

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Samsung Electronics Co., Ltd and Samsung Electronics America, Inc.,
Petitioners

v.

Dareltech, LLC, Inc.,
Patent Owner

Case IPR2019-XXXXXX

U.S. Patent No. 9,075,612

DECLARATION OF ANDREW WOLFE, PH.D.
U.S. PATENT NO. 9,075,612
CLAIMS 1-19

<p>Samsung v. Dareltech, LLC, Inc. IPR 2019-01575 U.S. Pat. 9,075,612 Exhibit 1010</p>

TABLE OF CONTENTS

1.	BACKGROUND AND QUALIFICATIONS	10
2.	MATERIALS REVIEWED	17
3.	RELEVANT LEGAL STANDARDS	20
4.	TECHNOLOGY BACKGROUND.....	24
5.	OVERVIEW OF U.S. PATENT 9,075,612	37
5.1.	Summary	37
5.2.	Prosecution History	40
5.3.	Effective Filing Date	43
5.4.	The Claims at Issue	48
5.5.	Level of Ordinary Skill in the Art	57
5.6.	Claim Construction	57
5.6.1.	“locked state” (claims 1, 10, 14 and 16).....	58
5.7.	<i>OVERVIEW OF THE PRIOR ART</i>	59
5.7.1.	<i>Park</i>	59
5.7.2.	<i>Newman</i>	65
5.7.3.	<i>Ording</i>	67
5.7.4.	<i>Siwinski</i>	69
5.7.5.	<i>Yang</i>	70
6.	FOUNDATIONS 1A/1B: <i>PARK</i> IN VIEW OF <i>NEWMAN</i> (1A) AND <i>PARK</i> IN VIEW OF <i>NEWMAN</i> AND <i>ORDING</i> (1B) RENDER OBVIOUS CLAIMS 1-2, 5-6, 9-15, AND 18	71

6.1.	Claim 1	71
[1p]	“A portable phone comprising”	71
[1a]	“a display comprising a display screen”	73
[1b]	“one or more processors”	75
[1c]	“a memory comprising program instructions, wherein the program instructions are executed by the one or more processors to implement . . .”	76
[1d]	“a power management module configured to manage power consumption of the display”	77
[1e]	“wherein when the display is not in a sleep mode the power management module directs a display controller to display a set of a plurality of graphical indications in color in a full configuration mode that puts substantially all of the display screen in a powered-on state”	79
[1f]	“wherein when the display is in a sleep mode, the power management module directs the display controller to display a subset of the plurality of graphical indications”	87
6.1.1.	Grounds 1A	89
6.1.2.	Grounds 1B	90
[1g]	“the subset comprising an unlock image comprising at least one of, time, date, or an indication of an email, text message, or voice message”	95
[1h]	“wherein the subset of the plurality of graphical indications are displayed in a portion of the display screen”	96
[1i]	“are displayed in black, white or grayscale, instead of displayed in color”	96

[1j]	“a user interface module configured to respond, when the portable phone is in a locked state, to unlock gestures associated with the unlock image”	101
[1k]	“wherein a particular unlock gesture of the unlock gestures causes: the phone to transition to an unlocked state, and the display controller to enter the full configuration mode”	104
[1l]	“wherein another particular unlock gesture of the unlock gestures causes: the phone to transition to an unlocked state, and the display controller to enter a proportional configuration mode that puts at least a portion of the display screen in a powered-off state and another portion of the display screen in the powered-on state”	107
6.2.	Claim 2 - “The portable phone of claim 1, wherein when the other portion of the display screen is in the powered-on state, the other portion of the display screen is configured to perform display functions and receive user input”	112
6.3.	Claim 5	113
[5a]	“The portable phone of claim 1, wherein the power management module is further configured to instruct the display controller to function in a full display mode”	113
[5b]	“wherein the full display mode configures substantially all of an available area of the display screen in the powered-on state when the display controller of the portable phone is in the full display mode”	114
6.4.	Claim 6	114
[6a]	“The portable phone of claim 1, wherein the power management module is further configured to manage the display of the portable phone when the display is in a powered-off mode”	114
[6b]	“the power management module configured to direct the display controller to display at least one of a time, date or an	

	indication of one or more messages while the display controller is in the powered-off mode”	115
6.5.	Claim 9	116
[9a]	“The portable phone of claim 1, wherein the display is a touch-sensitive display”	116
[9b]	“and wherein to respond to unlock gestures the user interface module is further configured to: detect a contact with the touch-sensitive display at a first predefined location corresponding to an unlock image”	116
[9c]	“continuously move the unlock image on the touch-sensitive display in accordance with movement of the contact while continuous contact with the display screen is maintained as part of the gestures”	121
[9d]	“wherein the unlock image is a graphical, interactive user-interface object with which a user interacts in order to unlock the portable phone”	123
6.6.	Claim 10	124
[10p]	“A method comprising”	124
[10a]	“managing a display of a portable phone, wherein managing the display comprises”	125
[10b]	“directing, by a power management module, the display”	125
[10c]	“wherein when the display is not in a sleep mode, the power management module directs the display to display a set of a plurality of graphical indications in color in a full configuration mode that puts substantially all of the display of the portable phone in a powered-on state”	125
[10d]	“when the display is in a sleep mode, directing the display, by the power management module, to display a subset of the plurality of graphical indications”	126

[10e]	“the subset comprising an unlock image comprising at least one of, time, date, or an indication of an email, text message, or voice message”	126
[10f]	“wherein the subset of the plurality of graphical indications are displayed in a portion of the display”	127
[10g]	“are displayed in black, white or grayscale, instead of displayed in color”	127
[10h]	“responding, by a user interface module when the portable phone is in a locked state, to unlock gestures associated with the unlock image”	127
[10i]	“wherein responding to a particular unlock gesture of the unlock gestures comprises: transitioning the portable phone to an unlocked state, and causing the display to enter the full configuration mode”	127
[10j]	“wherein responding to another particular unlock gesture of the unlock gestures comprises: transitioning the portable phone to an unlocked state, and causing the display to enter a proportional configuration mode that puts at least a portion of the display in a powered-on state and another portion of the display in the powered-off state”	128
6.7.	Claim 11	128
[11a]	“The method of claim 10, wherein said responding to the other particular unlock gesture further comprises causing the other portion of the display to not perform display functions”	128
[11b]	“and not receive user input”	129
6.8.	Claim 12 - “The method of claim 11, wherein said responding to the particular unlock gesture further comprises causing the portion of the display to perform display functions and receive user input”	130
6.9.	Claim 13	130

[13a]	“The method of claim 12, further comprising instructing the display to function in a full configuration mode”	130
[13b]	“wherein the full configuration mode configures substantially all of the display in a powered-on state”	130
6.10.	Claim 14-15 and 18	130
7.	<i>PARK IN VIEW OF NEWMAN AND SIWINSKI (GROUNDS 2A) AND PARK IN VIEW OF NEWMAN, ORDING AND SIWINSKI (GROUNDS 2B) RENDERS CLAIMS 3-4 AND 16-17 OBVIOUS</i>	132
7.1.	Claim 3 - “The portable phone of claim 2, wherein the powered-on state configures the other portion of the display screen to function in a grayscale color mode”	132
7.2.	Claim 4	135
[4a]	“The portable phone of claim 3, wherein the powered-off state configures the portion of the of the display screen to not perform display functions”	135
[4b]	“and to not receive user input”	136
7.3.	Claim 16	136
[16a]	“The portable phone of claim 15, wherein the locked state of the portable phone configures the display to function in a grayscale color mode”	136
7.4.	Claim 17	137
[17a]	“The portable phone of claim 16, wherein the powered-off state of the proportional configuration mode configures the other portion of the display to not perform display functions”	137
[17b]	“and to not receive user input”	138

8.	<i>PARK IN VIEW OF NEWMAN AND YANG (GROUNDS 3A) AND PARK IN VIEW OF NEWMAN, ORDING, AND YANG (GROUNDS 3B) RENDER OBVIOUS CLAIMS 7, 8, AND 19</i>	138
8.1.	Claim 7	138
[7a]	“The portable phone of claim 1, wherein the power management module is further configured to direct the display controller to transition between modes based on a configurable battery power threshold”	138
[7b]	“wherein the power management module is further configured to: determine that a battery power of the portable phone reaches the configurable battery power threshold”	142
[7c]	“subsequent to said determine, instruct the display controller to change from a full configuration mode to the proportional configuration mode”	143
8.2.	Claim 8	143
[8a]	“The portable phone of claim 7, wherein the configurable battery power threshold is a configurable setting in a user interface of the portable phone”	143
8.3.	Claim 19	144
[19a]	“The portable phone of claim 14 wherein the power management module is further configured to direct the display to change between modes based on a configurable battery power threshold”	144
[19b]	“wherein the power management module is further configured to: determine that a battery power of the portable phone has reached the configurable battery power threshold”	145
[19c]	“subsequent to said determination, instruct the display to shift from the full configuration mode to the proportional configuration mode”	145

9.	AVAILABILITY FOR CROSS-EXAMINATION	145
10.	RIGHT TO SUPPLEMENT	146
11.	JURAT	146

I, Andrew Wolfe, Ph.D., declare as follows:

1. BACKGROUND AND QUALIFICATIONS

1. My name is Andrew Wolfe. My complete qualifications and professional experience are described in my curriculum vitae, a copy of which is attached as Appendix A. The following is a brief summary of my relevant qualifications and professional experience.

2. I am the founder and sole employee of Wolfe Consulting. Through Wolfe Consulting, I provide technical and business analysis to businesses on processor technology, computer systems, display technology, consumer electronics, software, design tools, data security, cryptography, and intellectual property issues. I have more than thirty years' experience developing products, researching, consulting, and teaching in those fields. In that time, I have worked as a computer architect, computer system designer, and as an executive in the PC and electronics business. I have also taught at some of the world's leading institutions in those fields, including Stanford University, Princeton University, Carnegie Mellon University, and Santa Clara University.

3. In 1985, I earned a B.S.E.E. degree in Electrical Engineering and Computer Science from the Johns Hopkins University. In 1987, I received a M.S. degree in Electrical and Computer Engineering from Carnegie Mellon University.

In 1992, I received a Ph.D. degree in Computer Engineering from Carnegie Mellon University. My doctoral dissertation proposed a new approach for the architecture of a computer processor.

4. In 1983, I began designing touch sensors, microprocessor-based computer systems, and I/O (input/output) cards for personal computers as a senior design engineer for Touch Technology, Inc. During the course of my design projects with Touch Technology, I designed I/O cards for PC-compatible computer systems, including the IBM PC-AT, to interface with interactive touch-based computer terminals that I designed for use in public information systems. I continued designing and developing related technology as a consultant to the Carroll Touch division of AMP, Inc., where in 1986 I designed one of the first custom touch-screen integrated circuits. I designed the touch/pen input system for the Linus WriteTop, which many believe to be the first commercial tablet computer.

5. From 1986 through 1987, I designed and built a high-performance computer system at Carnegie Mellon University. From 1986 through 1988, I also developed the curriculum and supervised the teaching lab for the processor design courses.

6. In 1989, I worked as a senior design engineer for ESL-TRW Advanced Technology Division. I designed and built a bus interface and memory controller for a workstation-based computer system and worked on the design of a multiprocessor system.

7. At the end of 1989, along with some partners, I reacquired the technology I had developed at Touch Technology and at AMP and founded The Graphics Technology Company. As an officer and a consultant, I managed engineering development activities at that company and personally developed dozens of interactive graphics and interactive video computer systems over the next seven years.

8. I have consulted, formally and informally, for a number of processor design companies. In particular, I have served on the technical advisory boards for two media processor design companies, BOPS, Inc., where I chaired the board, and Siroyan Ltd. I served in a similar role for three networking chip companies, Intellon, Inc., Comsilica, Inc., and Entridia, Inc. and one 3D game accelerator company, Ageia, Inc. I have also served as a technology advisor to Motorola and to several venture capital funds in the U.S. and Europe. Currently, I am a director of Turtle Beach Corporation, providing guidance in its development of premium audio

peripheral devices and user-input devices for a variety of commercial electronic products.

9. From 1991 through 1997, I served on the Faculty of Princeton University as an Assistant Professor of Electrical Engineering. At Princeton, I taught undergraduate and graduate-level courses in Computer Architecture, Advanced Computer Architecture, Display Technology, and Microprocessor Systems courses as well as conducting sponsored research in the area of computer systems and related topics. I also was a principal investigator for DOD research in video technology and a principal investigator for the New Jersey Center for Multimedia Research. From 1999 through 2002, I also taught the Computer Architecture course to both undergraduates and graduate students at Stanford University several times as a Consulting Professor. At Princeton, I received several teaching awards, both from students and from the School of Engineering. I have also taught advanced microprocessor architecture to industry professionals in IEEE and ACM sponsored seminars. I am currently a lecturer at Santa Clara University teaching courses on Computer Organization and Architecture and Mechatronics.

10. From 1997 through 2002, I held a variety of executive positions at a publicly-held PC graphics company originally called S3, Inc. and later called Sonicblue Inc. These included Chief Technology Officer, Vice President of Systems

Integration Products, Senior Vice President of Business Development, and Director of Technology. At the time I joined S3, it supplied graphics accelerators for more than 50% of the PCs sold in the United States.

11. Beginning in 1998, I began to work closely with S3's largest customer, Diamond Multimedia, to explore possible opportunities for a merger. My investigation included evaluating the technology, market, and business model related to the "Diamond Rio PMP300," the first commercially viable flash-memory MP3 player. In 1999, I led the merger negotiations between the two companies, managed significant parts of company integration, and after the merger was complete, worked on new product development. Soon after the merger with Diamond, we introduced the "Diamond Rio PMP500," a portable music player that included USB capability.

12. While at Diamond, we also developed the Rio 600 and 800 MP3 players and a music delivery platform and webstore backend service for selling music. In 1999, this music delivery system was spun out as a separate company called RioPort.com. I served on the RioPort.com board of directors and became involved in their product and technology strategy. I also managed engineering and marketing for the Rio product line for a period of time as an interim general manager. During

my time at SonicBlue we launched more than 30 new consumer electronics products including tablet computers and handheld personal organizers.

13. I served as a board member and technical advisor to KBGear Inc. from 1999-2001. KBGear Inc. designed and produced digital cameras and music players.

14. I have published more than 50 peer-reviewed papers in computer architecture and computer systems design. I have also chaired IEEE and ACM conferences in microarchitecture and integrated circuit design. I am a named inventor on at least fifty-six U.S. patents and thirty-seven foreign patents. A list of my publications is included in Appendix A, which is attached.

15. I have been the invited keynote speaker at the ACM/IEEE International Symposium on Microarchitecture and at the International Conference on Multimedia. I have also been an invited speaker on various aspects of technology or the PC industry at numerous industry events including the Intel Developer's Forum, Microsoft Windows Hardware Engineering Conference, Microprocessor Forum, Embedded Systems Conference, Comdex, and Consumer Electronics Show as well as at the Harvard Business School and the University of Illinois *Law* School. I have been interviewed on subjects related to computer graphics and video technology and the electronics industry by publications such as the Wall Street

Journal, New York Times, LA Times, Time, Newsweek, Forbes, and Fortune as well as CNN, NPR, and the BBC. I have also spoken at dozens of universities including MIT, Stanford, University of Texas, Carnegie Mellon, UCLA, University of Michigan, Rice, and Duke.

16. Additional details of my education and work experience, awards and honors, and publications that may be relevant to the opinions I have formed are set forth in my CV, included in Appendix A attached to this declaration.

