737 application were amended (Ex. 1002, 366-369) to be substantially different from the claims of the international application (Ex. 1002, 546-553).

62. The Examiner issued a Notice of Allowance on November 27, 2015. Ex. 1002, 166.

63. The applicant filed an amendment after the Notice of Allowance with changes to the specification and drawings. Ex. 1002, 26-144.

64. The applicant also filed for a Certificate of Correction to correct independent claim 19 (Ex. 1002, 12-13), which was granted (Ex. 1002, 5). The attached copy of the '602 patent (Ex. 1001) includes this Certificate of Correction.

65. During prosecution, the applicant's second amendment to the independent claim undid some of its first amendment, changing the language from "zone" to "window," adding that "said at least one window functions independently of an interface of an application in use on the touch screen," and that the processor processes the gliding action to cause an action "regardless of said application in use." Ex. 1002, 297. The applicant did not cite any support in the specification for these amendments. The applicant relied on these amendments to argue that the Hofmeister reference does not "specify an interface that has a

functionality that is separate from and/or independent of an application in use on a screen." Ex. 1002, 300. The applicant also argued that the Roth reference "teaches an interface that specified functionality that is directly related to an interface," and "Roth teaches a target that is indivisible from an application that is in use on a touch screen." Ex. 1002, 300.

66. After another rejection, the applicant further amended the independent claim to remove that "the processor detects" the gliding action and instead recited "a gliding action provided from outside of the touch screen towards the inside of the touch screen, said gliding action first interacting with said at least one window on the touch screen." Ex. 1002, 242. The second independent claim was amended to recite that "said zone is present on said edge regardless of an interface of an application on said touch screen." Ex. 1002, 243. The applicant did not cite support for these amendments in the specification and did not substantively make arguments over the prior art, other than to allege that the features "[are] not found in any of the cited art." Ex. 1002, 245.

67. After another rejection, the applicant amended the independent claims to recite that "said at least one window is located on the touch screen before said gliding action begins." Ex. 1002, 206. The applicant attempted to distinguish the *Hinckley* reference, alleging that, "[i]n Hinckley, a gliding action on the bezel defines (the nature of) a window TO BE LOCATED ON THE EDGE of the touch

screen UPON the gliding action that is stated on the bezel," and "[t]here is NO window on the edge of the screen that is related to the gliding action BEFORE starting the corresponding gliding action from the bezel."[13] Ex. 1002, 211 (capitalized emphasis in original).

68. The Examiner then allowed the application. Ex. 1002, 166.

C. Claim Construction

69. I have been instructed that the "intrinsic record" includes the '602 patent itself, including the claims, description, and figures (Ex. 1001), and the '602 patent's prosecution history—i.e., the record of proceedings at the U.S. Patent and Trademark Office ("Patent Office") concerning the patent (Ex. 1002). I

[13] As an initial matter, I note that the applicant's statement about *Hinckley* appears to be incorrect, at least for some embodiments. *Hinckley* displays the visual affordance on the touch screen before the gliding action begins, and the gliding action may be used to either open a bezel menu (e.g., in novice mode) or activate a function without displaying the full menu (e.g., in expert mode). *E.g.*, *Hinckley*, [0072]-[0073] (describing the "visual affordance" being "semi-transparent" before the gesture and opening the menu "opaque" after the gesture), Figs. 5, 6, 8, 10 (describing "[d]isplay[ing] visual affordance" before "[r]eceiv[ing] bezel gesture" to "[p]resent bezel menu").

understand that, like the claims and written description, the prosecution history provides evidence to a person of ordinary skill in the art of how the inventor intended his patent to be understood, and how the Patent Office understood the patent. I understand that the inventor is permitted to apply a special definition to the terms or to limit the scope of claim terms in his patent claims, which may differ from the term's plain and ordinary meaning. That special definition or limitation on scope may be provided in the patent's written description, the patent's prosecution history, or both.

70. I understand that claim interpretation may also be informed by "extrinsic evidence" (that is, evidence outside of the patent record itself). I have been informed that extrinsic evidence may include dictionaries, technical treatises, and other materials evidencing the meaning of a claim term and the understanding held by a POSITA in the relevant time period.

71. I have been asked for purposes of this declaration to apply the plain and ordinary meaning of the claim terms as they would have been understood by a person of ordinary skill in the art at the earliest claimed priority date of the '602 patent.

72. I understand that no claim term's construction is in dispute at this time. Based on my review of these materials and my personal knowledge and experience, I have considered each term of the '602 patent as it would have been

understood by a person of ordinary skill in the art at the earliest claimed priority date of December 20, 2009.

VIII. LEVEL OF ORDINARY SKILL IN THE ART

73. In rendering the opinions set forth in this declaration, I have been asked to consider the '602 patent's claims and the prior art through the eyes of a person of ordinary skill in the art (which I may also refer to as "one skilled in the art," "skilled artisan," "POSITA," or similar variation). I have considered factors such as the educational level and years of experience of those working in the pertinent art, the types of problems encountered in the art, the teachings of the prior art, patents and publications of other persons or companies, and the sophistication of the technology.

74. Taking the factors described in the Legal Standards – Level of Ordinary Skill section into consideration, it is my opinion that a person of ordinary skill in the art ("POSITA") would have had at least a bachelor's degree in electrical engineering, computer science, or a similar field and two to three years of experience designing graphical user interfaces, including those with touch screens and for mobile devices. Additional relevant work experience can compensate for less education, and vice versa.

IX. THE PRIOR ART

75. In forming my opinions, I relied on the following prior art when considering whether the claims of the '602 patent would have been obvious to a person of ordinary skill in the art.

Ex. 1005	U.S. Patent Application Publication No. 2009/0249247 to Tseng et al. ("*Tseng*")
Ex. 1010	U.S. Patent Application Publication No. 2009/0094562 to Jeong et al. ("*Jeong*")
Ex. 1006	U.S. Patent Application Publication No. 2010/0302172 to Wilairat ("*Wilairat*")
Ex. 1007, Ex. 1008	Japanese Published Unexamined Patent Application No. 2003-195998 to Hisatomi ("*Hisatomi*")[14]

A. *Tseng* (U.S. Patent Application Publication No. 2009/0249247)

76. U.S. Patent Application Publication No. 2009/0249247 ("*Tseng*"; Ex. 1005), published October 1, 2009, from an application filed January 30, 2009, and claims priority to a provisional application filed January 30, 2008. I have been asked to assume that *Tseng* is prior art to the '602 patent.

77. In my opinion, *Tseng* is analogous art because it is directed to the same field of endeavor as the '602 patent—mobile communications devices and

[14] This declaration cites to the English translation of *Hisatomi* (Ex. 1008).

user input interfaces for mobile communications devices. *Tseng*, Abstract, [0051]-[0061], FIGS. 2B-2C; Ex. 1001, Abstract, Figs. 25A-25B. *Tseng* is also directed to the same problem as the '602 patent, for example, displaying user interfaces in response to user gestures. *Tseng*, Abstract, [0051]-[0061], FIGS. 2B-2C; Ex. 1001, 60:9-61:16, Figs. 25A-25B.

B. *Jeong* (U.S. Patent Application Publication No. 2009/0094562)

78. U.S. Patent Application Publication No. 2009/0094562 ("*Jeong*"; Ex. 1010), published April 9, 2009, from an application filed October 3, 2008. I have been asked to assume that *Jeong* is prior art to the '602 patent.

79. In my opinion, *Jeong* is analogous art because it is directed to the same field of endeavor as the '602 patent—mobile communications devices and user input interfaces for mobile communications devices. *Jeong*, Abstract, [0050]-[0059], FIGS. 6A-7C; Ex. 1001, Abstract, Figs. 25A-25B. *Tseng* is also directed to the same problem as the '602 patent, for example, displaying user interfaces in response to user gestures. *Jeong*, Abstract, [0050]-[0059], FIGS. 6A-7C; Ex. 1001, 60:9-61:16, Figs. 25A-25B.

C. *Wilairat* (U.S. Patent Application Publication No. 2010/0302172)

80. U.S. Patent Application Publication No. 2010/0302172 ("*Wilairat*"; Ex. 1006), published December 2, 2010, from an application filed May 27, 2009. I have been asked to assume that *Wilairat* is prior art to the '602 patent.

81. In my opinion, *Wilairat* is analogous art because it is directed to the same field of endeavor as the ’602 patent—mobile communications devices and user input interfaces for mobile communications devices. *Wilairat*, Abstract, [0003], [0009]-[0015], Fig. 1; Ex. 1001, Abstract, Figs. 25A-25B. *Wilairat* is also directed to the same problem as the ’602 patent, for example, displaying user interfaces in response to user gestures. *Wilairat*, Abstract, [0003], [0009]-[0015], Fig. 1; Ex. 1001, 60:9-61:16, Figs. 25A-25B.

D. *Hisatomi* (Japanese Published Unexamined Patent Application No. 2003-195998)

82. Japanese Published Unexamined Patent Application No. 2003-195998 (“*Hisatomi*”; Ex. 1007 (original Japanese); Ex. 1008 (English translation)[15]), published July 11, 2003. I have been asked to assume that *Hisatomi* is prior art to the ’602 patent.

83. In my opinion, *Hisatomi* is analogous art because it is directed to the same field of endeavor as the ’602 patent—mobile communications devices and user input interfaces for mobile communications devices. *Hisatomi*, Abstract, [0021], [0025], [0029]-[0034], FIGS. 5-7; Ex. 1001, Abstract, Figs. 25A-25B.

[15] In this declaration, I cite to the translation of *Hisatomi* for support of my opinions.

Hisatomi is also directed to the same problem as the ’602 patent, for example, displaying user interfaces in response to user gestures. *Hisatomi*, Abstract, [0021], [0025], [0029]-[0034], FIGS. 5-7; Ex. 1001, 60:9-61:16, Figs. 25A-25B.

X. GROUNDS OF UNPATENTABILITY IN MY OPINION

84. Based on my review of the materials set forth above, including my application of the knowledge of a person of ordinary skill in the art, it is my opinion that claims 1-13, 15-19, and 21-36 of the ’602 patent would have been obvious to one of ordinary skill in the art.

85. In particular, it is my opinion that claims 1-13, 15-19, and 21-36 of the ’602 patent would have been obvious to a person of ordinary skill in the art based on the combinations shown below:

Ground	Claims	Basis	Prior Art
1	1-13, 17-19, 21, 23-36	Obviousness	*Tseng*
2	1-13, 17, 18, 33	Obviousness	*Tseng* and *Wilairat*
3	15, 16, 18, 19, 21-36	Obviousness	*Tseng* in further view of *Hisatomi*, or *Tseng* and *Wilairat* in further view of *Hisatomi*
4	1-13, 15-19, 21-36	Obviousness	*Jeong*
5	1-13, 15-19, 21-36	Obviousness	*Jeong* and *Wilairat*

XI. CLAIMS 1-13, 15-19, AND 21-36 WOULD HAVE BEEN OBVIOUS TO A POSITA

86. In my opinion, claims 1-13, 15-19, and 21-36 would have been obvious to one skilled in the art at the earliest priority date of the '602 patent.

A. Ground 1: Claims 1-13, 17-19, 21, and 23-36 Are Rendered Obvious by *Tseng*

87. In my opinion, *Tseng* renders obvious claims 1-13, 17-19, 21, and 23-36.

1. Independent Claim 1

a. [1pre]: "A system for capturing an event provided from an edge of a touch screen comprising:"

88. In my opinion, *Tseng* discloses a system for capturing an event provided from an edge of a touch screen, as recited in [1pre].

89. For example, *Tseng* discloses that a "computer-implemented user notification method includes displaying, in a status area near a perimeter of a graphical interface, a notification of a recent alert event for a mobile device." *Tseng*, Abstract. As I explain below, *Tseng*'s mobile device, such as a mobile phone or smartphone, displays a "status bar" or "status area" on the edge of a touch

screen,[16] such as shown in *Tseng*'s FIGS. 1 and 2A-2C. *Tseng*, [0017], [0028], [0039], [0119].

[16] *Tseng*'s touch screen includes the status bar or status area because the gliding/dragging action is initiated based on the user touching or dragging over the status bar. *See infra* § XI.A.1.e; *Tseng*, [0013], [0014], [0029], [0056], [0058], [0068], [0074], FIGS. 2A-2C ("The notification event manager 310 may in turn provide information about the [notification] messages … to *status area display module 316*, which may in turn pass information for displaying a notification … to display manager 314, which *may have assigned a certain area of the touch screen 304* for display of status indicators and notification information," and "[i]nformation may be passed … to a notification event manager 310, which may *manage notifications that are presented to a user, through touch screen 304* …." (emphases added)).

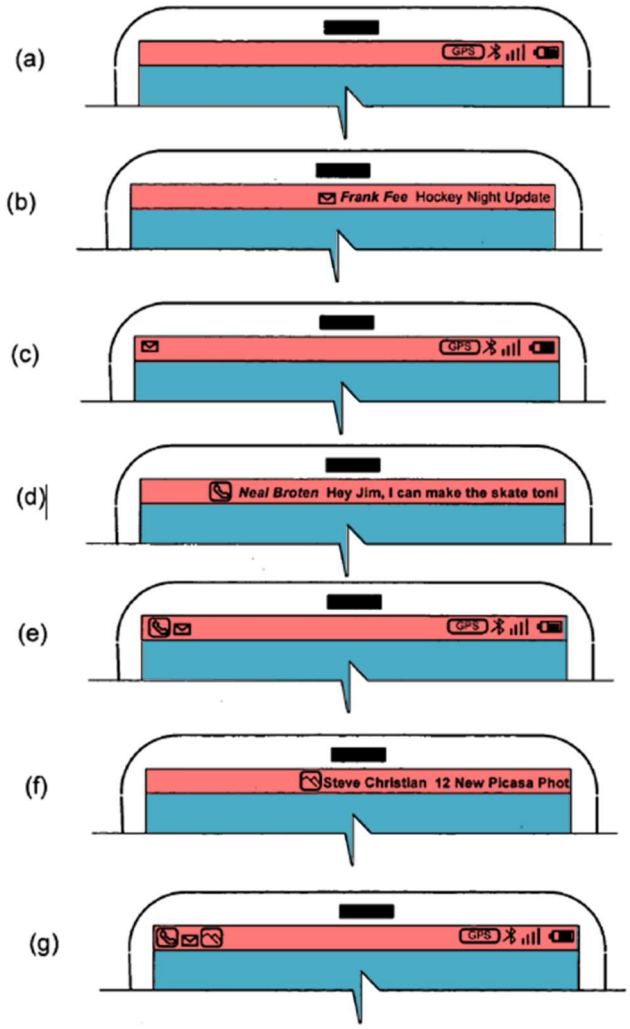
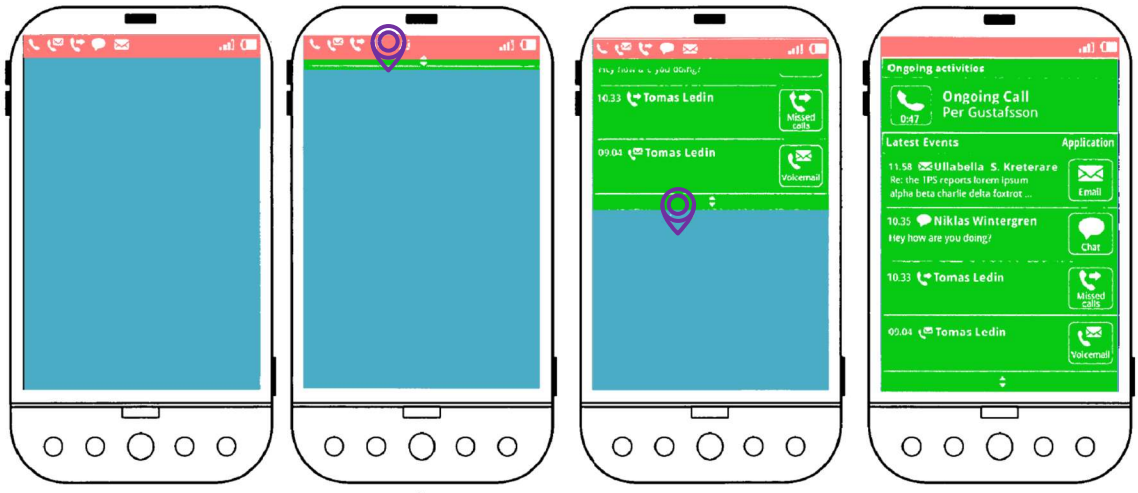


FIG. 1

Tseng, FIG. 1.

90. *Tseng*'s system receives an event or user selection, such as "receiving a dragging manipulation of the slider mechanism across the graphical interface" to "display[] the detail regarding the plurality of recent messaging events behind the slider mechanism as it is slid across the display." *Tseng*, [0011], FIGS. 2C, 4A. This event may be the user moving their finger in a swiping or gliding motion from

Tseng's status bar towards the middle of the display to open the message area to view notifications or alerts. In the example of FIG. 2C, the gliding motion (e.g., swiping or dragging event provided) is shown at the edge of the touch screen, as shown by the "circle having a ring around it in the status bar." *Tseng*, [0058], FIG. 2C. *Tseng* explains that the user makes "a finger swipe across the face of the display [touch screen], where the edge of the element showing an extended view of the messaging events 'sticks' to the user's finger as the finger moves past." *Tseng*, [0029]; *see also Tseng*, [0011], [0013], FIGS. 2C, 4A-4B. *Tseng* refers to this "event," such as the "finger swipe" (e.g., dragging/gliding action), as a "user selection" action. *Tseng*, [0013], [0014], [0015], [0029], [0058], [0080], FIGS. 2C, 4A-4B. Annotated FIG. 2C below shows this gliding gesture from the status bar towards the inside of the touch screen to display the notifications menu.



Tseng, FIG. 2C (clarifying "finger swipe" gesture indicator[17]).

b. [1a]: "a device having a touch screen;"

91. In my opinion, *Tseng* discloses a device having a touch screen.

92. For example, *Tseng* discloses a device, such as the "mobile device" or "smartphone" shown in FIGS. 1, 2A-2C, 3, and 5, having a touch screen display (e.g., display 200, 220; touch screen 304; and pointing device 504). *See, e.g.*, *Tseng*, [0002], [0028], [0031]-[0032], [0064], [0090], FIGS. 1, 2A-2C, 3, 5.

[17] The shape of the purple drag/swipe gesture indicator (a circle with an arrow) is partially shown in the middle images of FIG. 2C, but shown more clearly in the left image of FIG. 2B. *See Tseng*, [0053] ("The first display in FIG. 2B also shows a large circle surrounded by a ring having a downward pointing arrow."), [0058] ("The second display shows, by a circle having a ring around it in the status bar, a selection by a user, such as by moving a pointer to the status bar and pressing a selection mechanism such as a trackball, or by directly pressing on the display with a fingertip on top of the status bar."). I have annotated FIG. 2C to more clearly show this annotation in this declaration.

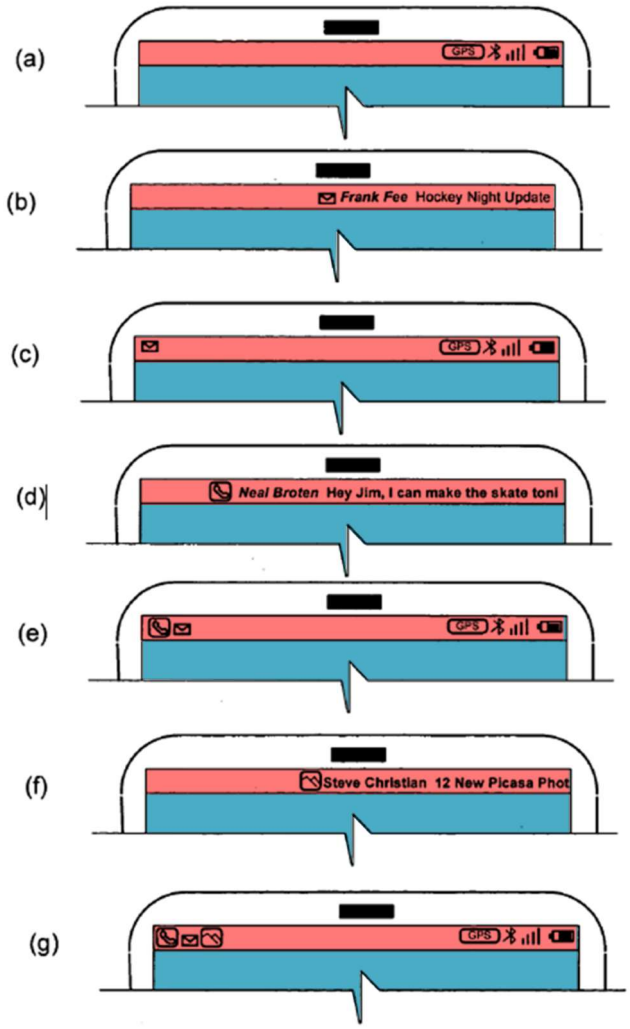


FIG. 1

Tseng, FIG. 1.

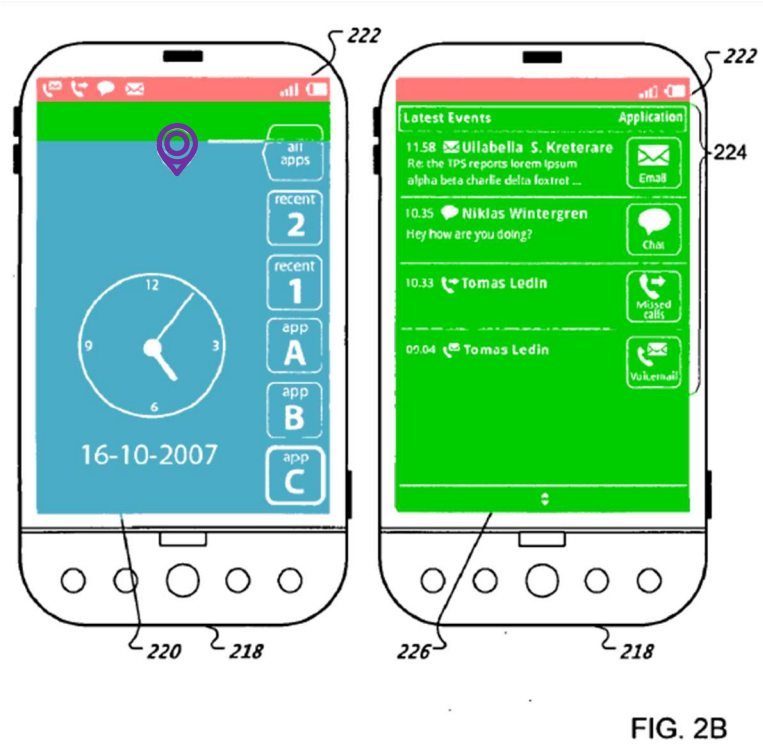
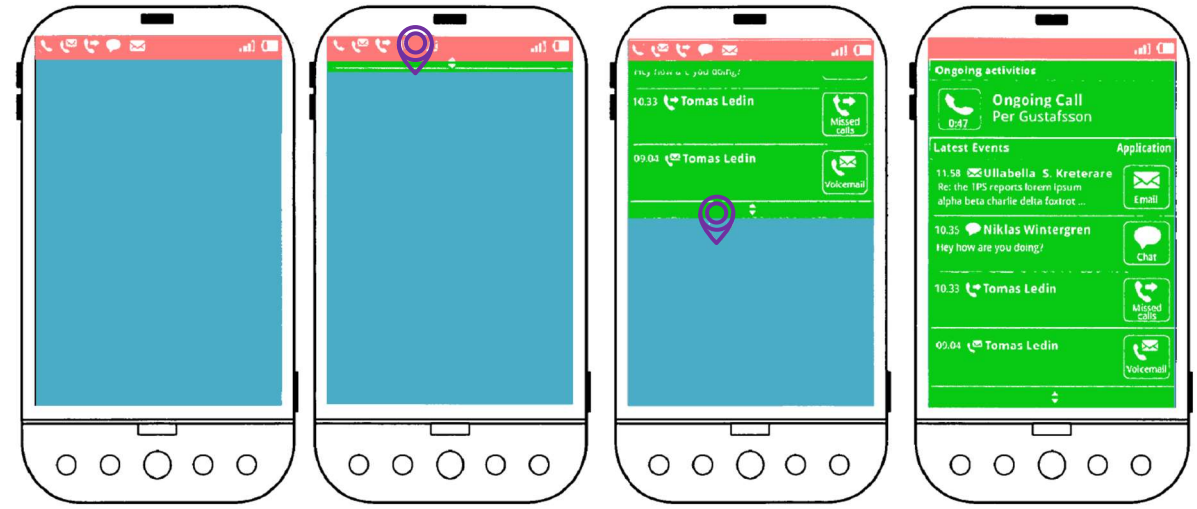


FIG. 2B

Tseng, FIG. 2B (excerpted).[18]

[18] *Tseng*'s FIG. 2B, first image, shows a line on the right side that a POSITA would have understood corresponds to the edge of the pull-down message area 206/224. This is because *Tseng* explains that the first image "shows a large circle surrounded by a ring having a downward pointing arrow" that "indicates a press by a user … over the status bar 222[] with a subsequent dragging downward of the status bar 222." *Tseng*, [0053]. This downward gliding action "result[s] in the *expanding* of a message area 224 into the main zone of the display 220." *Tseng*, [0053] (emphasis added). In this example "the message area 224 has a semi-



Tseng, FIG. 2C.

transparent background," which accounts for the reason the line is the clearest indicator of its bottom edge in FIG. 2B's first image. I make this clear in my excerpted version of FIG. 2B, which is confirmed by *Tseng*'s description that FIG. 2C shows "similar functionality to that just described" for FIG. 2B and has a clearer image of the message area being pulled open with the user's "finger swipe" gesture and "sticks" to the user's finger during swiping gesture. *Tseng*, [0029], [0057].

c. [1b]: "at least one window located in the touch screen on an edge of the touch screen, wherein said at least one window functions independently of an interface of an application in use on the touch screen; and"

93. In my opinion, *Tseng* discloses at least one window located in the touch screen on an edge of the touch screen, wherein said at least one window functions independently of an interface of an application in use on the touch screen.

94. *Tseng*'s status bar or status area describes a "window" located in the touch screen on the top edge of the touch screen. *Tseng* explains that the "status bar" is positioned "in a peripheral area at the edge of a display." *Tseng*, [0028], FIGS. 1, 2A-2C, 3, 4A-4B, 5; *see also Tseng*, [0005] (explaining that "supplemental elements are typically displayed around the periphery of the main area or over the main area in pop-up *windows or similar graphical elements*." (emphasis added)), [0014] (describing "present[ing] the notification message in a first zone near a perimeter of the graphical display"). A POSITA would have understood that *Tseng*'s status bar describes a window being drawn or rendered at the top edge of the touch screen as a specific region or zone displaying status information and scrolling or displaying notifications-related information. *Tseng*, [0014], [0028], [0058], FIGS. 1, 2A-2C. A POSITA would have recognized that *Tseng*'s disclosure setting aside a particular area or zone of the display to render a

status bar that is updated with status information describes the status bar being a "window" drawn on the touch-screen display.

95. This understanding would have been confirmed by the POSITA's knowledge that a "window" in a graphical user interface, like *Tseng*'s, is generally "an area of the screen set aside for a special purpose." Ex. 1023, Barron's *Dictionary of Computer and Internet Terms*, 3 (10th ed. 2006) ("window"); *see also* Ex. 1024, *Microsoft Computer Dictionary*, 4 (5th ed. 2002) ("window").

96. *Tseng* explains, in accordance with the POSITA's knowledge, that a "status bar area is [a] typically-static area on a device that displays information such as bars for wireless signal strength, a remaining battery life indicator, an icon that shows the network over which wireless communication is occurring, and the like." *Tseng*, [0005]. A POSITA would have recognized that the status bar being a rectangular area, placed in a constant location (top edge of the screen) regardless of the application shown in the main display area, to display notification and status information describes a window that displays this information separate from the main application area of the display, as shown below in FIG. 1. This is further confirmed by *Tseng*'s disclosure that the status bar's information varies (e.g., re-rendered or re-drawn on the screen) to show notifications, such as shown in FIG. 1. *Tseng*, [0032]-[0036], FIG. 1 (describing adding additional messages and/or icons to the status bar as new notifications arrive). FIG. 1, for example, shows a

notification "display portion shown [at] the top of a graphical display, where a status bar is located," that is updated with new notifications as they are received. *Tseng*, [0031], FIG. 1.

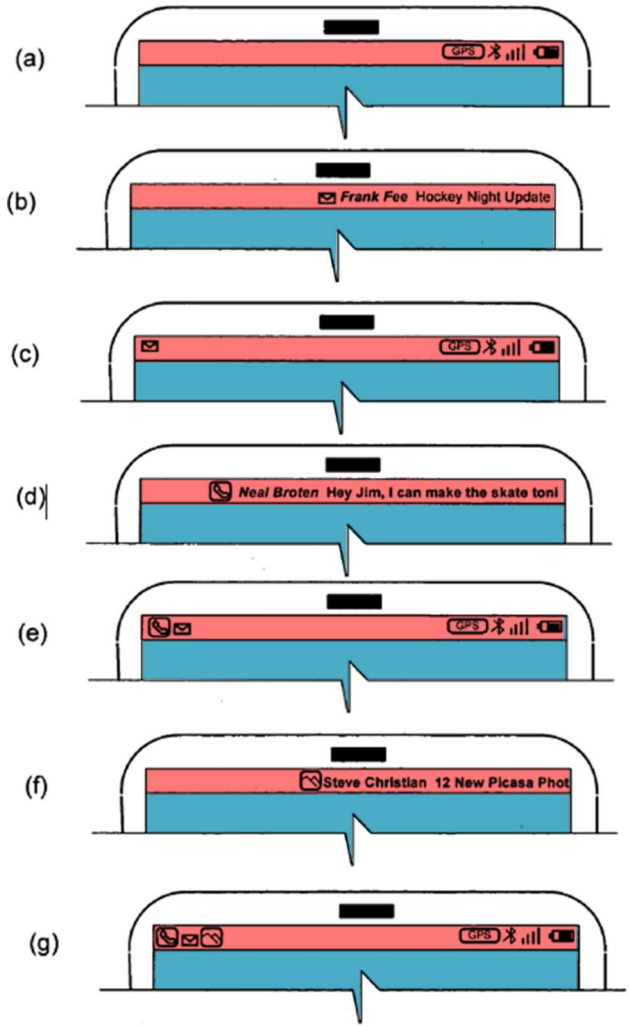


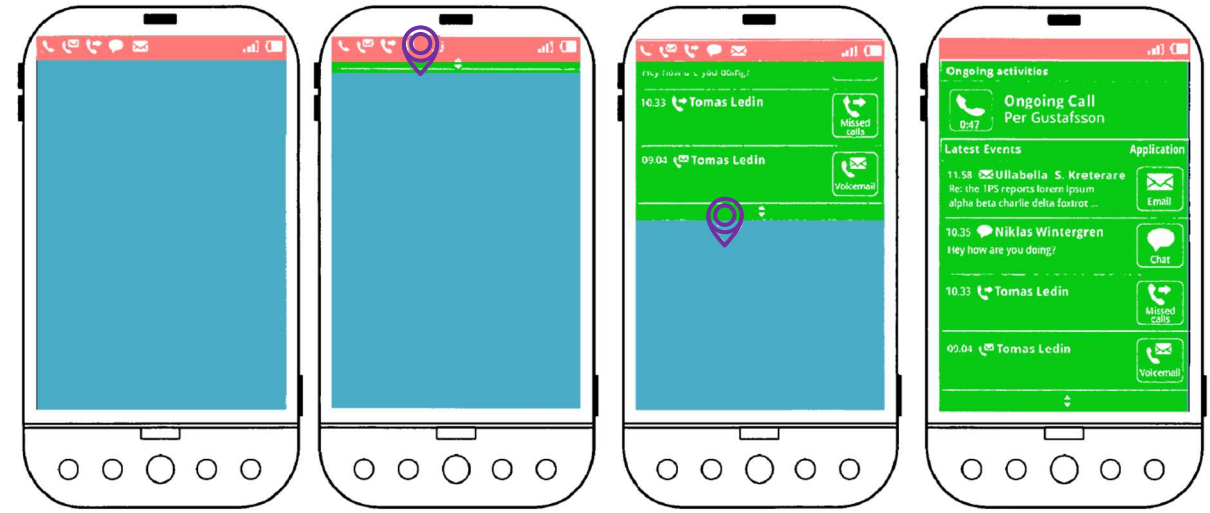
FIG. 1

Tseng, FIG. 1.

97. The POSITA's understanding is confirmed by *Tseng*'s disclosure that a "window manager 745[/814]" "allows multiple applications with multiple windows to share the display 501." *Tseng*, [0111], [0115]-[0116] (describing window manager 814), FIGS. 7, 8. A POSITA would have recognized that *Tseng* discloses the use of windows and that the status bar represents one such window that shares the display and another is the main application area. *Tseng*, [0031]-[0037], [0048], [0052], [0057], [0058], FIGS. 1, 2A-2C, 4A-4B. In *Tseng*, the display is sectioned into multiple windows as a POSITA would have understood the term, including the main application area, the status bar, and the pull-down message area, as three examples, although other examples are readily understood (e.g., pop-up windows).

98. *Tseng*'s status bar window functions independently of an interface of an application. *Tseng* provides an example where the application in the main display area in use on the touch screen is a phone application, but any application may be displayed, which is why *Tseng* shows the screen as blank in FIGS. 2A-2C—"one or more applications may be shown in the main zone" of the touch screen ("shown blank in [FIGS. 2A-2C]"). *Tseng*, [0040]. *Tseng* provides an example of "an application tracking an ongoing telephone call, and displaying an image of the person with whom the call is occurring, a number for that person, and an elapsed time for the call, among other things," in the area below the status bar.

Tseng, [0040]; *see also Tseng*, [0005]. Because the blank area shown in *Tseng*'s FIGS. 2A-2C may show any application, but the status bar remains present to show notifications and status icons from other applications (e.g., mail, messages, music), a POSITA would have understood that *Tseng*'s status bar functions independently of the application interface shown in the main display area in use on the touch screen. *Tseng*, [0032], [0052], [0057]. Indeed, *Tseng*'s status bar performs its notification/alert display and subsequent pull-down menu upon the user's gliding action, regardless of the application shown in the main display. This is confirmed by *Tseng*'s teaching that the application tracks a telephone conversation, but the status bar shows "alerts," including "icon[s] showing the type of message, such as an envelope for an e-mail message," "battery life indicator," and other information independent of the telephone application. *Tseng*, [0005], [0006], [0045]. It is further confirmed by *Tseng*'s teaching that the status bar runs as its own "system services" program. *Tseng*, FIGS. 7, 8.



Tseng, FIG. 2C.

d. [1c]: "a processor;"

99. In my opinion, *Tseng* discloses a processor in the mobile device.

100. *Tseng* discloses that the mobile device includes a processor, such as CPU 601 or processor 902/952. *Tseng*, [0095], [0120], [0125]-[0127], FIG. 6. A POSITA would have recognized that a CPU (central processing unit) is a processor. *Tseng* shows that its device includes a processor as highlighted in FIGS. 6 and 9 below.

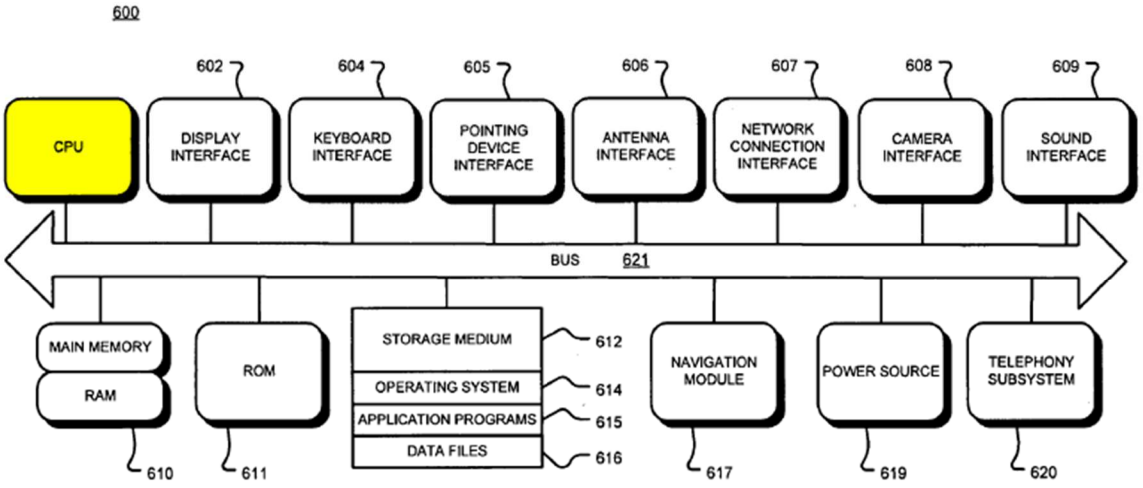


FIG. 6

Tseng, FIG. 6.

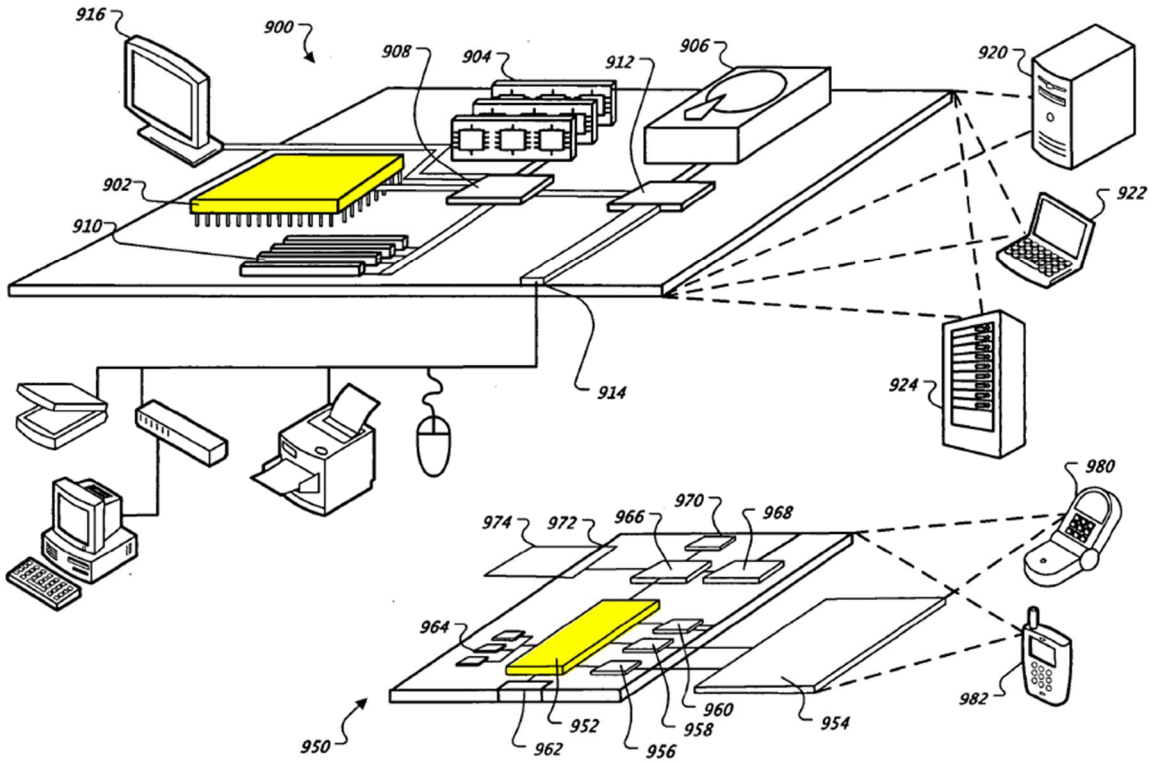


FIG. 9

Tseng, FIG. 9.

e. [1d]: "wherein a gliding action provided from outside of the touch screen towards inside of the touch screen, said gliding action at first interacting with said at least one window on the touch screen, is processed by said processor to cause an action assigned to said window, and"

101. In my opinion, *Tseng* discloses or renders obvious wherein a gliding action provided from outside of the touch screen towards inside of the touch screen, said gliding action at first interacting with said at least one window on the touch screen, is processed by said processor to cause an action assigned to said window.

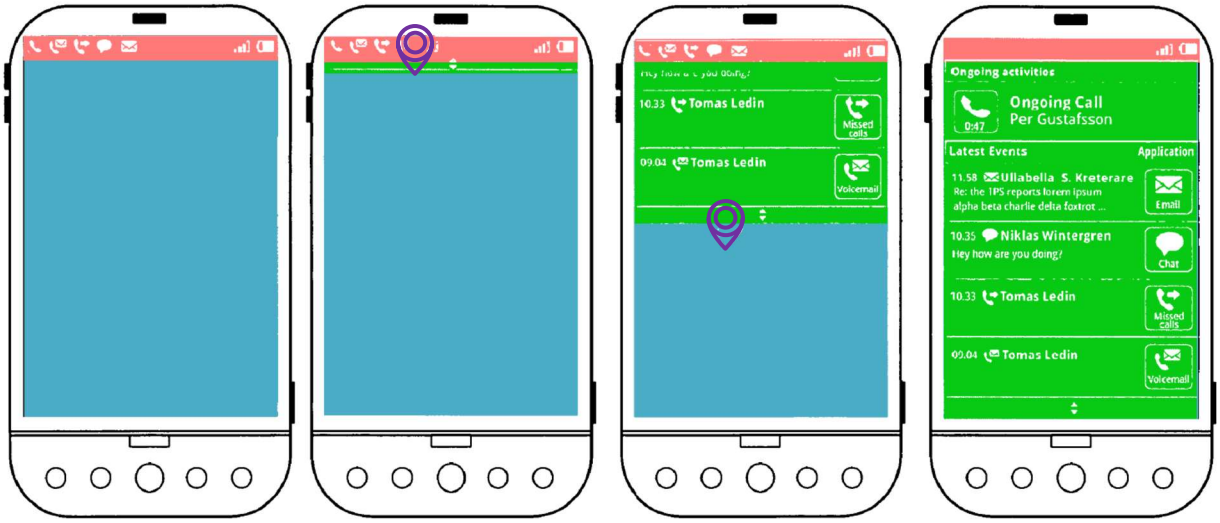
102. *Tseng* discloses that the user can perform "a finger swipe[19] across the face of the display" to pull open the notifications message area. For example, the

[19] *Tseng* also describes the "swipe" motion (e.g., glide) as a "drag[]." *See, e.g.*, *Tseng*, [0029], [0041], [0053], [0059], [0074], [0076]; *cf.* Ex. 1001, 44:49-52 (referring to "gliding or swiping actions"), 61:64-62:5 (referring to "dragging/gliding action 313105"). It was recognized in the art that a "swipe" or "slide" is an example of "drag[ging]" a finger "across the [touch] screen." *T-Mobile G1 User Manual*, 22, 27-28, 38, 42, 49 (referring to "slid[ing]" down a notification panel). A POSITA would have recognized that the terms "swipe,"

user can "press[] on the status area and drag[] downward to pull out the messages." *Tseng*, [0029]. A POSITA would have recognized that *Tseng* uses the terms "touch" and "press" interchangeably, meaning that the user's finger contacts the screen at that location. *See Tseng*, [0007] ("The user … may press on the area where the notification is being displayed …."), [0008] ("If the user touches the status bar …."), [0029] ("Such selection of the status area may occur … by pressing on the status bar and dragging downward ….").[20] When the user swipes his or her finger downward from the status bar, "the edge of the element showing an extended view of the messaging events 'sticks' to the user's finger as the finger moves past" and expands the message area showing new notifications, such as shown in FIG. 2C. *Tseng*, [0029]; *see also Tseng*, [0011], [0013], FIGS. 2B, 4A-4B.

"slide," "sweep," and "drag" were often used interchangeably with "glide" to refer to a gesture that contacts the touch screen during the movement.

[20] *Tseng*'s interchangeable use of "touch" and "press" is consistent with the '602 patent, which refers to "touch/press on a key" and "press/glide" from one location to another. Ex. 1001, 99:35, 99:52-60, 57:53-58.



Tseng, FIG. 2C; *see also Tseng*, FIG. 2B.

103. *Tseng* describes multiple interactions for selecting and interacting with the status bar. One way it describes is that the user's "finger swipe" (gliding action) first interacts with the status bar window on the touch screen when the user "press[es] on the status bar and then drag[s] it downward across the top of the display." *Tseng*, [0074]; *see also Tseng*, [0013] ("[T]he instructions can further comprise instructions to cause the one or more processors to receive a dragging manipulation on a touch screen display of the graphical interface, from the status area and across the display, and move the slider mechanism in response to the dragging mechanism, and display the detail regarding the plurality of recent messaging events behind the slider mechanism as it is slid across the display."), [0029] ("Such selection of the status area may occur … by pressing on the status area and dragging downward to pull out the messages as if they are mounted on or

under a window shade."), [0041] ("The right screen in FIG. 2A shows the display 200 after the user has … dragged downward on the status bar 202."), [0053] ("This element [circle surrounded by a ring having a downward pointing arrow[21]] indicates a press by a user on the device 218 over the status bar 222, with a subsequent dragging downward of the status bar 222."), [0059] ("The third display shows the user dragging the notification bar downward across the main part of the display, like a roll shade.").

104. Another way the user's finger swipe can interact with *Tseng*'s status bar is when the swiping action starts on the bezel (e.g., device housing) outside of the touch screen or outside on the face of the device outside of the touch-screen area. *Tseng* explains that, consistent with my discussion above in Section VI (state of the art), mobile devices may have "a fairly flush front surface" to enable "a finger swipe across the face of the display." *Tseng*, [0029]. Such "fairly flush front surfaces" describe devices where the housing or bezel of the device surrounding

[21] A POSITA would have recognized that this element represents the user's swiping action that begins when the user presses on the status bar to illustrate the gesture in *Tseng*'s figures. As *Tseng* notes, this "element does not appear on the display," but is instead shown in FIGS. 2B and 2C to illustrate the gesture. *Tseng*, [0053], FIGS. 2B, 2C.

the touch screen is not raised—it is substantially flush with the touch-screen surface—or where the surface (e.g., glass over the screen) extends beyond the boundaries of the touch screen, both of which were common throughout the art as was known in the HTC G1 device, Motorola's Droid phones, in the Palm Pre devices, in various HTC devices such as the Hero or Magic, in the Samsung Behold II device, and in Apple's iPhone devices. *Tseng* also explains that "an extended view of the messaging events 'sticks' to the user's finger as the finger moves [swipes/glides] past," which describes the edge of the message area moving with the user's finger, such as shown in FIG. 2C. *Tseng*, [0029], FIG. 2C.

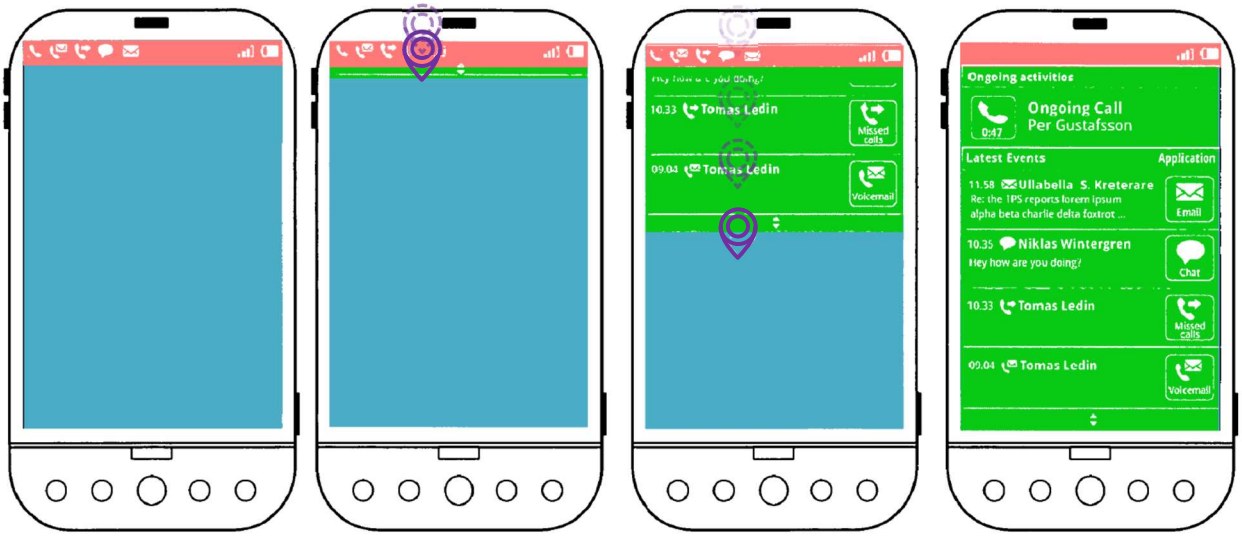
105. A POSITA would have recognized that the finger moving or swiping "past" the status bar encompasses the gliding action starting both on the status bar and starting outside of the touch screen, above the status bar on the surface surrounding the touch screen (e.g., bezel, housing, or glass surface that is not touch sensitive), and moving towards the inside of the touch screen, as shown in FIGS. 2B and 2C. One of the benefits of swiping or gliding actions, like that described in *Tseng*, is that they were known to begin off the screen for activating actions corresponding to narrow bars or windows located at the edge of the screen, like *Tseng*'s status bar, and be more efficient than the user trying to touch the bar directly because the effective size of the activatable status bar is increased, as I explain above in Section VI (state of the art). *See, e.g.*, *Raskin*; *Bezel Swipe*, 2;

Roth, [0009], [0010], [0015], [0036], [0039], Fig. 2B; *Wilairat*, [0003], [0009], [0012], [0015], Fig. 1; *Hinckley*, [0072], [0073], Fig. 6. Such sliding gestures were beneficial and provided user-friendly interfaces because they were "low-precision" gestures, meaning that a user did not have to be as precise with the movement because it could cross over the status bar to activate the notifications message area. *See supra* § VI (state of the art).

106. A POSITA would have recognized that, in *Tseng*, when the user's swipe or drag action starts outside of the touch screen, the first recorded interaction with the status bar window is on the touch screen because the area outside the touch screen is not disclosed as including any sensing ability. *Tseng*'s device registers a "touch" or "press" on the status bar when the finger first contacts the status bar portion of the touch screen. *Tseng*, [0013], [0029], claim 17 ("to receive a dragging manipulation on a touch screen display … from the status area and across the display"), FIGS. 2A-2C, 4A, 4B; *see also Bezel Swipe*, 2, Figure 2. A POSITA would have understood that the touch or press refers to the initial contact point with the status bar, but not necessarily the origin point of the physical gesture because the device only tracks touch-screen contact.

107. A POSITA would have known that a swiping or gliding action beginning outside of the touch screen and moving onto the status bar towards the inside of the touch screen to open the message area would have been registered as

a touch or press beginning on the status bar because the touch screen is the first area of the device that is touched that has the ability to sense the user's touch. As such, the device first registers the touch of the finger and the movement when the finger contacts the touch sensitive display of the touch screen. In other words, a POSITA would have recognized that a gliding action starting off screen and moving towards the inside of the touch screen over *Tseng*'s status bar would have been registered by the touch screen in the same way as a gliding gesture starting on the status bar and moving toward the main display area. Annotated FIGS. 2C and 2B below show how these actions would have resulted in the same operation in *Tseng*.



Tseng, FIG. 2C (dashed gliding gesture annotations added).

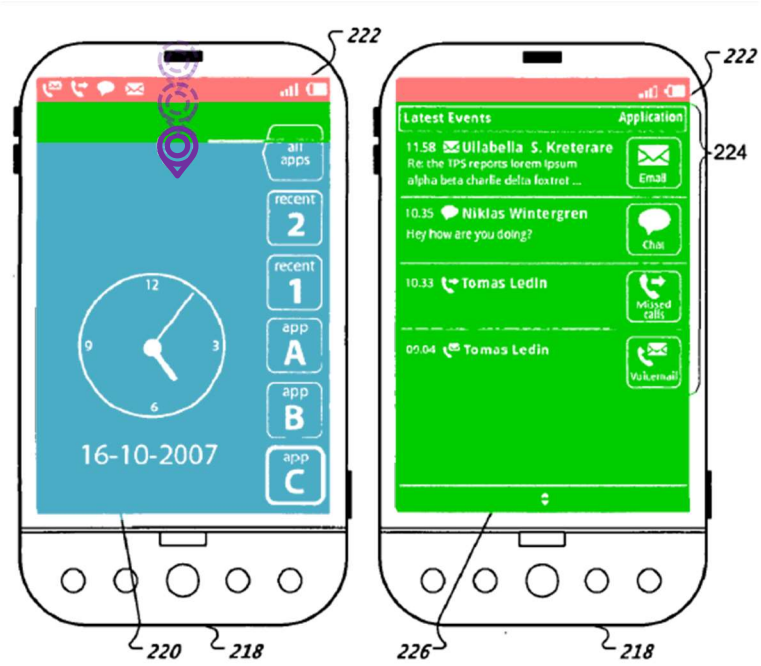


FIG. 2B

Tseng, FIG. 2B (excerpted, dashed gliding gesture annotations added).

108. *Tseng* discloses that this swiping or dragging gesture (gliding action) is processed by the processor to cause the action assigned to the status bar of displaying message area 206/224 to be performed. *See Tseng*, [0012], [0013], [0053], FIGS. 2B, 2C. *Tseng* discloses that instructions stored in memory "cause the one or more processors to receive a dragging manipulation [gliding action] on a touch screen display of the graphical interface, from the status area and across the display, and move the slider mechanism in response to the dragging mechanism, and display the detail regarding the plurality of recent messaging events behind the slider mechanism as it is slid across the display." *Tseng*, [0013]; *see also Tseng*,

[0012] ("The medium has instructions stored on it that, when executed, cause one or more processors to display, in a status area near a perimeter of a graphical interface, a notification of a recent alert event for a mobile device, receive a user selection in the status area [gliding action], and in response to the receipt of the user selection, display, in a central zone of the graphical interface, detail regarding a plurality of recent messaging events for the mobile device."), [0014] ("[A] computer-implemented notification system" wherein "a display manager … generate[s] elements for a graphical display, … receive[s] the notification message and … present[s] the notification message in a first zone near a perimeter of the graphical display. The system can further comprise an input device to receive a user selection in the first zone, wherein in response to the user selection, the display manager displays, in a central zone of the graphical interface, detail information regarding a plurality of recent messaging events for the mobile device."). Thus, *Tseng* discloses that the gliding action ("finger swipe" or "dragging" the status bar) is processed by the processor to display the slider function showing the message area 206/224.

109. I have also been asked to consider the situation in which *Tseng* is considered not to disclose [1d]. In such case, it is my opinion that *Tseng* renders [1d] obvious. As I explain above, *Tseng* describes using a "finger swipe" to "drag[]

downward" from the status bar to "pull out the messages" to show the notifications or messages indicated by the icons in the status bar. *Tseng*, [0029], FIGS. 2A-2C, 4A-4B. While *Tseng* sometimes refers to this action starting on the status bar, a POSITA would have recognized that, in this case, this is because the area around the display screen is not touch sensitive. Thus, a gliding action beginning outside of the touch screen and crossing over the status bar would first be sensed when the touch screen is touched—and thus it would operate the same as a gliding action starting on the status bar because *Tseng*'s device would merely register the first "press" or touch of the swipe gesture at the edge of the touch screen. Such operations were well known, as disclosed in *Bezel Swipe*, *Roth*, *Wilairat*, and generally discussed above in Section VI (state of the art). A POSITA, in my opinion, would have found it obvious to have the gliding gesture begin outside of the touch screen and move towards the inside of the touch screen across the status bar, such that the gesture first interacts with the status bar window on the touch screen in. A POSITA would have recognized that this does not require altering *Tseng*'s design because the change would be the location where the user's gesture starts—that is, the device operates the same as in *Tseng*: the user's action starts in a different location but achieves the same result. The off-to-on-screen gliding gesture would still be registered as the press/touch and swipe/drag gesture as described by *Tseng* when it enters the touch screen at the status bar, and so would not require

changing how the *Tseng* software or hardware operates—only how a user would use it. That said, a POSITA would understand that trivial changes would be possible to, for example, inform the user that such a gesture starting outside the touch screen was possible.[22]

i. Motivation

110. In my opinion, a POSITA would have been motivated to provide a gliding action from outside of the touch screen towards inside of the touch screen, where the gliding action at first interacts with *Tseng*'s status bar window on the touch screen, and is processed by the processor to cause the action of sliding out the message area. *Tseng*, Abstract, [0011]-[0013], [0029], [0041], [0053], [0059], [0074], [0076], FIGS. 2A-2C, 4A-4B.

111. A POSITA would have recognized, as I explain above, that this functionality would have provided the user with a better user experience because it

[22] I have been asked to consider two interpretations of claim 1: First, where the user's gliding action may begin outside of the touch screen and move towards the inside of the touch screen where the device registers the touch as it first contacts the touch screen without determining whether the finger actually started offscreen; and second, where the device makes a determination that the gliding action started outside of the touch screen and moved towards the inside of the touch screen.

requires less precision than requiring the user to start the gesture on the status bar itself. The benefits of having a user start a swiping or gliding beginning offscreen and moving towards the center of the screen by crossing over the status bar window were well known to a POSITA and in the art.

112. For example, a POSITA would have been motivated to provide this functionality because it simplifies the user's experience of opening the notifications menu. A POSITA would have recognized that, by registering the touch as the user's finger slides onto the screen (e.g., either as a regular touch on the status bar, as taught by *Tseng*, or as a pull-in gesture, such as taught by *Wilairat*) effectively increases the size of the status bar's activation area because the user's initial contact does not need to be precise—it can begin on the device anywhere above the status bar on the touch-insensitive bezel. This is a direct consequence of Fitts' Law, which is discussed in *Raskin* and above in Section VI (state of the art). "Fitts' law quantifies the fact that the farther a target is from your current cursor position or *the smaller the target is, the longer it will take you to move the cursor to the target*" and to activate the target. *Raskin*, 8 (emphasis added). Conversely, the larger a target is (physically or effectively), the faster the user will activate the target. *Raskin* goes on to explain why early Macintosh menus that are aligned at the edge of the screen (the top row of pixels was part of the menu activation button) were effectively larger than Windows menus where the

menu button stopped before the edge of the screen. The result was that the Macintosh menu was "effectively" a much larger button because the user did not have to stop the cursor before reaching the edge (and the mouse could continue moving because the screen edge stopped the cursor on the button), but Windows menus required the user to stop the cursor on the button before the edge, requiring more precision and being more difficult to select. *Raskin* calculates the advantage of the Macintosh menu and shows that what would otherwise take about 1 second to click on a Windows menu item would only take about 0.6 seconds on an edge-aligned menu, as in Macintosh menus. *Raskin*, 8-12. A similar result of improved ease of use and activation applies to dragging from outside the edge of a touch screen when the activatable target is aligned on the edge, like *Tseng*'s status bar. *See also Bezel Swipe*, *Roth*.

113. This simplifies the user's experience because the user does not have to try to specifically touch the narrow status bar and may instead start the gliding gesture offscreen and cross over the status bar to pull it down. Such "crossing"-type gestures were recognized as beneficial in the art for these reasons, including as I explain above in Section VI (state of the art). For example, *Bezel Swipe* explains that "screens of mobile devices are necessarily small," which leads to the development of "smaller widgets" that "are harder to hit." *Bezel Swipe*, 1. But, when the user can "start [a swiping gesture] on the bezel and move[] into the

display," it allows the user to contact "a narrow target (the red bar) positioned flush against the display edge," such as *Tseng*'s status bar, much more easily. *Bezel Swipe*, 2. A POSITA would have recognized that the same benefit is achieved for touches beginning fully off the touch-screen display or partially on the touch-screen display because both register as a "touch" on the display when they first contact the touch sensitive element. As was known in the art, and would have been known to a POSITA, "[s]wipes" from outside of the screen across the status bar "are recognized by detecting touches *inside a thin rectangular area* [e.g., *Tseng*'s status bar window] positioned flush against the display screen" as the gesture crossed into the touch screen, such as shown in annotated Figure 2 of *Bezel Swipe*, below. *Bezel Swipe*, 2, Figure 2 (emphasis added). A POSITA would have recognized that *Bezel Swipe*'s Figure 2, which refers to a "touch significantly overlapping the bezel," is discussing the point at which the motion first registers on the touch screen as the finger's contact area increases. In effect, it confirms that activating narrow edge targets (e.g., *Tseng*'s status bar) is more reliably performed by off-to-on-screen gliding gestures than by directly touching the edge target at the start of the motion.

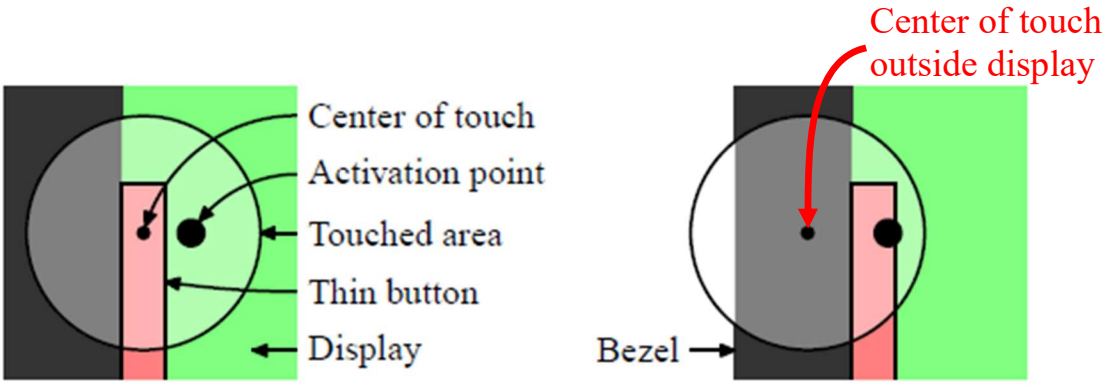


Figure 2. Touching narrow targets close to the bezel: a touch (large circle) centered on the target (left) may not activate it whereas a touch significantly overlapping the bezel (right) does.

Bezel Swipe, Figure 2 (annotated).

114. As *Bezel Swipe* teaches, a touch beginning outside of the touch screen and moving across the bars or windows (e.g., swiping or gliding by crossing) located at the edge of the screen will activate as the touch moves onto the screen and continues gliding towards the inside of the touch screen. *Bezel Swipe*, 2, Figure 2. A POSITA would have recognized that this would be the same as *Tseng*'s swiping action across the status bar and "enables the reliable activation of a button that is so narrow that it would be difficult to activate by direct touch," and "does not typically reduce the accessible display area" on small screens "because the swiping gesture minimizes the area of initial contact with the touch sensitive display [touch screen]." *Bezel Swipe*, 2. A POSITA would have been motivated to include these gesture activations on *Tseng*'s status bar to display the notifications

message area because they "require[] minimal display real estate," making them beneficial to mobile devices that have small screens, like *Tseng*. *Roth*, [0009]. *Tseng*'s status bar acts like a button because it can be activated by pressing or touching it, which, as I explain above, is the user's finger contacting the status bar to activate the pull-open menu function. This provides a motivation for a POSITA to implement a gliding gesture from outside of *Tseng*'s touch screen towards the inside of the touch screen across the status bar because it allows for a smaller status bar window, thereby increasing the size of the main display area, while still "enabl[ing] … reliable activation" of the status bar and dragging the message area view to display notification details. *Bezel Swipe*, 2.

115. As such, a POSITA would have been motivated to implement such off-to-on-screen swiping or gliding gestures to activate *Tseng*'s pull-down message display area because a POSITA would have known that such crossing activations "can be more efficient than pointing tasks" (e.g., than requiring the user to directly tap or long-press on the status bar) especially on small-screen devices, such as mobile phones. *Roth*, [0010]. Moreover, a POSITA would have recognized that, because of this efficiency, *Tseng*'s status bar window can be "made small so as to not take up valuable space on the display," which would have provided additional space to display the main application. *Roth*, [0036].

116. A POSITA would have further been motivated to activate *Tseng*'s message display area function when a user performs an off-to-on-screen gliding gesture over the status bar window on the touch screen because it represents a known operation in the prior art that was well known and conventional to POSITAs, as shown by *Tseng*, *Wilairat*, *Roth*, and *Bezel Swipe*. As such, allowing a user's gliding action from outside of the touch screen towards inside of the touch screen that first interacts with the status bar window on the touch screen to cause the message area display window to be pulled down in *Tseng*'s system represents nothing more than the application of known operations performing according to their known functions to achieve predictable and expected results.

117. In fact, this implementation does not require any change to *Tseng*'s operation, but rather where the *user chooses* to begin the gesture because a gliding action starting off the screen is registered the same as one starting on the status bar itself. Accordingly, a POSITA would have recognized that this operation represents merely implementing a known prior art gesture—an off-to-on-screen gliding action that first registers when the touch contacts the status bar on the touch screen—to yield the predictable result of contacting the status bar window and pulling down the message display area. *Tseng*, Abstract, [0011]-[0013], [0029], [0041], [0053], [0059], [0074], [0076], FIGS. 2A-2C, 4A-4B; *Bezel Swipe*, 2, Figure 2; *Roth*, [0009], [0010], [0015], [0036], [0039], Fig. 2B; *Wilairat*, [0003],

[0009], [0012], [0015], Fig. 1; *Hinckley*, [0072], [0073], Fig. 6. Similarly, a POSITA would have been motivated to implement an off-to-on-screen gliding action to activate *Tseng*'s pull-down message area as part of the gliding action to improve the user's experience by making it simpler to "enable[] … reliable activation" of this function and also reduce the amount of screen space needed to display the status bar, thereby providing for more screen space for the main application display. *Bezel Swipe*, 2; *Roth*, [0010], [0015]. At a minimum, a POSITA would have found it obvious to try implementing an off-to-on-screen gliding action to activate *Tseng*'s pull-down message area because it was a known technique that would have improved *Tseng*'s device in the same way as known in the prior art.

ii. Expectation of Success

118. A POSITA would have reasonably expected to succeed in providing a gliding action from outside of the touch screen towards inside of the touch screen, where the gliding action at first interacts with *Tseng*'s status bar window on the touch screen, and is processed by the processor to cause the action of sliding out the message area.

119. As I explain above, implementing the functionality of element [1d] would have involved nothing more than the routine application of existing technology in predictable ways. It would be a result of a change in the user's

action, but would not require a change in the operation of *Tseng*, which would register the touch when it crosses from offscreen into the touch-sensitive status bar area as if the user's gliding action began there. Such processes, implemented in *Tseng*, represent nothing more than combining prior art elements according to known methods and techniques (registering a user's gliding action when it first crosses into the status bar window and then moves towards the inside of the touch screen as the touch or press in *Tseng*) to yield predictable results (dragging open *Tseng*'s message area or notifications menu, such as by sliding it open, as disclosed by *Tseng*). Indeed, several devices had already implemented similar functionality of the user's finger moving from offscreen (whether touch sensitive or not) onto the touch screen, including the Palm Pre device, which opened a "Quick Launch" menu to display using a gliding gesture that started offscreen and moved towards the screen, and the Neonode N2 device, which displayed an application selection menu when swiping up onto the touch screen from the printed icon, as shown below:



Palm Pre Plus User's Manual, 20;

see also Palm Pre The Missing Manual, 51-52.

1.13 Vertical areas:

1. The left part of the screen is called the Start menu sweep area.
2. The middle part of the screen is called the Keyboard sweep area.
3. The right part of the screen is called the Tools menu sweep area.

In the vertical areas you start the sweep at the very bottom of the screen. Sweep upwards. The sweep should be about half the height of the screen.

A sweep in the left part of the screen opens the start menu. A sweep in the middle opens the keyboard and a sweep in the right part of the screen opens the tools menu.