17. I have included a list of cases in which I have testified as an expert at trial or by deposition for the date range specified in Appendix A.

18. In summary, I have extensive familiarity with fields involving electronic device user interfaces, touchscreens, and displays. I am familiar with what the state of this field was at the relevant time up to the time that U.S. Patent 9,075,612 (the “’612 patent”) was filed.¹

¹ The ’612 patent is a continuation-in-part of U.S. Patent No. 8,717,328, which is a continuation of U.S. Patent No. 8,593,427. It is my opinion that the ’612 claims rely on new mapper introduced with the ’612 filing and thus I have treated April 21, 2014 as the effective filing date. When I refer to the “time the patent was filed” or “time

2. MATERIALS REVIEWED

19. I am not an attorney and offer no legal opinions, but in my work, I have had experience studying and analyzing patents and patent claims from the perspective of a person skilled in the art. I am also a named inventor on at least fifty-six U.S. patents and thirty-seven foreign patents.

20. In preparing this declaration, I reviewed the '612 patent, including the claims of the patent in view of the specification, and its family members, and I have reviewed the prosecution history of the '612 patent, its family members, and numerous prior art and technical references from the time of the alleged invention. Of the materials cited as an exhibit to the '612 patent IPR petition, I reviewed the following:

Exhibit	Description
1001	U.S. Patent No. 8,593,427 (“the '427 patent”)

the '612 patent was filed” throughout this Declaration, I am referring to before the April 21, 2014 effective filing date of the '612 patent, however, all of my opinions apply to the May 10, 2013 and May 23, 2013 parent-application provisional dates as well.

Exhibit	Description
1002	U.S. Patent Application Publication No. 2014/0189583 to <i>Yang</i> (“ <i>Yang</i> ”)
1003	Not Used
1004	Not Used
1005	Not Used
1006	PCT Application No. PCT/CN2012/087795
1007	Not Used
1008	Not Used
1009	Not Used
1010	Declaration of Andrew Wolfe, Ph.D.
1011	U.S. Patent No. 4,972,496
1012	O’Malley, <i>BellSouth’s communicative Simon is a milestone in the evolution of the PDA</i> , Byte
1013	Ha, <i>Bellsouth IBM Simon</i> , Time Magazine, Oct. 25, 2010
1014	Ha, <i>Palm Pilot 1000</i> , Time Magazine, Oct. 25, 2010
1015	Newton Apple MessagePad Handbook, © 1995
1016	Macworld, September 1993 (cover)
1017	U.S. Patent Pub. No. 2013/0316769
1018	U.S. Patent No. 9,360,967
1019	U.S. Patent No. 8,203,541
1020	U.S. Patent No. 8,243,045
1021	U.S. Patent No. 5,825,352
1022	U.S. Patent No. 7,844,915
1023	Linus Write-Top Computer, printout from http://oldcomputers.net/linus.html last visited 7/11/2019 2:32:15 PM
1024	U.S. Patent No. 8,593,328 to <i>Yang et al.</i> (“the ’328 patent”)
1025	Not Used

Exhibit	Description
1026	U.S. Patent No. 9,075,612 to <i>Yang et al.</i> (“the ’612 patent”)
1027	Prosecution History of U.S. Patent Application No. 14/257,888
1028	International Publication No. WO 2013/172507 to <i>Park</i> (“ <i>Park</i> ”)
1029	U.S. Patent Application Publication No. 2013/0111378 to <i>Newman et al.</i> (“ <i>Newman</i> ”)
1030	U.S. Patent No. 8,842,074 to <i>Ording et al.</i> (“ <i>Ording</i> ”)
1031	U.S. Patent No. <i>Siwinski</i> , U.S. Patent No. 7,012,588 (“ <i>Siwinski</i> ”)
1032	Not Used
1033	U.S. Provisional Patent Application No. 61/822,267
1034	U.S. Provisional Patent Application No. 61/826,673
1036	U.S. Patent No. to 8,804,324 to <i>Bohn et al</i> (<i>Bohn</i>)
1037	Plaintiff/Counterclaim Defendant’s Objections And Responses To Defendant/Counterclaim Plaintiffs’ Requests For Admission (Nos. 1-6)
1038	U.S. Patent Application Publication No. 2012/0297215 (“ <i>Saba</i> ”)

21. I have been asked to consider whether the references listed as Exhibits 1028-1031 above disclose or suggest, alone or in combination, the limitations recited in the claims of the ’612 patent. I have also been asked to consider the state of the art and the prior art available before the time the ’612 patent was filed. My opinions are provided in this declaration.

22. To the best of my knowledge, I have no financial interest in Petitioners. Petitioners’ counsel has informed me that Dareltech, LLC purports to own the ’612

patent. To the best of my knowledge, I have no financial interest in Dareltech, LLC and, to the best of my recollection, I have had no contact with Dareltech, LLC or the named inventors of the patent, Jinrong *Yang* or Ramzi Khalil Maalouf. To the best of my knowledge, I similarly have no financial interest in the '612 patent. To the extent any mutual funds or other investments that I own have a financial interest in the Petitioners, the Patent Owner or the '612 patent, I am not aware of, nor do I have control over, any financial interest that would affect or bias my judgment.

23. I am being compensated at my standard consulting rate for my time. My compensation is in no way contingent on the results of these or any other proceedings relating to the above-captioned patent.

3. RELEVANT LEGAL STANDARDS

24. I am not an attorney. For the purposes of this declaration, I have been informed about certain aspects of the law that are relevant to forming my opinions. My understanding of the law is as follows:

25. Petitioners' counsel has informed me that a patent claim may be "anticipated" if each element of that claim is present either explicitly or inherently in a single prior art reference, and that the elements should be arranged in the reference as in the claim. Petitioners' counsel has informed me that for a claimed

limitation to be inherently present, the prior art need not expressly disclose the limitation, so long as the claimed limitation necessarily flows from a disclosure in the prior art.

26. Petitioners' counsel has informed me that a patent claim can be considered to have been obvious to a person of ordinary skill in the art at the time the application was filed. This means that, even if all of the requirements of a claim are not found in a single prior art reference, the claim is not patentable if the differences between the subject matter in the prior art and the subject matter in the claim would have been obvious to a person of ordinary skill in the art at the time the application was filed.

27. Petitioners' counsel has informed me that a determination of whether a claim would have been obvious should be based upon several factors, including, among others:

- the level of ordinary skill in the art at the time the application was filed;
- the scope and content of the prior art; and
- what differences, if any, existed between the claimed invention and the prior art.

28. Petitioners' counsel has informed me that a single reference can render a patent claim obvious if any differences between that reference and the claims would have been obvious to a person of ordinary skill in the art. Alternatively, the teachings of two or more references may be combined in the same way as disclosed in the claims, if such a combination would have been obvious to one having ordinary skill in the art. In determining whether a combination based on either a single reference or multiple references would have been obvious, it is appropriate to consider, among other factors:

- whether the teachings of the prior art references disclose known concepts combined in familiar ways, and when combined, would yield predictable results;
- whether a person of ordinary skill in the art could implement a predictable variation, and would see the benefit of doing so;
- whether the claimed elements represent one of a limited number of known design choices, and would have a reasonable expectation of success by those skilled in the art;
- whether a person of ordinary skill would have recognized a reason to combine known elements in the manner described in the claim;

- whether there is some teaching or suggestion in the prior art to make the modification or combination of elements claimed in the patent; and
- whether the innovation applies a known technique that had been used to improve a similar device or method in a similar way.

29. Petitioners' counsel has informed me that one of ordinary skill in the art has ordinary creativity and is not an automaton. Petitioners' counsel has informed me that in considering obviousness, it is important not to determine obviousness using the benefit of hindsight derived from the patent being considered.

30. Petitioners' counsel has informed me that the '612 patent is subject to the provisions of the America Invents Act ("AIA").

31. Petitioners' counsel has informed me that under specific circumstances whereby a secondary reference is not being used to teach a limitation but rather to explain the teachings of a primary reference, a specific motivation to combine need not be identified; however, in the case of the combination of art discussed in this declaration, a specific motivation to combine is present and I have identified it.

4. TECHNOLOGY BACKGROUND

32. The '612 patent is, at most, a combination of well-known technologies at the time of its filing. Notwithstanding any disputes as to the actual priority date, the priority date of the '612 patent falls no earlier than May 2013. At that time all of the constituent technologies of the '612 patent claims were well established.

33. The '612 patent explains that it “relates generally to power management, and, more specifically, to managing power consumption in display systems” with respect to its field of art. '612 patent, 1:23-25. The technology relates to “multifunction devices” that rely on battery power such as phones, tablets, and laptops. '612 patent, 1:27-44. The key technologies in the patent include display screens, touchscreens, and user input gestures. '612 patent, Abstract; 1:23-25; 2:15-18; 11:35-12:17. Each of these technologies was well established as disclosed in the '612 patent prior to May 2013.

34. The '612 patent explains that when it refers to multifunction devices, it is referring to at least smart phones, tablets, and laptops. '612 patent, 1:27-44. It is also referring to at least “smart phones and hand-held terminals.” '612 patent, 7:27-38. The '612 patent also explains that it is aware of prior-art devices such as the iPhone and iPad. '612 patent, 11:64-67. All such multifunction devices would already include a processor, memory, display, and user-input device as well as power

management hardware and software. No substantial modifications to the hardware of a standard multifunction device is suggested by the '612 patent.

35. The technology of multi-function handheld devices including touch and/or pen input and displays is decades old. For example, in 1985, I developed the sensor technology for what I believe to be the first commercial keyboardless tablet-style computer, the Linus Write-Top. While the commercial product used a pen-based input sensor that I developed, earlier versions of the product used a conventional touchscreen. Both embodiments are discussed in U.S. Patent 4,972,496, which is related to this device. (Ex. 1011, Sklarew.) The Linus Write-Top is illustrated below. The Linus Write-Top could resolve over 1 million distinct touch locations and measure movement every 5-10ms. (*Id.*)



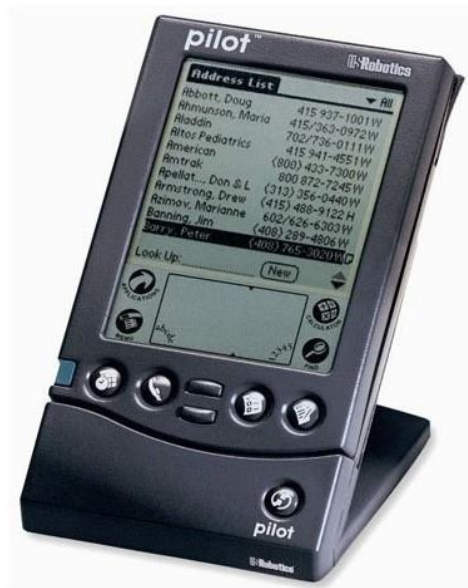
(Ex. 1022, Linus.)

36. Smaller multi-function devices such as smartphones were well-known as well. The IBM/BellSouth Simon mobile phone used a touchscreen over an LCD and was first shown in 1992. (*See* Ex. 1012, O'Malley; Ex. 1013, Ha - Simon.) I personally developed touchscreen prototypes for the IBM Simon. The Simon device is illustrated below.

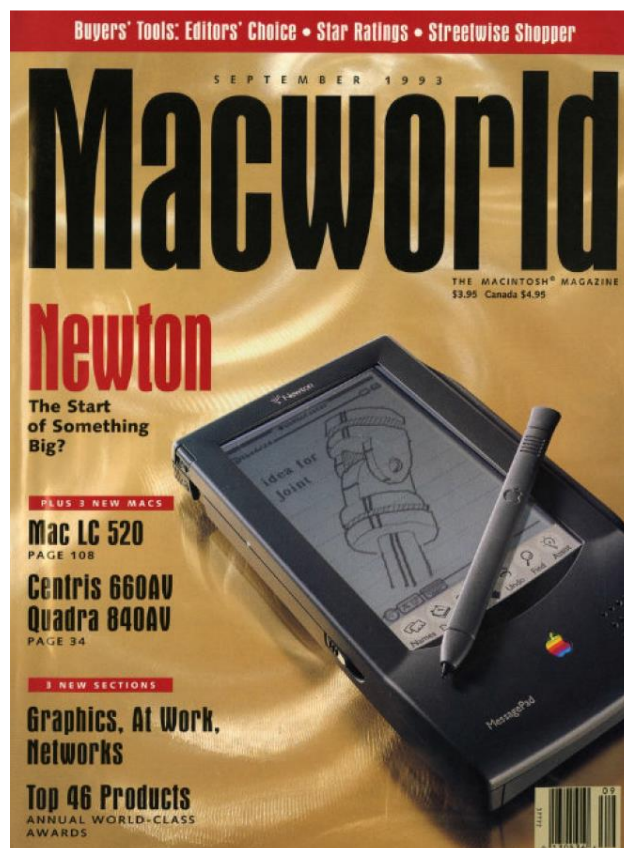


(Ex. 1013, Ha - Simon.)

37. The Apple Newton and the Pilot 1000 (later called the Palm Pilot) were also introduced in the early and mid-90s. (Ex. 1014, Ha – Palm Pilot; Ex. 1015, Newton.) These devices were personal organizers that also used touchscreens over an LCD display for user input and to control the user interface. (Ex. 1043, Ha – Palm Pilot; Ex. 1015, Newton.)



(Ex. 1014, Ha – Palm Pilot.)



(Ex. 1016, 1993 Macworld.)

38. Furthermore, as admitted in the '612 patent, the iPhone was introduced to the public in 2007. See e.g.

<https://www.nytimes.com/2007/01/10/technology/10apple.html? r=0>.



39. Each of these devices relied on battery power and used extensive power management technology. Each was capable of powering-off the display when the device had not been recently used. Similar disclosure existed in the patent art. For example, U.S. Patent Application 2013/0316769, assigned to Samsung (Ex, 1016), discloses various mechanisms to manage power (including display power) in a portable multifunction device that includes an OLED display and a touchscreen.

40. The '612 patent also uses conventional display technology at the time. For example, the '612 patent recites:

Touch screen **112** may use LCD (liquid crystal display) technology, LPD (light emitting polymer display) technology, or LED (light emitting diode) technology,

although other display technologies may be used in other embodiments. '612 patent, 11:54-57

It does not specifically refer to OLED technology by name (although a POSITA would likely understand that light-emitting polymer is another name for OLED) even though such technology was well-known and used in smartphones with touchscreens. For example, the Samsung Galaxy S III phone in 2012 included an OLED display screen (specifically AMOLED – i.e. Active Matrix Organic Light Emitting Diode) and a capacitive touchscreen. See <https://www.nytimes.com/2012/06/21/technology/personaltech/samsung-galaxy-s-iii-phone-bristles-with-extras-state-of-the-art.html>



41. Furthermore, ordinary color LCD and OLED devices at the time were capable of displaying in black and white and/or grayscale.

42. The touchscreens disclosed in the '612 patent are the ordinary touchscreens known at the time of the invention. Many of these technologies included an inherent ability to power on sensors one at a time or in small groups in order to enable a portion of the screen for sensing.

Touch screen **112** has a touch-sensitive surface, sensor or set of sensors that accepts input from the user based on haptic and/or tactile contact. Touch screen **112** and display controller **156** (along with any associated modules and/or sets of instructions in memory **102**) detect contact (and any movement or breaking of the contact) on touch screen **112** and converts the detected contact into interaction with user-interface objects (e.g., one or more soft keys, icons, web pages or images) that are displayed on touch screen **112**. In an exemplary embodiment, a point of contact between touch screen **112** and the user corresponds to a finger of the user.