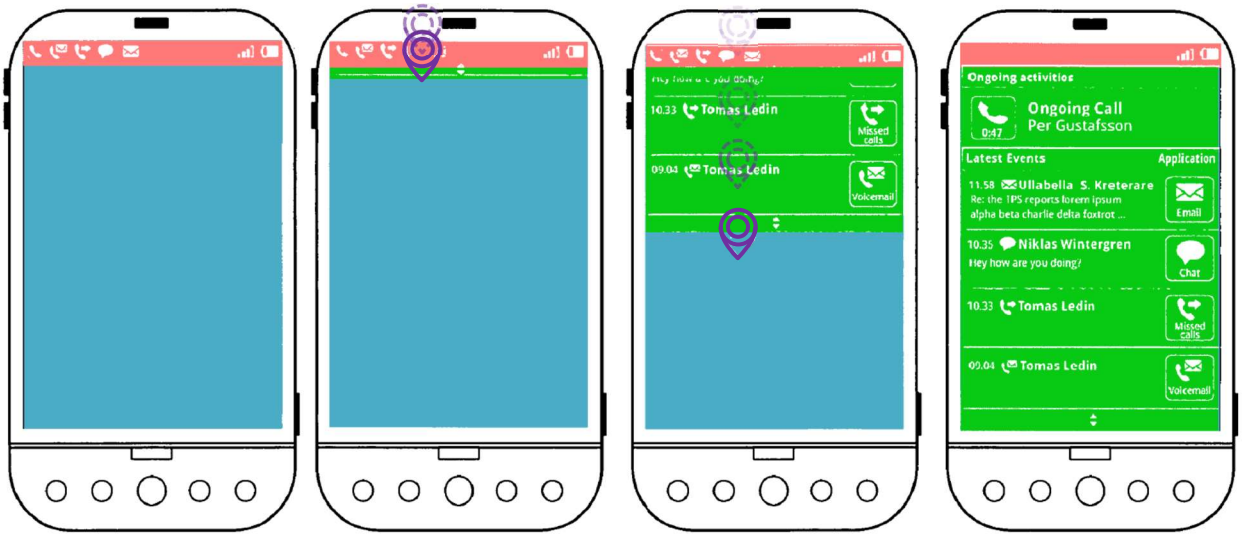
Neonode N2 User Guide, 7 (the red boxes represent the touch-screen area, whereas the icons below are not part of the touch screen).

See also Goertz, [0047], [0071], Fig. 2 (describing the Neonode phone having a "menu area" outside of the screen and separate from the "display area"; "FIG. 2 shows that any one of these three functions 21, 22, 23 can be activated when the touch sensitive area 1 detects a movement of an object 4 with its starting point A

within the representation of a function on the menu area 2 and with a direction B from the menu area 2 to the display area 3.").

120. As such, a POSITA would have recognized that providing a gliding action from outside of the touch screen towards inside of the touch screen to activate a function based on the gliding action first interacting with a window on the touch screen was well known and routine in the prior art. *Tseng*, Abstract, [0011]-[0013], [0029], [0041], [0053], [0059], [0074], [0076], FIGS. 2A-2C, 4A-4B; *Bezel Swipe*, 2; *Roth*, [0009], [0010], [0015], [0036], [0039], Fig. 2B; *Wilairat*, [0003], [0009], [0012], [0015], Fig. 1; *Hinckley*, [0072], [0073], Fig. 6; *Palm Pre Plus User's Manual*, 20; *see also Palm Pre The Missing Manual*, 51-52; *Neonode N2 User Guide*, 7.

121. Implementing this functionality in *Tseng*'s system to pull down the message area as the user's finger crosses over the status bar would have been merely the straightforward application of known, conventional techniques used according to their known functions to yield predictable results (pulling down the message area, such as shown in *Tseng*'s FIGS. 2A-2C).



Tseng, FIG. 2C (dashed gliding gesture annotations added).

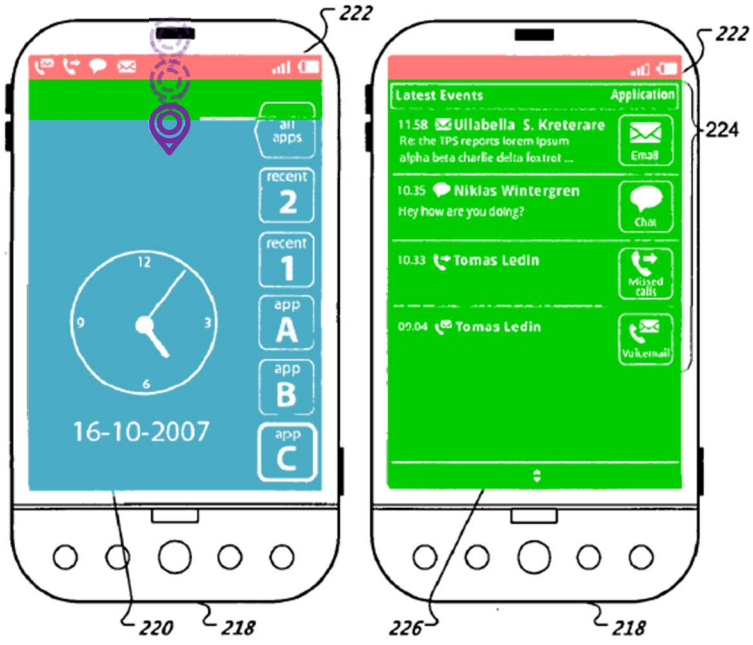


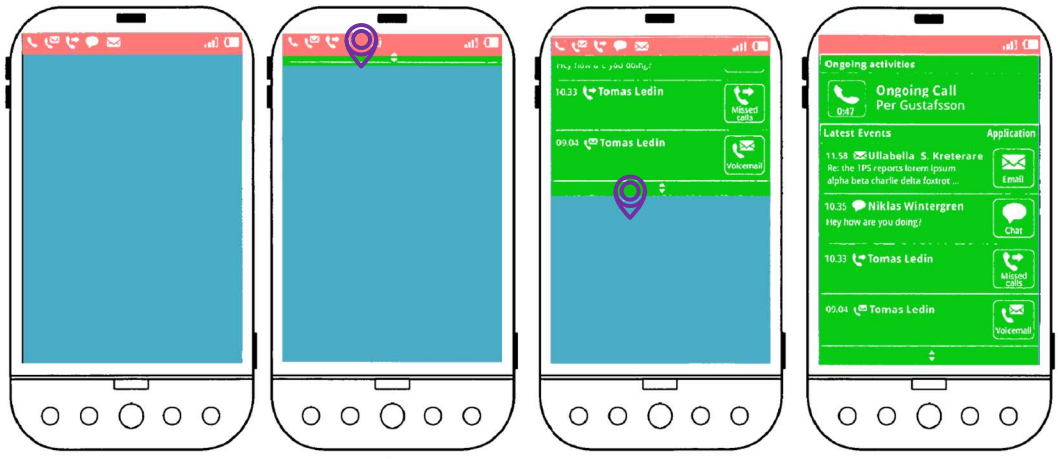
FIG. 2B

Tseng, FIG. 2B (excerpted, dashed gliding gesture annotations added).

f. [1e]: "wherein said at least one window is located on the touch screen before said gliding action begins."

122. In my opinion, *Tseng* discloses wherein said at least one window is located on the touch screen before said gliding action begins.

123. As I explain in [1b] and [1d], *Tseng* discloses displaying alerts and notifications of events (e.g., new emails or messages) in the "status bar" or "status area" on the touch screen to alert the user to the new events before the user begins the "finger swipe" (gliding action). *Tseng*, Abstract, [0010], FIGS. 1, 2A-2C, 3, 4A-4B, 5. For example, FIG. 2C (first image) shows both the active application and the status bar displayed on the touch screen, but the user's "finger swipe" (gliding action, dragging) gesture begins in the second, subsequent image to pull down the expanded notifications message area (third and fourth images). *Tseng*, [0057]-[0061], FIG. 2C.



Tseng, FIG. 2C.

124. This is further confirmed in FIG. 1, which shows different notification examples in the status bar, but no gliding action has occurred because the user continues to use the main application. *Tseng*, FIG. 1. Indeed, *Tseng* discloses that the user "drag[s] downward on the status bar" to display the expanded notifications menu, meaning that the status bar is already shown before the user begins the "finger swipe" (gliding action). *Tseng*, [0014], [0029], [0041], [0058], [0059], [0070], [0074], FIGS. 1, 2A-2C, 4A-4B.

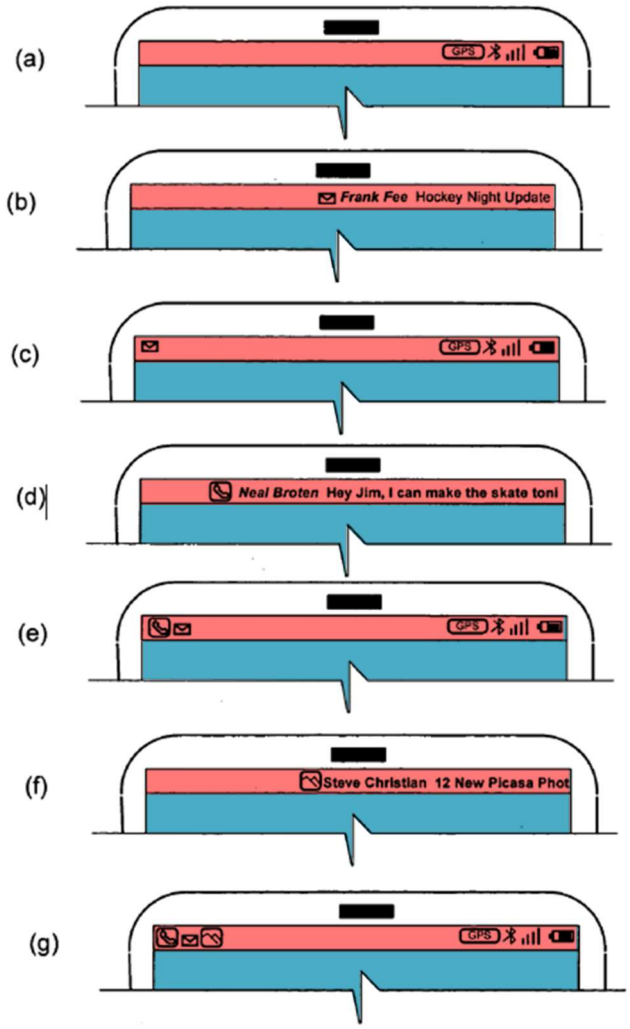


FIG. 1

Tseng, FIG. 1.

125. *Tseng* describes "aggregating, in the status bar, a plurality of icons that are each visually representative of one or more recently received messaging events." *Tseng*, [0010], [0014] ("present[ing] the notification message in a first zone near a perimeter of the graphical display," then "receiv[ing] a user selection in the first zone"), FIGS. 1, 2A, 2C, 5. *Tseng* explains that "the notifications may

occur by having a notification message—which may be an abbreviated form of the actual communication, e.g., a name and subject line for an incoming e-mail—be displayed in a peripheral area at the edge of a display, such as a status area, or status bar, for the mobile device." *Tseng*, [0028], FIGS. 1, 2A, 2C, 5. *Tseng* explains that, after the notifications are displayed in the status bar, more detail about the notifications can be shown by "the user pressing on the status bar and then dragging it downward across the top of the display," which describes the status bar already displayed before the dragging or gliding action can occur because the status bar shows the notifications that cause the user to then drag down on the status bar. *Tseng*, [0074], FIGS. 2A, 2C. If the status bar were not shown on the touch screen before the gliding action begins, the user would not know there were notifications to view and would not be able to drag it downward to view them.

126. *Tseng*'s flow charts in FIGS. 4A and 4B further confirm that the status bar showing event notifications is displayed on the touch screen before the user's gliding action (user "selection" or "finger swipe") begins. *Tseng*, [0070]-[0083], FIGS. 4A-4B. For example, in FIG. 4A, "[a]t box 402, status information is initially displayed on the device" in a "status bar along a periphery of a display screen …, such as along the top of a display screen." *Tseng*, [0071]. Then, "at box

410," which is subsequent (after) box 402, the "device receives a user's selection of the status bar," such as "pressing on the status bar and then dragging it downward across the top of the display." *Tseng*, [0074]. "FIG. 4B shows a process 420 that is similar to process 400 of FIG. 4A" and describes "plac[ing] an icon for the alert in the status area or status bar of the display" (step 424) before "a user selection, such as a user selection in the status bar area" begins (step 434). *Tseng*, [0078], [0080].

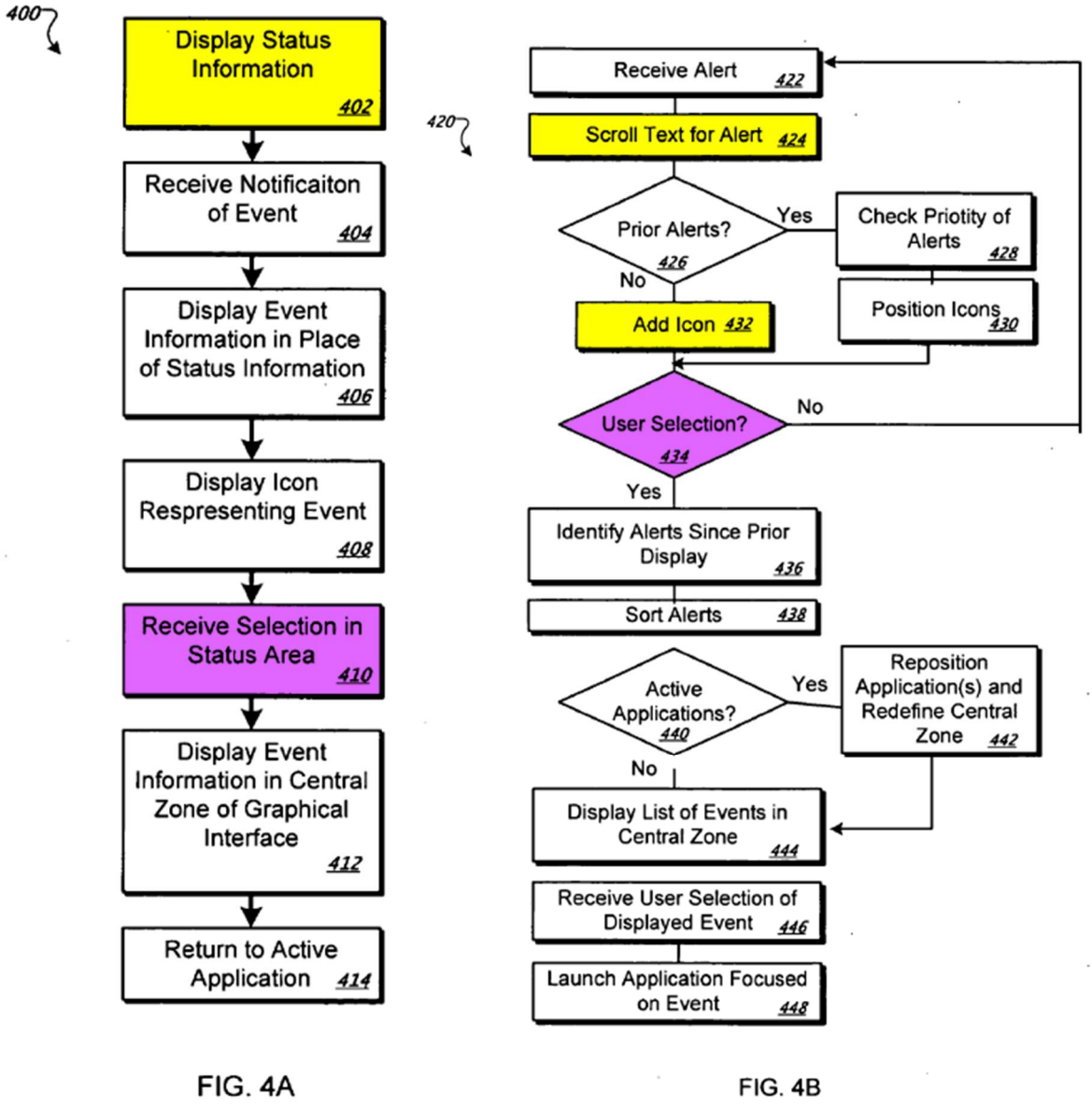


FIG. 4A FIG. 4B

Tseng, FIGS. 4A, 4B.

127. As I explain above, it is thus my opinion that *Tseng* renders obvious claim 1.

2. Claim 2: "The system of claim 1, wherein the system relates said gliding action to a function which is not related to a mouse function."

128. In my opinion, *Tseng* discloses wherein the system relates said gliding action to a function which is not related to a mouse function, as recited in claim 2.

129. *Tseng*'s "finger swipe" (gliding action) relates to pulling down a message area or notifications menu, as I explain in claim 1, which is not related to the types of "mouse" functions described in the '602 patent. *See supra* § XI.A.1. The '602 patent describes mouse functions, for example, as "control[ling] a mouse pointer," "control[ling] a mouse cursor," and "character entry." Ex. 1001, 36:10-13, 36:41-51. *Tseng* does not describe the status bar gliding gesture as performing any of these actions and does not describe opening a notifications menu as being associated with any such mouse functions.

3. Claim 3: "The system of claim 1, wherein said at least one window comprises at least one bar located on said edge of the screen."

130. In my opinion, *Tseng* discloses or renders obvious that said at least one window comprises at least one bar located on said edge of the screen, as recited in claim 3.

131. As I explain above in [1b], *Tseng* discloses that the "status *bar*" window is located "in a peripheral area at the edge of a display." *Tseng*, [0028] (emphasis added), FIGS. 1, 2A-2C, 3, 4A-4B, 5; *see supra* § XI.A.1.c. *Tseng* notes

that a "status *bar*" is "traditionally displayed—typically at the top of a display" on the edge, such as shown in FIGS. 1 and 2A-2C, which show the status bar displayed along the entire top edge of the touch-screen display. *Tseng*, [0028] (emphasis added).

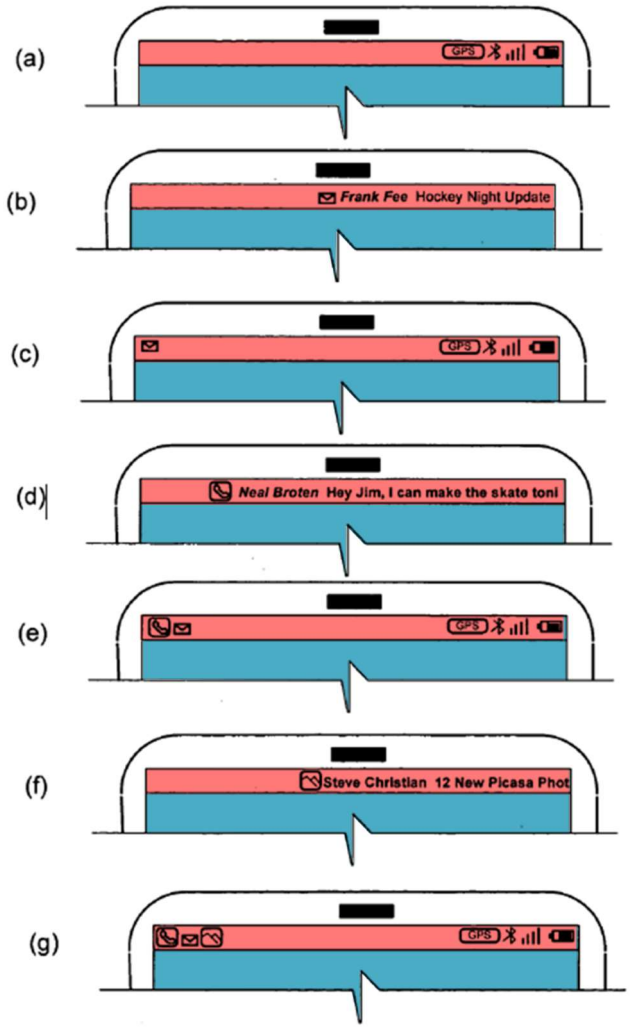
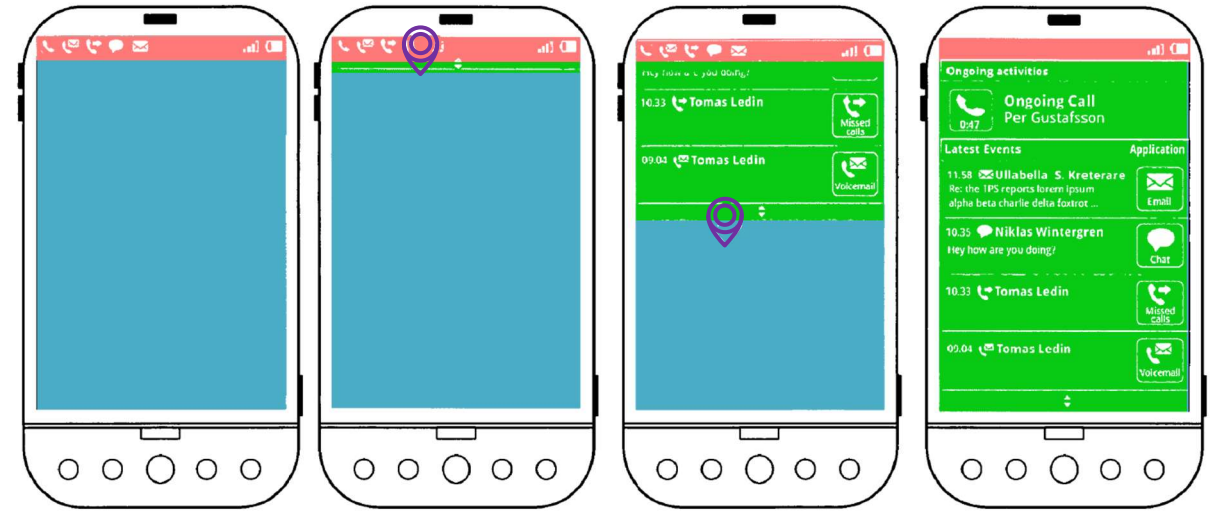


FIG. 1

Tseng, FIG. 1.



Tseng, FIG. 2C.

4. Claim 4: "The system of claim 3, wherein said at least one bar extends along a substantial portion of an edge of the touch screen."

132. In my opinion, *Tseng* discloses that said at least one bar extends along a substantial portion of an edge of the touch screen, as recited in claim 4.

133. As I explain above in [1b] and claim 3, *Tseng* discloses that the status bar extends along the entire top edge (e.g., a substantial portion of the top edge) of the touch screen. *See supra* §§ XI.A.1.c, XI.A.3; *Tseng*, FIGS. 1, 2A-2C.

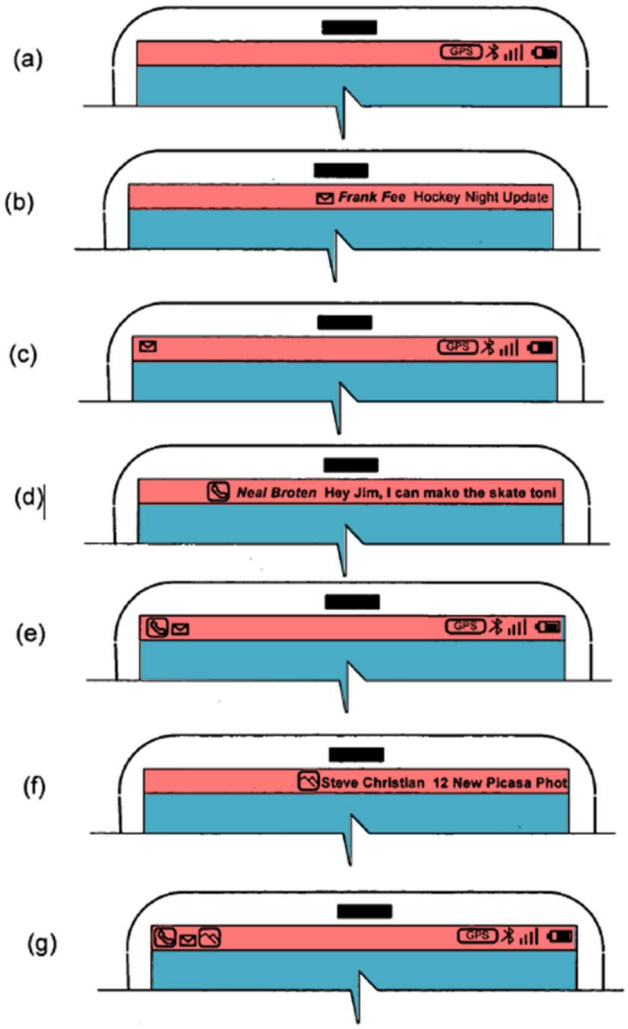
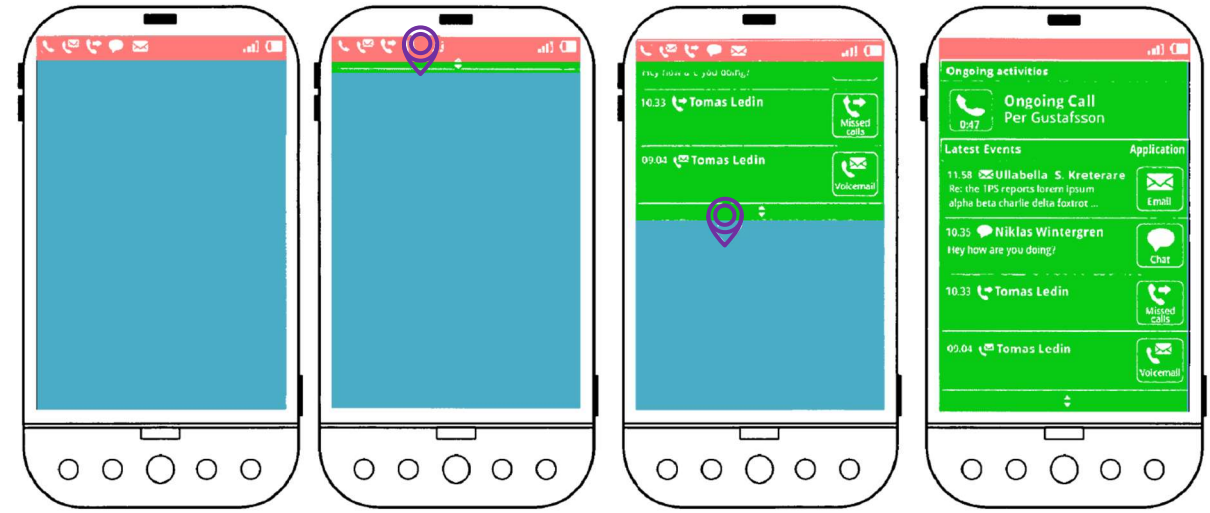


FIG. 1

Tseng, FIG. 1.



Tseng, FIG. 2C.

5. Claim 5: "The system of claim 3, wherein said bar is in a form of a line."

134. In my opinion, *Tseng* discloses that said bar is in a form of a line, as recited in claim 5.

135. For example, as I explain above in [1b] and claim 3, *Tseng*'s status bar window is in the form of a straight line across the top edge of the touch screen, such as shown in FIGS. 1, 2A-2C, and 5. *See supra* §§ XI.A.1.c, XI.A.3.

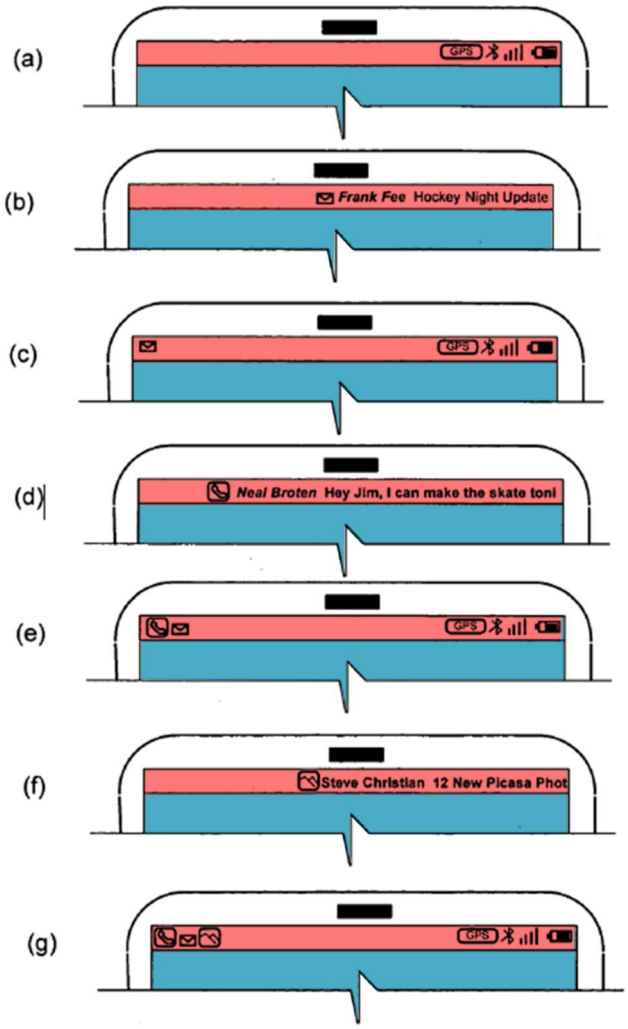
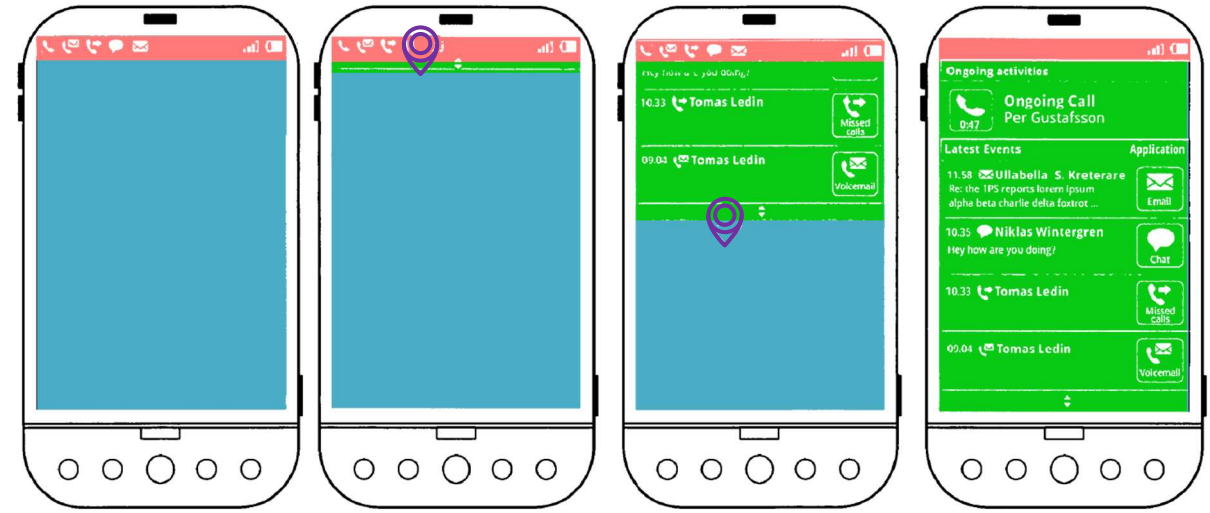


FIG. 1

Tseng, FIG. 1.



Tseng, FIG. 2C.

6. Claim 6: "The system of claim 5, wherein said action is displaying an interface on the screen."

136. In my opinion, *Tseng* discloses that said action is displaying an interface on the screen, as recited in claim 6.

137. For example, *Tseng* discloses that the user's "finger swipe" action over the status bar causes the system to display the notifications message area interface and, optionally, a reduced application area interface. *Tseng*, [0029], FIGS. 2A-2C, 4A-4B. *Tseng* explains that the user can interact with the notifications or alerts, such as by selecting one of the notifications to view the corresponding event or selecting an application icon to open the corresponding application. Alternatively, *Tseng* explains that the user can interact with the message area to clear, delete, or move the notifications or alerts.

138. When *Tseng*'s message area 206/224 is displayed, a user's "selection of a particular message may result in the full message being opened for the user in its corresponding application, while selection of an application icon may cause the application to be invoked," which describes an interface that allows the user to select the particular notification or corresponding application to view. *Tseng*, [0053]; *see also Tseng*, [0044] ("A user selection of one of the messages in the message area 206 will bring up the application opened to that message, while the selection of one of the application icons 212 will bring up the particular selected application with its various messages displayed …."). *Tseng* further explains that, "[i]f the user would like to see more about a particular message, they may select that particular message and may be taken to the relevant application for that message, with the message open." *Tseng*, [0075] ("The user may also select an icon to open the relevant application (or they may select a line that lists the number of messages of a certain type, when such a display is provided), and the message previously shown in the display will generally be the top message when the application opens.").

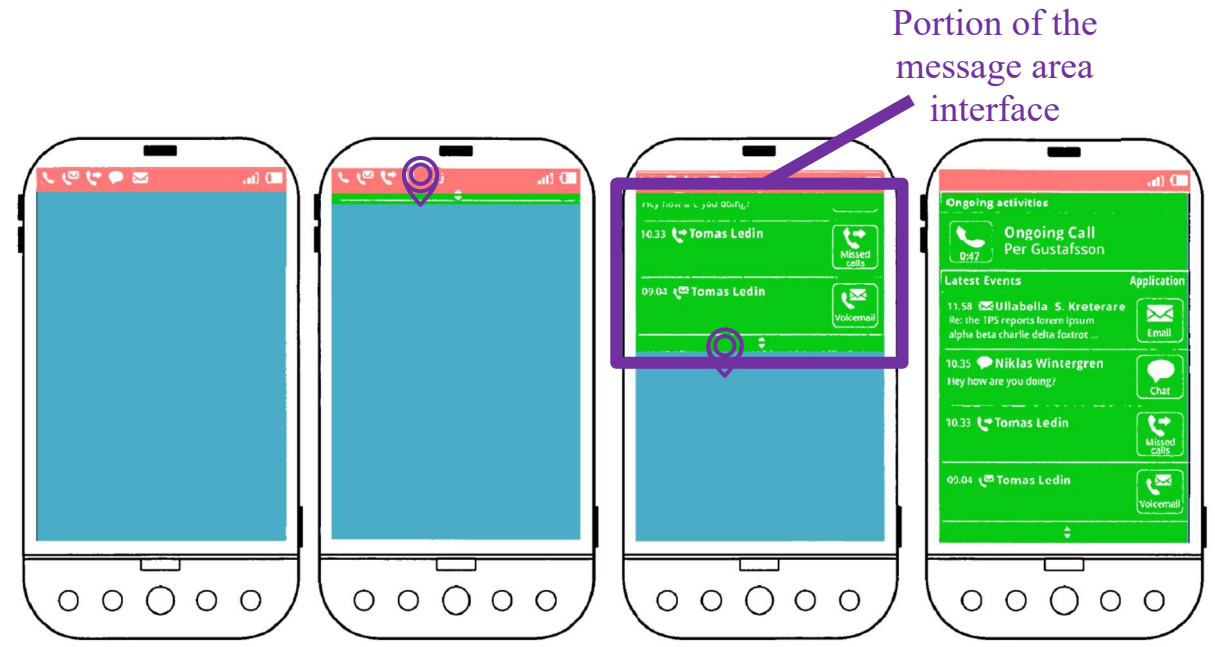
139. As further confirmation that the action to open the message area 206/224 displays an interface on the screen, *Tseng* explains that "[t]he user may … handle each message [in the message area] as he or she sees fit, such as by reviewing it and then deleting or moving it." *Tseng*, [0075]. A POSITA would

have recognized that the ability to review, delete, or move a notification while accessing the message area 206/224 describes an interface.

7. Claim 7: "The system of claim 5, wherein said action is displaying a portion of an interface on the screen."

140. In my opinion, *Tseng* discloses that said action is displaying a portion of an interface on the screen, as recited in claim 7.

141. For example, as shown in FIG. 2C's third image, *Tseng*'s gliding action displays a portion of the message area interface 206/224 corresponding substantially to the length of the gliding action. *Tseng* explains that the gliding action "may take the form of a finger swipe across the face of the display, where the edge of the [message area] element showing an extended view of the messaging events 'sticks' to the user's finger as the finger moves past." *Tseng*, [0029], [0059]. FIG. 2C shows the portion of the message area interface displayed on the touch screen while the user's finger is swiping/gliding downward from the status bar. As I explain below, this portion may be substantially the same as the distance the user has dragged his or her finger along the touch screen. *See infra* §§ XI.A.8, XI.A.13.



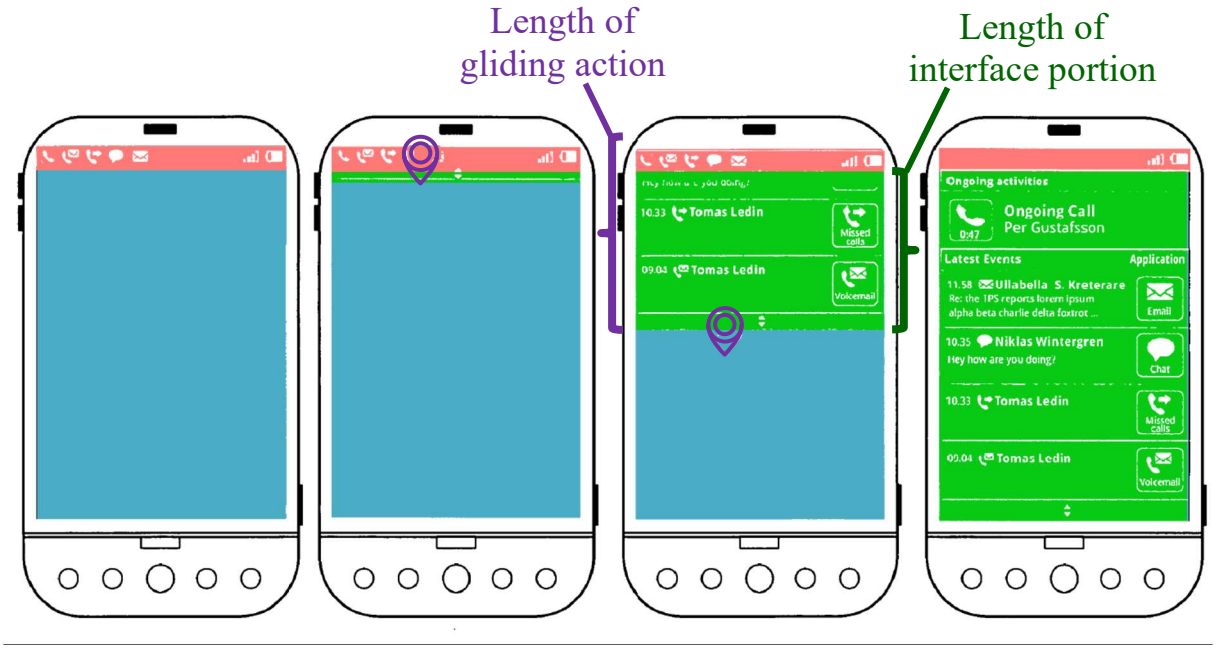
Tseng, FIG. 2C (annotated).

142. Furthermore, and alternatively, *Tseng* explains that, if the new message notifications "do not all fit on the display at one time, the presence of additional off-screen messages may be indicated by a fading out of the last message toward the edge of the display (e.g., a fade-to-black where the background is black)." *Tseng*, [0030]; *see also Tseng*, [0043], [0059]. Thus, *Tseng* discloses that, when the system cannot display all of the new message notifications on the screen, only a portion of the interface is displayed to show some of the notifications, with the remainder of the interface fading to black at the top and/or bottom to indicate the presence of additional notifications.

8. Claim 8: "The system of claim 7, wherein during said gliding action, a length of the portion of the interface being displayed is substantially equal to a length of the gliding action."

143. In my opinion, *Tseng* discloses that during said gliding action, a length of the portion of the interface being displayed is substantially equal to a length of the gliding action, as recited in claim 8.

144. For example, as shown in *Tseng*'s FIG. 2C's second and third images, and as I explain above in claim 7, during the user's "finger swipe [gliding action] across the face of the display, … the edge of the element [message area] showing an extended view of the messaging events 'sticks' to the user's finger as the finger moves past" to display a portion of the interface substantially equal to the length of the swipe. *Tseng*, [0029], [0058], [0059]; *see supra* § XI.A.7. A POSITA would have recognized that the message area "stick[ing]" to the user's finger as it pulls down the interface means that the edge of the message area tracks and moves with the user's touch as it glides downward from the status bar across the screen, as shown in FIG. 2C. FIG. 2C shows, consistent with this understanding, that the size of the message area shown is substantially equal to the length of the gilding action, especially as the gliding action increases in length because any difference at the start of the gliding action becomes trivial as the gliding action progresses.



Tseng, FIG. 2C (annotated).

9. Claim 9: "The system of claim 3, wherein said action is displaying an interface on the screen."

145. The additional limitations of claim 9 are substantively the same as those in claim 6. In my opinion, *Tseng* discloses the additional limitations of claim 9 for the reasons discussed for claim 6. *See supra* § XI.A.6.

10. Claim 10: "The system of claim 3, wherein said action is displaying a portion of an interface on the screen."

146. The additional limitations of claim 10 are substantively the same as those in claim 7. In my opinion, *Tseng* discloses the additional limitations of claim 10 for the reasons discussed for claim 7. *See supra* § XI.A.7.

11. Claim 11: "The system of claim 10, wherein during said gliding action, a length of the portion of the interface being displayed is substantially equal to a length of the gliding action."

147. The additional limitations of claim 11 are substantively the same as those in claim 8. In my opinion, *Tseng* discloses the additional limitations of claim 11 for the reasons discussed for claim 8. *See supra* § XI.A.8.

12. Claim 12: "The system of claim 1, wherein upon detecting said gliding action, the system displays an interface on said touch screen."

148. The additional limitations of claim 12 are substantively the same as those in claims 6 and 9. In my opinion, *Tseng* discloses the additional limitations of claim 12 for the reasons discussed for claims 6 and 9. *See supra* §§ XI.A.6, XI.A.9.

13. Claim 13: "The system of claim 12, wherein upon detecting said gliding action, the system relates said gliding action to setting the location of said interface on said touch screen."

149. In my opinion, *Tseng* discloses or renders obvious that, upon detecting said gliding action, the system relates said gliding action to setting the location of said interface on said touch screen, as recited in claim 13.

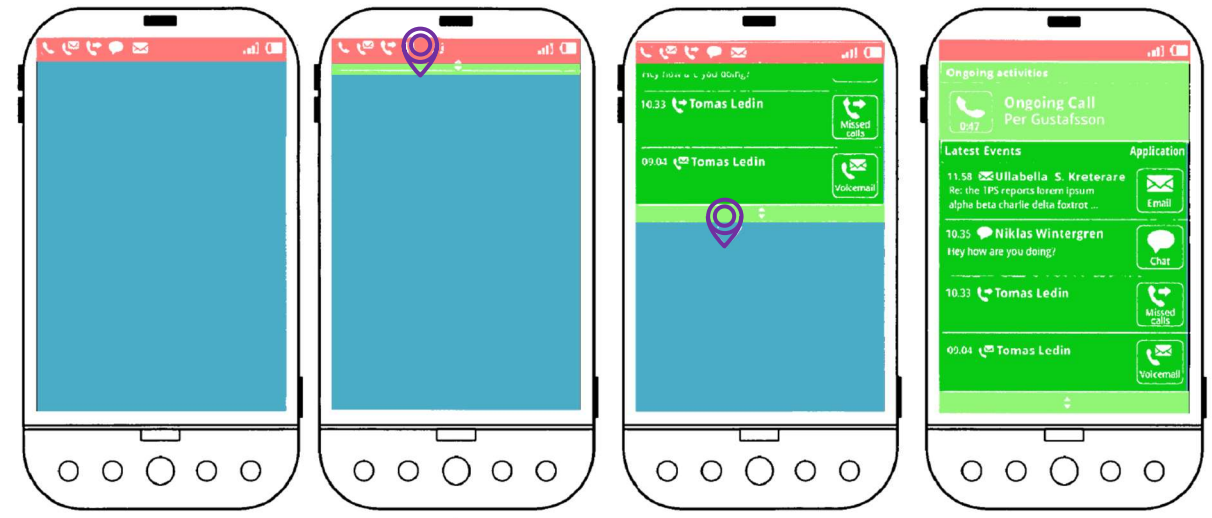
150. For example, *Tseng* discloses that if the user drags (e.g., swipes, glides) the message area 206/224 down to the bottom of the screen and then back up, it may remain "partially" open. *Tseng*, [0046]. That is, *Tseng* teaches that the

message area interface is dragged open, "stick[ing]" with the user's finger until the finger stops and is lifted from the touch screen. The interface then remains partially open at the point where the user's finger was lifted. The user may then interact with the partially shown interface. For example, the message area remains only partially open unless "the user pulls the bar below a determined level on the display," when it will fully open. *Tseng*, [0060]. For example, as shown in FIG. 2C, the bottom of the message area interface and the corresponding interactive elements (e.g., rows of alerts and application icons that the user can select, such as the alert for the voicemail from Tomas Ledin) moves down the screen to positions or locations on the screen that previously displayed the main application.

151. In another example, *Tseng* explains that, "if a user drags the bar quickly and releases it, the bar may continue moving *until its momentum runs out or* until it hits the bottom of the display." *Tseng*, [0060] (emphasis added). A POSITA would have understood that this describes it being possible for the message area to stop *before* the bottom of the display is reached because it does not have enough momentum to reach the bottom of the screen.

152. In each of these examples, a POSITA would have recognized that the message area may be displayed over some, but not all, of the touch screen's display area, thereby setting the location of the interface as a proportion of the screen dictated by the user's gliding action.

153. Moreover, as shown in *Tseng*'s FIG. 2C, the system relates the user's finger swipe gliding action to setting the location of the interface for message area 206/224, for example, being shown at the top of the screen in the third image and below the application area 214 in the fourth image. The interface for message area 206/224 is also above the drag-down indicator bar of the pull down interface. Thus, the location of the message area 206/224 changes based on the user's gliding action, moving down the screen, depending on how far the user has dragged open the overall pull-down menu interface. In the four images below, I emphasize this by showing the interface for message area 206/226 in darker green, while the rest of the notifications pull-down interface is in lighter green.



Tseng, FIG. 2C.

154. I have also been asked to consider the situation in which *Tseng* is considered not to disclose the additional limitations of claim 13. In such case, in

my opinion, *Tseng* renders the additional limitations of claim 13 obvious. As I explain above, *Tseng* describes partially displaying the message area interface based on the length of the user's dragging action. *See Tseng*, [0046], [0060]. A POSITA would have been motivated to allow the user to partially open the message area 206/224. For example, *Tseng* explains that "events may also be group [sic] by event type—such as by one line in the display listing the number of e-mails that have been received since the last time notifications were cleared, another listing the number of text messages, another listing the number of updates for downloaded applications, and the like." *Tseng*, [0075]. This, along with *Tseng*'s other teachings, would have suggested to a POSITA that it would have been beneficial to allow a user to partially open the message area until the user finds the specific notification he or she is interested in, e.g., new email notifications. The user would then be able to cease opening the message area to "handle each message as he or she sees fit, such as by reviewing it and then deleting or moving it." *Tseng*, [0075]. This would have allowed users to interact with the notification alert details that most interested them, but also retain the ability to see some of the underlying application in the main display area, thereby providing a motivation to a POSITA to implement this functionality.

155. A POSITA would have reasonably expected to succeed in implementing this partial opening in *Tseng*'s system. *Tseng* discloses that "the

edge of the element [message area] showing an extended view of the messaging events 'sticks' to the user's finger as the finger moves past" during the finger swipe (gliding action). *Tseng*, [0029], FIG. 2C. A POSITA would have recognized that it only needs to open the window to the point that the user lifts their finger from the screen with the message area window being partially open if the finger is lifted before the bottom of the screen is reached, as I explain above. Such processes, implemented in *Tseng*, represent nothing more than combining prior art elements according to known methods and techniques (identifying a user's gliding action and displaying the message area window commensurate with the length of the user's drag before lifting the finger) to yield predictable results (opening *Tseng*'s notification menu, such as by sliding it open, as disclosed by *Tseng*). Implementing this functionality in *Tseng*'s system to pull down the message area as far as the location of the user's dragging action until the finger is lifted would have been merely the straightforward application of known, conventional techniques used according to their known functions to yield predictable results (pulling down the message area until the user's finger is lifted from the screen).

14. Claim 17: "The system of claim 1, wherein during providing said gliding action, the system dynamically drags and shows an interface or a portion of an interface on the touch screen."

156. In my opinion, *Tseng* discloses wherein during providing said gliding action, the system dynamically drags and shows an interface or a portion of an interface on the touch screen.

157. As I explain above in claims 1, 7, 8, and 13, *Tseng* discloses that, during the dragging (gliding) action, the mobile device dynamically "drags" and shows the menu interface or a portion of the menu interface on the touch screen that "sticks" with the user's finger during the gliding action, such as shown in FIG. 2C. *See supra* §§ XI.A.1, XI.A.7, XI.A.8, XI.A.13.

15. Claim 18: "The system of claim 1, wherein the processor relates a gliding action provided towards any arbitrary direction inside the screen to presenting a same interface."

158. In my opinion, *Tseng* discloses that the processor relates a gliding action provided towards any arbitrary direction inside the screen to presenting a same interface, as recited in claim 18.

159. For example, *Tseng* discloses "a finger swipe across the face of the display, where the edge of the element showing an extended view of the messaging events 'sticks' to the user's finger as the finger moves past." *Tseng*, [0029], [0058], [0059], FIG. 2C. *Tseng* also discloses that the message area travels up and down

with the user's finger, as I explain above for claims 7, 8, and 13. *See supra* §§ XI.A.7, XI.A.8, XI.A.13. A POSITA would have recognized that this "stick[ing]" would have allowed the user's finger to glide in any direction on the screen from the status bar (e.g., from the status bar towards any arbitrary direction inside the screen dragging open the message area) to show the same message area interface.

160. A POSITA would have recognized that, because *Tseng* describes a pull-down interface that pulls down from the status bar, the device would have used the Y-coordinate of the user's gliding action to "stick[]" the message area to the user's gliding action.[23] Thus, the user's gliding action would be able to proceed in any direction inside the interface, but the pull-down action would show the same interface that comprises the entire width of the screen, as shown, for example, in FIGS. 2A-2C. *Tseng*, FIGS. 2A-2C.

[23] Whether *Tseng*'s device also tracks the X-component of the gliding action does not change the result. If it does, and chooses to ignore the X-component, the same interface is displayed as if the X-component is not tracked. Moreover, this does not change that the *user's gliding action* continues in any arbitrary direction to pull down the message area interface.

16. Independent Claim 19[24]

a. [19pre]: "A system for capturing an event provided from an edge of a touch screen comprising:"

161. [19pre] recites substantively the same limitations as those in [1pre]. In my opinion, *Tseng* discloses [19pre] for the reasons discussed for [1pre]. *See supra* § XI.A.1.a.

b. [19a]: "a device having a touch screen;"

162. [19a] recites substantively the same limitations as those in [1a]. In my opinion, *Tseng* discloses [19a] for the reasons discussed for [1a]. *See supra* § XI.A.1.b.

c. [19b]: "a zone in form of a bar located in the touch screen on an edge of the touch screen; and"

163. [19b] recites substantively similar limitations to [1b] and claim 3, except that [19b] does not require that the "zone" be a "window," as recited in [1b].[25]

164. In my opinion, *Tseng* discloses [19b] for at least similar reasons to those discussed for [1b] and claim 3 (in the form of a bar). *See supra* § XI.A.1.c.

[24] I have considered claim 19 as recited in the Certificate of Correction issued February 16, 2021. *See* Ex. 1001, Certificate of Correction.

[25] The "functions independently" limitation of [1b] is discussed below in [19d].

Tseng also explains that the status bar or status area is a "*first zone* near a perimeter of the graphical display" and is in the form of a bar positioned "in a peripheral area at the edge of a display." *Tseng*, [0014], [0028], FIGS. 1, 2A-2C, 3, 4A-4B, 5 (emphasis added).

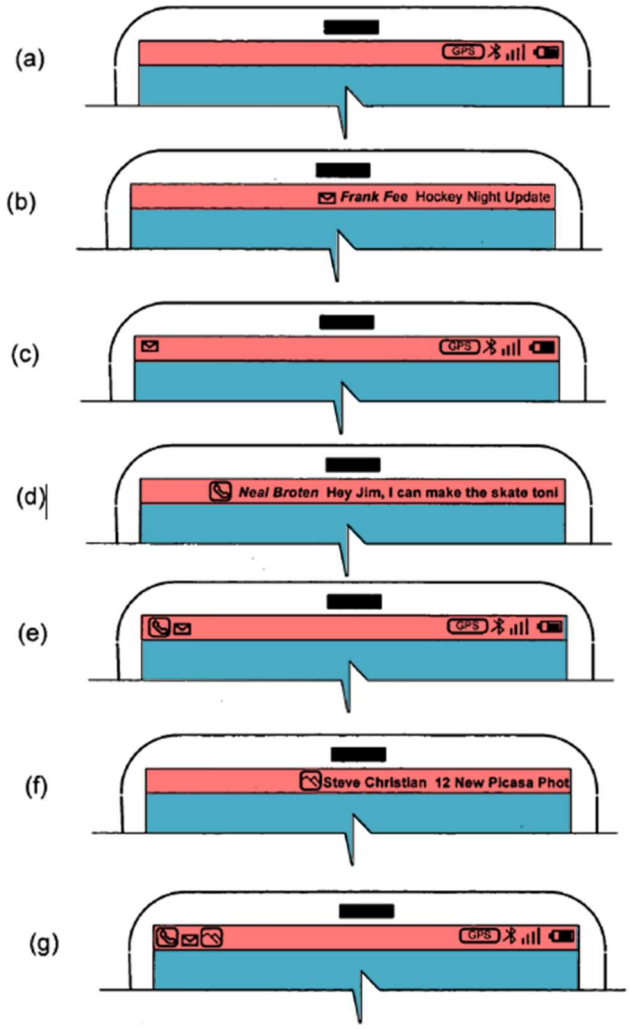
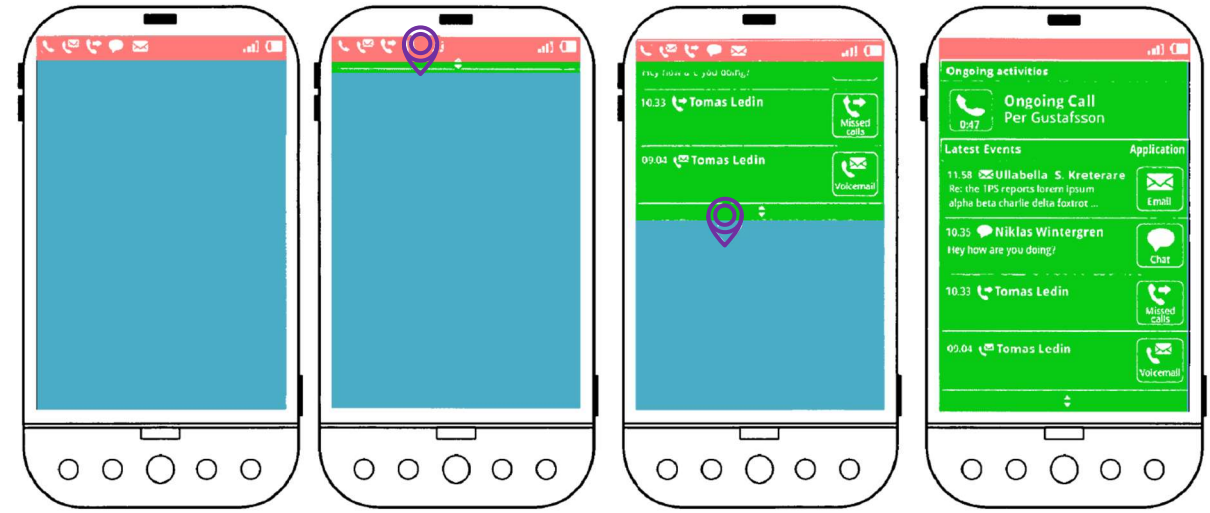


FIG. 1

Tseng, FIG. 1.



Tseng, FIG. 2C.

d. [19c]: "a processor;"

165. [19c] recites substantively the same limitations as those in [1c]. In my opinion, *Tseng* discloses [19c] for the reasons discussed for [1c]. *See supra* § XI.A.1.d.

e. [19d]: "wherein a gliding action provided from said zone of the touch screen towards any arbitrary direction inside the touch screen at first interacts with said zone, and wherein the processor executes a function related to said zone, and wherein said zone is present on said edge regardless of the interface of an application on said touch screen, and"

166. In my opinion, *Tseng* discloses or renders obvious a gliding action provided from said zone of the touch screen towards any arbitrary direction inside the touch screen at first interacts with said zone, and wherein the processor

executes a function related to said zone, and wherein said zone is present on said edge regardless of the interface of an application on said touch screen.

167. For example, as I explain in [1d], *Tseng* discloses that a user's gliding action (e.g., "finger swipe") provided from the status bar zone of the touch screen towards the inside of the touch screen at first interacts with the status bar when the user's finger contacts the status bar (either by starting on the status bar or, as I explain in [1d], gliding from offscreen to onscreen through the status bar). *See supra* § XI.A.1.e.

168. As I explain for claim 18, *Tseng* discloses that the user's gliding action to display the message area 206/224 may be towards any arbitrary direction inside the touch screen to open the message area interface. *See supra* § XI.A.15.

169. As I explain in [1d], *Tseng*'s processor executes the function related to the status bar zone of displaying the message area 206/224 in response to the user's gliding action. *See supra* § XI.A.1.e.

170. As I explain in [1b] and [1d], *Tseng*'s status bar zone (which *Tseng* also refers to as a "first zone" (*Tseng*, [0014])) is displayed (present) on the top edge of the screen regardless of the interface of an application displayed in the main area of the touch screen. *See supra* §§ XI.A.1.c, XI.A.1.e.

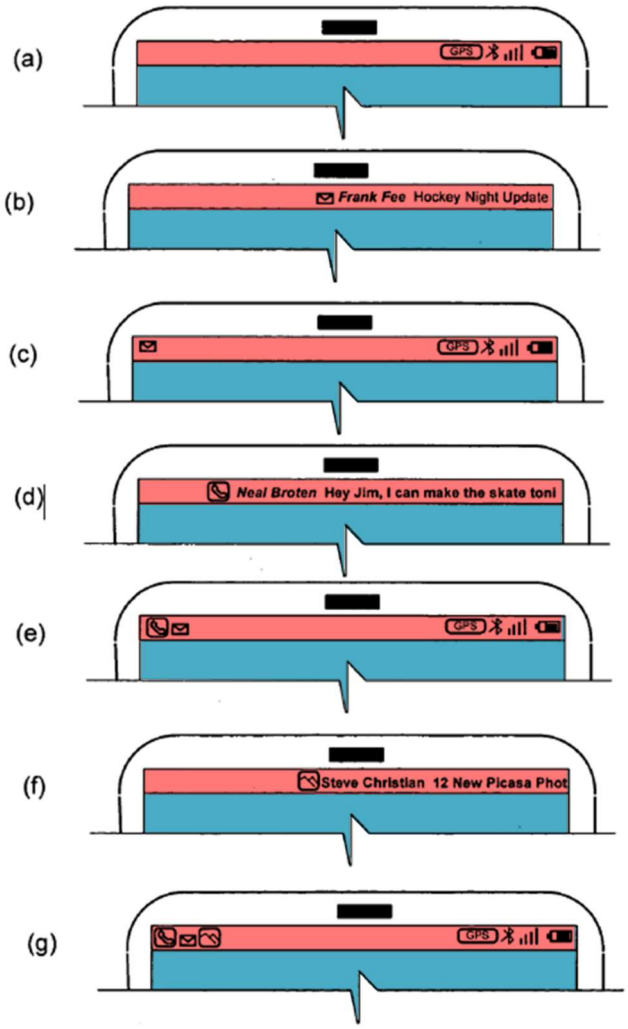
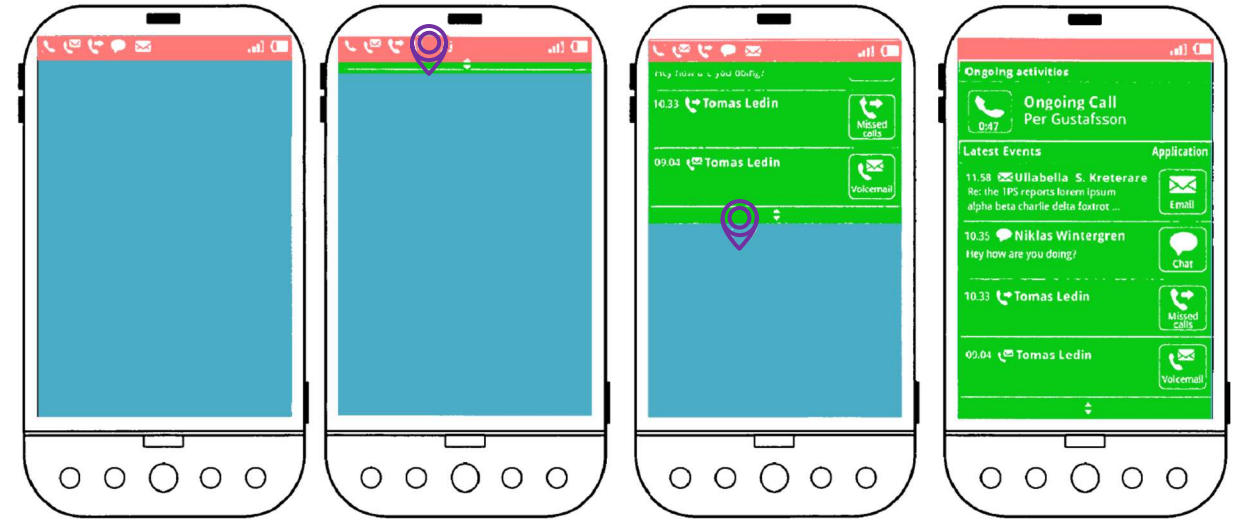


FIG. 1

Tseng, FIG. 1.



Tseng, FIG. 2C; *see also Tseng*, FIG. 2B.

f. [19e]: "wherein said zone is located on the touch screen before said gliding action begins."

171. [19e] recites substantively the same limitations as those in [1e], except that it recites a "zone" instead of a "window," as I explain in [19b]. In my opinion, *Tseng* discloses [19e] for the reasons discussed for [1e] and [19b]. *See supra* §§ XI.A.1.f, XI.A.16.c.

17. Claim 21: "The system of claim 19, wherein upon detecting said gliding action, the system relates said gliding action to setting the location of an interface on the touch screen."

172. The additional limitations of claim 21 are substantively the same as those in claim 13. In my opinion, *Tseng* discloses or renders obvious the additional limitations of claim 21 for the reasons discussed for claim 13. *See supra* § XI.A.13.

18. Claim 23: "The system of claim 19, wherein said zone is in a form of a visible or invisible line."

173. The additional limitations of claim 23 are substantively the same as those in claim 5. In my opinion, *Tseng* discloses the additional limitations of claim 23 for the reasons discussed for claim 5, for example, because the status bar is a visible line at the top edge of the touch screen. *See supra* § XI.A.5.

19. Claim 24: "The system of claim 23, wherein said function is displaying an interface on the screen."

174. The additional limitations of claim 24 are substantively the same as those in claims 6, 9, and 12. In my opinion, *Tseng* discloses the additional limitations of claim 24 for the reasons discussed for claims 6, 9, and 12. *See supra* §§ XI.A.6, XI.A.9, XI.A.12.

20. Claim 25: "The system of claim 23, wherein said function is displaying a portion of an interface on the screen."

175. The additional limitations of claim 25 are substantively the same as those in claims 7 and 10. In my opinion, *Tseng* discloses the additional limitations of claim 25 for the reasons discussed for claims 7 and 10. *See supra* §§ XI.A.7, XI.A.10.

21. Claim 26: "The system of claim 23, wherein said function is displaying a portion of an interface on the screen, and wherein a length of said portion of the interface is substantially equal to a length of the gliding action."

176. The additional limitations of claim 26 are substantively the same as those in claims 8 and 11. In my opinion, *Tseng* discloses the additional limitations of claim 26 for the reasons discussed for claims 8 and 11. *See supra* §§ XI.A.8, XI.A.11.

22. Claim 27: "The system of claim 19, wherein said bar is visible or invisible."

177. The additional limitations of claim 27 are substantively the same as those in claims 5 and 23. In my opinion, *Tseng* discloses the additional limitations of claim 27 for the reasons discussed for claims 5 and 23. *See supra* §§ XI.A.5, XI.A.18.

23. Claim 28: "The system of claim 27, wherein said function is displaying an interface on the screen."

178. The additional limitations of claim 28 are substantively the same as those in claims 6, 9, 12, and 24. In my opinion, *Tseng* discloses the additional limitations of claim 28 for the reasons discussed for claims 6, 9, 12, and 24. *See supra* §§ XI.A.6, XI.A.9, XI.A.12, XI.A.19.

24. Claim 29: "The system of claim 27, wherein said function is displaying a portion of an interface on the screen."

179. The additional limitations of claim 27 are substantively the same as those in claims 7, 10, and 25. In my opinion, *Tseng* discloses the additional limitations of claim 29 for the reasons discussed for claims 7, 10, and 25. *See supra* §§ XI.A.7, XI.A.10, XI.A.20.

25. Claim 30: "The system of claim 29, wherein during said gliding action, a length of the portion of the interface being displayed is substantially equal to a length of the gliding action."

180. The additional limitations of claim 30 are substantively the same as those in claims 8, 11, and 26. In my opinion, *Tseng* discloses the additional limitations of claim 30 for the reasons discussed for claims 8, 11, and 26. *See supra* §§ XI.A.8, XI.A.11, XI.A.21.

26. Claim 31: "The system of claim 19, wherein during providing said gliding action, the system dynamically drags and shows an interface or a portion of an interface on the touch screen."

181. The additional limitations of claim 31 are substantively the same as those in claim 17. In my opinion, *Tseng* discloses the additional limitations of claim 31 for the reasons discussed for claim 17. *See supra* § XI.A.14.

27. Claim 32: "The system of claim 19, wherein said function is displaying a same interface for any said gliding action, said gliding action interacting with any portion of said zone."

182. In my opinion, *Tseng* discloses that said function is displaying a same interface for any said gliding action, said gliding action interacting with any portion of said zone, as recited in claim 32.

183. As I explain for claim 18 and [19d], *Tseng* discloses or renders obvious that the same message area interface is displayed regardless of the gliding action by the user. *See supra* §§ XI.A.15, XI.A.16.e.

184. *Tseng* also explains that the user "may select more generally in the status bar" and drag to display the message area, which describes the user's gliding action interacting with any portion of the status bar zone. *Tseng*, [0038]. Similarly, *Tseng* discloses that the user's gliding action may be "a press by a user on the device 218 over the status bar 222, with a subsequent dragging downward of the status bar 222." *Tseng*, [0053]; *see also Tseng*, [0029] (describing the user "pressing on the status area and dragging downward to pull out the messages"), [0058] (describing the user "pressing on the display with a fingertip on top of the status bar"), [0074] (describing "the user pressing on the status bar and then dragging it downward across the top of the display"), FIGS. 2A-2C. *Tseng* does not require touching any particular part of the status bar, and a POSITA would have recognized that it does not limit the portion of the status bar that can be

touched to pull down the message area. Thus, *Tseng* describes the user being able to interact with any portion of the status bar when performing the gliding action to pull open the message area.

28. Claim 33: "The system of claim 32, wherein said gliding action is provided from outside the touchscreen towards inside the touch screen, wherein said gliding action at first interacts with said zone on said touch screen."

185. The additional limitations of claim 32 are substantively the same as those in [1d]. In my opinion, *Tseng* discloses or renders obvious the additional limitations of claim 33 for the reasons discussed for [1d]. *See supra* § XI.A.1.e.

29. Claim 34: "The system of claim 19, wherein said function is displaying a portion of an interface on the screen."

186. The additional limitations of claim 34 are substantively the same as those in claims 7, 10, 25, and 29. In my opinion, *Tseng* discloses or renders obvious the additional limitations of claim 34 for the reasons discussed for claims 7, 10, 25, and 29. *See supra* §§ XI.A.7, XI.A.10, XI.A.20, XI.A.24.

30. Claim 35: "The system of claim 34, wherein during said gliding action, a length of the portion of the interface being displayed is substantially equal to a length of the gliding action."

187. The additional limitations of claim 35 are substantively the same as those in claims 8, 11, 26, and 30. In my opinion, *Tseng* discloses the additional

limitations of claim 35 for the reasons discussed for claims 8, 11, 26, and 30. *See supra* §§ XI.A.8, XI.A.11, XI.A.21, XI.A.25.

31. Claim 36: "The system of claim 19, wherein said zone extends along a substantial portion of said edge."

188. The additional limitations of claim 36 are substantively the same as those in claim 4. *Tseng* discloses the additional limitations of claim 36 for the reasons discussed for claim 4. *See supra* § XI.A.4.

B. Ground 2: Claims 1-13, 17, 18, and 33 Are Rendered Obvious by *Tseng* and *Wilairat*

1. Claims 1 and 33

189. I have also been asked to consider the situation in which *Tseng* is considered not to disclose or render obvious the gliding action being provided from outside of the touch screen towards the inside of the touch screen ([1d], claim 33). I have similarly been asked to consider the situation in which this gliding action is interpreted to require that the device determine that the user's finger started offscreen and moved onscreen during the gliding action. In my opinion, *Wilairat* renders both of these considerations obvious.

190. *Wilairat* discloses that "a touch pull-in gesture" is detected when a user "initiate[s] a touch input with a finger just off an edge of the touch-screen and then motion[s] a pull-in gesture across the touch-screen." *Wilairat*, [0009], [0012], [0015], Fig. 1. This pull-in gesture is detected by "a contact region 124

progressively expand[ing], such as illustrated when the hand moves from the edge of the touch-screen at position 118 [outside the touch-screen] to position 120, and then from position 120 to position 122 [inside the touch-screen]" of Fig. 1. *Wilairat*, [0012], Fig. 1.