Touch screen **112** may use LCD (liquid crystal display) technology, LPD (light emitting polymer display) technology, or LED (light emitting diode) technology, although other display technologies may be used in other embodiments. Touch screen **112** and display controller **156** may detect contact and any movement or breaking thereof using any of a variety of touch sensing technologies now known or later developed, including but not limited to capacitive, resistive, infrared, and surface acoustic wave technologies, as well as other proximity sensor arrays or other elements for determining one or more points of contact with touch screen **112**. In an exemplary embodiment, projected mutual capacitance sensing technology is used, such as that found in the

iPhone®, iPod Touch®, and iPad® from Apple Inc. of Cupertino, Calif. '612 patent, 11:43-67.

43. The simple inclusion of the prior-art Apple touchscreen indicates that an ordinary touchscreen at the time is sufficient for practicing the claimed '612 patent subject matter. Furthermore, public disclosures, such as U.S. patent 9,360,967, published in 2008, (Ex. 1018) disclose driving a current separately to each sensor drive line and scanning sensors in sequence (i.e. turning individual sensors on and off). *See e.g.* 9,360,967 at Abstract, 2:50-61; 6:26-44.

44. Touch screens specifically designed to operate with OLED displays were also well-known at the time. For example, my own U.S. patents, 8,203,541 and 8,243,045 (Exs. 1019-1020) disclose specific techniques for incorporating touchscreens with OLED displays using scanning mechanisms that turn portions of the display and touchscreen on and off at various times.

45. The remaining technology described in the '612 patent is the ability to receive “user indications.” This includes various touch gestures. *See e.g.* '612 patent, 12:1-9; 13:63-14:7. Touch gestures including taps, drags, spreads, and pinches were well known by the time of the '612 patent filing as mechanisms for selecting, controlling, and expanding content in a multi-function device.

46. Touchpads and touchscreens are very flexible control devices. They can provide continuous information about the location of touch contact which can then be further processed to calculate the speed, distance, and direction of motion. This information can then be used in many ways to control a computer-based system. Three particular forms of control have been very common. These are: (i) selection (i.e. pressing a virtual button); (ii) cursor positioning, similar to the use of a mouse; and (iii) scrolling, similar to moving a lever or spinning a dial.

47. U.S. Patent 5,825,352 (Ex. 1021), filed in 1996, discloses tapping and scrolling gestures on a touchpad device. This particular touchpad, from Logitech, was capable of responding to multiple-finger gestures. ('352 patent, 2:18-4:11.) A variety of tapping and dragging gestures are disclosed in figures 7F-7F and in the accompanying text. (*Id.* at 12:14-36.) When three fingers were placed on the touchpad and moved up or down, the currently selected document would scroll accordingly (*Id.* at 13:32-44).

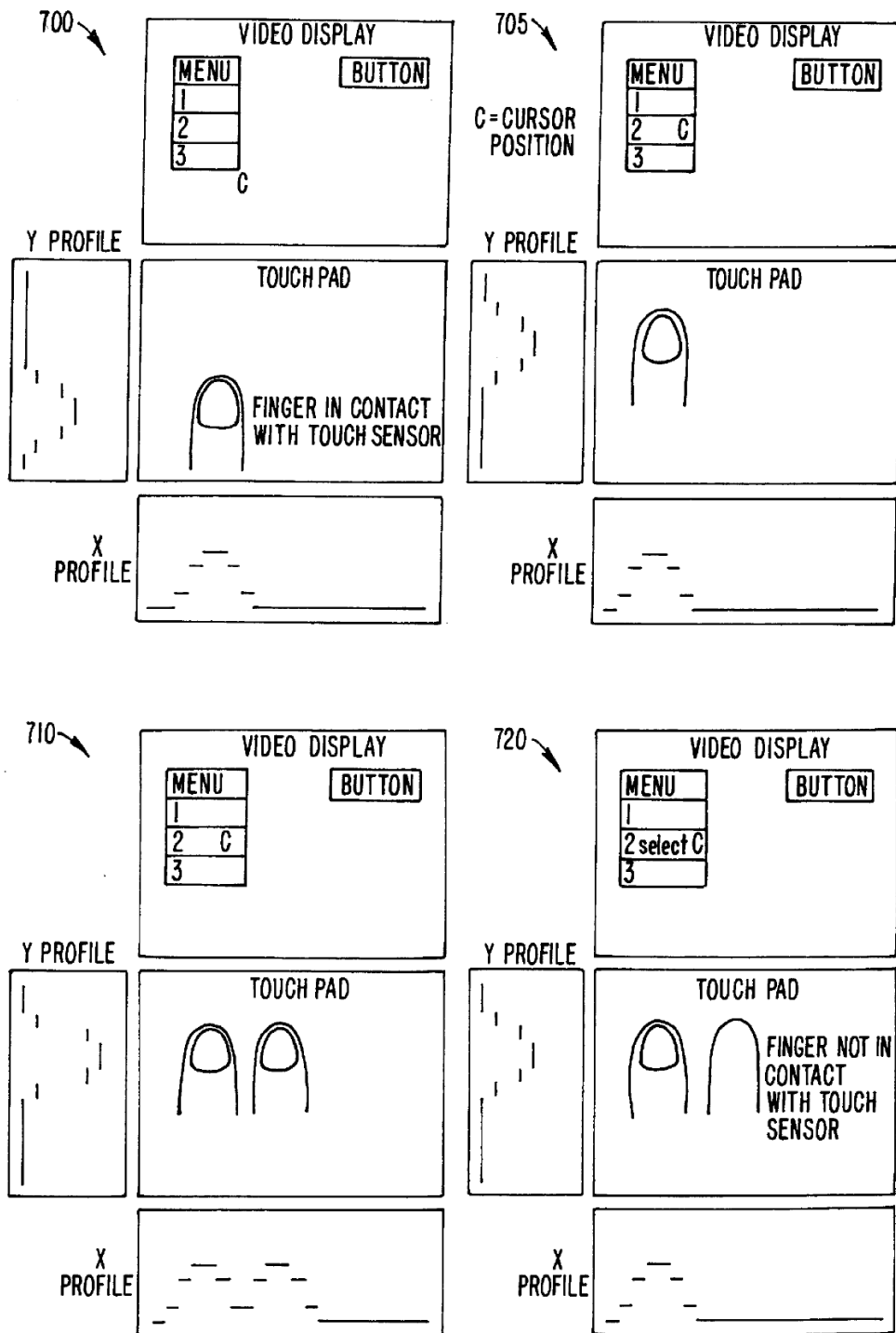
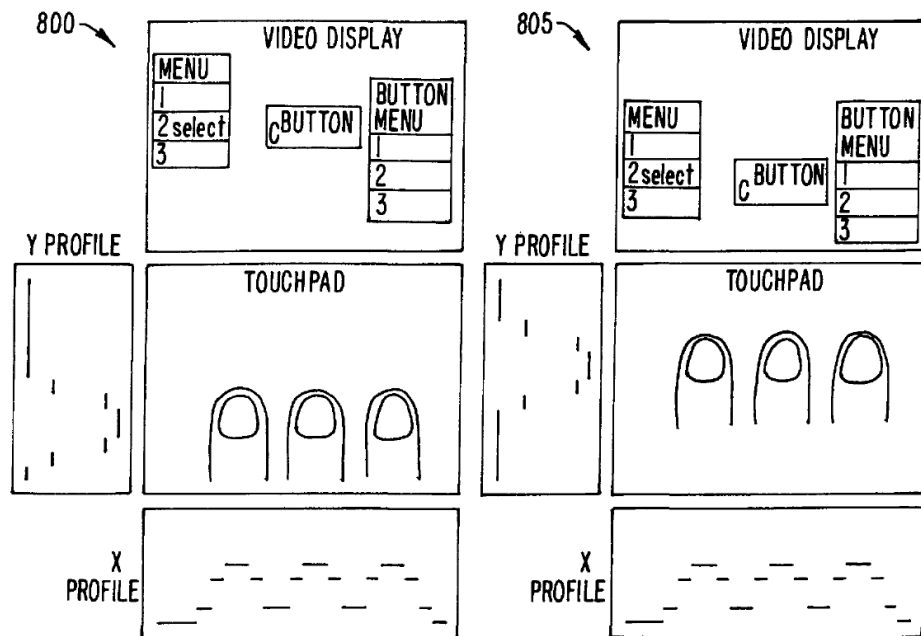


FIG. 7B.

(Id. at Fig. 7E.)



(*Id.* at Fig. 7E.)

48. The pinch-to-zoom gesture (for both expanding and reducing an image) was well known from the iPhone beginning in 2007 and is also disclosed in corresponding Apple patents. For example, U.S. patent 7,844,915 (Ex. 1022) discloses this two-finger gesture at 2:22-29 and 7:4-10.

Gesture operations may also include scaling a view associated with the event object by zooming in or zooming out based on receiving the user input. 7,844,915, 7:8-10

49. A POSITA would have known that each of these core technologies was well-known at the time of the '612 patent filing and would have understood the '612 patent and the prior art cited herein in light of that knowledge.

5. OVERVIEW OF U.S. PATENT 9,075,612

5.1. Summary

50. The '612 patent is directed to a system for reducing power consumption in portable, battery-powered, electronic devices such as mobile phones. '612 Abstract. The patent is specifically directed to managing power consumption in the display systems used by such portable devices. '612 patent, 1:23-25.

51. The embodiments of the '612 patent have a touchscreen display (*e.g.*, touch-sensitive display system 112, shown in Fig. 1). '612 patent, 11:35-36. ("Touch-sensitive display 112 provides an input interface and an output interface between the device and a user."). The touchscreen display may function in one of three distinct modes: 1) a full configuration mode, 2) a proportional configuration mode, or 3) sleep mode.

52. In full configuration mode, the entire available display area is in a powered-on state to perform display functions and receive user input. '612 patent, 2:1-7 ("According to some embodiments, an entire device display screen may

function in a full configuration mode where the entire available display screen is in a power-on state. For example, a powered-on state may cause the affected part of the display to perform display functions and receive user input.”).

53. In proportional configuration mode, a portion of the display screen is in the powered-on state while another portion of the display is in a powered-off state, in which the powered-off portion does not perform display functions or receive user input. ’612 patent, 2:9-14 (“The proportional configuration mode may configure a portion of the display screen in the powered-on state and another portion of the display in a powered-off state (in an example powered-off state, the affected part of the display may be configured to not perform display functions and to not receive user input).”).

54. In the sleep mode of the ’612 patent, “at least some portion or all of the display may be configured with limited or no functionality.” ’612 patent, 29:46-56.

55. The ’612 patent also describes a “locked state,” where the the portable electronic device displays an “unlock image” and is able to detect a user contact with the touch-sensitive display screen. If the detected user contact is a predefined gesture corresponding to a proportional configuration mode, the portable electronic device will transition from the locked state into a proportional configuration mode.

Similarly, if the detected user contact is a predefined gesture corresponding to a full configuration mode, the portable electronic device will transition from the locked state into the full configuration mode.’612 patent, 29:30-30:38.

56. Additionally, in some embodiments, transitioning between the display modes may be prompted when the remaining battery power of a device reaches a certain battery power threshold. ’612 33:6-9 (“In embodiments, the battery level may be a condition upon which the configuration may be changed from the proportional mode to the full mode or from the full mode to the proportional configuration mode.”).

57. Some embodiments of the ’612 patent also have a power management module (*e.g.*, power management module 2500, shown in Fig. 25) for managing display power consumption. ’612 patent, 25:32-34 (“Fig. 25 illustrates a display power management module for managing display power consumption, according to some embodiments.”). The power management module may manage display power consumption by configuring the color of the display based on a corresponding state or mode of the display (*e.g.*, black, white, grayscale and other colors). ’612 patent, 26:1-12 (“In embodiments, one or more of the modules of the screen power management module 2500 may configure (*e.g.*, coordinately configure) the color of the display. . . . the color(s) used for the display may be configured based on a

corresponding state or mode. For example, a device or display that is in a power-saving mode or in a proportional configuration mode may be configured to display in grayscale or in black and white.”).

58. According to the specification, manipulating the display of a portable electronic device to operate in a proportional configuration mode and/or display in grayscale or black and white can improve “power efficiency” and result in an extended battery life. ’612 patent, 6:47-49.

5.2. Prosecution History

59. The application for the ’612 patent, Application No. 14/257,888, was filed on April 21, 2014. The ’612 patent is a continuation-in-part of U.S. Patent No. 8,717,328, which is a continuation of U.S. Patent No. 8,593,427. As explained in Section 5.3 5.3below, no claims of the ’612 patent are supported by the disclosures in any of the parent patents or applications preceding U.S. Patent Application No. 14/257,888, filed on April 21, 2014. Therefore, the effective filing date of the ’612 patent is its actual filing date (*i.e.*, April 21, 2014). *See* 35 U.S.C. § 119(e)(1).

60. On September 25, 2014, the Office issued a Final Office Action rejecting all claims as obvious under prior art not at issue in this petition. On

November 25, 2014, applicant amended all pending claims. Notably, applicant amended independent claim 1, in part, as follows:

wherein when the display is in a sleep mode, the power management module directs the display controller to display a subset of the plurality of graphical indications, the subset comprising an unlock image comprising at least one of, time, date, or an indication of an email, text message, or voice message, and wherein the subset of the plurality of graphical indications are displayed in a portion of the display screen and are displayed in black, white or grayscale, instead of displayed in color; and the portion of the display screen that is configured in the powered-on state comprises two or more isolated portions in the powered-on state, the two or more isolated portions in the powered-on state being non-contiguous with respect to one another and separated by at least some of the portion of the display screen that is in the powered-off state

a user interface module configured to respond, when the portable phone is in a locked state, to unlock gestures associated with the unlock image,

wherein response to a particular unlock gesture of the unlock gestures causes the display controller to enter the full configuration mode, and

wherein response to another particular unlock gesture of the unlock gestures causes the display controller

to enter a proportional configuration mode that puts at least a portion of the display screen in a powered-off state and another portion of the display screen in the powered-on state. (emphasis in original)

Ex. 1027 at 120-121 (emphasis in original). Similar amendments were made to the other independent claims. *See id.*, at 121-124.

61. On February 18, 2015, another Office Action issued, once again rejecting all claims as obvious under prior art not at issue in this petition. On May 18, 2015, applicant amended all independent claims. An element of claim 1 was amended as follows:

wherein ~~response to~~ a particular unlock gesture of the unlock gestures causes: the phone to transition to an unlocked state, and the display controller to enter the full configuration mode; [[,]] and

wherein ~~response to~~ another particular unlock gesture of the unlock gestures causes: the phone to transition to an unlocked state, and the display controller to enter a proportional configuration mode that puts at least a portion of the display screen in a powered-off state and another portion of the display screen in the powered-on state. (emphasis in original)

Ex. 1027 at 61-62 (Applicant Amendment). Similar amendments were made to the other independent claims. *See id.*, 62-64.

62. On May 28, 2015, a Notice of Allowance issued allowing claims 1-18 and 20. *See id.*, 13-20. In the Reasons for Allowance, the Examiner explained the rationale for allowing the claims as follows:

[C]laims 1-18 and 20 are allowable because prior art fails to teach or suggest, either alone or in combination, in independent claim(s) 1 and 10:

“wherein response another particular unlock gesture of the unlock gestures causes: the phone to transition to an unlocked state, and

the display controller to enter a proportional configuration mode that puts at least a portion of the display screen in a powered-off state and another portion of the display screen in the powered-on state.”

Id., 18-19.