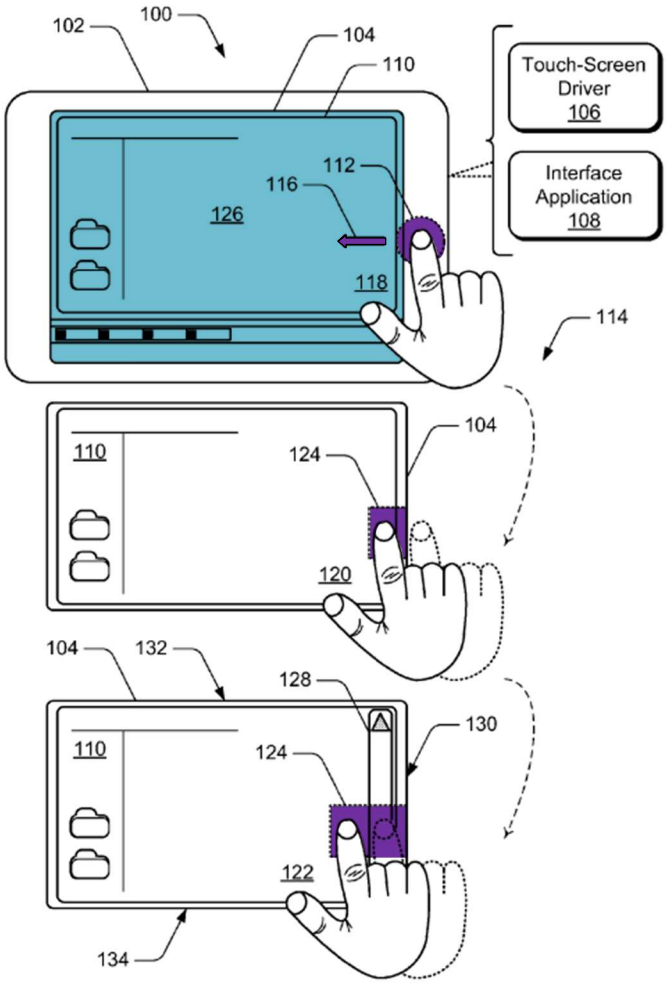


Fig. 1

Wilairat, Fig. 1.

191. A POSITA would have found it obvious to incorporate *Wilairat*'s functionality determining that the gliding gesture begins offscreen and moves

onscreen into *Tseng*'s system. *Wilairat* also teaches that a "user interface component" revealed by the pull-in gesture may be a "hidden menu, slide menu, drop-down menu, … and/or any other type of user interface displayable element," *Wilairat*, [0009], like *Tseng*'s message area 206/224, which is a menu-like interface, to "interact as necessary with the various messages and/or applications," *Tseng*, [0076]. A POSITA would have found this functionality obvious to determine that the user intended to activate *Tseng*'s pull-down message area by determining a pull-in gesture, as taught by *Wilairat*, because it helps the system differentiate between intentional actions (e.g., the pull-in gesture (gliding action) from offscreen) and actions taken on the main display occurring very close to the status bar that a user might have accidentally begun on the status bar.

a. Motivation to Combine

192. In my opinion, a POSITA would have been motivated to incorporate *Wilairat*'s pull-in gesture determination into *Tseng*'s system to activate *Tseng*'s pull-down message area from the status bar. A POSITA would have recognized that this operation has certain benefits to users, such as allowing the status bar to be thinner, as I explain above in Ground 1, [1d], because the user does not need to land directly on the status bar (such as by tapping it). *See supra* § XI.A.1.e; *Bezel Swipe*, 2; *Roth*, [0009], [0010], [0015]. A POSITA also would have recognized that incorporating a pull-in gesture determination would have required more

intentionality by users without sacrificing accuracy because users could be informed (e.g., in a user's manual or device tutorial) that the notifications message area could be displayed using a gesture that begins offscreen and swipes onscreen. This would have benefitted users because such gestures are "low precision," meaning that the user gliding from offscreen across the status bar towards the inside of the screen would be determined as a "pull-in gesture" gliding action and activate the pull-down menu. Low-precision gestures are easier for users to activate, and a POSITA would have been motivated to incorporate it to activate *Tseng*'s message area pull-down menu to avoid frustration by users believing that they must start on the status bar and be frustrated by placing the touch close to, but below, the status bar or by accidentally starting on the status bar when trying to touch a location next to the status bar in the main application area.

193. At least two previous devices included pull-in gliding actions—the Palm Pre and the Neonode N2—which would have further motivated a POSITA as a known method of improving similar devices.



Palm Pre Plus User's Manual, 20; *see also Palm Pre The Missing Manual*, 51-52.

1.13 Vertical areas:

1. The left part of the screen is called the Start menu sweep area.
2. The middle part of the screen is called the Keyboard sweep area.
3. The right part of the screen is called the Tools menu sweep area.

In the vertical areas you start the sweep at the very bottom of the screen. Sweep upwards. The sweep should be about half the height of the screen.

A sweep in the left part of the screen opens the start menu. A sweep in the middle opens the keyboard and a sweep in the right part of the screen opens the tools menu.



Neonode N2 User Guide, 7.

See also Goertz, [0047], [0071], Fig. 2 (describing Neonode phone having a "menu area" separate from the "display area"; "FIG. 2 shows that any one of these three functions 21, 22, 23 can be activated when the touch sensitive area 1 detects a movement of an object 4 with its starting point A within the representation of a function on the menu area 2 and with a direction B from the menu area 2 to the display area 3.").

194. Determining an off-to-on-screen gliding gesture, like *Wilairat*'s pull-in gesture, was also described in *Bezel Swipe*, which discloses a "Bezel Swipe gesture" that "starts on the bezel and moves into the display" such that "the contact area [of the finger] is gradually increased until it exceeds the contact threshold of the display." *Bezel Swipe*, 2; *see also Roth*, [0009], [0015], Fig. 2B ("[u]sers can invoke actions with swiping gestures across a section of the display side from the outside to the inside," and "[a] continuous swiping motion may also begin from outside of the display for ease of use"). When the finger's contact area "exceeds the contact threshold of the display," the swiping gesture is determined and the function of the bar is activated. *Bezel Swipe*, 2; *Roth*, [0009], [0010], [0015], Fig. 2B.

195. A POSITA would have been motivated to determine that the user's gliding gesture began offscreen and moved onscreen, such as by using the expanding contact method of *Wilairat* (also taught by *Bezel Swipe*) because it lends intentionality to the user's action and would have been less likely to result in accidental activations because *Tseng*'s status bar would act as a buffer between the main display actions and the "finger swipe" dragging action to show the message area 206/224. A POSITA would have recognized that this implementation would benefit users by making it easier for users to activate portions of the display very close to the status bar, without compromising the ease of use to pull down the

message area. In such case, a POSITA would have been motivated to implement this functionality because it allows the status bar to behave as if it were a crossing gesture where the finger first interacts with the status bar on the touch screen (during the gliding), but the expanding contact determination confirms that the user intended to activate the pull-down status bar message area, rather than accidentally touching the status bar instead of the main display.

196. As I explain in [1d] above, "crossing"-type gestures were recognized as beneficial in the art, especially for devices having small touch screens, like *Tseng*'s mobile device, where the "smaller widgets" "are harder to hit." *Bezel Swipe*, 1. A POSITA would have recognized that this off-to-on-screen swiping gesture (e.g., *Wilairat*'s pull-in gesture, or *Bezel Swipe*'s/*Roth*'s bezel swipe gesture) "can be more efficient" than tapping on *Tseng*'s status bar and dragging, and that it "enables the reliable activation of a button that is so narrow that it would be difficult to activate by direct touch." *Roth*, [0010]; *Bezel Swipe*, 2. Furthermore, a POSITA would have recognized that such functionality "does not typically reduce the accessible display area" on small screens and "require[] minimal display real estate" "because the swiping gesture minimizes the area of initial contact with the touch sensitive display [touch screen]." *Bezel Swipe*, 2; *Roth*, [0009], [0010], [0015]. A POSITA would have been motivated by this to decrease the size of the

status bar to increase the size of the main application display area, while still informing the user of appropriate status and notification information.

197. At a minimum, in my opinion, a POSITA would have found it obvious to try implementing an off-to-on-screen gliding action to activate *Tseng*'s pull-down message area using, for example, a pull-in gesture or expanding-contact determination. This would have been obvious to try because it was a known technique, such as taught by *Wilairat* and also described in *Bezel Swipe*, that would have improved *Tseng*'s device in the same way as known in the prior art by identifying the off-to-on screen gliding action and potentially mitigated accidental activation of the status bar menu. A POSITA would have recognized that this operation represents merely implementing a known prior art off-to-on screen gliding action determination that first registers a touch when the user contacts the status bar on the touch screen, for example, by determining a pull-in gesture or expanding-contact area determination. This would have yielded the predictable result of the user contacting the status bar window as their finger slides from offscreen onto the status bar in the pull-in gesture to activate pulling down the message display area. *See supra* § VI.

b. Expectation of Success

198. A POSITA would have reasonably expected to succeed in implementing *Wilairat*'s pull-in gesture determination to determine whether a

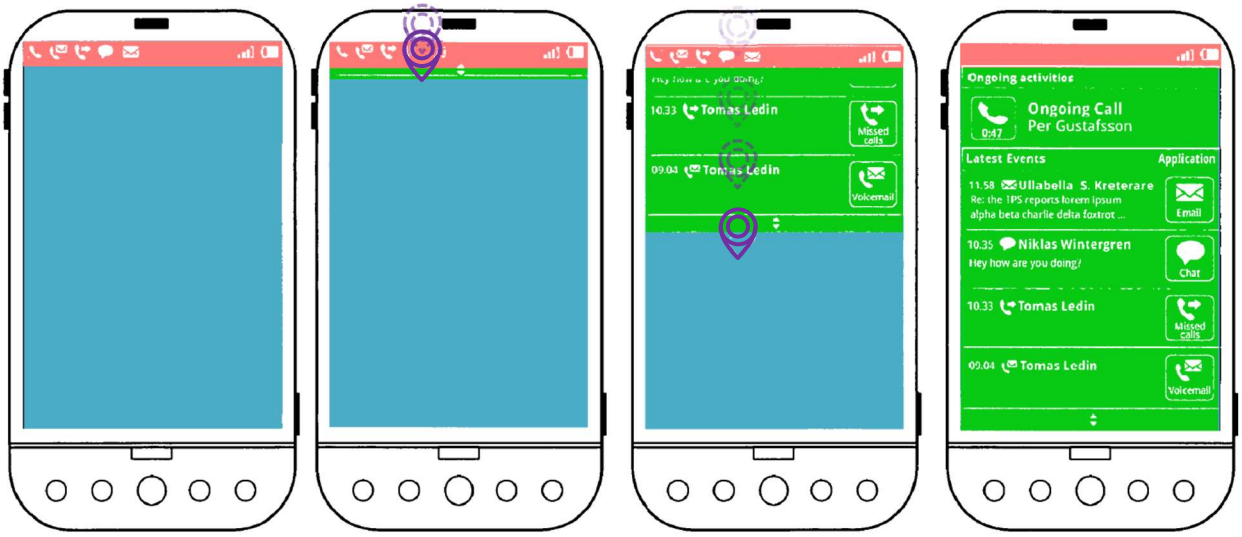
user's gliding action (e.g., "finger swipe") in *Tseng*'s system began offscreen and glided onscreen, first interacting with the status bar on the touch screen, such as by using *Wilairat*'s expanding contact determination.

199. Similar to the reasons explained above in Ground 1, [1d], implementing *Wilairat*'s pull-in gesture determination to determine that a user's gliding gesture started offscreen and moved onscreen, first interacting with the status bar window, would have involved nothing more than the routine combination of existing technology in predictable ways. Such processes, implemented in *Tseng*, represent nothing more than combining known prior art elements according to known methods and techniques (registering a user's gliding action when it first crosses into the status bar window and moves onto the touch screen, such as by using the expanding contact method disclosed in *Wilairat* and *Bezel Swipe*) to yield predictable results (opening *Tseng*'s notification menu, such as by sliding it open, as disclosed by *Tseng*).

200. As such, a POSITA would have recognized that determining that a gliding action started outside of the touch screen and moved towards inside of the touch screen (e.g., by contact area determination) to activate a function based on the gliding action first interacting with a window (e.g., status bar) on the touch screen was well known in the prior art. *Wilairat*, [0003], [0009], [0012], [0015], Fig. 1; *Bezel Swipe*, 2, Figure 2; *Roth*, [0009], [0010], [0015], [0036], [0039], Fig.

2B; *see also Palm Pre Plus User's Manual*, 20; *see also Palm Pre The Missing Manual*, 51-52; *Neonode N2 User Guide*, 7; *Goertz*, [0047], [0071], Fig. 2.

201. Implementing this functionality in *Tseng*'s system to pull down *Tseng*'s message area by determining that the user's gliding action started offscreen and moved towards the inside of the touch screen over the status bar, such as by *Wilairat*'s pull-in gesture, would have been merely the straightforward application of known, conventional techniques used according to their known functions to yield predictable results (pulling down the message area, as shown in *Tseng*'s FIGS. 2A-2C, when the device determines a pull-in gesture).



Tseng, FIG. 2C (dashed gliding gesture annotations added).

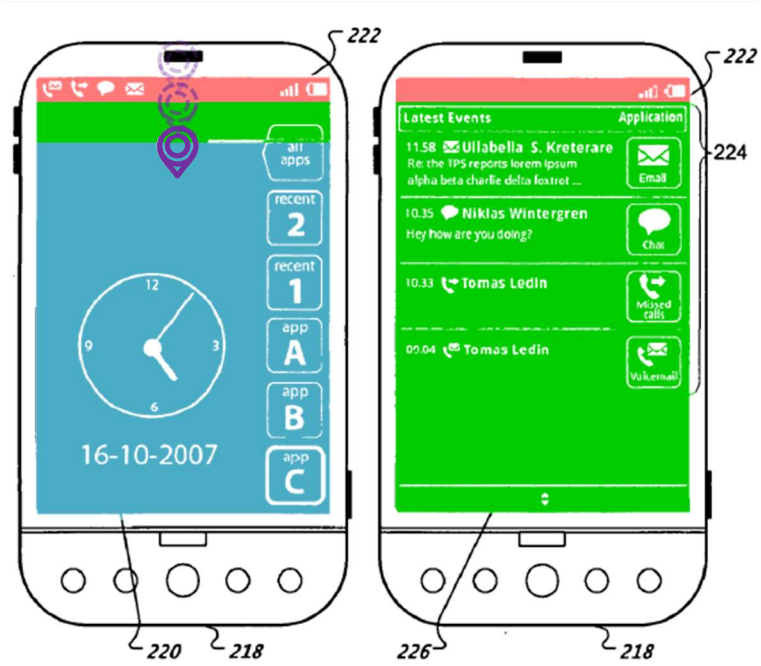


FIG. 2B

Tseng, FIG. 2B (excerpted, dashed gliding gesture annotations added).

2. Claims 2-13, 17, and 18

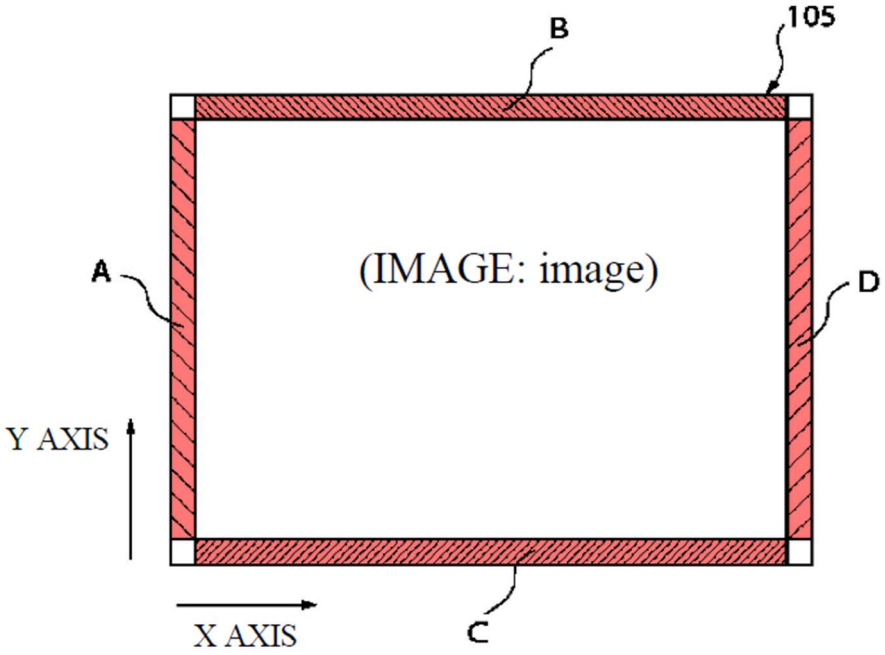
202. *Tseng* discloses or renders obvious the additional limitations of dependent claims 2-13 and 17, as discussed above in Ground 1.

C. Ground 3: Claims 15, 16, 18, 19, and 21-36 Are Rendered Obvious by *Tseng* in Further View of *Hisatomi*, or *Tseng* and *Wilairat* in Further View of *Hisatomi*

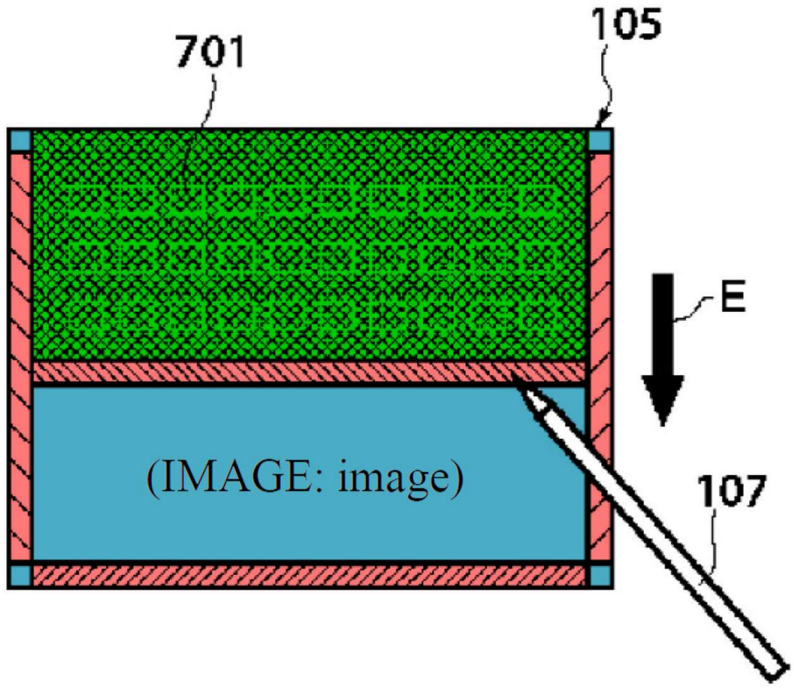
1. Claim 15: "The system of claim 1, wherein said at least one window comprises more than one window located on one or more edges of the touch screen."

203. In my opinion, *Hisatomi* discloses and renders obvious that said at least one window comprises more than one window located on one or more edges of the touch screen.

204. *Hisatomi* discloses that "FIG. 5 to FIG. 7 are drawings showing examples of coordinate definitions for 'drawer menu display-triggering areas' on the display 105." *Hisatomi*, [0029], FIGS. 5-7. In FIGS. 5-7, *Hisatomi* shows four categories of menus: A-D, which are "drawer menus." *Hisatomi*, [0030], FIGS. 5-7. Each of *Hisatomi*'s menus A-D has different functions for selection. *Hisatomi*, [0032]. Like in *Tseng*, the "user can display the menus for the respective categories by performing an operation resembling pulling out from the edges of the display 105," such as by "sliding the input device 107 in the direction of arrow E toward the center of the display screen" in FIG. 7. *Hisatomi*, [0033], [0034], FIG. 7.



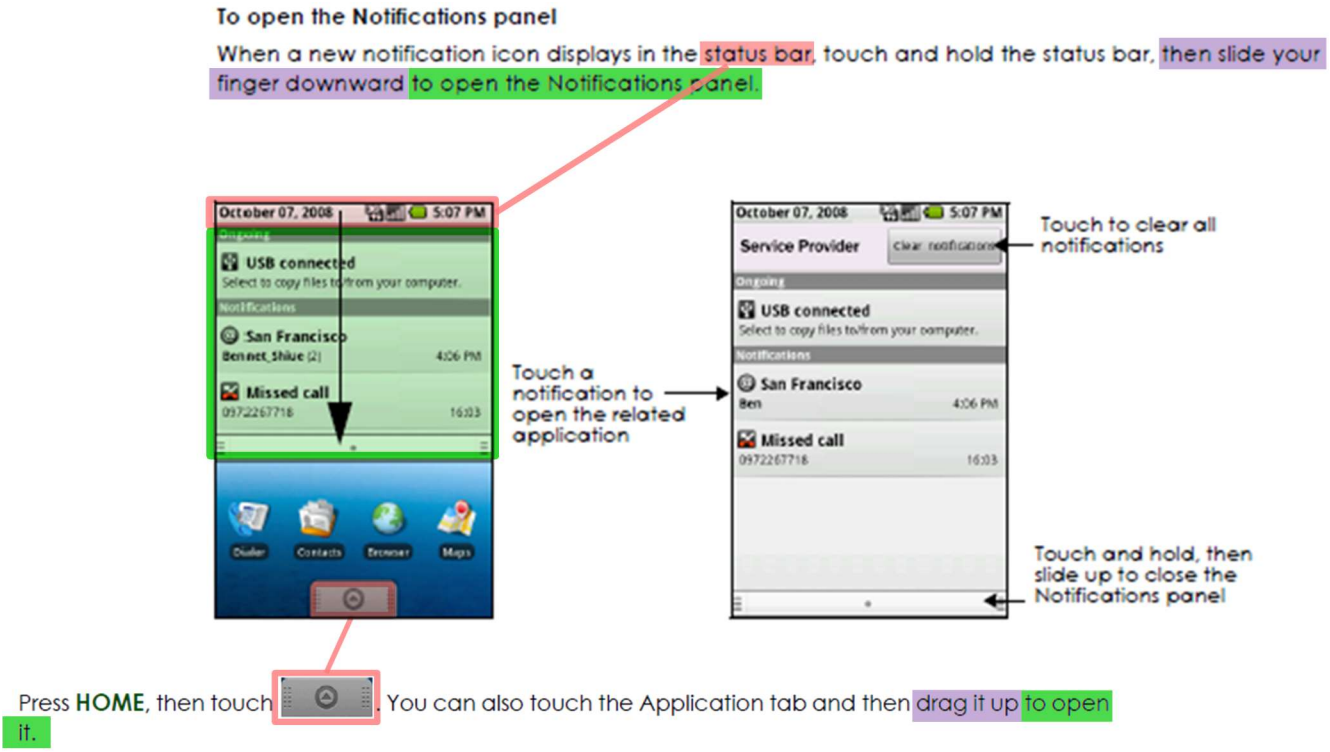
Hisatomi, FIG. 5.



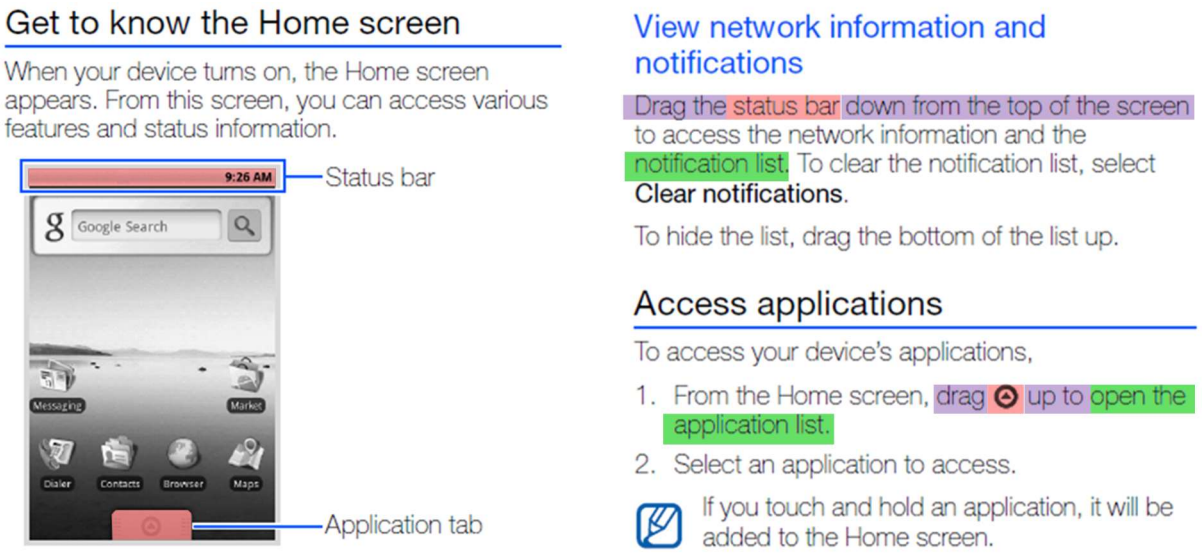
Hisatomi, FIG. 7.

a. Motivation

205. A POSITA would have been motivated to incorporate the additional menu options of *Hisatomi* into *Tseng* to provide additional functionality for a user (without needing to use *Hisatomi*'s specific device). For example, a POSITA would have been motivated to provide a second pull-out menu at a second edge of *Tseng*'s screen to allow a user to quickly access other applications, as was known in the prior art. For example, T-Mobile had released a device that allowed a user to drag open a status bar notifications panel and drag open an applications selection, and the Samsung GT-i7500 user manual contained a similar teaching.



T-Mobile G1 User Manual, 27-29.



Samsung GT-i7500 User Manual, 30-31.

206. A POSITA would have been motivated to provide a second menu for users to access other functions, such as quickly switching between applications, in *Tseng* by including a second window located on the touch screen, such as at the bottom shown in Figure A below. *See, e.g.*, *T-Mobile G1 User Manual*, 27-29 (describing slide-in menus to show notifications and applications); *Jeong*, [0052], [0053], FIG. 6A (describing a pull-in menu having "a plurality of menu items (or icons)" used "for executing a program").

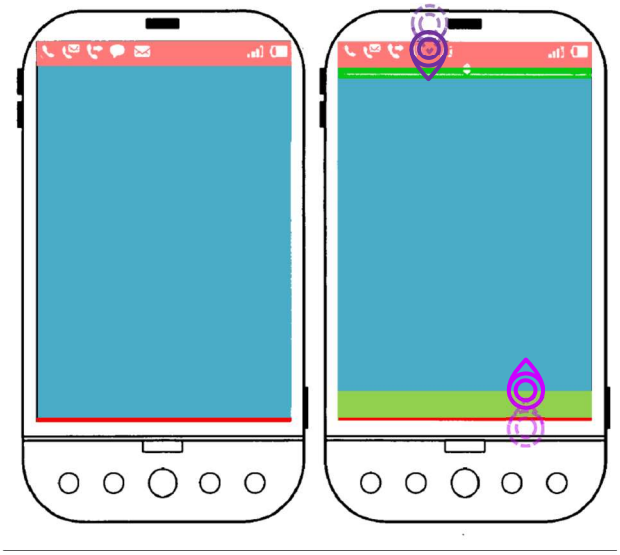


Figure A.

207. As I explain above for [1d] and Ground 2, a POSITA would have been motivated to provide the second window of the at least one windows using a very thin window, such as only a few pixels as was known in the art (*see Bezel Swipe*, 3 (describing 8-pixel window)). The prior art provides a motivation for including a second window. As *Bezel Swipe* explains, using off-to-on-screen gliding gestures allows a user to "start [a swiping gesture] on the bezel and move[] into the display" to contact "a narrow target (the red bar) positioned flush against the display edge," such as shown at the bottom of Figure A. *Bezel Swipe*, 2. Such gestures would have been "recognized by detecting touches *inside a thin rectangular area* [e.g., the red application bar window of Figure A] positioned flush against the display screen," which "enables the reliable activation of a button that is so narrow that it would be difficult to activate by direct touch." *Bezel Swipe*,

2, Figure 2 (emphasis added). Because a POSITA would have been motivated to use a very thin indicator of the second window, it "requires minimal display real estate" and "does not typically reduce the accessible display area" on small screens "because the swiping gesture minimizes the area of initial contact with the touch sensitive display [touch screen]," which a POSITA would have recognized makes it ideal for smaller device screens, as in *Tseng*. *Bezel Swipe*, 2; *Roth*, [0009], [0010], [0015].

208. A POSITA would have been motivated to provide the second window, such as shown at the bottom of Figure A, in varying sizes, depending on the design preferences. This may include shorter windows, such as shown in *Bezel Swipe*, *Roth*, and the *T-Mobile G1 User Manual*, or the entire bottom few pixels, as shown in Figure A. *Bezel Swipe*, Figures 1, 2; *Roth*, Figs. 2A-4; *T-Mobile G1 User Manual*, 27-29. In each case, the design would not have hindered the user's use of the application interface in *Tseng*'s main application area because, by design, the second window would have been "so narrow that it would be difficult to activate by direct touch." *Bezel Swipe*, 2. Furthermore, if a "finger swipe" is required to activate the pull-out menu, as taught by *Tseng*, even an accidental direct touch by a user on the thin second window would not accidentally activate it. Accidental activation could be further prevented by requiring the system to determine a pull-in

gesture, such as *Wilairat*'s expanding contact area, as I explain in Ground 2. *See supra* § XI.B

b. Expectation of Success

209. A POSITA would have reasonably expected to succeed in at least one window comprising more than one window located on one or more edges of the touch screen. Implementing this functionality would have involved nothing more than the routine application of existing technology in predictable ways, which was well known and routine in the prior art, as I explain in [1d] and Ground 2. *See supra* §§ XI.A.1.e, XI.B.

210. Such processes, implemented in *Tseng*, represent nothing more than combining prior art elements according to known methods and techniques (registering a user's gliding action when it first crosses into the second window and then moves towards the inside of the touch screen to open a second menu) to yield predictable results (sliding open a menu as disclosed by *Tseng*), as I explain in [1d] and Ground 2. *See supra* §§ XI.A.1.e, XI.B.

211. Implementing the functionality of claim 15 in *Tseng*'s system to slide open a second menu as the user's finger glides over a second window, such as shown in Figure A, would have been merely the straightforward application of known, conventional techniques used according to their known functions to yield

predictable results (opening a second menu similar to that shown in *Tseng*'s FIGS. 2A-2C, as shown in Figure A).

2. Claim 16: "The system of claim 15, wherein said at least one window extends along a substantial portion of an edge of the touch screen."

212. The additional limitations of claim 16 are substantively the same as those in claim 4, which *Tseng* discloses or renders obvious as discussed for claim 4. *See supra* § XI.A.4.

3. Claim 18: "The system of claim 1, wherein the processor relates a gliding action provided towards any arbitrary direction inside the screen to presenting a same interface."

213. I have also been asked to consider the situation in which *Tseng* is considered not to disclose or render obvious the processor relating a gliding action provided towards any arbitrary direction inside the screen to presenting a same interface. In such case, it is my opinion that *Hisatomi* renders these limitations obvious.

214. *Hisatomi* discloses that, when sliding open the drawer menus, "if the interior of any [menu] regions is detected, then the respective coordinate data are mapped," and when "the coordinates [of the touch/slide] are continuously updated toward the center portion of the display screen of the image-displaying display 803, the display region of the drawer is slid in the indicated direction." *Hisatomi*, [0059]. In tracking the slide direction, for example, up-and-down sliding of menus

B and C in *Hisatomi*'s FIGS. 5-7 (like *Tseng*'s pull-down status bar notification menu), "X-axis information is ignored and only Y-axis information is reflected in the process." *Hisatomi*, [0069]. For example, the system "stands by to receive Y-coordinate information and ignores the X[-]coordinate, and … the bar display position is continuously updated in accordance with the Y-coordinate information." *Hisatomi*, [0065], [0069] (describing ignoring X-axis information for category-B menu). A POSITA would have recognized that, because only the Y-coordinate information is used, then the same category-B menu is presented for this example pull-down menu, but the user's direction may be in any arbitrary direction towards the interior of the touch screen.

a. Motivation

215. A POSITA would have been motivated to have *Tseng*'s processor relate a gliding action provided towards any arbitrary direction inside the screen to presenting a same interface.

216. For example, a POSITA would have been motivated to use only the Y-coordinate of the user's "finger swipe" (gliding action) such that any arbitrary direction into *Tseng*'s touch screen from or across the status bar would have opened message area 206/224 because it would have simplified the user's interaction and provided a better user experience. By providing the same interface for any arbitrary direction from *Tseng*'s status bar inside the touch screen, a POSITA would have

recognized that a user would only have to concentrate on the relevant portion of their movement—ignoring the irrelevant potential left/right movement of their finger. This allows for significant variation in the user's action to achieve the same result. A POSITA would have been motivated to do this because it would increase the speed and intuitiveness of the user opening *Tseng*'s message area because the user does not need to precisely place their finger or navigate a particular direction. As such, the user's gliding action could have variation, such as curving with a thumb's movement, angling to one side or another depending on how the user is holding the device in relation to the finger performing the "finger swipe," or varying depending on which hand the user uses to perform the gliding action. By relating the user's gliding action from the status bar provided towards any arbitrary direction inside the screen to present a same message area interface of *Tseng*, the user would experience a simplified interaction, thereby allowing them to more quickly and efficiently open the message area without compromising reliability. *See Bezel Swipe*, 2, Figure 2; *Roth*, [0009], [0010], [0015].

b. Expectation of Success

217. A POSITA would have reasonably expected to succeed in the processor relating a gliding action provided towards any arbitrary direction inside the screen to presenting a same interface. Implementing this functionality would have involved nothing more than the routine application of existing technology in

predictable ways, which was well known and routine in the prior art, as I explain in [1d] and Ground 2. *See supra* §§ XI.A.1.e, XI.B.

218. Such processes, implemented in *Tseng*, represent nothing more than combining prior art elements according to known methods and techniques (registering a user's gliding action by determining the menu-opening direction (e.g., Y-direction) as it moves towards the inside of the touch screen to open *Tseng*'s notification menu) to yield predictable results (sliding open the notifications message area as disclosed by *Tseng*), as I explain in [1d] and Ground 2. *See supra* §§ XI.A.1.e, XI.B.