5.3. Effective Filing Date

63. I understand that the '612 patent claims the benefit of U.S. Patent No. 8,717,328 (Ex. 1028), which is a continuation of U.S. Patent No. 8,593,427 (Ex.1001), and Provisional Application Nos. 61/822, 267 (Ex.1033) and 61/826,673 (Ex.1034), filed on May 10, 2013 and May 23, 2013, respectively. I understand that

a patent application is entitled to the benefit of the filing date of an earlier filed application only if the disclosure of the earlier application provides support for the claims of the later application as required by 35 U.S.C. § 112. I further understand that, to satisfy the written description requirement of 35 U.S.C. § 112, the disclosure of the prior application must convey with reasonable clarity to those skilled in the art that, as of the filing date sought, the inventor was in possession of the invention. I have carefully studied each of the aforementioned parent patents and provisional applications (*i.e.*, Exs. 1028, 1001, 1033, 1044) and, as discussed below. I see no claims of the '612 patent supported by either parent patent or either provisional application. Therefore, it is my understanding that the claims of '612 patent are not entitled to any of these earlier priority dates, and that the effective filing date of these claims is the actual filing date of the '612 patent (*i.e.*, April 21, 2014).

64. At least elements [1f]-[1l], [10g]-[10j] and [14f]-[14l], as I have labeled the claim elements, are not disclosed in any application from which the '612 patent claims priority. Specifically, none of the previously-filed priority applications (or their original claims) include any disclosure of an unlock image, much less “an unlock image comprising at least one of, time, date, or an indication of an email, text message, or voice message,” nor do the preceding applications include any disclosure of graphical indications displayed in black, white, grayscale, or in color.

Likewise, none of the previously filed priority applications include any disclosure of a portable phone that, when in a locked state, responds to unlock gestures. Finally, none of the previously filed priority applications include any disclosure of a phone that transitions from a locked state to an unlocked state and enters a full configuration mode or enters a proportional configuration mode depending on a particular unlock gesture. In sum, the following portions of the '612 patent do not appear in any of the preceding applications, and no other portions provide support for elements [1f]-[1l], [10g]-[10j] and [14f]-[14l]: Fig.19A, Figs.33-46, 1:40-44, 1:49-55, 2:1-30, 3:53-55, 4:25-55, 5:48-7:4, 23:52-24:40, 26:1-16, 27:14-23, 29:7-11, 29:30-34:34. Claims 1, 10, and 14 are independent, and every other claim in the '612 patent depends from claim 1, 10, or 14. Thus, the preceding applications do not provide support for any of the claims in the '612 patent.

65. I have reviewed Dareleth's Objections And Responses To Defendant/Counterclaim Plaintiffs' Requests For Admission (Nos. 1-6) (Ex. 1037). In that document, Dareleth admitted that the terms "grayscale," "unlock image," "unlock gesture" do not appear in the parent ('328 patent). Ex. 1037 at 3-7. In that same document, I have noted that Dareleth asserts that the application that issued as the '328 patent discloses "unlocking the device" and an "unlock process" in ¶114. Dareleth also asserts that the application that issued as the '328 patent discloses

several grayscale figures (*e.g.*, Fig. 4) which reflect a display area capable of displaying content in a grayscale. *Id.*

66. The mere mention of either unlocking a device or an unlock process are nothing more than generic statements. A POSITA would not understand such generic disclosures to mean that the subject matter claimed in elements [1f]-[1l], [10g]-[10j] and [14f]-[14l] were present in the '328 patent's specification. Likewise, a POSITA would not understand the illustration in Fig. 4 of the '328 patent to indicate a grayscale image, as no grayscale images are illustrated. All images in the patent are black and white line drawings and there is nothing in the '328 patent to indicate that any drawing is a representation of a grayscale image rather than a color image. Moreover, nothing in the application that issued as the '328 patent (or any other priority application) says anything about using grayscale images to reduce power consumption.

67. To the extent Dareltech argues that the subject matter claimed in elements [1f]-[1l], [10g]-[10j] and [14f]-[14l] are necessarily present in the '328 patent, I disagree. There were many possible different ways of “unlocking a device” and many different “unlock processes” a POSITA could have chosen from as of the effective filing date of the '328 patent, but this does not mean that the various available options were necessarily present in the '328 patent. There is nothing in the

'328 patent to indicate that an unlock gesture is part of any unlock process, much less a particular unlock gesture and another particular unlock gesture. Moreover, during prosecution of the '612 patent, the Examiner specifically noted that the independent claims were being allowed because the following elements in the independent claims were not in the prior art:

“wherein response another particular unlock gesture of the unlock gestures causes: the phone to transition to an unlocked state, and

The display controller to enter a proportional configuration mode that puts at least a portion of the display screen in a powered-off state and another portion of the display screen in the powered-on state.”

See also ¶62, above. This demonstrates that the Examiner believed that the claims recited a particular unlock process that was not in the prior art. Because of this, I do not see how this recited subject matter could be present in the '328 patent since there is no discussion regarding these features, and these features are apparently what drove the Examiner to believe the claims were allowable. In other words, if the recitations in the claims of the '612 patent quoted above necessarily were present in the '328 patent, the Examiner would not have allowed the claims, because the same generic teachings would necessarily been present in hundreds of prior art references.

5.4. The Claims at Issue

68. Claims 1-19 read as follows:

1. A portable phone comprising:

a display comprising a display screen;

one or more processors; and

a memory comprising program instructions,

wherein the program instructions are executed by the one or more processors to implement:

a power management module configured to manage power consumption of the display, wherein when the display is not in a sleep mode the power management module directs a display controller to display a set of a plurality of graphical indications in color in a full configuration mode that puts substantially all of the display screen in a powered-on state;

wherein when the display is in a sleep mode, the power management module directs the display controller to display a subset of the plurality of graphical indications, the subset comprising an unlock image comprising at least one of, time, date, or an indication of an email, text message, or voice message, and wherein the subset of the plurality of graphical indications are displayed in a portion of the display screen and are displayed in black, white or grayscale, instead of displayed in color; and

a user interface module configured to respond, when the portable phone is in a locked state, to unlock gestures associated with the unlock image,

wherein a particular unlock gesture of the unlock gestures causes:

the phone to transition to an unlocked state, and

the display controller to enter the full configuration mode; and

wherein another particular unlock gesture of the unlock gestures causes:

the phone to transition to an unlocked state, and

the display controller to enter a proportional configuration mode that puts at least a portion of the display screen in a powered-off state and another portion of the display screen in the powered-on state.

2. The portable phone of claim 1, wherein when the other portion of the display screen is in the powered-on state, the other portion of the display screen is configured to perform display functions and receive user input.

3. The portable phone of claim 2, wherein the powered-on state configures the other portion of the display screen to function in a grayscale color mode.

4. The portable phone of claim 3, wherein the powered-off state configures the portion of the of the display screen to not perform display functions and to not receive user input.

5. The portable phone of claim 1, wherein the power management module is further configured to instruct the display controller to function in a full display mode, wherein the full display mode configures substantially all of an available area of the display screen in the powered-on state when the display controller of the portable phone is in the full display mode.

6. The portable phone of claim 1, wherein the power management module is further configured to manage the display of the portable phone when the display is in a powered-off mode, the power management module configured to direct the display controller to display at least one of a time, date or an indication of one or more messages while the display controller is in the powered-off mode.

7. The portable phone of claim 1, wherein the power management module is further configured to direct the display controller to transition between modes based on a

configurable battery power threshold, wherein the power management module is further configured to:

- determine that a battery power of the portable phone reaches the configurable battery power threshold; and

- subsequent to said determine, instruct the display controller to change from a full configuration mode to the proportional configuration mode.

8. The portable phone of claim 7, wherein the configurable battery power threshold is a configurable setting in a user interface of the portable phone.

9. The portable phone of claim 1, wherein the display is a touch-sensitive display, and wherein to respond to unlock gestures the user interface module is further configured to:

- detect a contact with the touch-sensitive display at a first predefined location corresponding to an unlock image; and

- continuously move the unlock image on the touch-sensitive display in accordance with movement of the contact while continuous contact with the display screen is maintained as part of the gestures, wherein the unlock image is a graphical, interactive user-interface object with which a user interacts in order to unlock the portable phone.

10. A method comprising:

managing a display of a portable phone, wherein managing the display comprises:

directing, by a power management module, the display, wherein when the display is not in a sleep mode, the power management module directs the display to display a set of a plurality of graphical indications in color in a full configuration mode that puts substantially all of the display of the portable phone in a powered-on state;

when the display is in a sleep mode,

directing the display, by the power management module, to display a subset of the plurality of graphical indications, the subset comprising an unlock image comprising at least one of, time, date, or an indication of an email, text message, or voice message, and wherein the subset of the plurality of graphical indications are displayed in a portion of the display and are displayed in black, white or grayscale, instead of displayed in color; and

responding, by a user interface module when the portable phone is in a locked state, to unlock gestures associated with the unlock image,

wherein responding to a particular unlock gesture of the unlock gestures comprises:

transitioning the portable phone to an unlocked state, and

causing the display to enter the full configuration mode, and

wherein responding to another particular unlock gesture of the unlock gestures comprises:

transitioning the portable phone to an unlocked state, and

causing the display to enter a proportional configuration mode that puts at least a portion of the display in a powered-on state and another portion of the display in the powered-off state.

11. The method of claim 10, wherein said responding to the other particular unlock gesture further comprises causing the other portion of the display to not perform display functions and not receive user input.

12. The method of claim 11, wherein said responding to the particular unlock gesture further comprises causing the portion of the display to perform display functions and receive user input.

13. The method of claim 12, further comprising instructing the display to function in a full

configuration mode, wherein the full configuration mode configures substantially all of the display in a powered-on state.

14. A portable phone comprising:

a display;

one or more processors; and

a memory comprising program instructions, wherein the program instructions are executable by the one or more processors to implement:

a power management module configured to manage power consumption of the display, wherein when the display is not in a sleep mode the power management module directs the display to display a set of a plurality of graphical indications in color in a full configuration mode that puts substantially all of the display in a powered-on state;

wherein when the display is in a sleep mode, the power management module directs the display to display a subset of the plurality of graphical indications, the subset comprising an unlock image comprising at least one of, time, date, or an indication of an email, text message, or voice message, and wherein the subset of the plurality of graphical indications are displayed in a portion of

the display and are displayed in black, white or grayscale, instead of displayed in color; and

a user interface module configured to respond, when the portable phone is in a locked state, to unlock gestures associated with the unlock image,

wherein a particular unlock gesture of the unlock gestures causes:

the portable phone to transition to an unlocked state, and

the display to enter the full configuration mode; and

wherein another particular unlock gesture of the unlock gestures causes:

the portable phone to transition to an unlocked state, and

the display to enter a proportional configuration mode that puts at least a portion of the display in a powered-on state and another portion of the display in a powered-off state.

15. The portable phone of claim 14, wherein the powered-on state of the proportional configuration mode configures the portion of the display to perform display functions and receive user input.

16. The portable phone of claim 15, wherein the locked state of the portable phone configures the display to function in a grayscale color mode.

17. The portable phone of claim 16, wherein the powered-off state of the proportional configuration mode configures the other portion of the display to not perform display functions and to not receive user input.

18. The portable phone of claim 14, wherein the power management module is further configured to instruct the display to function in a full display mode, wherein the full display mode configures substantially all of the display in the powered-on state.

19. The portable phone of claim 14, wherein the power management module is further configured to direct the display to change between modes based on a configurable battery power threshold, wherein the power management module is further configured to:

determine that a battery power of the portable phone has reached the configurable battery power threshold; and

subsequent to said determination, instruct the display to shift from the full configuration mode to the proportional configuration mode.

5.5. Level of Ordinary Skill in the Art

69. It is my understanding that factors defining the level of ordinary skill in the art include: (1) the types of problems encountered in the art; (2) the prior art solutions to those problems; (3) the rapidity with which innovations are made; (4) the sophistication of technology; and (5) the educational level of active workers in the field.

70. Using these factors, a person of ordinary skill in the art at the time of the alleged invention of the '612 patent ("POSITA") would have a 4-year degree in electrical engineering, computer engineering, or computer science and one year of experience in user interface software or system design. One can also obtain similar knowledge and experience through other means.

5.6. Claim Construction

71. It is my understanding that in this proceeding, the claim terms should be given their plain and ordinary meaning as understood by one of ordinary skill in the art (a "POSITA"), consistent with the disclosure and the prosecution history. I

do not believe that the patentee has acted as his own lexicographer for any claim term in this patent.

72. For clarity, I provide constructions for the term “lock state” here. I will address the ordinary meaning of other claim language when I compare the claims to the prior art.

5.6.1. “locked state” (claims 1, 10, 14 and 16)

73. The ordinary meaning of “locked state” to a POSITA in the context of the claims and specification is “*a state in which a user is prevented from accessing specific functions or capabilities.*” This is consistent with the ’612 patent disclosure that “a screen or device may be set to a user interface lock state by any predefined manner where the lock state prevents the device from performing a predefined set of actions.” ’612 patent, 29:57-60. The ’612 patent further describes a “lock state” as providing “a limited number of graphic(s) via the display and respond to a limited number of input commands (e.g., only responding to one or a few types of particular input, such as a particular swipe with respect to a displayed object).” *Id.*, 29:38-42. The patent further states that Fig. 35 illustrates a device in a “lock state” where “graphical indications” (e.g., time) are displayed:

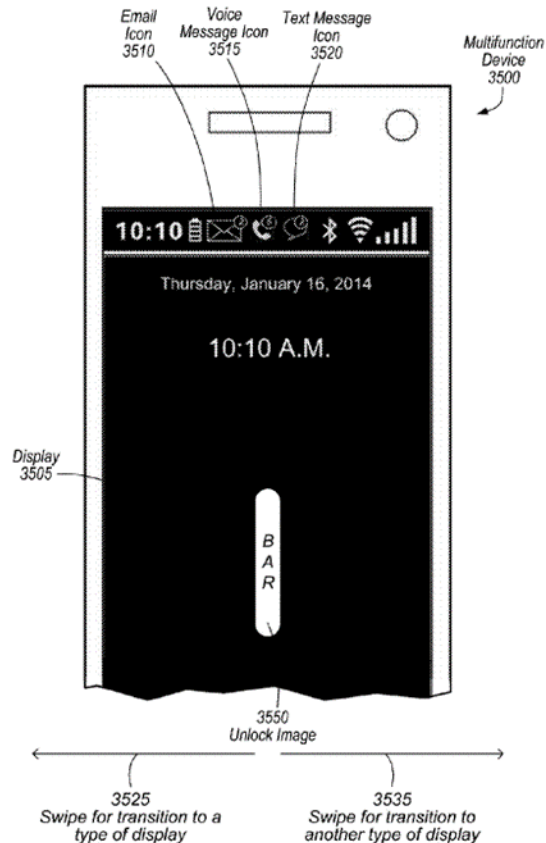


FIG. 35

74. *Id.*, 30:22-35. Thus, this construction is consistent with the intrinsic evidence.

5.7. OVERVIEW OF THE PRIOR ART

5.7.1. *Park*

75. International Patent Publication No. WO 2013/172507 (“*Park*”), entitled “Portable Electronic Device and Method for Controlling the Same,” was published on November 21, 2013, and thus I understand it to be prior art under 35

U.S.C. § 102(a)(1). *Park* discloses a portable electronic device such as a mobile phone. *See Park*, ¶1 (“The present invention relates to a portable device”), Figs. 4-7. In particular, *Park* discloses a portable electronic device with a touch sensitive display. *See, e.g., Park*, ¶¶1, 123 (“The display unit 106 may output an image to a screen. The display unit 106 may be used as the touch *sensor described above when the display unit is a touch sensitive display.*”). *See also* Figs. 2-10

76. To prevent unnecessary power consumption, *Park* recognized that deactivating at least a portion of a display can be used to “achieve power saving effects[.]” *See, e.g., Park*, ¶84. For example, *Park* discloses that “the portable device 10 may deactivate at least one of a light emitting element and a touch sensor of each of the first and second display units.” *Park*, ¶83; *see also Park*, ¶84.

77. *Park* discloses that when the display unit of a portable electronic device is in an “active state,” “the portable device may activate at least one of the light emitting element and the touch sensor of the display unit.” *Park*, ¶53. Note that as explained below, *Park*’s use of the term “display unit” can refer to a portion of a flexible display screen. *Park*, ¶53. *Park* teaches that the display unit can use various technologies, including light emitting diode (LED) or organic light emitting diode (OLED) technology. *Park*, ¶53. As I will explain below, *Park* also teaches that the term “display unit” can refer to a portion of a flexible display screen. *Park*, ¶48. A

POSITA would have known that OLED technology is an emissive technology that requires no backlighting. Thus, in displays using OLED technology, each pixel generates its own light output within the available color spectrum. A POSITA would have also known that each individual pixel can be disabled, *i.e.*, turned off, such that the disabled pixels generate no light at all. A POSITA would have known that disabled pixels in an OLED display consume very little or no power based on the nature of OLED technology and existing OLED displays. The OLED displays in *Park* are ordinary OLED displays at the time.

78. *Park* further discloses that a display unit of a portable electronic device may be maintained in a “ready-to-activate” before it switches to an active state. *Park*, ¶51. In this “ready to activate” state, at least one of the light-emitting element and the touch sensor of the display unit is inactive. *Park*, ¶52.

79. In addition, *Park* discloses that a display unit may be maintained in a “locked state” wherein the display unit is inactive and at least one of a light emitting element and a touch sensor of the display unit is inactive. *Park*, ¶50. In particular, *Park* discloses:

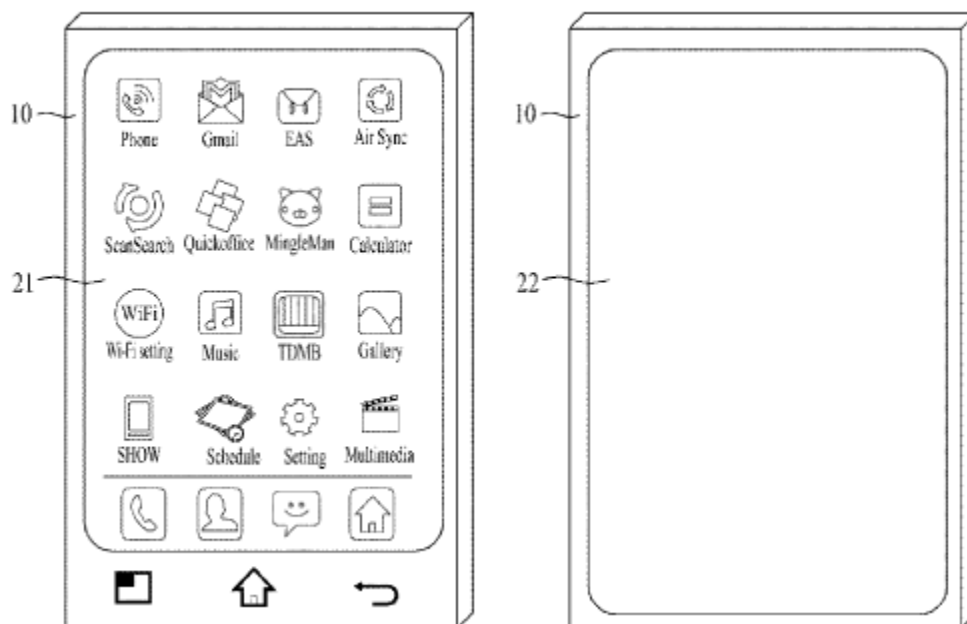
When the display unit is in a locked state, the portable device cannot provide an application or content to the user through the display unit. **However, the portable device**

may partially activate the touch sensor or the light emitting element of the display unit in order to detect an unlock command input by the user or to inform the user of how to input an unlock command.

Park, ¶50.

80. *Park*'s Fig. 4a illustrates a portable device 10 having a first display unit 21 in an active state and a second display unit 22 in a locked state or ready-to-activate state:

[Fig. 4a]

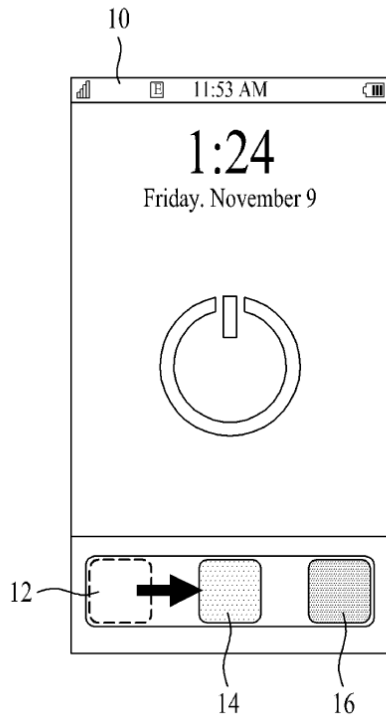


81. Although *Park*'s figures, *e.g.*, Fig. 4a, show first display unit 21 and second display unit 22 are shown separate from one another, *Park* discloses an embodiment in which first display unit 21 and second display unit 22 are part of a

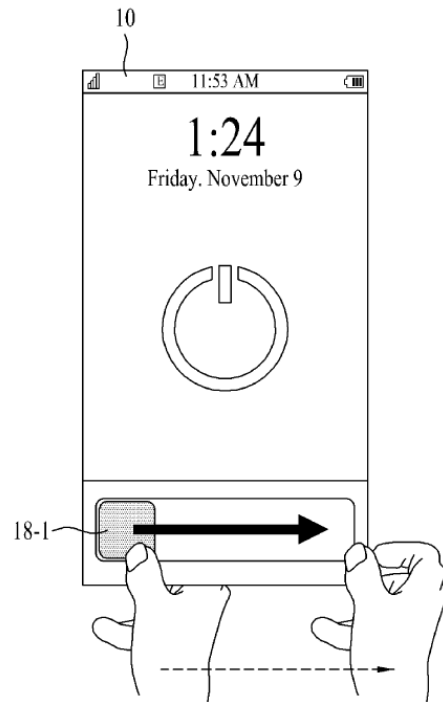
single display screen. *Park*, ¶¶48. More specifically, *Park* discloses that the device described therein may include a flexible display and that, in that embodiment, the phrase “first display unit” should be understood to refer to a first portion of the display, while the phrase “second display unit” should be understood to refer to a second portion of the display. *Park*, ¶¶48, 123. For purposes of my declaration, *Park*’s “first display unit” and “second display unit” in *Park* to refer to first and second portions, respectively, of a single flexible display screen in accordance with the disclosure of *Park*. *E.g.*, *Park*, ¶48.

82. *Park*’s Figs. 2a and 3a illustrate how the first display portion may appear when in the “locked state:”

[Fig. 2a]



[Fig. 3a]



As shown in *Park's* Figs. 2a and 3a, when the first display unit is in the locked state, an interface is displayed so that a user may provide input that causes the display unit to transition from the locked state to another state. *Park*, ¶¶63-74.

83. In sum, *Park* discloses a device having the same purpose as the '612 patent (a mobile device that consumes less power to extend battery life) and does so using the very same features claimed in the '612 patent (disabling portions of the display screen).

84. In addition, as I will discuss in more detail below, *Park* discloses several display configurations, including: 1) first and second portions of the display

in the locked state; 2) first and second portions of the display in the active state; and 3) first portion in the active state and second portion in the ready-to-activate state. This table shows how each configuration corresponds to one of the modes described in the '612 patent:

<i>Park</i> First Portion	<i>Park</i> Second Portion	'612 Patent
locked state	locked state	“sleep mode”
active state	active state	“full configuration mode”
active state	ready-to-activate state	“proportional configuration mode”

5.7.2. *Newman*

85. U.S. Patent Pub. No. 2013/0111378 (“*Newman*”), entitled “Portable Electronic Device, Associated Apparatus and Methods,” was filed on October 31, 2011, and it is thus my understanding that it is prior art under 35 U.S.C. § 102(a)(2). *Newman* describes a portable electronic device having multiple modes of operation. *Newman*, ¶1. With respect to the modes, *Newman* discloses “different colour schemes in different modes of operation[,]” including where graphical indications are displayed in color. *Newman*, ¶147. “For example a portable electronic device may be configured to, in a first mode, display (e.g. information such as text, map or image) in colour, and, in the second mode, display in black and white.” *Newman*, ¶147.

86. *Newman* teaches that “in a fully active mode, the full range of functionality and information provided by one or more application(s) are generally available to the user.” *Newman*, ¶3. Moreover, “[i]f multiple applications are used, a significant amount of processor activity and/or power would be required.” *Newman*, ¶3. *Newman* discloses several solutions to address this.

87. For example, *Newman* discloses that “to lower processor activity and/or power consumption (e.g. to extend battery life) the user may turn off the portable electronic device, or enter a mode wherein user interaction with the portable electronic device is prevented and functionality is disabled (other than allowing the user to return the portable electronic device to the active mode).” *Newman*, ¶4.

88. *Newman* discloses other solutions, such as “low power mode,” which includes “configuring the pixels corresponding to the background to be turned off (making them black) and configuring the pixels corresponding to text and user interface elements to be white.” *Newman*, ¶136. By doing so, “[t]his reduces the power consumption of the screen whilst the portable electronic device is on the second mode.” *Newman*, ¶136. *Newman* further teaches that “other example embodiments may be configured to turn all or portions of a screen into a low power mode (e.g. by turning off a backlight, reducing the contrast, selecting colour schemes which reduce power).” *Newman*, ¶136. “Such forms of output can be considered to

be low power output.” *Newman*, ¶136. For example, “a Quarter Video Graphics Array OLED display may consume 3 watts while showing black text on a white background, but only 0.7 watts showing white text on a black background.” *Newman*, ¶94.

5.7.3. *Ording*

89. U.S. Patent No. 8,842,074 (“*Ording*”), entitled “Portable Electronic Device Performing Similar Operations for Different Gestures,” was filed on September 5, 2007, and thus I understand it to be prior art under 35 U.S.C. § 102(a)(2). *Ording* describes a portable electronic device with touch-sensitive display. *E.g.*, *Ording*, Abstract, 5:22-26. *Ording*’s device can be in a “user-interface unlock state” or a “user-interface lock state.” *Id.*, 12:21-30. *Ording*’s Fig. 4 illustrates interface 400, which is displayed when in the “user-interface unlock state:”

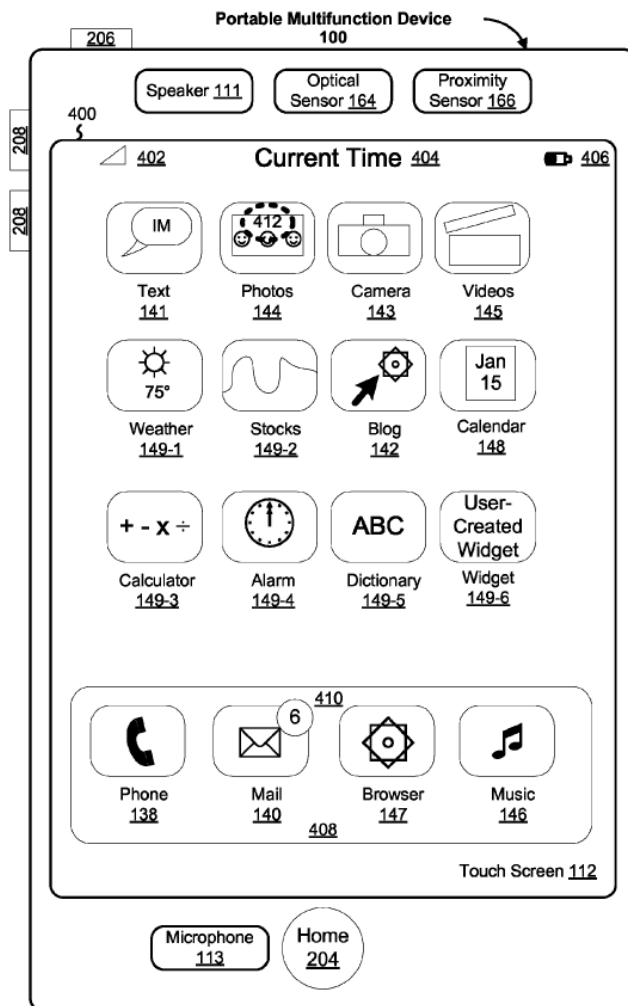


Figure 4

Id., 12:36-63). The user interface 400 displays a plurality of graphical indications (e.g., “Current Time 404”).

90. *Ording’s* Fig. 3 illustrates interface 300 , which is displayed when in the “user-interface lock state,” and which is used when unlocking a device:

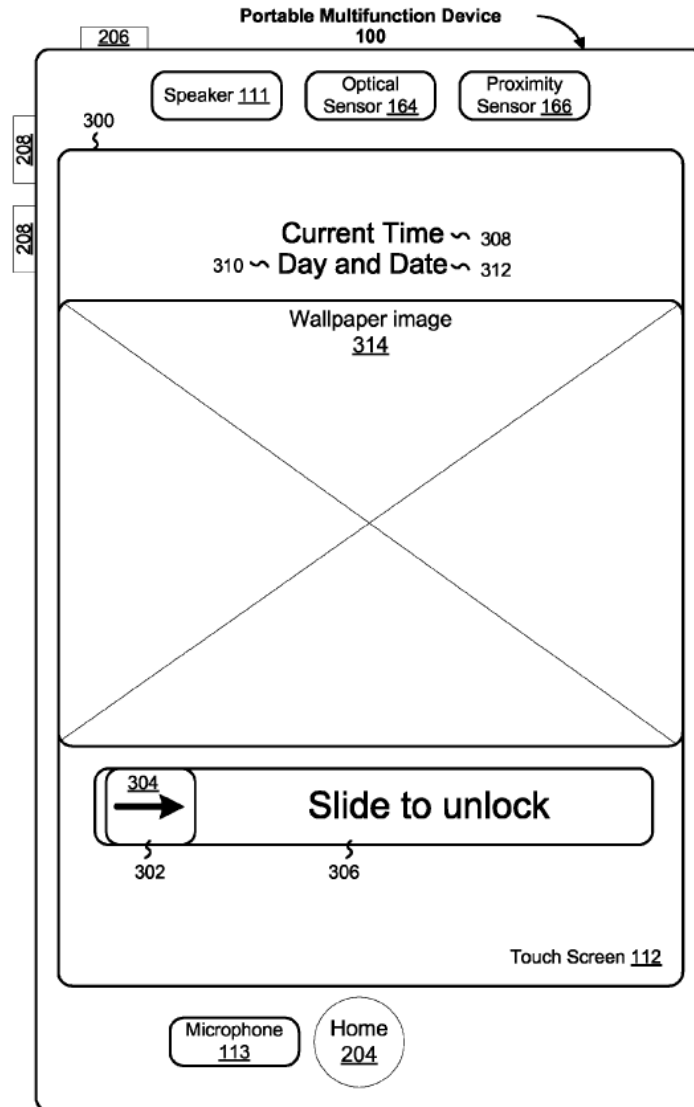


Figure 3

Id., 12:7-20. The current time 308 is also displayed in this state.