219. Implementing the functionality of claim 18 in *Tseng*'s system to slide open the message area as the user's finger glides in any arbitrary direction towards the inside of the touch screen would have been merely the straightforward application of known, conventional techniques used according to their known functions to yield predictable results (opening the message area as shown in *Tseng*'s FIGS. 2A-2C using the coordinate of the menu-opening direction).

4. Independent Claim 19

220. If *Tseng* is considered not to disclose or render obvious that the gliding action of claim 19 is provided towards any arbitrary direction inside the touch screen, it is my opinion that *Hisatomi* further renders this limitation obvious as discussed above for claim 18. *See supra* § XI.C.3.

5. Claim 22: "The system of claim 19, wherein said bar comprises more than one bar located on one or more edges of the touch screen."

221. The additional limitations of claim 22 are substantively the same as those in claim 15, which *Tseng* in further view of *Hisatomi*, or *Tseng* and *Wilairat* in further view of *Hisatomi*, renders obvious as discussed for claim 15. *See supra* § XI.C.1.

6. Claims 21 and 23-36

222. *Tseng*, or *Tseng* and *Wilairat*, discloses or renders obvious the additional limitations of dependent claims 21 and 23-36 for the reasons discussed above in Grounds 1 and 2 and claims 15 and 16 of Ground 3. *See supra* §§ XI.A, XI.B, XI.C.1, XI.C.2.

D. Ground 4: Claims 1-13, 15-19, and 21-36 Are Rendered Obvious by *Jeong*

223. *Jeong* renders obvious claims 1-13, 15-19, and 21-36.

1. Independent Claim 1

a. [1pre]: "A system for capturing an event provided from an edge of a touch screen comprising:"

224. To the extent the preamble is limiting, *Jeong* discloses a system for capturing an event provided from an edge of a touch screen.

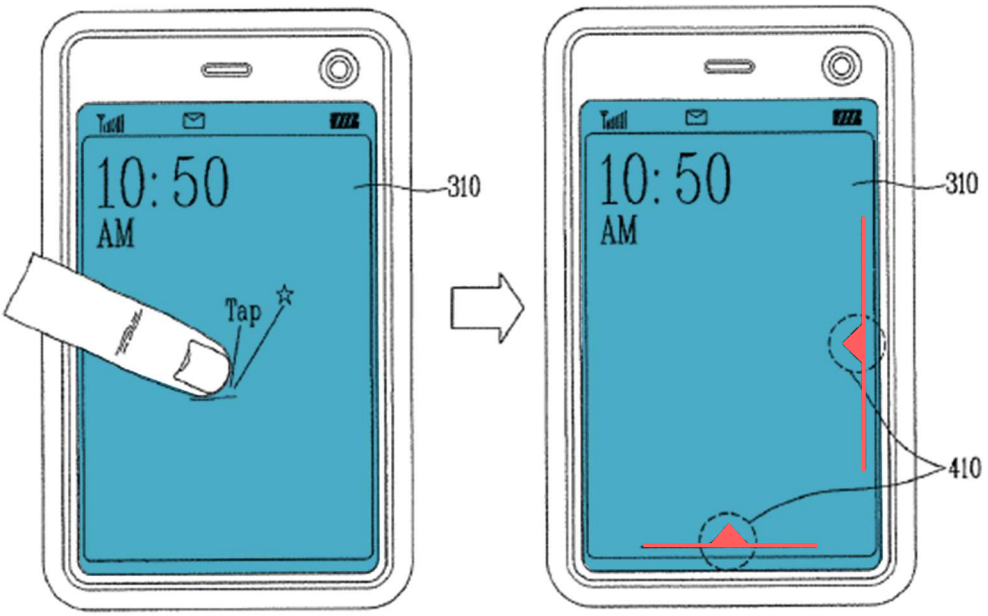
225. For example, *Jeong* discloses "[a] mobile terminal," which describes a "system" that "compris[es] a display module to display a tag and to display a menu

screen image related to the tag at one portion of a background image as the tag is dragged ….” *Jeong*, Abstract.

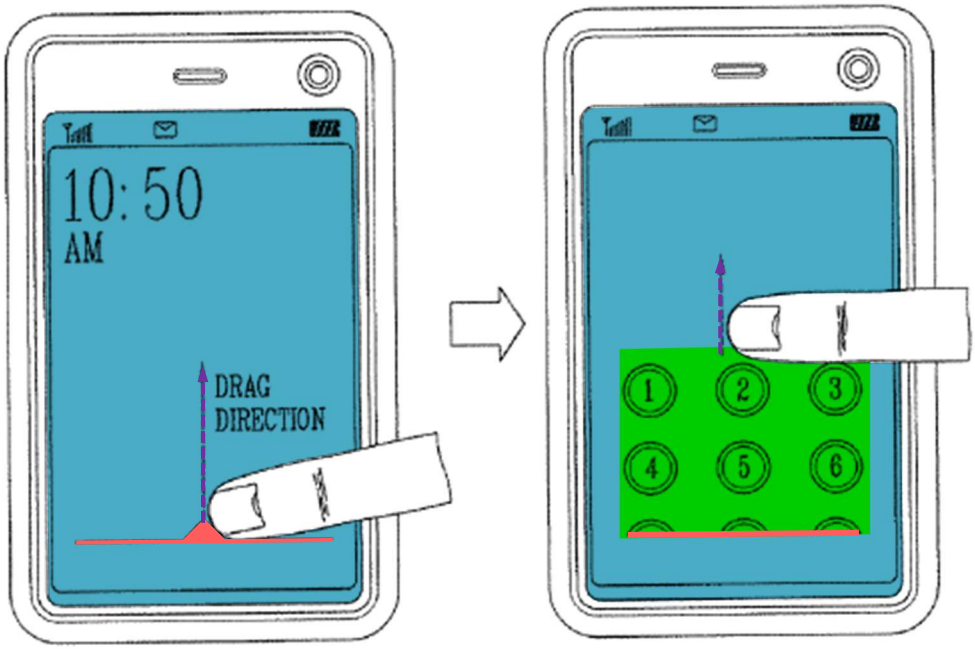
226. As one example, *Jeong* discloses that a “tag” 330/410[26] shown on the device’s touch screen “may be [a] graphical user interface (GUI) object associated with a functional interface which allows a user to expose or hide from view other GUI objects on the mobile terminal 100’s display.” *Jeong*, [0050]. *Jeong* explains that “a side portion … of the touch screen” may be used “as a boundary region from which the menu screen image 320 can appear or disappear,” and that “the tag 330 (or other graphical indicator) can be used to indicate the boundary region” from which the menu screen appears. *Jeong*, [0056].

227. FIG. 6A shows one example where “tags 410 [are] display[ed]” on the bottom and right edges of the touch screen after the “user … touch[es] the background screen image 310.” *Jeong*, [0057], [0058]; *see also Jeong*, [0017]-[0019], FIGS. 4, 5, 6B, 7A-7C, 8 (FIGS. 7A-7C show examples of “displaying a menu screen by dragging a tag in FIG. 6B”).

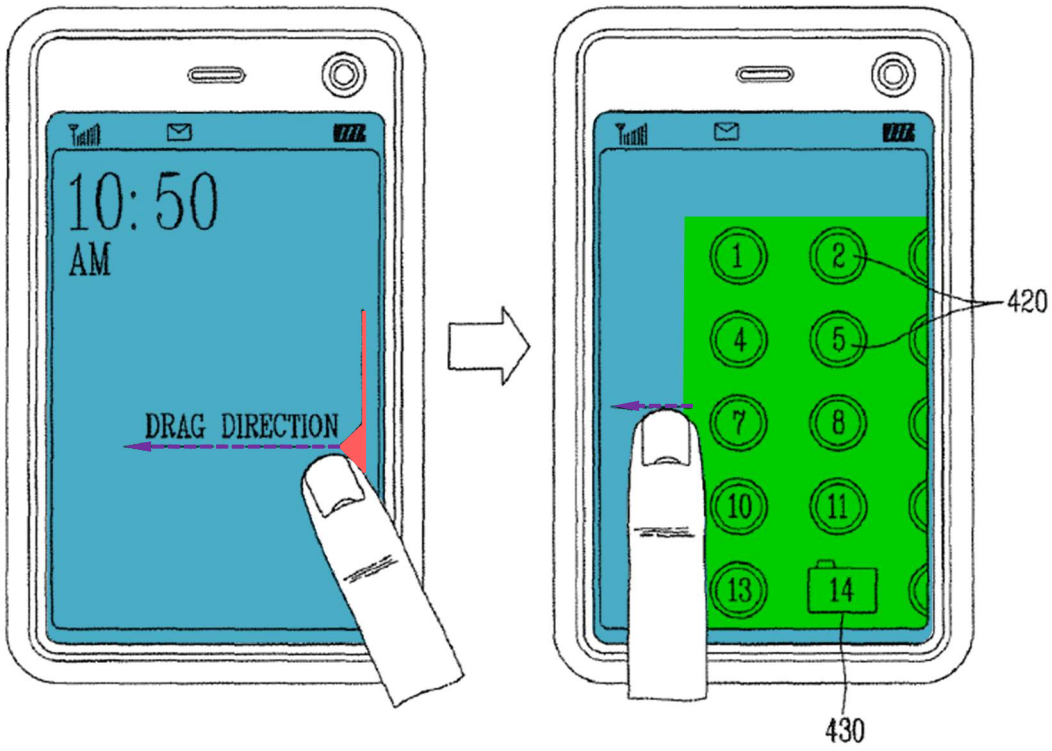
[26] *Jeong* describes that tags 410-416 are similar to tags 330.



Jeong, FIG. 6A.



Jeong, FIG. 7B.

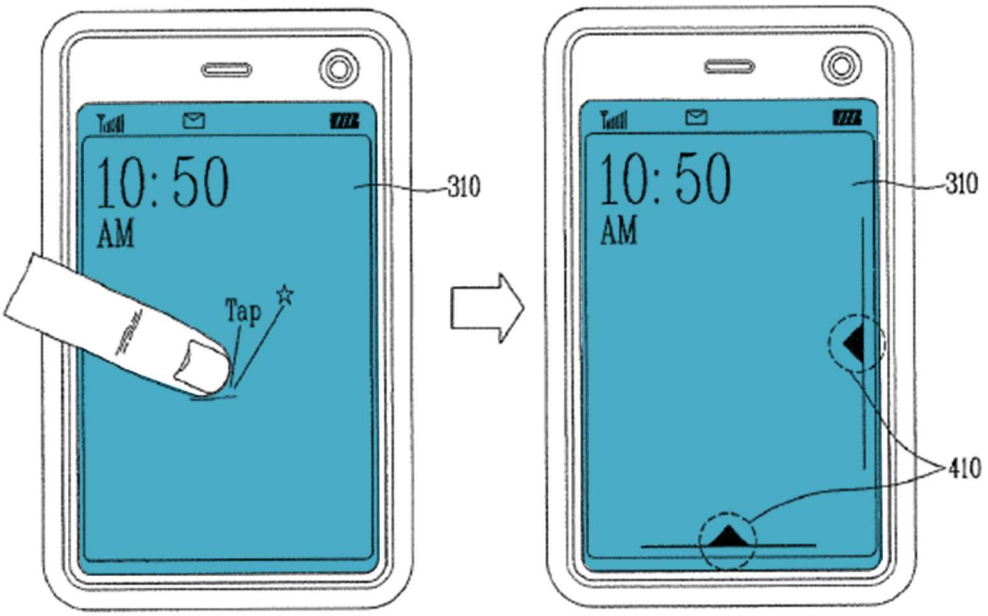


Jeong, FIG. 7C.

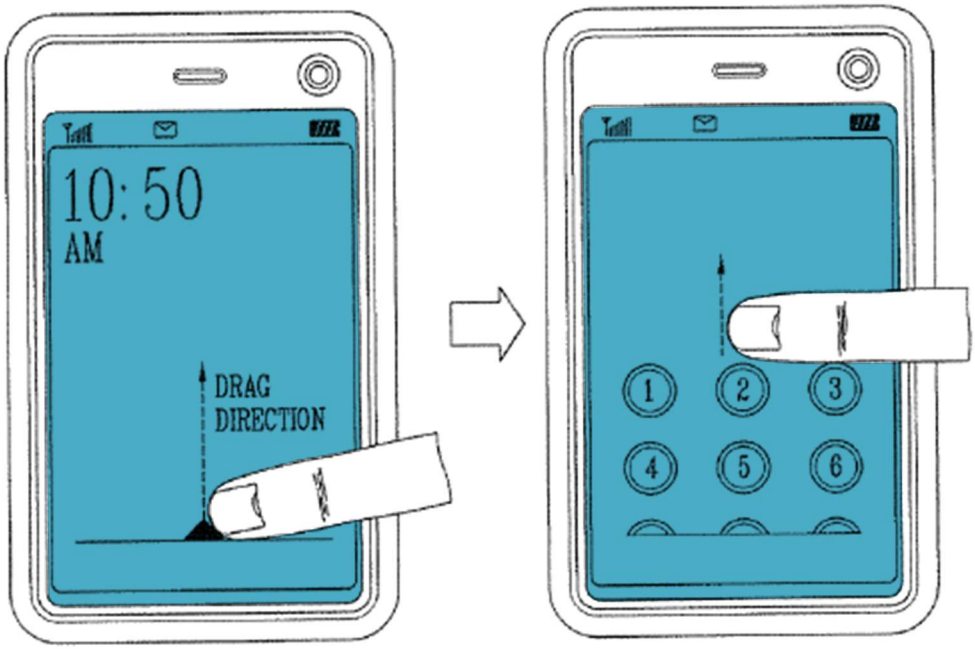
b. [1a]: "a device having a touch screen;"

228. *Jeong* discloses a device having a touch screen.

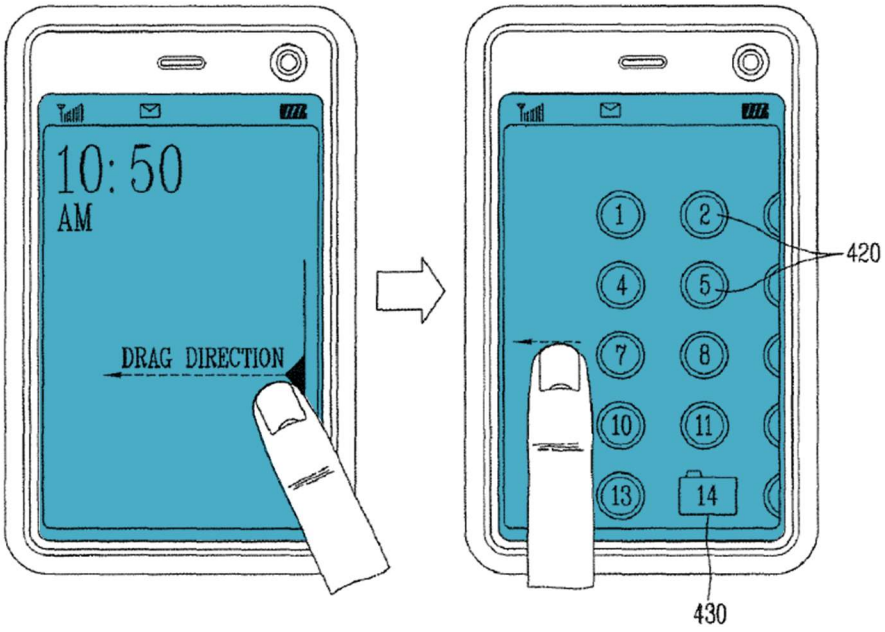
229. For example, *Jeong* discloses that a "mobile terminal 100" (device) includes "a touch screen." *Jeong*, [0030], [0034], [0041], [0058], FIGS. 4-9E, claim 2.



Jeong, FIG. 6A.



Jeong, FIG. 7B.



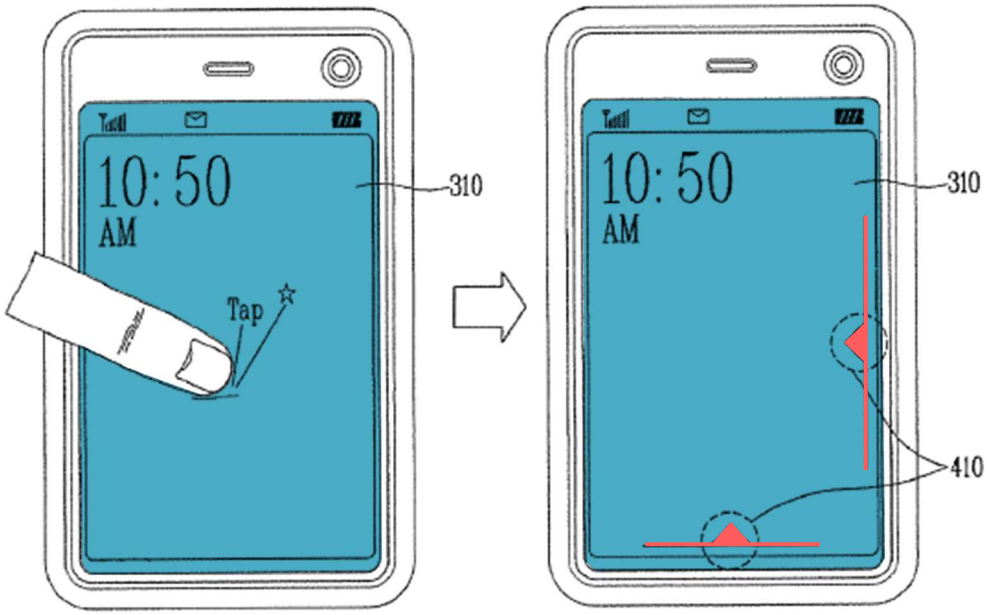
Jeong, FIG. 7C.

c. [1b]: "at least one window located in the touch screen on an edge of the touch screen, wherein said at least one window functions independently of an interface of an application in use on the touch screen; and"

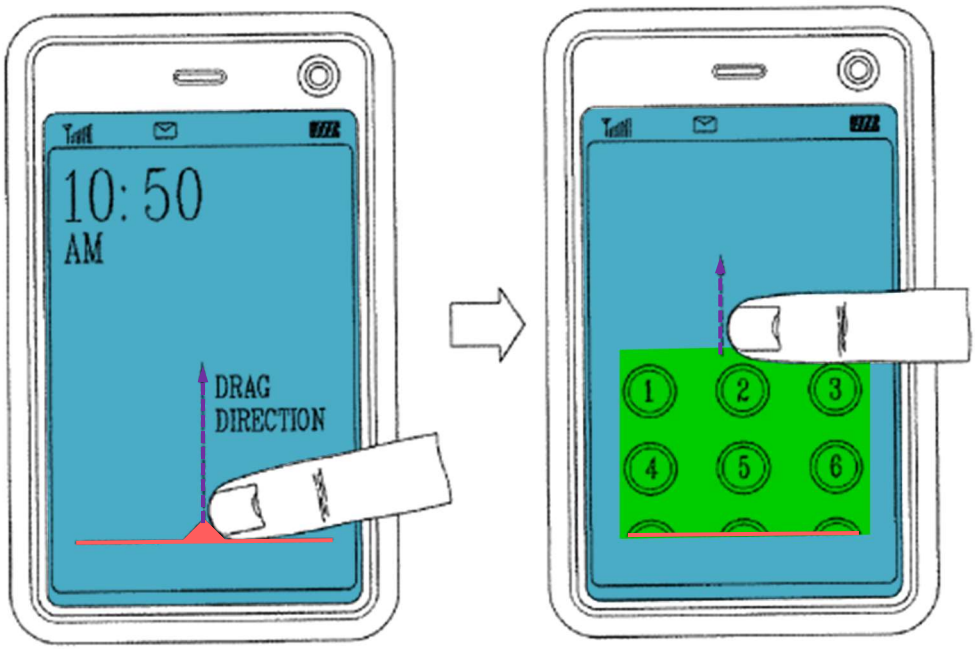
230. *Jeong* discloses or renders obvious at least one window located in the touch screen on an edge of the touch screen, wherein said at least one window functions independently of an interface of an application in use on the touch screen.

231. For example, *Jeong* discloses that "a side portion … of the touch screen" is set as "a boundary region from which the menu screen image 320 can appear or disappear, and the tag 330 (or other graphical indicator) can be used to indicate the boundary region." *Jeong*, [0056]. As shown in FIGS. 6A, 7B, and 7C

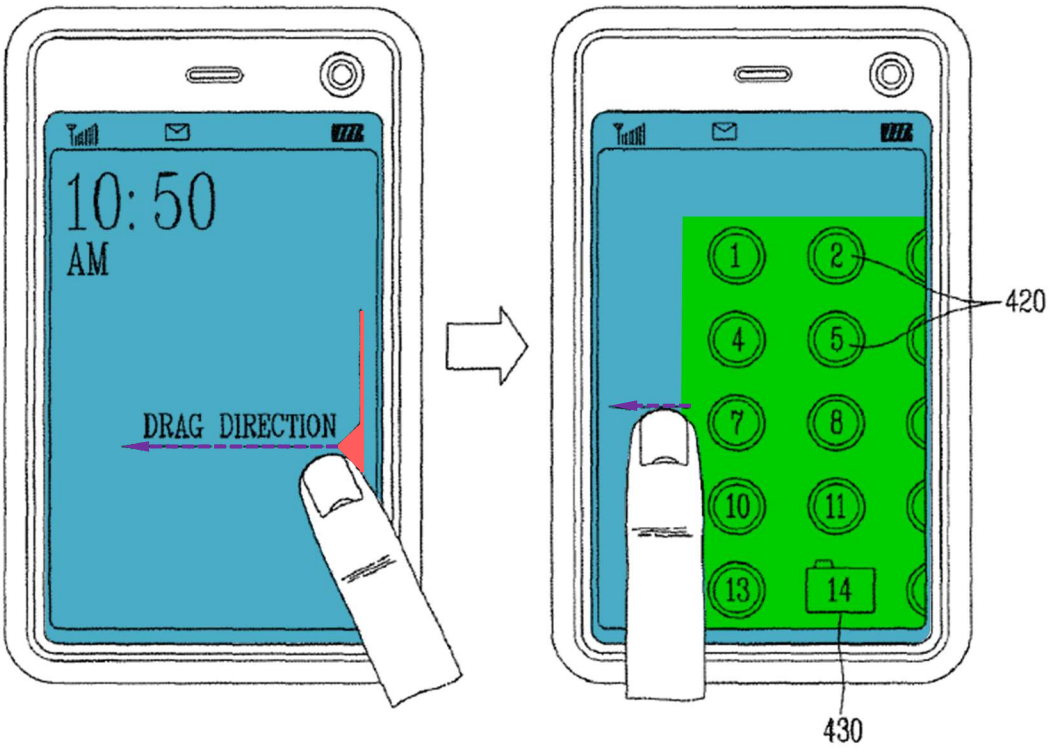
below, tag 330/410 is located on an edge of the touch screen showing background screen image 310. A POSITA would have understood that tags 330/410 are windows because they are drawn over the screen image when the user uses a "tag calling" process by, for example, touching the screen when no tags are displayed. *Jeong*, [0057], [0058], FIG. 6A. A POSITA also would have understood that the "tag calling" procedure is optional and that the tags 330/410 could be displayed on the touch screen generally.



Jeong, FIG. 6A.


10:50
AM
DRAG
DIRECTION
1
2
3
4
5
6

Jeong, FIG. 7B.


10:50
AM
DRAG DIRECTION
1
2
4
5
7
8
10
11
13
14
420
430

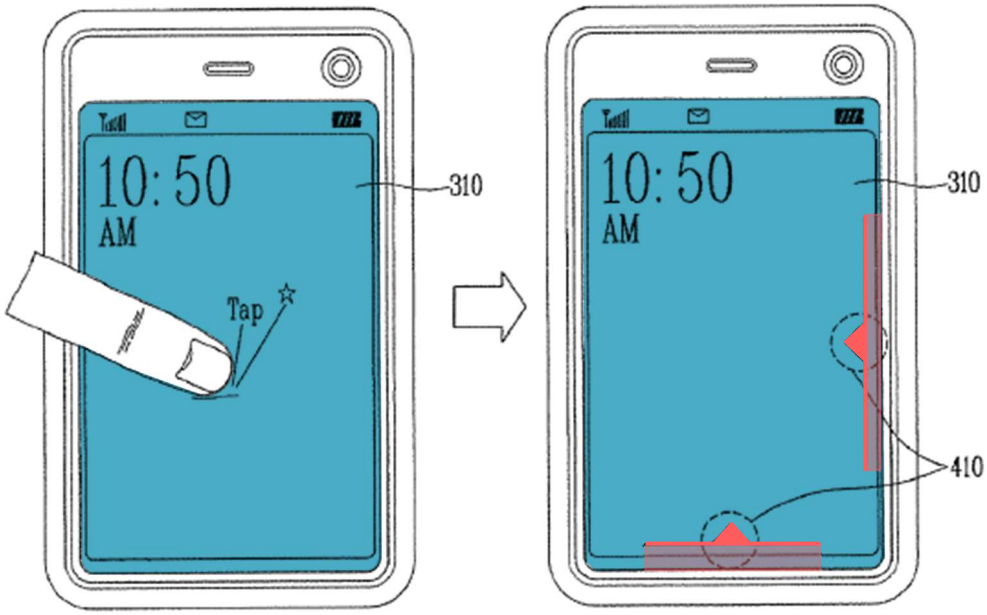
Jeong, FIG. 7C.

232. A POSITA reading *Jeong*'s disclosure would have also understood that the tag 330/410 is a window at the edge of the touch screen based on their drawn position in *Jeong*'s figures. Furthermore, a POSITA would have recognized, or at least found obvious, that the window would extend to the outermost edge of the touch screen, as shown in dashed annotations in FIG. 6A below, because *Jeong* explains that the tag shows the boundary "from which the menu screen image 320 can appear," and that the tag "indicate[s] the boundary region." *Jeong*, [0056]. A POSITA would have recognized that such tags are independent of an application in use to display the background image on the touch screen because the background image is shown irrespective of the tags' presence. *Jeong*, [0057], [0058], FIG. 6A.

233. A POSITA would have recognized this because providing the window from the tag to the outermost edge[27] of the screen would have extended the area for the user to touch and create the "boundary region" for the user to pull out the

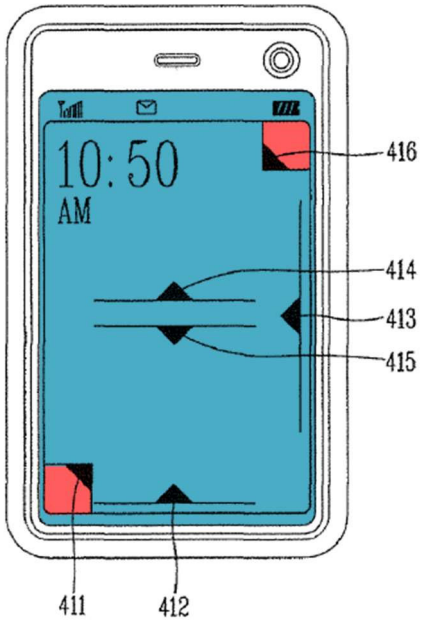
[27] It is my opinion that *Jeong*'s tags are shown on an edge of the touch screen even if they are not shown being adjacent to the outermost edge. However, I have also been asked to consider the situation where this claim element is interpreted to require that the window be at the outermost edge. In such case, it is my opinion that *Jeong* discloses it or at least renders it obvious, as discussed herein.

menu. This also would have mitigated confusion or frustration by users because the user's gliding action would not need to be as precise to exactly touch the narrow tag, but instead has a wider activation region when the tags are shown, which leads to a better and more intuitive user experience, as I explain below in [1d]. *Infra* § XI.D.1.e.

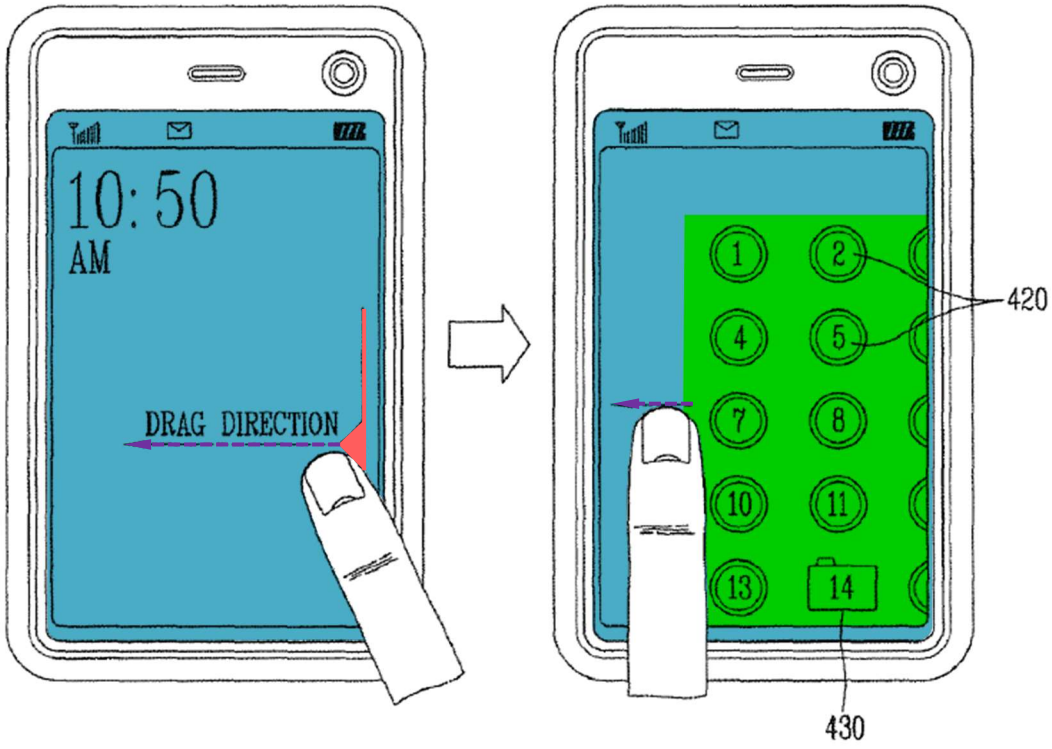


Jeong, FIG. 6A (modified).

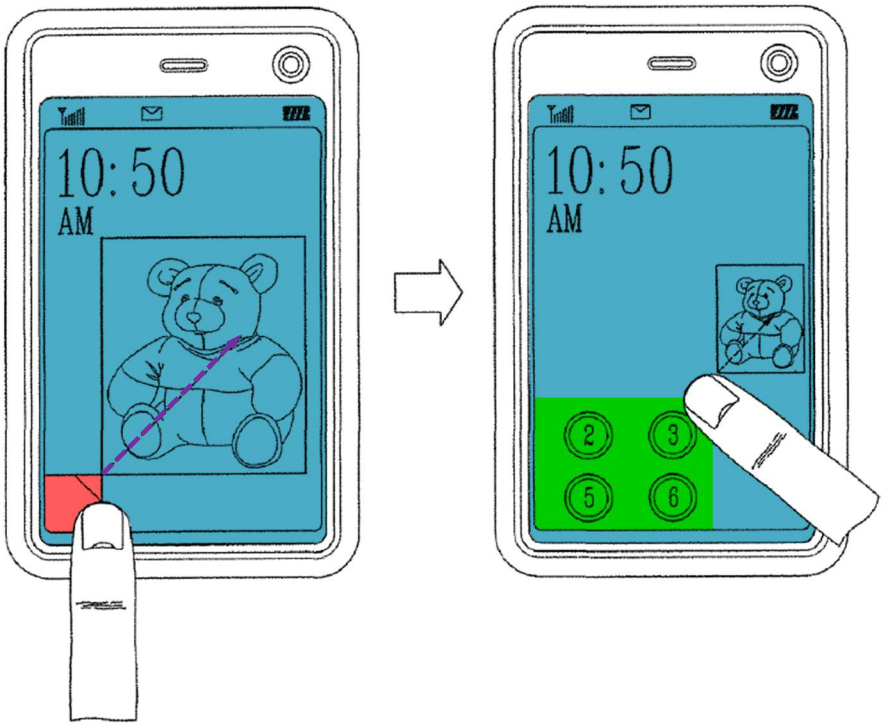
234. Moreover, *Jeong* shows that both the pull-out tag and the menu being pulled out may be at the outermost edge of the touch screen's background image, which a POSITA would have generally understood to denote the outermost edge of the main display portion of the screen (e.g., the portion that displays images and applications). *Jeong*, FIGS. 6B, 7C, 9C.



Jeong, FIG. 6B.



Jeong, FIG. 7C.



Jeong, FIG. 9C.

235. A POSITA would have found it obvious to place *Jeong*'s tags on the outermost edge of the touch screen, either on the background image display area (light blue in Figure B) (as shown by *Jeong*) or in the edge region outside of the background image display area (shown dark blue in Figure B).



Figure B.

i. Motivation

236. A POSITA would have been motivated to provide *Jeong*'s tags as windows on an edge of the touch screen as windows functioning independently of an interface of an application in use on the touch screen, such as shown in Figure B.

237. For example, a POSITA would have recognized that placing *Jeong*'s tags as windows on the edge of the touch screen would have simplified the user's

experience using *Jeong*'s menus and tags by removing uncertainty about where the user needs to touch to activate the menu.

238. A POSITA knew that "screens of mobile devices are necessarily small," which leads to the development of "smaller widgets" that "are harder to hit." *Bezel Swipe*, 1. *Jeong*'s figures, however, show the line marking the boundary regions of tags 330/410 as slightly separated from the edge of the screen. *See, e.g.*, *Jeong*, FIGS. 4, 6A, 6B, 7B, 7C. A POSITA would have found it obvious to position *Jeong*'s tags as "a narrow target (the red bar) positioned flush against the display edge" (e.g., on an edge of the touch screen) because it "enables the reliable activation of a button that is so narrow that it would be difficult to activate by direct touch," such as shown in Figure B, while also clarifying the operation for the user. *Bezel Swipe*, 2, Figures 1, 2; *Roth*, [0009], [0010], [0015], Fig. 2B. This positioning, as a POSITA would have recognized, would have avoided confusion whether the user must touch *Jeong*'s tags directly if the tag window does not proceed to the edge of the touch screen and touching the tag directly would have been difficult because of its small size. *See Roth*, [0010] (crossing activations "can be more efficient than pointing tasks"). A POSITA would have been motivated to do this because it would have facilitated *Jeong*'s disclosure of dragging the tags 330/410 to display menus or activate other functions. *See, e.g.*, *Jeong*, Abstract, [0002], [0006], [0007], [0051]-[0065], FIGS. 4-9E.