5.7.4. *Siwinski*

91. 7,012,588 (“*Siwinski*”), entitled “Method For Saving Power in an Organic Electroluminescent Display Using White Light Emitting Elements,” was patented on 3/14/2006, and is thus prior art under 35 U.S.C. § 102(a)(1). *Siwinski*

recognized that OLED displays were useful in “battery powered portable electronic devices such as ... cellular telephones (*Siwninski*, 1:23-26)” and describes a particular type of OLED display that is capable of conserving power when operating in a grayscale mode. *Id.*, 2:15-22..

5.7.5. *Yang*

92. U.S. Patent Publication No. 2014/0189583 (“*Yang*”), entitled “Displaying Area Adjustment,” was filed in the United States on June 25, 2013 and claimed priority to PCT Application No. PCT/CN2012/087795 (Ex. 1006), which was filed on December 28, 2012 and designated the United States. I understand *Yang* to have an effective filing date of December 28, 2012. I understand *Yang* to be prior art under 35 U.S.C. § 102(a)(2).²

93. *Yang* discloses a portable electronic device such as a mobile phone. *See Yang*, Abstract; ¶19 (“Referring to FIG. 1A, shown is a portable electronic device (PED) 100 having a display 102. The PED 100 can be any type of portable electronic device such as a mobile telephone (e.g., smartphone)”). Recognizing that the “display of a portable electronic device is another feature that is a big consumer of

² Note that the inventor of *Yang*, Wenlong Yang, is not the same person listed as an inventor on the ’612 patent, Jinrong Yang.

battery charge[,]” *see Yang*, ¶19, *Yang* teaches that its device may conserve power while in a normal operating mode by switching from an original screen mode (often referred to therein as “OSM”) to an adjusted screen mode (often abbreviated as “ASM”), where a portion of the display area is inactive. *Yang*, ¶29.

94. In one embodiment, *Yang* discloses that the switch from OSM to ASM may occur automatically as a function of battery capacity. *Yang*, ¶33. For example, “if the battery reaches a capacity that is at or below a certain percentage of total battery capacity (e.g., 30%, 25%, 20%, 15%, 10%, 5%) display 102 may be automatically switched from OSM to ASM to conserve the remainder of the battery power.” *Yang*, ¶33; *see also Yang*, ¶90 (“In Example 2, the subject matter of Example 1 may optionally include detecting if battery power is less than a battery power threshold, automatically switching from the original screen mode to the adjusted screen mode.”).

6. GROUNDS 1A/1B: *PARK* IN VIEW OF *NEWMAN*(1A) AND *PARK* IN VIEW OF *NEWMAN* AND *ORDING* (1B) RENDER OBVIOUS CLAIMS 1-2, 5-6, 9-15, AND 18

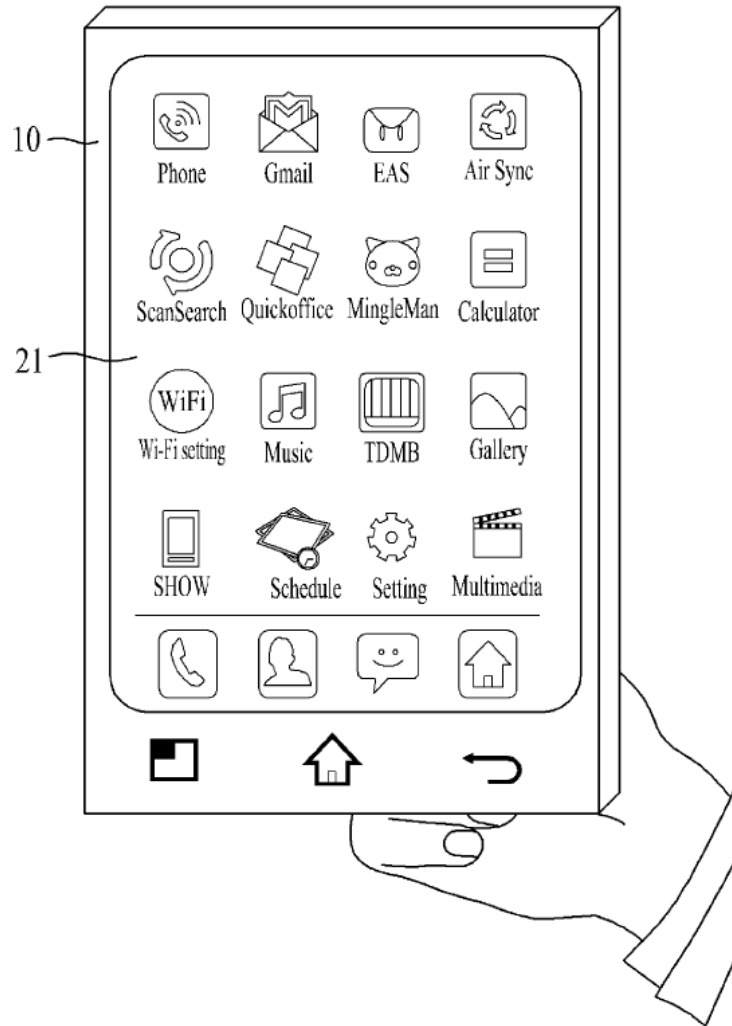
6.1. Claim 1

[1p] “A portable phone comprising”

95. To the extent the preamble is limiting, *Park* discloses a “portable phone.” *Park* is entitled “Portable Device and Method for Controlling the Same”

and extensively refers to a “portable device” throughout its disclosure. Figures 4a, 4b, 5a, 5b, 6, 7a, and 7b of *Park* are described as illustrating a “portable device.” *See Park*, ¶¶36-39. Each of those figures includes an icon expressly labeled “Phone” and depicting a telephone, indicating that the disclosed portable device is intended to function as a portable phone. *Park*, Figs. 4a, 4b, 5a, 5b, 6, 7a, and 7b. A POSITA would understand that a device that can make phone calls is a phone within the context of this claim. A POSITA would also understand *Park*’s Fig. 11 to disclose a smartphone in the context of *Park* given the presence of communications unit 102 and audio I/O unit 104 as well as a processor, storage, camera, and touchscreen display.

96. For example, Fig. 7a of *Park* (below) depicts a device with a “Phone” icon near its upper left corner, the device being held in the hand of a user, and thus a “portable” phone. *Park*, Fig. 7a. Portable phones of the type depicted in figure 7a of *Park* and matching the figure 11 block diagram were well known in the United States, long before the ’612 patent was filed in 2014 (*see e.g., Newman*, ¶¶91-92).



Park, Fig. 7a

[1a] “a display comprising a display screen”

97. *Park* discloses this element. *Park* extensively refers to a “display unit” throughout its disclosure. *E.g.*, *Park*, ¶48 (“A display unit included in the portable device displays content, an application, or the like to the user.”). *Park* further discloses that “[t]he display unit 106 may output an image to a screen.” *Park*, ¶123.

Portable phones having display screens, such as the portable phone depicted in Fig. 7a of *Park* (above), were well-known in the United States long before the '612 patent was filed in 2014.

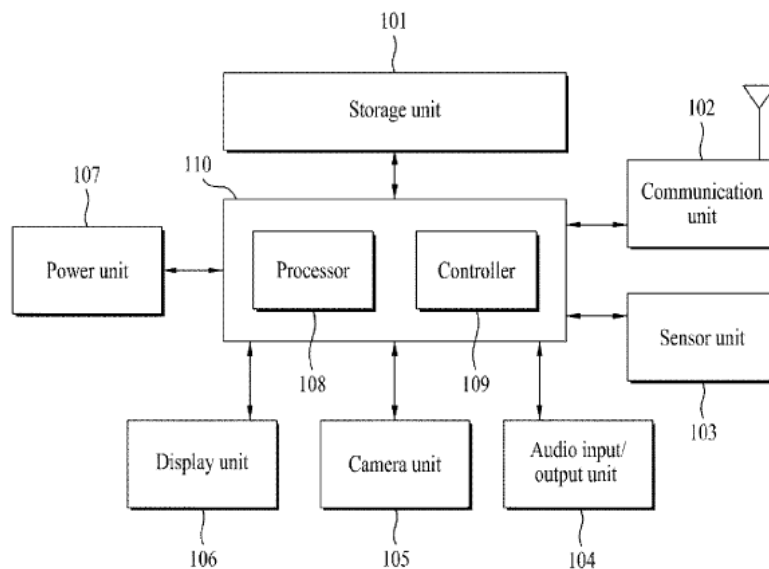
98. *Park* discloses that the device described therein may use a flexible display and that, in that embodiment, the phrase “first display unit” refers a first portion of the display, while the phrase “second display unit” refers to a second portion of the display. *Park*, ¶¶48, 123. This flexible display corresponds to the claimed “display comprising a display screen.” For purposes of this declaration, the phrases “first display unit” and “second display unit” when I discuss *Park* are understood to refer to first and second portions, respectively, of a flexible display screen in accordance with the disclosure of *Park*. *E.g.*, *Park*, ¶48.

99. Indeed, it was well-known to POSITAs before the patent’s filing that a single flexible display could have two or more display portions and that the display could be folded such that the first portion is on a first side of a device and the second portion is on the reverse side of the device when folded. It is basic common sense that a complex color graphics display such as disclosed in the *Park* reference includes many independently controllable pixels which can be individually turned on or off. At the time of *Park*’s filing in 2012 LCD and OLED smartphones were commonplace and the assignee of the *Park* application, LG Electronics, sold such

devices commercially throughout the world. A POSITA would have certainly understood that a single display could have 2 or more display portions including a top and bottom portion or a left and right portion. U.S. Patent 8,804,324 (Ex. 1036) predates Park and clearly illustrates that such a display may be folded such that the first portion is on a first side of a device and the second portion is on the reverse side of the device when folded. *See e.g.* 8,804,324, Figs. 1,2, and 6; 1:32-47.

[1b] “one or more processors”

100. *Park* discloses this element. In particular, *Park* discloses that the portable device described therein may include a processor. *Park*, ¶117, Fig. 11. A processor 108 is illustrated in figure 11 of *Park* (below).



Park, Fig. 11

[1c] “a memory comprising program instructions, wherein the program instructions are executed by the one or more processors to implement . . .”

101. *Park* discloses this element. In particular, *Park* discloses a “storage unit” 101 that serves as a memory, where the memory can use various memory technologies, *e.g.*, flash memory. *Park*, 117-¶118. Indeed, *Park* notes that “[t]he storage unit 101 may store various digital data such as video, audio, photographs, moving images, and applications. The storage unit 101 may be various digital data storage spaces such as a flash memory, a Hard Disk Drive (HDD), or a Solid State Drive (SSD).” *Park*, ¶110. *Park* further discloses that “[t]he processor 108 may execute various applications stored in the storage unit 101 and may process data in the portable device.” *Park*, ¶124. A POSITA would have understood that executing applications with a processor in this context means that the storage unit 101 stores program instructions that are executed by processor 108.

102. Although *Park* states that the particular “storage unit 101” may be an optional element depending on the design of the portable device,” *Park*, ¶118, a POSITA would understand that a memory storing instructions is present in each disclosed embodiment in *Park*. *Park* expressly discloses that the processor, in conjunction with a controller, may perform the operations described therein, including detecting unlock commands and switching the state of a display according

to the detected unlock commands. *Park*, ¶125. Those operations correspond to elements of the '612 patent claims discussed in further detail below. In order for a processor to perform such operations, the processor would execute program instructions stored in a memory. To the extent that one were to find the explicit disclosure of a memory in *Park* to be insufficient, a POSITA would find the use of a processor and a memory holding instructions to be obvious in *Park*'s devices. All commercial smartphones at the time included a processor and a memory holding instructions.

103. *Newman* also discloses this element. For example, *Newman* expressly discloses that “[t]he memory (107) may store computer program code and/or applications which may be used to instruct/enable the processor (108) to perform functions (e.g. read, write, delete, edit or process data).” *Newman*, ¶126. In light of the processor/memory disclosures in *Park* and the ubiquity of processors running instructions from memory in the art, it would have been obvious to use the processor/memory configuration in *Newman* together with *Park*.

[1d] “a power management module configured to manage power consumption of the display”

104. *Park* discloses this limitation. The '612 patent describes a “power management module” as one that receives, as input, user stimulus and generates, as

output, new state information. '612 patent, 26:31-41, Fig. 25. Fig. 1 of the '612 patent shows screen power management module 158 as being stored in memory 102, which communicates with CPU chip 104, and Fig. 25 provides additional detail regarding sub-modules found therein. Thus, a POSITA would understand that the '612 patent describes its power management module using generalized structural and functional descriptions. . *Park's* description is similar, disclosing a device that detects "user touch input," which may correspond to one of several unlock commands. *E.g., Park*, ¶63. *Park* further discloses a chip including processor 108 and controller 109 that receive instructions, and that generates, as output, a new state for the device. *Park*, ¶125; Fig. 11. . *Park* also discloses that, in response to user input (*i.e.*, unlock commands), the states of display units are switched. *Park*, ¶64.

105. Moreover, *Park* also discloses that the purpose of switching the states of display units differently in response to different unlock commands is "to prevent unnecessary power consumption." *Park*, ¶145. Accordingly, *Park* discloses "a power management module configured to manage power consumption of the display."

106. A POSITA would understand that these teachings are the same as in the '612 patent and thus correspond to the recited "power management module." *Id.* *Newman*, discussed below, describes similar structures also corresponding to the

recited “power management module.” *Newman*, ¶125. Indeed, ordinary commercial smartphones at the time of *Park*’s filing all included a hardware power management module and power management software for managing power consumption of a display. Ordinary commercial smartphones included the ability to turn off the display after a time-out period of no interactions or no use. As such a POSITA would have found that *Park* (and *Newman*) discloses “a power management module configured to manage power consumption of the display.”

[1e] “wherein when the display is not in a sleep mode the power management module directs a display controller to display a set of a plurality of graphical indications in color in a full configuration mode that puts substantially all of the display screen in a powered-on state”

107. *Park* in view of *Newman* discloses this element. This claim element recites two modes: “sleep mode” and “full configuration mode.” According to the ’612 patent, when in sleep mode, “at least some portion or all of the display may be configured with limited or no functionality.” ’612 patent, 29:53-55. The claim itself states that “full configuration mode” is one where the graphical indications are in color and “substantially all of the display screen in a powered-on state.”

108. As I have previously discussed, *Park* discloses that the first and second portions of its flexible display can be in different states. *Park* calls one of those states the locked state:

The term “**locked state**” refers to a state in which the display unit is inactive and at least one of a light emitting element and a touch sensor of the display unit is inactive. **When the display unit is in a locked state, the portable device cannot provide an application or content to the user through the display unit. However, the portable device may partially activate the touch sensor or the light emitting element of the display unit in order to detect an unlock command input by the user or to inform the user of how to input an unlock command.**

Park, ¶50.³

109. A POSITA would have understood that *Park*’s configuration where first and second portions of the flexible display are both in the locked state corresponds to the recited “sleep mode” because, just as in the ’612 patent, “at least some portion or all of the display may be configured with limited or no functionality.” ’612 patent, 29:53-55. For example, as seen in the above quote, *Park*’s locked state disallows display of applications and content but allows for unlocking a device, which is “limited” functionality.

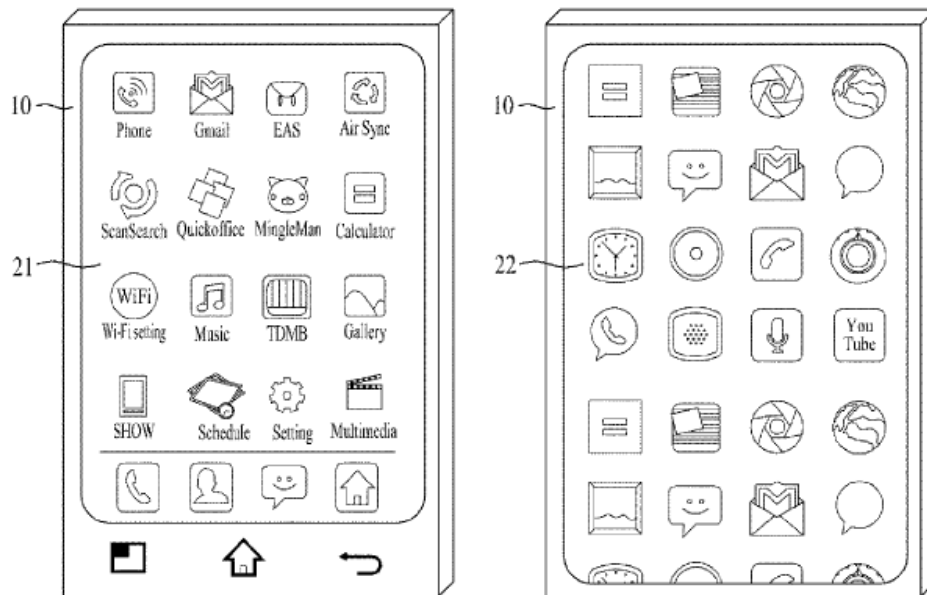
³ Unless otherwise stated, I have added all emphasis to quotes.

110. *Park's* first and second display portions can also be in what it calls the active state:

The term “**active state**” refers to a state in which the display unit is active. When the display unit is switched to the active state, the portable device may activate at least one of the light emitting element and the touch sensor of the display unit.

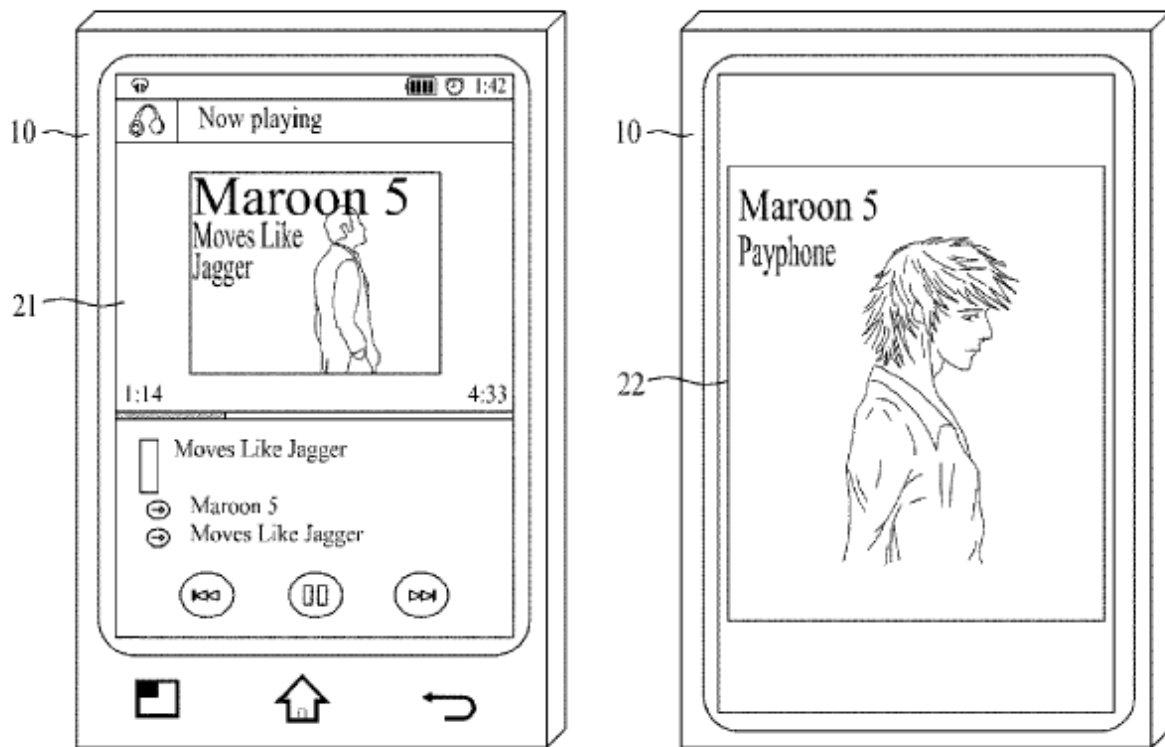
Park, ¶53. A POSITA would have understood that *Park's* configuration where both first and second portions of the flexible display are in the active state corresponds to the recited “full configuration mode” in which substantially all of the display screen is in a powered-on state. This is illustrated *Park's* Fig. 4b:

[Fig. 4b]



See also Fig. 10a:

[Fig. 10a]



111. As seen in both of these examples, all of the display screen (*i.e.*, both first and second portions 21-22) is in an active state and displaying a plurality of graphical indications (*e.g.*, icons.) See also, *Park*, ¶¶53, 78-79. I have prepared the following table to illustrate several states *Park*'s first and second display portions can be in, and which combination of states corresponds to the "modes" disclosed and claimed in the '612 patent:

'612 Patent Mode	<i>Park</i> First Portion	<i>Park</i> Second Portion
“sleep mode” / “locked state”	locked state	locked state
“full configuration mode”	active state	active state
“proportional configuration mode” ⁴	active state	ready-to-activate state

112. Thus, *Park* discloses that when its device is not in a sleep mode, the power management module causes display controller (*e.g.*, *Park*’s controller 109) to cause the display to display a set of a plurality of graphical indications in a full configuration mode that puts substantially all of the display screen in a powered-on state. *See e.g.*, *Park*, ¶¶117, 125.

113. I note that a POSITA would understand that, technically, a display controller is incapable of displaying content, but that the controller may cause a display to display content. To the extent this element is interpreted to make it comprehensible, a POSITA would understand the claim language “directs a display controller to display...” to mean “directs a display controller to cause a display to display.” Note that independent claims 10 and 14 do not have this issue, as they recite a display that displays information. The analysis I provide in this section

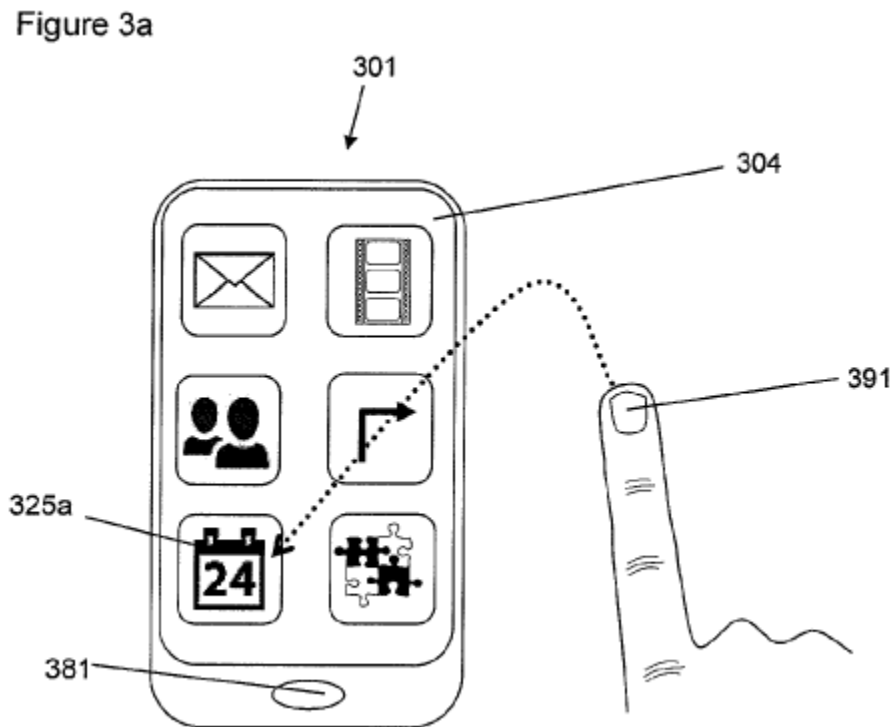
⁴ I discuss “proportional configuration mode” in more detail when discussing element [11].

regarding claim element [1e] applies to the corresponding elements of claims 10 and 14.

114. *Park* does not expressly state that icons (*i.e.*, graphical indications) are displayed in color. However, *Park* discloses that the display may be an LED or OLED display. *Park*, ¶53 When the '612 patent was filed, it was well-known and extremely common for such displays to display graphical information in color. Thus, a POSITA would have understood that the icons displayed by *Park* in its active state (*i.e.*, “full configuration mode”) could have been displayed in color and a POSITA would have found it obvious to display information in color when in the active state. Every commercial smartphone that I am aware of that was contemporaneously for sale at the time of *Park*’s filing included the ability to display graphical information in color. LG Electronics, the assignee of *Park* commercially sold many color-capable smart phones at the time. The illustrations in *Park* include representations of multimedia viewers, a YouTube app, a TDMB (Terrestrial Digital Multimedia Broadcast) app, and a camera app that all suggest to a POSITA the use of a color-capable display.

115. To the extent Dareltech argues that *Park* does not disclose displaying a set of a plurality of graphical indications in color in a full configuration mode, *Newman* satisfies this limitation. *Newman* is similar to *Park* (and the '612 patent)

because it discloses a device having what it calls a “third mode” in which “at least some portion or all of the display may be configured with limited or no functionality (’612 patent, 29:53-55),” but where the display allows unlocking (*Newman*, ¶¶65-67), and a “first mode” in which substantially all of the display is powered-on and icons are displayed as illustrated in Fig. 3a of *Newman* (below) (as with *Park*’s active state):



Newman, Fig. 3a

See also *Newman*, ¶¶133.

116. A POSITA would have understood that *Newman*'s "first mode" corresponds to the recited "full configuration mode" since the display performs display functionality, and that *Newman*'s "third mode," which *Newman* states "may provide for a sleep mode (*id.*, ¶65)," corresponds to the recited "sleep mode" because, just as in the '612 patent, "at least some portion or all of the display may be configured with limited or no functionality ('612 patent, 29:53-55)." *See Newman*, ¶67 ("The apparatus may be configured, when in the third mode, to disable user interaction with one or more applications configured to run on the apparatus but allow the user to unlock the portable electronic device to enter the first mode of operation."); *see also id.*, ¶¶64-66, 123.

117. *Newman* also discloses that, in the first mode depicted in figure 3a (above), information such as text, map, or image, is displayed "in colour." *Newman*, ¶147, Fig. 3a. Accordingly, *Park* in view of *Newman* discloses "wherein when the display is not in a sleep mode the power management module directs a display controller to display a set of a plurality of graphical indications in color in a full configuration mode that puts substantially all of the display screen in a powered-on state." It would have been obvious to a POSITA to combine the teachings of *Park* and *Newman* so that *Park*'s graphical indications were displayed in color since virtually every touchscreen display manufactured as of the effective filing date were

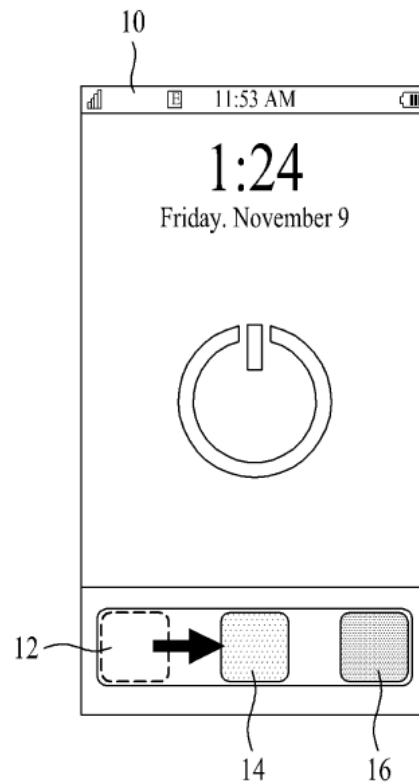
color displays, and a POSITA would have understood that users of such devices would have expected and desired that devices like those in *Park* should normally display information in color, as taught by *Newman*, and that as such, market forces would have motivated this combination. I provide further reasons why a POSITA would have been motivated to combine *Newman* with *Park* below when discussing element [1i].

[1f] “wherein when the display is in a sleep mode, the power management module directs the display controller to display a subset of the plurality of graphical indications”

118. The language of this element requires that when in the recited “sleep mode,” the power management module directs the display controller to “display a subset of the plurality of graphical indications.” As I have noted above, a POSITA would understand that this language should have recited that the display controller causes the display to display information. This is how I am interpreting this element. Note that as I also discussed above, the other independent claims do not have this issue, and the analysis I provide regarding element [1f] applies to the corresponding elements of independent claims 10 and 14.

119. As I discussed above with respect to element [1e], *Park* discloses a device having a configuration (*i.e.*, first and second portions of its flexible display

in a locked state) (*Park*, ¶50) corresponding to the recited “sleep mode” because a portion of the display has limited functionality. *Park*’s Fig. 2a illustrates an unlock screen that can be displayed on a first portion of its flexible display when in the locked state.



Park, Fig. 2a

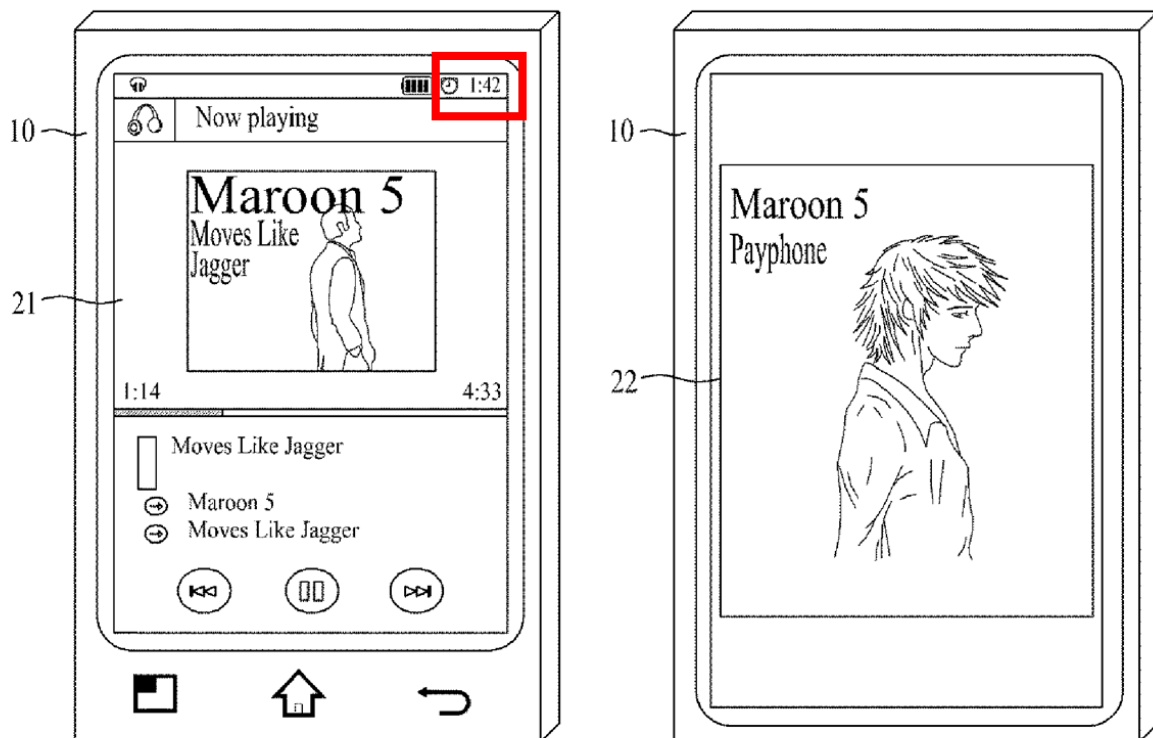
See also *Park*, ¶¶63, 66-67. The unlock screen illustrated in Fig. 2a displays graphical indications, including time. *Park* further discloses that both display portions were placed in the locked state (*i.e.*, “sleep mode”) by the controller, which manages power consumption of the device. *E.g.*, *Park*, ¶5. Thus, *Park* discloses

that its controller (*i.e.*, “power management module”) “directs the display controller to display a subset of the plurality of graphical indications” since it directs the display controller to display the time and date on *Park’s* flexible display.