239. A POSITA also would have been motivated to place *Jeong*'s tag windows on an edge of the touch screen, such as shown in Figure B, because this positioning "does not typically reduce the accessible display area" on small screens and "minimizes the area of initial contact with the touch sensitive display [touch screen]" when using swiping gestures, such as *Jeong*'s dragging activation. *Bezel Swipe*, 2, Figures 1, 2. Doing so would have "require[d] minimal display real estate," and the tags could be "made small" like the lines shown in *Jeong*'s figures "so as to not take up valuable space on the display," making them beneficial to mobile devices that have small screens, thereby further motivating a POSITA to place *Jeong*'s tags on the edge. *Roth*, [0009], [0036].

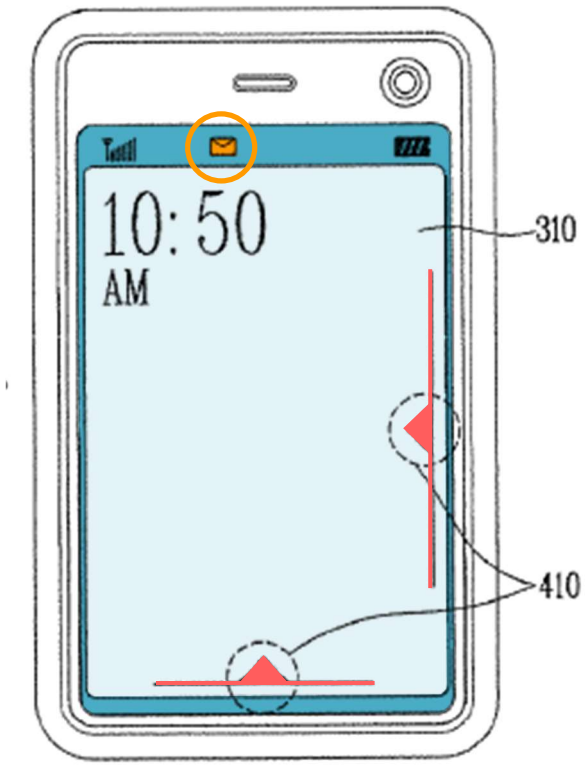
240. As shown in exemplary Figure B, placing *Jeong*'s tags on the edge of the touch screen would have made better use of the area outside of the background image display shown in *Jeong*'s figures, thereby freeing up more of the main display for other applications, while continuing to enable the gliding-based activation of the pull-out menus, such as was known in the prior art, as discussed above in Ground 1, [1d]. *See supra* § XI.A.1.e; *Bezel Swipe*, 2, Figures 1, 2; *Roth*, [0009], [0010], [0015], [0036], [0039], Fig. 2B; *Wilairat*, [0003], [0009], [0012], [0015], Fig. 1; *Hinckley*, [0072], [0073], Fig. 6.



Figure B.

241. A POSITA would have further found this obvious because it would have permitted *Jeong*'s application menu tag 330/410 to be present regardless of (e.g., independently of) an interface of an application shown in the background image section of the touch screen. *Jeong*'s figures show a status bar at the top of the display screen outside of the background image, which a POSITA would have known is generally continuously displayed, regardless of the application shown on the rest of the touch screen. *See, e.g.*, *Tseng*, [0005], [0028], FIGS. 1, 2A-2C, 3, 4A-4B, 5. A POSITA also would have recognized that *Jeong*, like *Tseng*, shows

notifications in the status bar, such as the email or message envelope shown in FIG. 6A (*see also* FIGS. 2, 4, 6B, 7A-7C), thereby suggesting to a POSITA that the area outside of the background display region could have been used as an active portion of the display, such as taught by *Tseng*, *Roth*, *Bezel Swipe*, and *Hinckley*. *See supra* §§ VI, XI.A.1.e.



Jeong, FIG. 6A (excerpted).



Figure B.

242. Indeed, a POSITA would have been motivated to position *Jeong*'s tags on an edge of the touch screen, such as shown in Figure B, because it would have made use of the outer edge "that is so narrow that it would be difficult to

activate by direct touch" using "pixels that are not typically touched during regular interactions," while still using *Jeong*'s dragging gesture to activate the pull-out menu, such as described above for *Tseng* in Ground 1, [1d]. *See supra* § XI.A.1.e; *Bezel Swipe*, 2. A POSITA also would have recognized that this would enable (to the extent not already disclosed by *Jeong*) the user to drag over any portion of the tag to expose or hide the menu, which was well known in the prior art, such as confirmed by *Roth*, *Bezel Swipe*, and *Hinckley*. A POSITA would have been motivated to implement *Jeong*'s dragging (gliding) action using the off-to-on-screen swiping (gliding) action because the user can achieve the desired action of opening the menu without requiring the precision of touching a particular portion of the tag, and therefore, "can be more efficient" and "faster" than requiring the user to directly begin on the tag. *Roth*, [0010].

ii. Expectation of Success

243. A POSITA would have reasonably expected to succeed in providing *Jeong*'s tags as windows on an edge of the touch screen as windows functioning independently of an interface of an application in use on the touch screen, such as shown in Figure B.

244. As I explain above, implementing the functionality of [1b] in *Jeong* would have involved nothing more than the routine combination of existing technology in predictable ways. Such processes, implemented in *Jeong*, represent

nothing more than combining prior art elements according to known methods and techniques (the location of *Jeong*'s tag windows being rendered on the screen) to yield predictable results (displaying *Jeong*'s tag windows on an edge of the touch screen). This was well known in the art, as shown in *Tseng*'s status bar, *Roth*, *Bezel Swipe*, *Hinckley*, and *Wilairat*, which were also used to implement gliding actions, like *Jeong*'s disclosed dragging gesture. *See supra* §§ VI, XI.A.1.e (Ground 1, [1d]).

245. As such, a POSITA would have recognized that providing *Jeong*'s tags as windows on an edge of the touch screen as windows functioning independently of an interface of an application in use on the touch screen was well known and routine in the prior art. *Bezel Swipe*, 2; *Roth*, [0009], [0015], [0036], [0039], Fig. 2B; *Wilairat*, [0003], [0009], [0012], [0015], Fig. 1; *Hinckley*, [0072], [0073], Fig. 6; *Palm Pre Plus User's Manual*, 20; *see also Palm Pre The Missing Manual*, 51-52; *Neonode N2 User Guide*, 7; *Tseng*, [0005], [0028], FIGS. 2A-2C.

246. Implementing this functionality in *Jeong*'s system to display the tags at an edge of the touch screen independent of an interface of an application on the touch screen would have been merely the straightforward application of known, conventional techniques used according to their known functions to yield predictable results (displaying *Jeong*'s tags on an edge of the screen, such as disclosed in *Bezel Swipe* to be "flush" with the screen edge, *Bezel Swipe*, 2).

d. [1c]: "a processor;"

247. *Jeong* discloses a processor.

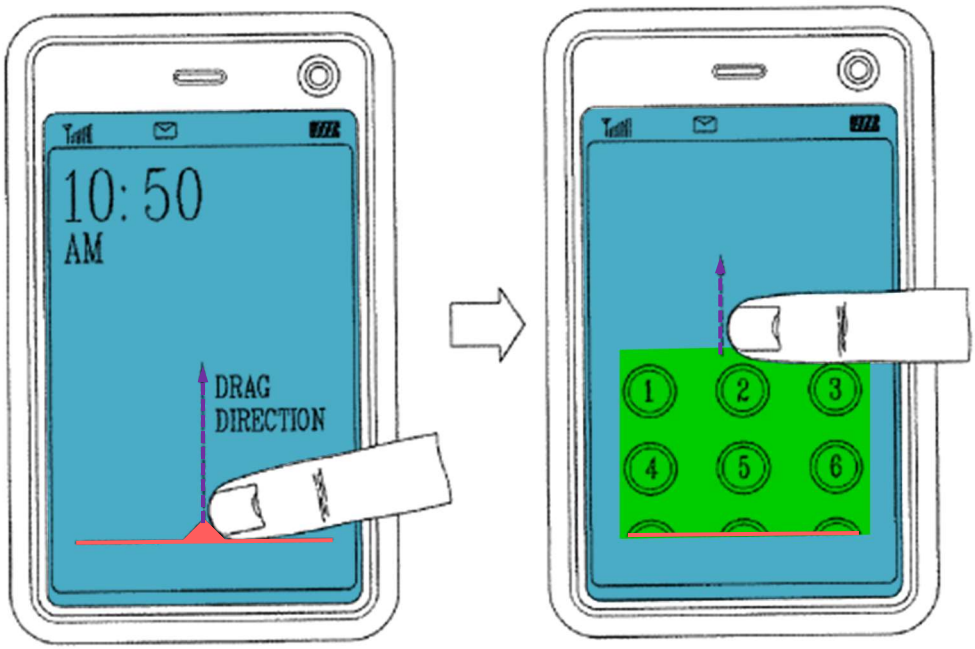
248. For example, *Jeong* discloses a "controller 180" for "control[ling] the general operations of the mobile terminal 100." *Jeong*, [0023], [0037], FIG. 1. As one example, "the controller 180 may determine [a] type of touch that was or is being performed when the user touches or releases the tag (icon) 330" on the touch screen of the mobile terminal. *Jeong*, [0054]. In one example, "when the user touches one of the tags 410 and drags it (S104 [of FIG. 5]), the controller 180 exposes a menu screen image 320, which has been hidden, in the direction in which the tag is dragged." *Jeong*, [0058], FIGS. 5, 6A-7C, claim 1 ("a controller to expose or hide the menu screen image according to the dragging direction and the dragging distance of the inputted touch").

e. [1d]: "wherein a gliding action provided from outside of the touch screen towards inside of the touch screen, said gliding action at first interacting with said at least one window on the touch screen, is processed by said processor to cause an action assigned to said window, and"

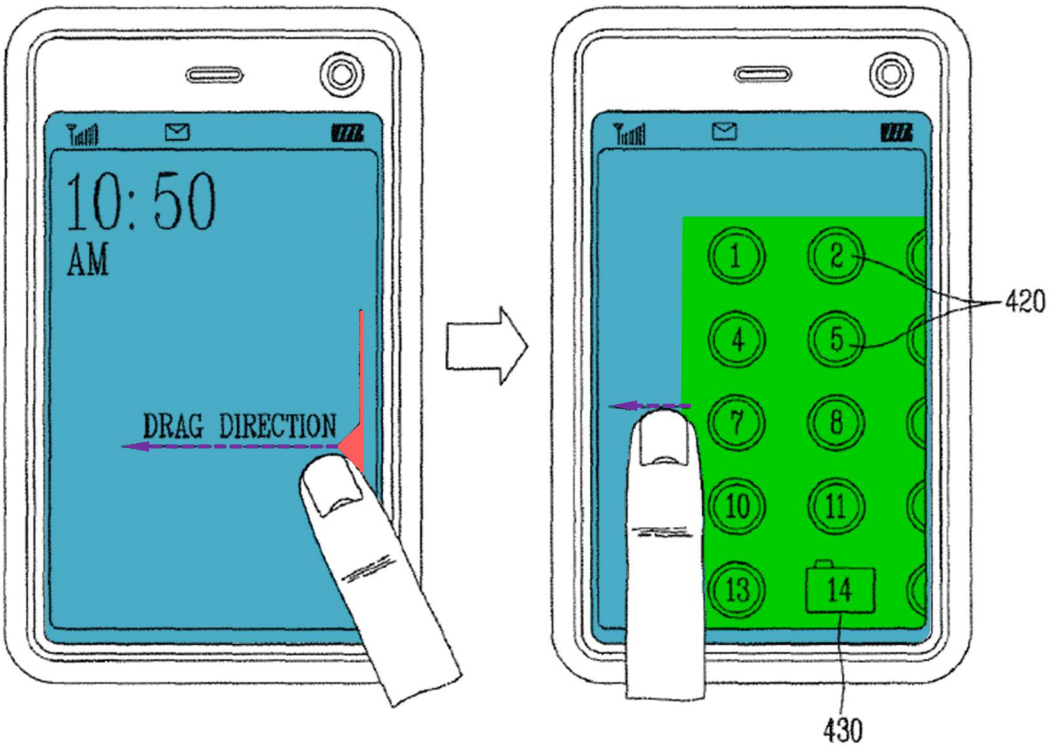
249. *Jeong* discloses or renders obvious wherein a gliding action provided from outside of the touch screen towards inside of the touch screen, said gliding action at first interacting with said at least one window on the touch screen, is processed by said processor to cause an action assigned to said window.

250. For example, *Jeong* discloses "dragging a menu screen image in a tactile manner to allow the menu screen image to be exposed or hidden." *Jeong*, [0002]; *see also Jeong*, [0006] ("display a menu screen image related to the tag at one portion of a background screen image as the tag is dragged, the menu screen image being displayed according to a dragging direction and a dragging distance"), [0007], [0017]-[0019] ("FIG[S]. 7A[/7B] show[] a second [and third] example of displaying a menu screen by dragging a tag in FIG. 6B[.]"), [0057]-[0059], FIGS. 5, 6A, 7A-7C. A POSITA would have understood that this disclosure, like *Tseng* above, would activate the tag even if the user's gesture begins outside of the touch screen because the touch sensitive screen registers the touch when it contacts the touch screen upon gliding inward from the bezel or housing that is not touch sensitive.

251. *Jeong* further discloses that the user's gliding action is towards the inside of the touch screen, and the user's gliding or dragging action first interacts with *Jeong*'s tag windows on the touch screen, such as shown in FIGS. 7B-7C.


10:50
AM
DRAG
DIRECTION
1
2
3
4
5
6

Jeong, FIG. 7B.


10:50
AM
DRAG DIRECTION
1
2
4
5
7
8
10
11
13
14
420
430

Jeong, FIG. 7C.

252. *Jeong* also discloses that the user's gliding action (dragging) is processed by the "controller" (processor, *see supra* § XI.D.1.d) to cause the action of displaying "[a] menu screen image being displayed according to a dragging direction and a dragging distance." *Jeong*, [0006], [0007], [0050], [0052], [0057]-[0059], FIGS. 5, 7B, 7C.

253. I have also been asked to consider the situation in which *Jeong* is considered not to disclose the tags being positioned on an edge of the touch screen. In such case, it is my opinion that a POSITA would have found this obvious, as I explain in [1b]. *See supra* § XI.D.1.c.

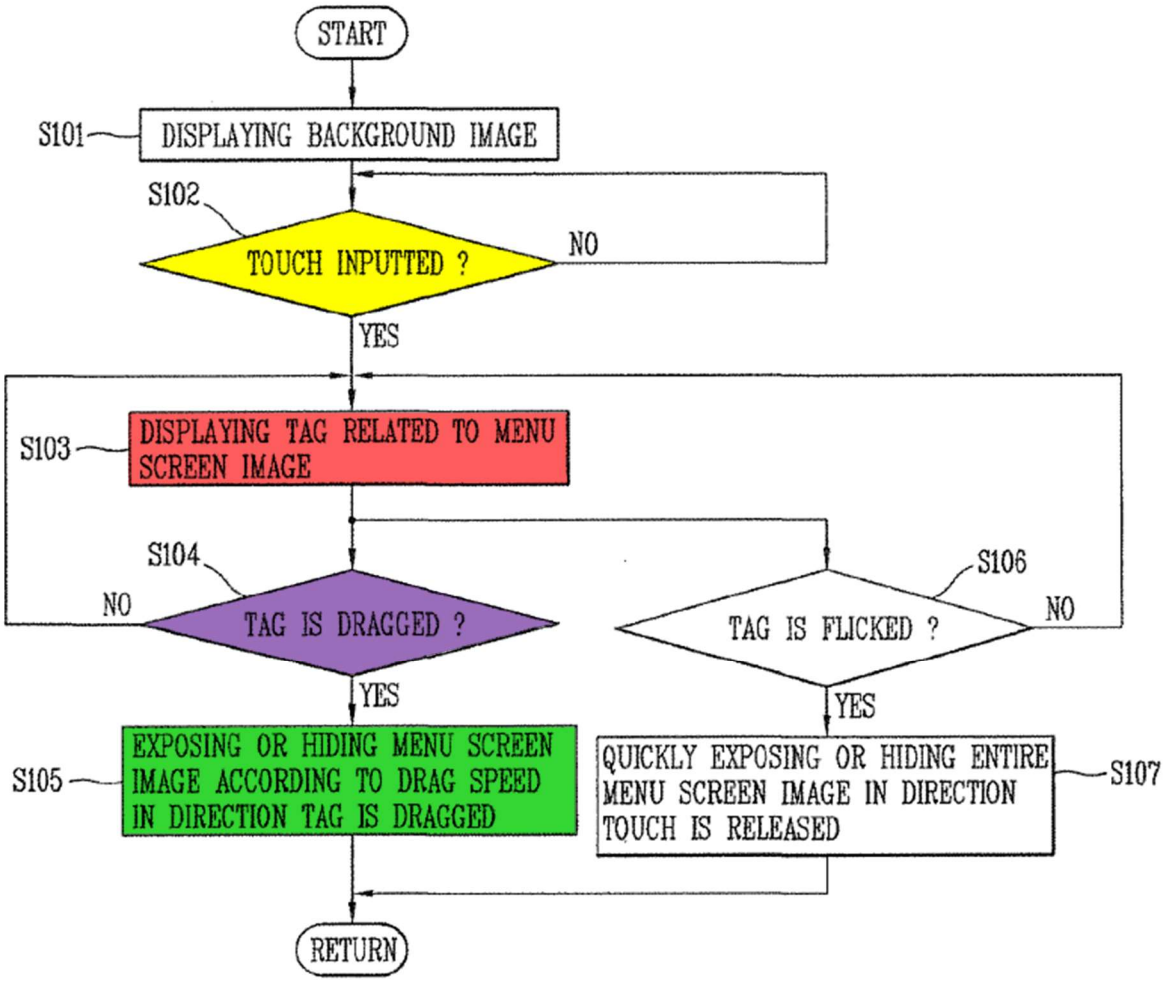
254. Furthermore, a POSITA would have found it obvious, been motivated to implement, and reasonably been expected to succeed in implementing *Jeong*'s gliding action provided from outside of the touch screen towards the inside of the touch screen for the same reasons as discussed in Ground 1, [1d]. *See supra* § XI.A.1.e.

f. [1e]: "wherein said at least one window is located on the touch screen before said gliding action begins."

255. *Jeong* discloses wherein said at least one window is located on the touch screen before said gliding action begins.

256. As I explain in [1d], *Jeong* discloses at FIG. 5 that the tags 330/410 are shown (step S103) before the "tag is dragged" (gliding action, step S104). For example, "when a touch is inputted with nothing displayed on the background screen image 310, the tags 410 related to the menu screen image 320 are displayed (Sl0l to S103)," although this "tag called" step may also be omitted such that the tags are shown on the screen without being called. *Jeong*, [0057]-[0059], FIG. 5. After "the tags 410 [are] displayed, when the user touches one of the tags 410 and drags it (S104), the controller 180 exposes a menu screen image 320, which has been hidden, in the direction in which the tag is dragged as shown in FIGS. 7A to 7C." *Jeong*, [0058], FIGS. 5, 7A-7C.

257. A POSITA also would have been motivated to provide the tags on the edge of *Jeong*'s touch screen, as I explain in [1b], such that they need not be called because they are posited in "pixels that are not typically touched during regular interactions," and could be displayed with or without a calling procedure before the dragging begins. *See supra* § XI.D.1.c; *Bezel Swipe*, 2. As such, the tag windows 330/410 are located (displayed) on the touch screen before the user's dragging action (gliding action) begins. *Jeong*, [0057]-[0058], FIGS. 5, 7A-7C.



Jeong, FIG. 5.

258. *Jeong* thus renders obvious claim 1.

2. Claim 2

a. "The system of claim 1, wherein the system relates said gliding action to a function which is not related to a mouse function."

259. *Jeong* discloses wherein the system relates said gliding action to a function which is not related to a mouse function.

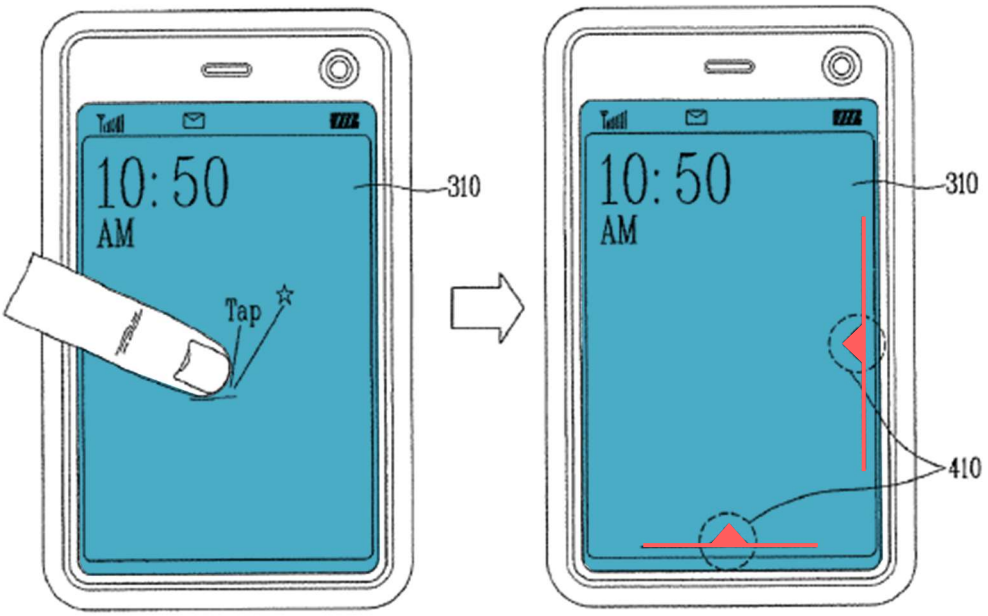
260. *Jeong*'s "dragging" (gliding action) relates to pulling open menus based on the distance and direction of the gesture, as I explain in claim 1, which is not related to the types of "mouse" functions described in the '602 patent. *See supra* § XI.D.1. For example, the '602 patent describes mouse functions as "control[ling] a mouse pointer," "control[ling] a mouse cursor," and "character entry." Ex. 1001, 36:10-13, 36:41-51. *Jeong* does not describe opening a notifications menu as being associated with any such mouse function.

3. Claim 3

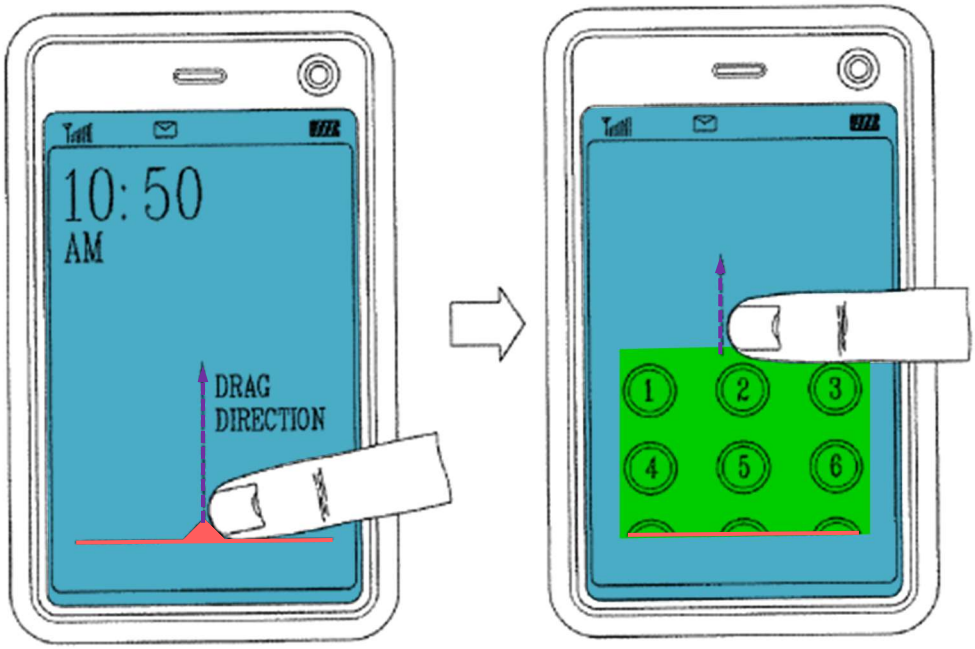
a. "The system of claim 1, wherein said at least one window comprises at least one bar located on said edge of the screen."

261. *Jeong* discloses wherein said at least one window comprises at least one bar located on said edge of the screen.

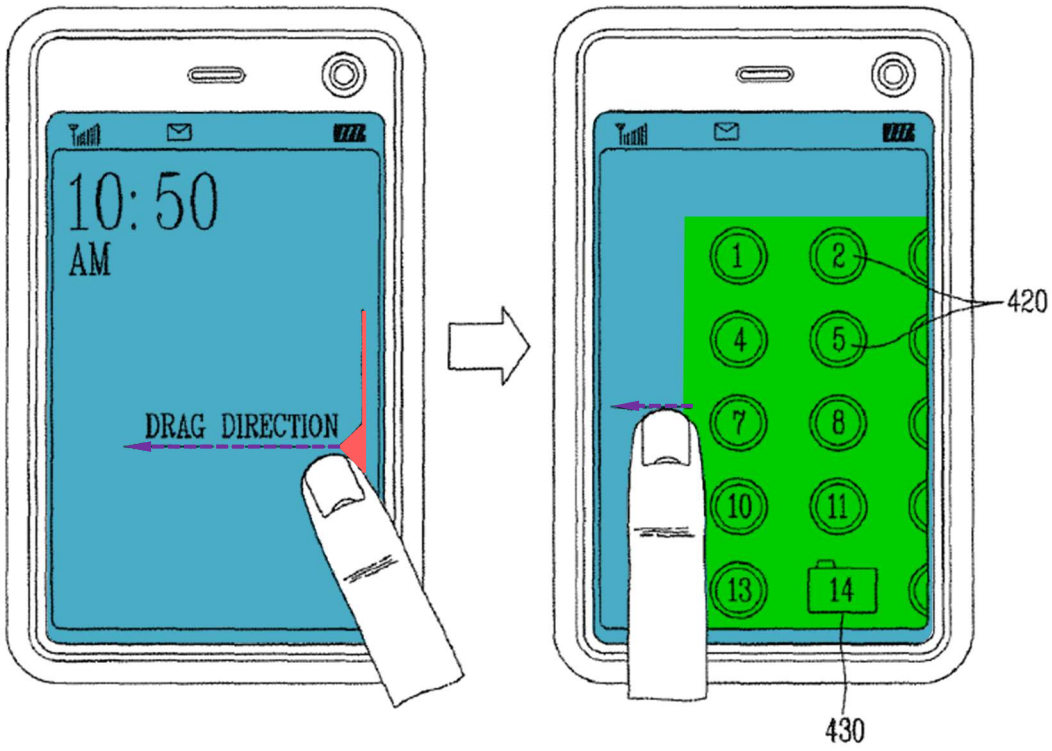
262. *Jeong* discloses or a POSITA would have found obvious that tags 330/410 are windows located on the edge of the touch screen, as I explain in [1b]. *See supra* § XI.D.1.c. *Jeong* discloses that tags 330/410 may be in the shape of a bar in the form of a line and an arrow indicating the drag direction, such as shown in FIGS. 6A, 6B, 7B, 7C.



Jeong, FIG. 6A.



Jeong, FIG. 7B.



Jeong, FIG. 7C.

4. Claim 4

a. "The system of claim 3, wherein said at least one bar extends along a substantial portion of an edge of the touch screen."

263. *Jeong* discloses wherein said at least one bar extends along a substantial portion of an edge of the touch screen.

264. *Jeong*'s FIGS. 6A and 7B show that the bar for tags 330/410 extends along a substantial portion of the bottom edge of the touch screen, as shown in claims 1 and 3.

265. I have also been asked to consider the situation in which *Jeong* is considered not to disclose the tags being on an edge of the touch screen. In such case, it is my opinion that a POSITA would have found this obvious, as I explain in [1b]. *See supra* § XI.D.1.c.

5. Claim 5

a. "The system of claim 3, wherein said bar is in a form of a line."

266. *Jeong* discloses wherein said bar is in a form of a line.

267. *Jeong*'s FIGS. 6A and 7B show that the bar for tags 330/410 is in a form of a thin line, as I explain in claims 1 and 3. *See supra* §§ XI.D.1, XI.D.3.

6. Claim 6

a. "The system of claim 5, wherein said action is displaying an interface on the screen."

268. *Jeong* discloses wherein said action is displaying an interface on the screen.

269. *Jeong* discloses that "[a] tag may be [a] graphical user interface (GUI) object associated with a functional interface which allows a user to expose or hide from view other GUI objects on the mobile terminal l00's display" *Jeong*, [0050]. For example, *Jeong* discloses that the menu screen image shown from the gliding action "includ[es] a plurality of menu items (or icons)" that may be used "for executing a program" and a "'group menu item' 430 for retrieving a menu item of

a different group and displaying it." *Jeong*, [0052], [0053], FIGS. 7A-7C. A POSITA would have known that a menu for displaying icons to launch or execute programs describes an interface for selecting a program's icon from the menu.

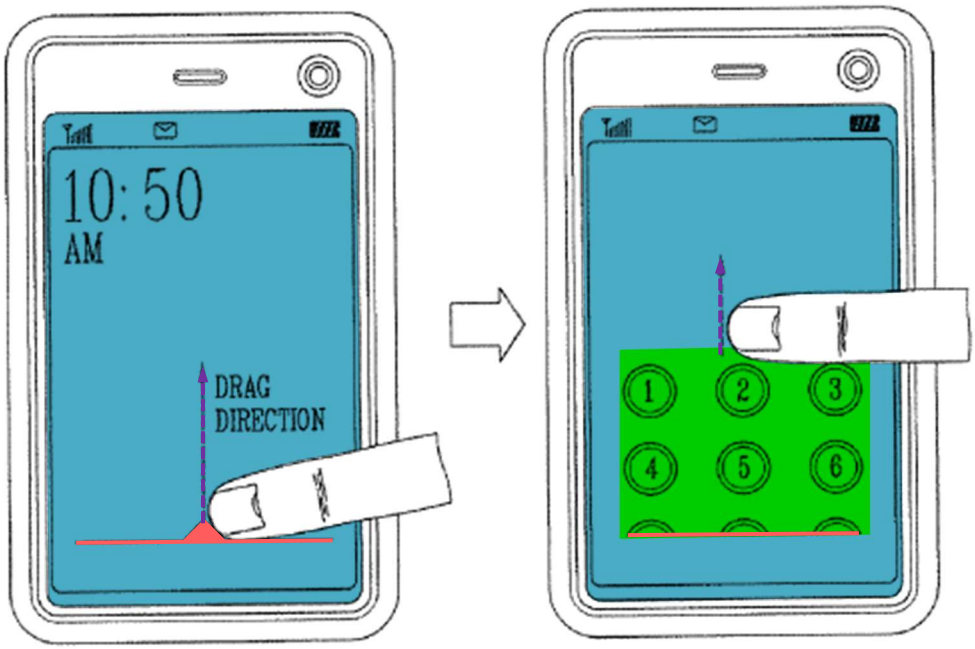
7. Claim 7

a. "The system of claim 5, wherein said action is displaying a portion of an interface on the screen."

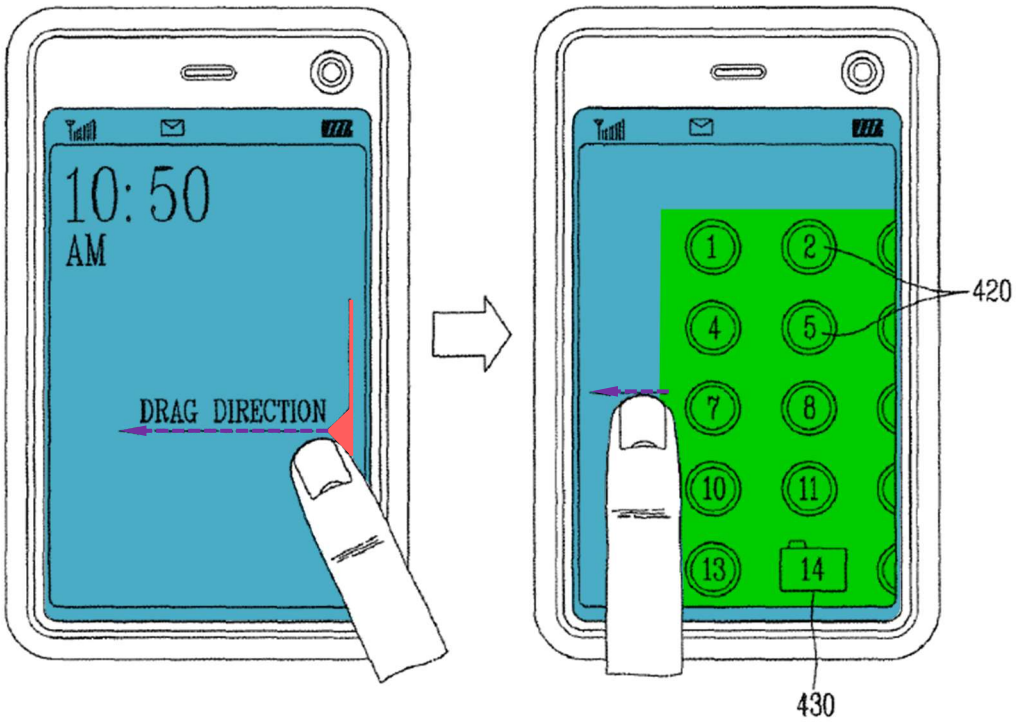
270. *Jeong* discloses wherein said action is displaying a portion of an interface on the screen.

271. *Jeong* discloses that "menu screen image 320 may expose some of the menu items while hiding other items according to the distance along which the tag 330 is dragged." *Jeong*, [0054]. More specifically, "some of the menu items may be displayed while others may not be displayed *according to the drag distance*." *Jeong*, [0054] (emphasis added). A POSITA would have recognized that "expos[ing] some of the menu items" according to the gliding distance displays a portion of the menu interface on the screen because a varying number of icons are shown depending on how far the user glides their finger to expose the menu. This is shown, for example, in FIGS. 7B-7C proportional to the dragging distance. *See also Jeong*, Abstract, [0006], [0007], [0054], [0061], [0064] (describing the background image changing size proportionally to the menu portion exposed by dragging).

272. *Jeong* confirms this, explaining that in FIGS. 7A-7C, "[i]f [the] tag dragging is stopped before the entire menu screen image 320 is exposed, or when the touch to the tag being dragged is released, the menu screen *maintains a currently exposed state as it is*"—that is, *Jeong*'s system exposes or hides a portion of the menu both during the dragging action and when the user ceases the dragging action. *Jeong*, [0059] (emphasis added).



Jeong, FIG. 7B.



Jeong, FIG. 7C.

8. Claim 8

a. "The system of claim 7, wherein during said gliding action, a length of the portion of the interface being displayed is substantially equal to a length of the gliding action."

273. *Jeong* discloses wherein during said gliding action, a length of the portion of the interface being displayed is substantially equal to a length of the gliding action.

274. *Jeong* discloses, for example, as shown in FIGS. 7B-7C, that during the user's dragging action, the length of the exposed portion of the menu interface being displayed is substantially equal to the length of the dragging (gliding) action

because the edge of the menu is shown under the user's finger as it is dragged, such as discussed in claim 7. *See supra* § XI.D.7. This proportional display allows for the menu to remain partially open if the user ceases the action, as discussed by *Jeong*. *Jeong*, [0059], FIGS. 7B-7C.

9. Claim 9

a. "The system of claim 3, wherein said action is displaying an interface on the screen."

275. The additional limitations of claim 9 are substantively the same as those in claim 6, which *Jeong* discloses or renders obvious as discussed for claim 6. *See supra* § XI.D.6.

10. Claim 10

a. "The system of claim 3, wherein said action is displaying a portion of an interface on the screen."

276. The additional limitations of claim 10 are substantively the same as those in claim 7, which *Jeong* discloses or renders obvious as discussed for claim 7. *See supra* § XI.D.7.

11. Claim 11

a. "The system of claim 10, wherein during said gliding action, a length of the portion of the interface being displayed is substantially equal to a length of the gliding action."

277. The additional limitations of claim 11 are substantively the same as those in claim 8, which *Jeong* discloses or renders obvious as discussed for claim 8. *See supra* § XI.D.8.

12. Claim 12

a. "The system of claim 1, wherein upon detecting said gliding action, the system displays an interface on said touch screen."

278. The additional limitations of claim 12 are substantively the same as those in claims 6 and 9, which *Jeong* discloses or renders obvious as discussed for claims 6 and 9. *See supra* §§ XI.D.6, XI.D.9.

13. Claim 13

a. "The system of claim 12, wherein upon detecting said gliding action, the system relates said gliding action to setting the location of said interface on said touch screen."

279. *Jeong* discloses or renders obvious that, upon detecting said gliding action, the system relates said gliding action to setting the location of said interface on said touch screen.

280. For example, as I explain in claims 1, 7, and 8, *Jeong* discloses that the portion of the menu screen image shown as a result of the dragging action tracks with the user's touch during the gliding gesture. *See supra* §§ XI.D.1, XI.D.7, XI.D.8. In each of these examples, a POSITA would have recognized that the menu screen image may comprise some, but not all, of the display area, thereby setting the location of the interface as a proportion of the screen dictated by the user's gliding action, as I explain in claims 7 and 8.

281. I have also been asked to consider the situation in which *Jeong* is considered not to disclose the additional limitations of claim 13. In such case, in my opinion, *Tseng* renders the additional limitations of claim 13 obvious. As I explain above, *Jeong* describes partially displaying the menu screen interface based on the length of the user's dragging action because it "maintains a currently exposed state as it is" when the user lifts his or her finger "before the entire menu screen image 320 is exposed." *See Jeong*, [0059], FIGS. 7A-7C.

282. A POSITA would have been motivated to allow the user to partially open the menu screen image. For example, *Jeong* explains that "[i]f tag dragging is stopped before the entire menu screen image 320 is exposed, or when the touch to the tag being dragged is released, the menu screen maintains a currently exposed state as it is" because "dragging allows adjusting of the degree of exposing or hiding of the menu screen image 320 in accordance with the speed and direction of

the dragging motion." *Jeong*, [0059]. This, along with *Jeong*'s other teachings, would have suggested to a POSITA that it would have been beneficial to allow for partially opening the menu screen image until the user finds the specific notification he or she is interested in, e.g., until the desired application icon or menu group item is displayed. The user would then be able to cease opening the menu screen to select the menu item to "execut[e] the program." *Jeong*, [0053], [0059]. This would have allowed users to interact with the menu screen more efficiently, but also retain the ability to fully view (e.g., without obscuring) the background image or any programs or applications operating on the background screen, thereby providing a motivation to a POSITA to implement this functionality.

283. A POSITA would have reasonably expected success in implementing this partial opening in *Jeong*'s system. As I explain above, *Jeong* discloses and shows in FIGS. 7A-7C that the menu screen tracks the user's dragging action. *See Jeong*, [0059]. A POSITA would have recognized that it only needs to open the menu screen to the same point that the user lifts their finger from the screen, as I explain above. *Jeong*, [0059], FIGS. 7A-7C. Such processes, implemented in *Jeong*, represent nothing more than combining prior art elements according to known methods and techniques (identifying a user's gliding action and displaying the menu screen image commensurate with the length of the user's drag before

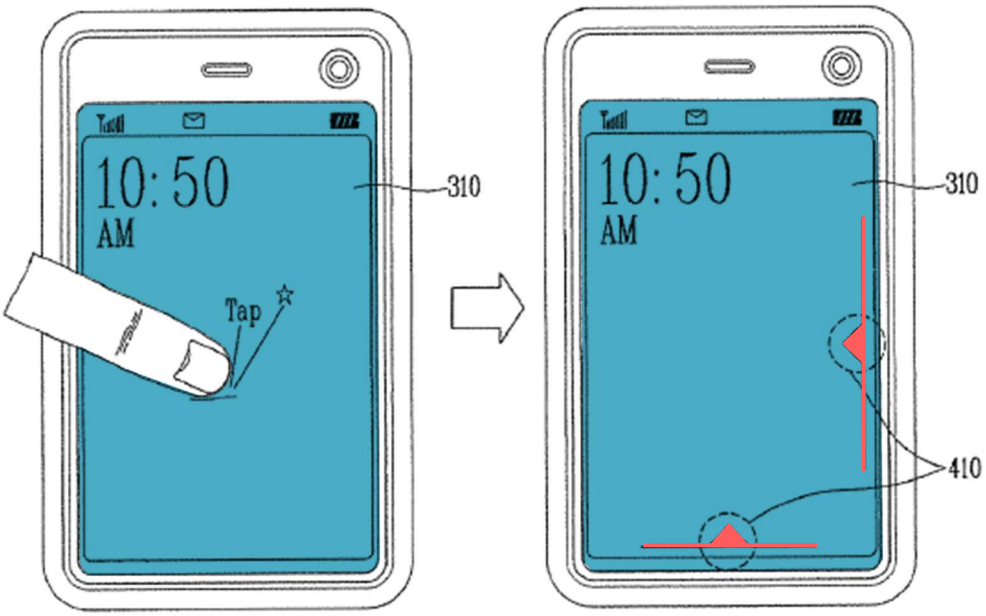
lifting the finger) to yield predictable results (opening *Jeong*'s menu, such as by sliding it open, as disclosed by *Jeong*). Implementing this functionality in *Jeong*'s system to pull open the menu screen as far as the location of the user's dragging action until the finger is lifted would have been merely the straightforward application of known, conventional techniques used according to their known functions to yield predictable results (pulling down the menu screen until the user's finger is lifted from the screen).

14. Claim 15

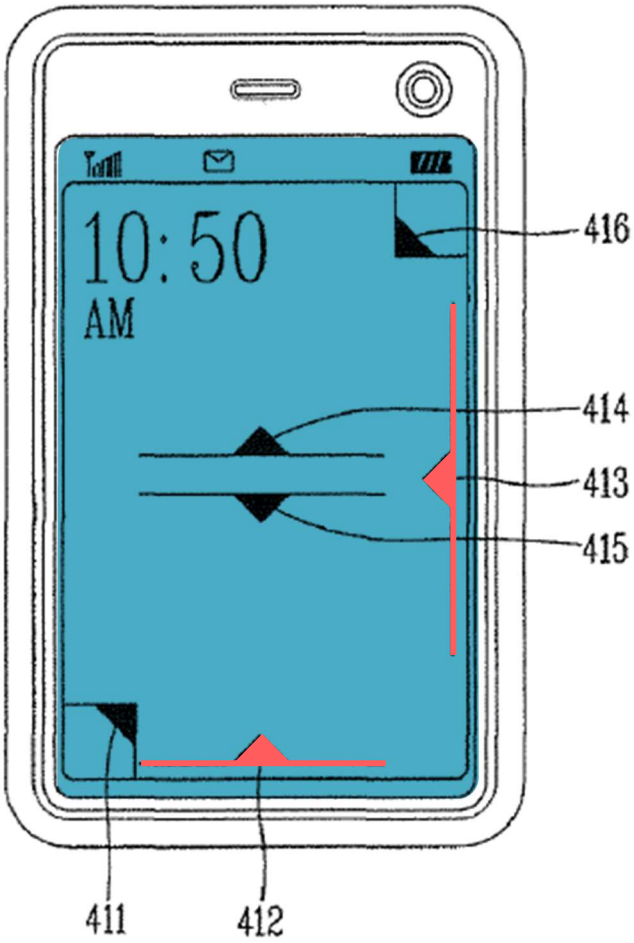
a. "The system of claim 1, wherein said at least one window comprises more than one window located on one or more edges of the touch screen."

284. *Jeong* discloses wherein said at least one window comprises more than one window located on one or more edges of the touch screen.

285. *Jeong* discloses that multiple tag windows 330/410 are located on multiple screen edges, such as the bottom and side edges shown in FIGS. 6A-6B. *Jeong*, [0058]. Furthermore, as I explain above for [1b], if this claim is interpreted to require that the window be on the outermost edge of the touch screen, a POSITA also would have found it obvious to place *Jeong*'s tags on the outermost edge. *See supra* § XI.D.1.c



Jeong, FIG. 6A.



Jeong, FIG. 6B.

15. Claim 16

a. "The system of claim 15, wherein said at least one window extends along a substantial portion of an edge of the touch screen."

286. The additional limitations of claim 16 are substantively the same as those in claim 4, which *Jeong* discloses or renders obvious as discussed for claim 4. *See supra* § XI.D.4.

16. Claim 17

a. "The system of claim 1, wherein during providing said gliding action, the system dynamically drags and shows an interface or a portion of an interface on the touch screen."

287. *Jeong* discloses wherein during providing said gliding action, the system dynamically drags and shows an interface or a portion of an interface on the touch screen.

288. As I explain above in claim 7, *Jeong* discloses that, during the dragging (gliding) action, the mobile device dynamically drags and shows the menu interface, or a portion of the menu interface, on the touch screen. *See supra* § XI.D.7.

17. Claim 18

a. "The system of claim 1, wherein the processor relates a gliding action provided towards any arbitrary direction inside the screen to presenting a same interface."

289. *Jeong* discloses or renders obvious wherein the processor relates a gliding action provided towards any arbitrary direction inside the screen to presenting a same interface.

290. For example, *Jeong* discloses that "tag 330 may be displayed in a shape (e.g., an arrow) indicating a direction in which the menu screen image 320 is exposed or a direction in which the tag 330 can be dragged." *Jeong*, [0052],

FIG. 6A. *Jeong* also discloses that the menu screen area travels up and down or left and right with the user's finger, as I explain above for claims 7, 8, and 13. *See supra* §§ XI.D.7, XI.D.8, XI.D.13. A POSITA would have recognized that this would have allowed the user's finger to glide anywhere on the screen in the indicated general direction (e.g., left from the tag indicating left) arbitrarily to expose the same menu screen image interface.

291. A POSITA would have recognized that, because *Jeong* describes a pull-out interface, the device would have used the direction coordinate in the direction indicated by the tag (e.g., Y-coordinate for up-down exposure or X-coordinate for left-right exposure), but that the reciprocal coordinate would not be needed, thus allowing the device to either ignore or discard it.[28] Thus, the user's gliding action would be able to proceed in any direction inside the interface from the tag, but the exposed menu screen would show the same interface, as shown, for example, in FIGS. 7B and 7C. *Jeong*, FIGS. 7B-7C.

[28] Whether *Jeong*'s device also tracks the X-component of the gliding action does not change the result. If it does, and chooses to ignore the X-component, the same interface is displayed as if the X-component is not tracked. Moreover, this does not change that the *user's gliding action* continues in any arbitrary direction to pull open *Jeong*'s menu screen interface.

18. Independent Claim 19

a. [19pre]: "A system for capturing an event provided from an edge of a touch screen comprising:"

292. [19pre] recites substantively the same limitations as those in [1pre], which *Jeong* discloses as discussed for [1pre]. *See supra* § XI.D.1.a.

b. [19a]: "a device having a touch screen;"

293. [19a] recites substantively the same limitations as those in [1a], which *Jeong* discloses as discussed for [1a]. *See supra* § XI.D.1.b.

c. [19b]: "a zone in form of a bar located in the touch screen on an edge of the touch screen; and"

294. [19b] recites substantively similar limitations to [1b] and claim 3, except that [19b] does not require that the "zone" be a "window," as recited in [1b].[29]

295. *Jeong* discloses or renders obvious [19b] for at least similar reasons to those discussed for [1b] and claim 3 (in the form of a bar). *See supra* §§ XI.D.1.c, XI.D.3. For example, *Jeong* explains that the tag is in the form of a bar (e.g., line), as explained in [1b] and claim 3.

[29] The "functions independently" limitation of [1b] is discussed below in [19d].

d. [19c]: "a processor;"

296. [19c] recites substantively the same limitations as those in [1c], which *Jeong* discloses as discussed for [1c]. *See supra* § XI.D.1.d.

e. [19d]: "wherein a gliding action provided from said zone of the touch screen towards any arbitrary direction inside the touch screen at first interacts with said zone, and wherein the processor executes a function related to said zone, and wherein said zone is present on said edge regardless of the interface of an application on said touch screen, and"

297. *Jeong* discloses or renders obvious that a gliding action provided from said zone of the touch screen towards any arbitrary direction inside the touch screen at first interacts with said zone, and wherein the processor executes a function related to said zone, and wherein said zone is present on said edge regardless of the interface of an application on said touch screen.

298. For example, as I explain in [1d], *Jeong* discloses or renders obvious that a user's dragging or gliding action provided from tag 330/410 of the touch screen towards the inside of the touch screen at first interacts with the tag zone when the user's finger contacts the touch screen (for example, when the user starts the gliding action on the tag or when the user glides their finger from offscreen to onscreen through the tag zone, as I explain in [1d]). *See supra* § XI.D.1.e.

299. As I explain for claim 18, *Jeong* discloses or renders obvious that the user's gliding action to display the menu screen image is towards any arbitrary direction inside the touch screen. *See supra* § XI.D.17.

300. As I explain in [1d], *Jeong*'s processor executes the function related to the tag 330/410 of displaying the menu screen image in response to the user's gliding action. *See supra* § XI.D.1.e.

301. As I explain in [1b] and [1d], *Jeong*'s tag 330/410 is displayed (present) on an edge of the screen regardless of the interface of an application displayed in the background area of the touch screen. *See supra* §§ XI.D.1.c, XI.D.1.e.

f. [19e]: "wherein said zone is located on the touch screen before said gliding action begins."

302. [19e] recites substantively the same limitations as those in [1e], except that it recites a "zone" instead of a "window," as I explain in [19b]. *Jeong* discloses [19e] as discussed for [1e] and [19b]. *See supra* §§ XI.D.1.f, XI.D.18.c.

19. Claim 21

a. "The system of claim 19, wherein upon detecting said gliding action, the system relates said gliding action to setting the location of an interface on the touch screen."

303. The additional limitations of claim 21 are substantively the same as those in claim 13, which *Jeong* discloses or renders obvious as discussed for claim 13. *See supra* § XI.D.13.

20. Claim 22

a. "The system of claim 19, wherein said bar comprises more than one bar located on one or more edges of the touch screen."

304. The additional limitations of claim 22 are substantively the same as those in claim 15, which *Jeong* discloses or renders obvious as discussed for claim 15. *See supra* § XI.D.14.

21. Claim 23

a. "The system of claim 19, wherein said zone is in a form of a visible or invisible line."

305. The additional limitations of claim 23 are substantively the same as those in claim 5, which *Jeong* discloses or renders obvious as discussed for claim 5. *See supra* § XI.D.5.

22. Claim 24

a. "The system of claim 23, wherein said function is displaying an interface on the screen."

306. The additional limitations of claim 24 are substantively the same as those in claims 6, 9, and 12, which *Jeong* discloses or renders obvious as discussed for claims 6, 9, and 12. *See supra* §§ XI.D.6, XI.D.9, XI.D.12.

23. Claim 25

a. "The system of claim 23, wherein said function is displaying a portion of an interface on the screen."

307. The additional limitations of claim 25 are substantively the same as those in claims 7 and 10, which *Jeong* discloses or renders obvious as discussed for claims 7 and 10. *See supra* §§ XI.D.7, XI.D.10.

24. Claim 26

a. "The system of claim 23, wherein said function is displaying a portion of an interface on the screen, and wherein a length of said portion of the interface is substantially equal to a length of the gliding action."

308. The additional limitations of claim 26 are substantively the same as those in claims 8 and 11, which *Jeong* discloses or renders obvious as discussed for claims 8 and 11. *See supra* §§ XI.D.8, XI.D.11.

25. Claim 27

a. "The system of claim 19, wherein said bar is visible or invisible."

309. The additional limitations of claim 27 are substantively the same as those in claims 5 and 23, which *Jeong* discloses or renders obvious as discussed for claims 5 and 23. *See supra* §§ XI.D.5, XI.D.21.

26. Claim 28

a. "The system of claim 27, wherein said function is displaying an interface on the screen."

310. The additional limitations of claim 28 are substantively the same as those in claims 6, 9, 12, and 24, which *Jeong* discloses or renders obvious as discussed for claims 6, 9, 12, and 24. *See supra* §§ XI.D.6, XI.D.9, XI.D.12, XI.D.22.

27. Claim 29

a. "The system of claim 27, wherein said function is displaying a portion of an interface on the screen."

311. The additional limitations of claim 27 are substantively the same as those in claims 7, 10, and 25, which *Jeong* discloses or renders obvious as discussed for claims 7, 10, and 25. *See supra* §§ XI.D.7, XI.D.10, XI.D.23.

28. Claim 30

a. "The system of claim 29, wherein during said gliding action, a length of the portion of the interface being displayed is substantially equal to a length of the gliding action."

312. The additional limitations of claim 30 are substantively the same as those in claims 8, 11, and 26, which *Jeong* discloses or renders obvious as discussed for claims 8, 11, and 26. *See supra* §§ XI.D.8, XI.D.11, XI.D.24.

29. Claim 31

a. "The system of claim 19, wherein during providing said gliding action, the system dynamically drags and shows an interface or a portion of an interface on the touch screen."

313. The additional limitations of claim 31 are substantively the same as those in claim 17, which *Jeong* discloses or renders obvious as discussed for claim 17. *See supra* § XI.D.16.

30. Claim 32

a. "The system of claim 19, wherein said function is displaying a same interface for any said gliding action, said gliding action interacting with any portion of said zone."

314. As I explain for claim 18 and [19d], *Jeong* discloses or renders obvious that the same menu screen area interface is displayed regardless of the gliding action by the user. *See supra* §§ XI.D.17, XI.D.18.e.

315. *Jeong* also explains that "[a] tag 330 related to a menu display may be displayed to allow the user to touch the tag 330 to drag it in a certain direction to expose the other remaining menu items that are usually hidden." *Jeong*, [0050]. *Jeong* does not disclose or require touching any particular part of the tag, but rather explains that the entire "tag may be [a] graphical user interface (GUI) object associated with a functional interface which allows a user to expose or hide from view other GUI objects on the mobile terminal 100's display." *Jeong*, [0050]. *Jeong* further explains that the user "drag[s] *a tag*," which a POSITA would have also recognized describes the user being able to interact with and drag any portion of the tag when performing the gliding action to expose the menu screen image. *Jeong*, [0051], FIGS. 7B-7C (emphasis added).

31. Claim 33

a. "The system of claim 32, wherein said gliding action is provided from outside the touchscreen towards inside the touch screen, wherein said gliding action at first interacts with said zone on said touch screen."

316. The additional limitations of claim 32 are substantively the same as those in [1d], which *Jeong* discloses or renders obvious as discussed for [1d]. *See supra* § XI.D.1.e.

32. Claim 34

a. "The system of claim 19, wherein said function is displaying a portion of an interface on the screen."

317. The additional limitations of claim 34 are substantively the same as those in claims 7, 10, 25, and 29, which *Jeong* discloses or renders obvious as discussed for claims 7, 10, 25, and 29. *See supra* §§ XI.D.7, XI.D.10, XI.D.23, XI.D.27.

33. Claim 35

a. "The system of claim 34, wherein during said gliding action, a length of the portion of the interface being displayed is substantially equal to a length of the gliding action."

318. The additional limitations of claim 35 are substantively the same as those in claims 8, 11, 26, and 30, which *Jeong* discloses or renders obvious as discussed for claims 8, 11, 26, and 30. *See supra* §§ XI.D.8, XI.D.11, XI.D.24, XI.D.28.

34. Claim 36

a. "The system of claim 19, wherein said zone extends along a substantial portion of said edge."

319. The additional limitations of claim 36 are substantively the same as those in claims 4 and 16, which *Jeong* discloses or renders obvious as discussed for claims 4 and 16. *See supra* §§ XI.D.4, XI.D.15

E. Ground 5: Claims 1-13, 15-18, and 33 Are Rendered Obvious by *Jeong* and *Wilairat*

320. I have also been asked to consider the situation in which *Jeong* is considered not to disclose or render obvious the gliding action being provided from outside of the touch screen towards the inside of the touch screen ([1d], claim 33). I have similarly been asked to consider the situation in which this gliding action is interpreted to require that the device determine that the user's finger started offscreen and moved onscreen during the gliding action. In my opinion, *Wilairat* renders both of these obvious.

321. *Wilairat* discloses that "a touch pull-in gesture" is detected when a user "initiate[s] a touch input with a finger just off an edge of the touch-screen and then motion[s] a pull-in gesture across the touch-screen," as I explain above for Ground 2. *See supra* § XI.B; *Wilairat*, [0009], [0012], [0015], Fig. 1.

322. A POSITA would have found it obvious to incorporate *Wilairat*'s pull-in gesture to detect an offscreen-to-onscreen gliding action to activate *Jeong*'s tags 330/410 to cause the menu to be pulled out for similar reasons to combining with *Tseng*, as discussed above in Ground 2. *See supra* § XI.B.

323. For example, a POSITA would have been motivated to incorporate *Wilairat*'s pull-in gesture determination into *Jeong*'s system to activate *Jeong*'s pull-open menus from the edge of the displays with tags 330/410. A POSITA

would have recognized that this operation has certain benefits to users, such as allowing the tags to be thinner and, optionally, positioned on the outermost edge of the display screen to use pixels not covered by the background image, while retaining the benefits of gliding activation because the user does not need to land directly on the status bar (such as by tapping it). *See supra* § VI; *Bezel Swipe*, 2; *Roth*, [0009], [0010], [0015]. A POSITA also would have recognized that incorporating a pull-in gesture determination would have required more intentionality by users without sacrificing accuracy because users could be informed (e.g., in a user's manual or device tutorial) that the tag menus could be displayed using a gesture that begins offscreen and swipes onscreen. This would have benefitted users because such gestures are "low precision," meaning that the user gliding from offscreen across tag lines towards the inside of the screen would be determined as a "pull-in gesture" gliding action and activate the pull-open menu. Low-precision gestures are easier for users to activate, and a POSITA would have been motivated to incorporate it to activate *Jeong*'s menus to avoid frustration by users believing that they must start on the thin line of the tag and be frustrated by placing the touch close to, but not touching, the tag line, or by accidentally starting on the tag when trying to touch a location next to the tag in the main application area.

324. At least two previous devices included pull-in gliding actions—the Palm Pre and the Neonode N2—which would have further motivated a POSITA as a known method of improving similar devices.



Palm Pre Plus User's Manual, 20; *see also Palm Pre The Missing Manual*, 51-52.

1.13 Vertical areas:

1. The left part of the screen is called the Start menu sweep area.
2. The middle part of the screen is called the Keyboard sweep area.
3. The right part of the screen is called the Tools menu sweep area.

In the vertical areas you start the sweep at the very bottom of the screen. Sweep upwards. The sweep should be about half the height of the screen.

A sweep in the left part of the screen opens the start menu. A sweep in the middle opens the keyboard and a sweep in the right part of the screen opens the tools menu.



Neonode N2 User Guide, 7.

See also Goertz, [0047], [0071], Fig. 2 (describing Neonode phone having a "menu area" separate from the "display area"; "FIG. 2 shows that any one of these three functions 21, 22, 23 can be activated when the touch sensitive area 1 detects a

movement of an object 4 with its starting point A within the representation of a function on the menu area 2 and with a direction B from the menu area 2 to the display area 3.").

325. Determining an off-to-on-screen gliding gesture, like *Wilairat*'s pull-in gesture, was also described in *Bezel Swipe*, which discloses a "Bezel Swipe gesture" that "starts on the bezel and moves into the display" such that "the contact area [of the finger] is gradually increased until it exceeds the contact threshold of the display." *Bezel Swipe*, 2; *see also Roth*, [0009], [0010], [0015], Fig. 2B ("[u]sers can invoke actions with swiping gestures across a section of the display side from the outside to the inside," and "[a] continuous swiping motion may also begin from outside of the display for ease of use"). When the finger's contact area "exceeds the contact threshold of the display," the swiping gesture is determined and the function of the bar (e.g., *Jeong*'s tag) is activated to drag open. *Bezel Swipe*, 2; *Roth*, [0009], [0010], [0015], Fig. 2B.

326. A POSITA would have been motivated to determine that the user's gliding gesture began offscreen and moved onscreen, such as by using the expanding contact method of *Wilairat* (also taught by *Bezel Swipe*) because it lends intentionality to the user's action and would have been less likely to result in accidental activations because users would be less likely to accidentally activate the tag knowing that the menu would be activated by a pull-in gesture. A POSITA

would have recognized that this implementation would benefit users by making it easier for users to activate portions of the display very close to the tags, without compromising the ease of use to pull open the menus, while also freeing up additional display space (e.g., by moving the tag lines to the outermost edge pixels). In such case, a POSITA would have been motivated to implement this functionality because it allows the tags to behave as if it were a crossing gesture where the finger first interacts with the status bar on the touch screen (during the gliding), but the expanding contact determination confirms that the user intended to activate the pull-open menus.

327. As I explain above, "crossing"-type gestures were recognized as beneficial in the art, especially for devices having small touch screens, like *Jeong*'s mobile device, where the "smaller widgets" "are harder to hit." *Bezel Swipe*, 1. A POSITA would have recognized that this off-to-on-screen swiping gesture (e.g., *Wilairat*'s pull-in gesture, or *Bezel Swipe*'s/*Roth*'s bezel swipe gesture) "can be more efficient" than tapping on *Jeong*'s tag and dragging, and that it "enables the reliable activation of a button that is so narrow that it would be difficult to activate by direct touch." *Roth*, [0010]; *Bezel Swipe*, 2. Furthermore, a POSITA would have recognized that such functionality "does not typically reduce the accessible display area" on small screens and "require[] minimal display real estate" "because the swiping gesture minimizes the area of initial contact with the touch sensitive

display [touch screen].” *Bezel Swipe*, 2; *Roth*, [0009], [0010]. A POSITA would have been motivated by this. *Jeong* displays a thin line for the tags that might otherwise confuse or frustrate users into thinking that they must precisely touch the thin line.

328. A POSITA would have reasonably expected to succeed in implementing *Wilairat*’s pull-in gesture determination to determine whether a user’s gliding action (e.g., “dragging”) in *Jeong*’s system began offscreen and glided onscreen, first interacting with the status bar on the touch screen, such as by using *Wilairat*’s expanding contact determination.

329. Similar to the reasons explained above in Ground 1, [1d], implementing *Wilairat*’s pull-in gesture determination to determine that a user’s gliding gesture started offscreen and moved onscreen, first interacting with the status bar window, would have involved nothing more than the routine combination of existing technology in predictable ways. Such processes, implemented in *Jeong*, represent nothing more than combining known prior art elements according to known methods and techniques (registering a user’s gliding action when it first crosses into the display at the tag window and moves onto the touch screen, such as by using the expanding contact method disclosed in *Wilairat* and *Bezel Swipe*) to yield predictable results (opening *Jeong*’s pull-out menu, such as by sliding it open, as disclosed by *Jeong*).

330. As such, a POSITA would have recognized that determining that a gliding action started outside of the touch screen and moved towards inside of the touch screen (e.g., by contact area determination) to activate a function based on the gliding action first interacting with a window (e.g., tag window) on the touch screen was well known in the prior art. *Wilairat*, [0003], [0009], [0012], [0015], Fig. 1; *Bezel Swipe*, 2, Figure 2; *Roth*, [0009], [0015], [0036], [0039], Fig. 2B; *see also Palm Pre Plus User's Manual*, 20; *see also Palm Pre The Missing Manual*, 51-52; *Neonode N2 User Guide*, 7; *Goertz*, [0047], [0071], Fig. 2.

331. Implementing this functionality in *Jeong*'s system to pull open *Jeong*'s menus by determining that the user's gliding action started offscreen and moved towards the inside of the touch screen over the tag window, such as by *Wilairat*'s pull-in gesture, would have been merely the straightforward application of known, conventional techniques used according to their known functions to yield predictable results (pulling down a menu, as shown in *Jeong*'s FIGS. 7B-7C, when the device determines a pull-in gesture).

XII. CONCLUSION

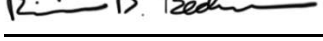
332. For the reasons set forth in Section XI, it is my opinion that one skilled in the art would have found claims 1-13, 15-19, and 21-36 of the '602 patent obvious.

333. In signing this declaration, I understand that the declaration will be filed as evidence in a contested case before the Patent Trial and Appeal Board of the United States Patent and Trademark Office. I acknowledge that I may be subject to cross-examination in this case and that cross-examination will take place within the United States. If cross-examination is required of me, I will appear for cross-examination within the United States during the time allotted for cross-examination.

334. I declare that all statements made herein of my knowledge are true, and that all statements made on information and belief are believed to be true, and that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

Respectfully submitted,

Dated: February 9, 2025



Benjamin B. Bederson, Ph.D.

CLAIMS LISTING FOR THE '602 PATENT

1. **[1pre]** A system for capturing an event provided from an edge of a touch screen comprising:

[1a] a device having a touch screen;

[1b] at least one window located in the touch screen on an edge of the touch screen, wherein said at least one window functions independently of an interface of an application in use on the touch screen; and

[1c] a processor;

[1d] wherein a gliding action provided from outside of the touch screen towards inside of the touch screen, said gliding action at first interacting with said at least one window on the touch screen, is processed by said processor to cause an action assigned to said window, and

[1e] wherein said at least one window is located on the touch screen before said gliding action begins.

2. The system of claim 1, wherein the system relates said gliding action to a function which is not related to a mouse function.

3. The system of claim 1, wherein said at least one window comprises at least one bar located on said edge of the screen.

4. The system of claim 3, wherein said at least one bar extends along a substantial portion of an edge of the touch screen.

5. The system of claim 3, wherein said bar is in a form of a line.

6. The system of claim 5, wherein said action is displaying an interface on the screen.

7. The system of claim 5, wherein said action is displaying a portion of an interface on the screen.

8. The system of claim 7, wherein during said gliding action, a length of the portion of the interface being displayed is substantially equal to a length of the gliding action.

9. The system of claim 3, wherein said action is displaying an interface on the screen.

10. The system of claim 3, wherein said action is displaying a portion of an interface on the screen.

11. The system of claim 10, wherein during said gliding action, a length of the portion of the interface being displayed is substantially equal to a length of the gliding action.

12. The system of claim 1, wherein upon detecting said gliding action, the system displays an interface on said touch screen.

13. The system of claim 12, wherein upon detecting said gliding action, the system relates said gliding action to setting the location of said interface on said touch screen.

15. The system of claim 1, wherein said at least one window comprises more than one window located on one or more edges of the touch screen.

16. The system of claim 15, wherein said at least one window extends along a substantial portion of an edge of the touch screen.

17. The system of claim 1, wherein during providing said gliding action, the system dynamically drags and shows an interface or a portion of an interface on the touch screen.

18. The system of claim 1, wherein the processor relates a gliding action provided towards any arbitrary direction inside the screen to presenting a same interface.

19.[30] **[19pre]** A system for capturing an event provided from an edge of a touch screen comprising:

[19a] a device having a touch screen;

[19b] a zone in form of a bar located in the touch screen on an edge of the touch screen; and

[19c] a processor;

[19d] wherein a gliding action provided from said zone of the touch screen towards any arbitrary direction inside the touch screen at first interacts with said zone, and wherein the processor executes a function related to said

[30] Claim 19 as corrected in the Certificate of Correction issued February 16, 2021.

zone, and wherein said zone is present on said edge regardless of the interface of an application on said touch screen, and

[19e] wherein said zone is located on the touch screen before said gliding action begins.

21. The system of claim 19, wherein upon detecting said gliding action, the system relates said gliding action to setting the location of an interface on the touch screen.

22. The system of claim 19, wherein said bar comprises more than one bar located on one or more edges of the touch screen.

23. The system of claim 19, wherein said zone is in a form of a visible or invisible line.

24. The system of claim 23, wherein said function is displaying an interface on the screen.

25. The system of claim 23, wherein said function is displaying a portion of an interface on the screen.

26. The system of claim 23, wherein said function is displaying a portion of an interface on the screen, and wherein a length of said portion of the interface is substantially equal to a length of the gliding action.

27. The system of claim 19, wherein said bar is visible or invisible.

28. The system of claim 27, wherein said function is displaying an interface on the screen.

29. The system of claim 27, wherein said function is displaying a portion of an interface on the screen.

30. The system of claim 29, wherein during said gliding action, a length of the portion of the interface being displayed is substantially equal to a length of the gliding action.

31. The system of claim 19, wherein during providing said gliding action, the system dynamically drags and shows an interface or a portion of an interface on the touch screen.

32. The system of claim 19, wherein said function is displaying a same interface for any said gliding action, said gliding action interacting with any portion of said zone.

33. The system of claim 32, wherein said gliding action is provided from outside the touchscreen towards inside the touch screen, wherein said gliding action at first interacts with said zone on said touch screen.

34. The system of claim 19, wherein said function is displaying a portion of an interface on the screen.

35. The system of claim 34, wherein during said gliding action, a length of the portion of the interface being displayed is substantially equal to a length of the gliding action.

36. The system of claim 19, wherein said zone extends along a substantial portion of said edge.