6.1.1. Grounds 1A

120. *Park’s* Fig. 10a shows an embodiment where both the first and second portions of its flexible display are in the active state, thus corresponding to the claimed “full-configuration mode:”

[Fig. 10a]



As seen in the screen area boxed in red, one of the graphical indications displayed in the first portion of *Park*'s flexible display is the time. Since *Park* displays a time graphical indication when in both its locked state (Fig. 2a), corresponding to the claimed "sleep mode," and in its active state (Fig. 10a), corresponding to the claimed "full-configuration mode," *Park* in view of *Newman* discloses this element.

121. Since *Park* teaches that a time graphical indication is displayed in its mode corresponding to the claimed "full-configuration mode" (as shown in Fig. 10a), and also that a time graphical indication is displayed when in its locked state, corresponding to the claimed "sleep mode" (as shown in Fig. 2a), *Park* discloses display of "a subset of the plurality of graphical indications" when in the recited sleep mode, as claimed, and thus *Park* in view of *Newman* discloses this element.

6.1.2. Grounds 1B

122. *Park*'s Fig. 4b does not show a time graphical indication in its first portion. A POSITA would understand that *Park*'s Fig. 4b does not show this because the drawing is a simplified version of the actual display, as made clear in *Park*'s Fig. 10a, which shows the device displaying a time graphical indication when in a mode corresponding to the claimed "full-configuration mode." To the extent Dareltech argues that *Park* does not disclose that a time graphical indication is

displayed when both portions of the flexible display are in the active state (*i.e.*, “full configuration mode”), a POSITA would have recognized that *Park’s* figures are simplified, that such a feature would have been present, but that to the extent the teaching was missing, it would have been obvious to do so, since displaying the time on unlocked mobile device screens was well-known as of the effective filing date, as demonstrated, for example, by *Ording*.

123. *Ording* discloses a device having a “user-interface lock state” and a “user-interface unlock state.” *Ording*, 12:21-30. A POSITA would have understood that *Ording’s* user-interface unlock state corresponds to the recited “full configuration mode” because, as illustrated in its Fig. 4, substantially all of *Ording’s* display is in a powered-on state since icons are displayed that a user can touch to access desired applications). *Ording*, 12:8-13:12. A POSITA would also have understood that *Ording’s* “user-interface lock state” corresponds to the recited “sleep mode” because, as illustrated in Fig. 3, the screen allows for unlocking but no applications are available for use, meaning that “at least some portion ... of the display [is] configured with limited ... functionality (’612 patent, 29:53-55).” Figs. 3-4 are reproduced below:

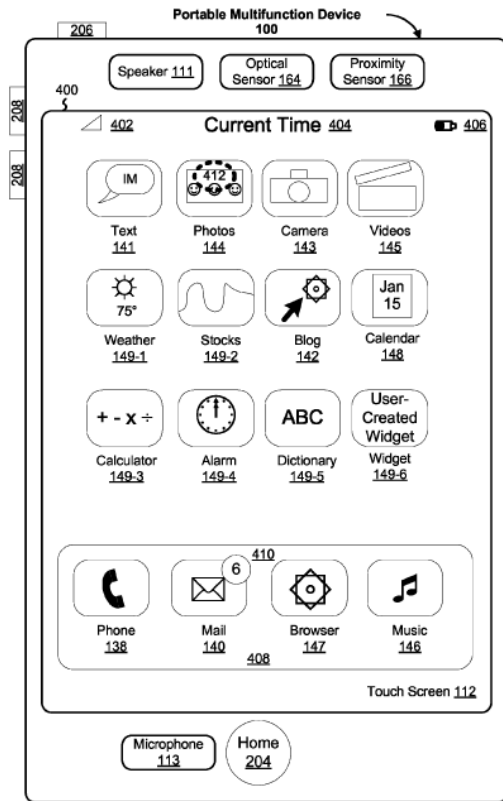


Figure 4

Ording, Fig. 4

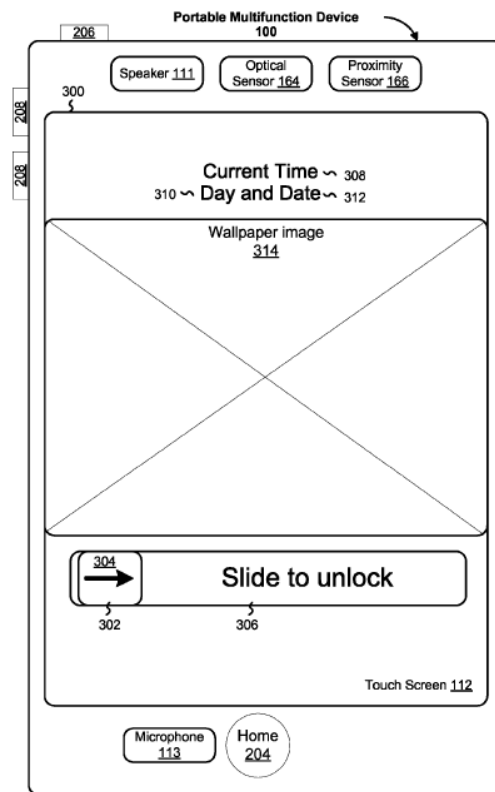


Figure 3

Ording, Fig. 3

See also *Ording*, 12:8-13:12.

124. As illustrated in Fig. 4, when in its user-interface unlock state (corresponding to the claimed “full configuration mode”), *Ording*’s device displays a plurality of graphical indications including application icons and “Current Time.” *Ording*, 12:36-63. As illustrated in Fig. 3 of *Ording*, when in its user-interface lock state (“sleep mode”), *Ording*’s device does not display the application icons, but does display “Current Time.” *Ording*, 12:8-20. . Thus, the “Current Time” graphical indication displayed when in user-interface lock state (corresponding to

the claimed “sleep mode”) is a “subset of the plurality of graphical indications” that were displayed when in user-interface unlock state (“full configuration mode”).

125. Accordingly, *Park* in view of *Ording* discloses “wherein when the display is in a sleep mode, the power management module directs the display controller to display a subset of the plurality of graphical indications.”

126. A POSITA would have understood that *Ording*’s teachings regarding its user-interface lock and unlock states provide additional details regarding what a POSITA would have understood about what is displayed when both of *Park*’s display portions are in either the locked (*i.e.*, “sleep mode”) or active (*i.e.*, “full configuration mode”) states, respectively. Regardless, a POSITA would have been motivated to combine *Ording*’s teaching regarding display of the time in *Park*’s mode corresponding to the recited “full configuration mode.” *Park* discloses a portable device that can display graphical indications while in “full configuration mode” (which *Park* calls the active state) and “sleep mode” (which *Park* calls the locked state). *Park*, ¶¶63-114, Figs. 2-10. *Park* discloses that a time graphical indication can be displayed on a lock screen when the device is in a mode corresponding to the recited “sleep mode” (*i.e.*, *Park*’s locked state). *Park*, Figs. 2a-2b, 3a-3b. Like *Park*, *Ording* discloses a portable device that can display graphical indications while in modes corresponding to the recited sleep and full configuration

modes. *Ording*, 12:5-13:12, Figs. 3-4. *Ording* also discloses that a time graphical indication can be displayed when in “full configuration mode,” in addition to when in “sleep mode.” *Ording*, 12:5-13:12, Figs. 3, 4.

127. A POSITA would have been motivated to use *Ording*’s teachings to enable *Park*’s device to display a time graphical indication while in full configuration mode (to the extent *Park* does not teach this). A POSITA would have understood that modifying *Park*’s device to display the time while in “full configuration mode” would have provided a useful feature because it would have allowed a user of the *Park* device to view the current time, regardless of which mode the device was in. Moreover, such a feature was well-known in the art as of the ’612 patent’s effective filing date, and as such, market forces would also have motivated a POSITA to include such a feature in *Park*.

128. This modification would have been the result of combining prior art elements (*e.g.*, *Park*’s flexible display, which displays the time when in “sleep mode,” and *Ording*’s device, which displays the time when in both “sleep” and “full configuration” modes) according to known methods (*e.g.*, implementing software instructions on *Park*’s device that cause the device to display the time while in an unlocked state) to yield predictable results (*e.g.*, the convenience of being able to view the current time while the device is unlocked and in “full configuration mode”).

[1g] “the subset comprising an unlock image comprising at least one of, time, date, or an indication of an email, text message, or voice message”

129. *Park* (Grounds 1A) and *Park* in view of *Ording* (Grounds 1B) discloses this element. This element recites an “unlock image” that is “at least one of” a number of different graphical indications, one of which is “time.” As I discussed regarding element [1f], *Park* displays the time when in modes corresponding to the recited “full configuration mode” and “sleep mode” (Grounds 1A), as does *Park* when combined with *Ording* (Grounds 1B). Under either grounds, a graphical indication of the current time corresponds to the claimed “subset of the plurality of graphical indications.” Thus, the current time displayed by both *Park*’s and *Ording*’s devices on their lock screens corresponds to the recited “unlock image” because it is displayed when the devices are in the recited “sleep mode.”

130. Accordingly, *Park* (1A) and *Park* incorporating *Ording*’s teachings (1B) discloses “the subset comprising an unlock image comprising at least one of, time, date, or an indication of an email, text message, or voice message.” A POSITA would have been motivated to incorporate *Ording*’s teachings into *Park* for the reasons I discussed regarding element [1f].

[1h] “wherein the subset of the plurality of graphical indications are displayed in a portion of the display screen”

131. *Park* (Grounds 1A) and *Park* incorporating *Ording*’s teachings (Grounds 1B) disclose this element. As I discussed earlier, Fig. 2a of *Park* illustrates the time (“the subset of the plurality of graphical indications”) being displayed on a first portion of its flexible display screen, when the first portion of the display is in what they call their locked state, corresponding to the recited “sleep mode.” *Park*, ¶63, Fig. 2a. As discussed above with respect to element [1f], *Park* (Fig. 10a) and *Ording* (12:8-20, 12:36-63, Figs. 3, 4) disclose that the time displayed in the recited “sleep mode” may be from a subset of graphical indications displayed in the unlocked state (*i.e.*, “full configuration mode”). *Ording*, 12:8-20, 12:36-63, Figs. 3, 4. For Grounds 1B, a POSITA would have been motivated to incorporate *Ording*’s teachings into *Park* for the reasons I discussed regarding element [1f].

[1i] “are displayed in black, white or grayscale, instead of displayed in color”

132. *Park* in view of *Newman*, and *Park* in view of *Ording* and *Newman*, disclose this element. This element requires that the graphical elements be displayed in black, white, or grayscale when in “sleep mode.” The word “or” separates the terms black, white, and grayscale. Thus, it is my understanding that the prior art need only disclose one of these to meet this limitation.

133. Neither *Park* nor *Ording* expressly state that graphical indications are displayed in black, white, or grayscale. *Newman*, however, discloses that graphical indications can be displayed in black or white instead of in color, and that this is done to reduce power consumption. *E.g.*, *Newman*, ¶¶94, 136, 147. *Newman* discloses that the portable device described therein “may be configured to, in a first mode, display (e.g. information such as text, map or image) in colour, and, in the second mode, display in black and white.” *Newman*, ¶147; *see also id.*, ¶¶94, 136 (disclosing use of a black and white display mode to reduce power consumption). As discussed regarding element [1e], *Newman* discloses a “third mode,” corresponding to the recited “sleep mode,” having lower power consumption than its second mode. *See Newman*, ¶¶64-67.

134. Although *Newman* does not indicate whether black and white or color are used when displaying information in the third mode, *Newman* discloses using black and white instead of color to reduce power consumption in the second mode relative to the first mode. Because *Newman*’s third mode consumes less power than its second mode, a POSITA would have found it obvious that *Newman*’s third mode also displays information black and white and not in color, just as in *Newman*’s second mode. Otherwise, *Newman*’s third mode would likely have increased power consumption as compared to *Newman*’s second mode, which would be contrary to

Newman's disclosure and contrary to how a POSITA would have understood *Newman*. Thus, in view of *Newman's* teaching that black and white display mode is used to reduce power consumption, a POSITA would have found it obvious to utilize a black and white display mode in *Newman's* third mode, to help achieve lower power consumption than *Newman's* second mode, as described. Moreover, a POSITA would have found it obvious that displaying information in black and white using *Newman's* display technology uses less power than displaying the same information in color..

135. A POSITA would have found it obvious to incorporate *Newman's* teachings into *Park/Park-Ording* so that the graphical indications displayed when in “sleep mode” (illustrated, *e.g.*, in *Park's* Fig. 2a) were displayed in black and white.

136. *Park* relates primarily to reducing power consumption in a portable device and discloses a device configured to operate in multiple display modes to reduce power consumption. *See e.g., Park*, ¶¶25, 28, 55-56, 63-67, 75-77, 145. *Newman* also relates primarily to reducing power consumption in a portable device, and discloses a device configured to operate in multiple display modes to reduce power consumption. *See e.g., Newman*, ¶¶4, 64-88, 136. *Newman* further discloses that power may be conserved by reducing the color of a display, or by switching

from a color display mode to a black and white display mode. *Newman*, ¶¶94, 136, 147.

137. *Park* does not expressly state that graphical indications are displayed in black, white, or grayscale, although such a simple feature would be obvious to a POSITA. Graphical indications in white, for example, were ubiquitous in smartphones. Furthermore, the figures in *Park* are literally black illustrations on a white background, at least making such a configuration obvious to try. *Newman* explicitly discloses that graphical indications can be displayed in black or white instead of in color, for purposes of reducing power consumption, when a device is operating in a sleep mode. *E.g.*, *Newman*, ¶¶94, 0136, 0147. More specifically, *Newman* discloses a device having a “second mode of operation,” which is also described as a “low power mode.” *Newman*, ¶126. *Newman* discloses that the portable device described therein “may be configured to, in a first mode, display (e.g. information such as text, map or image) in colour, and, in the second mode, display in black and white.” *Newman*, ¶147; *see also Newman*, ¶¶94, 136 (disclosing use of a black and white display mode to reduce power consumption). In the second mode, the power consumed by the device is less than that of the first mode. *Newman*, ¶62. *Newman* further discloses a “third mode of operation,” which is also described as a “sleep mode,” in which graphical indications may be displayed,

but functionality of the device is limited. *Newman*, ¶¶64-88, 165. In the third mode, the power consumed by the device is less than that of the second mode. *Newman*, ¶64. Accordingly, a POSITA would have understood that, as with the second mode (i.e., “low power mode”), graphical indications in the third mode (i.e., “sleep mode”) could be displayed in black and white to reduce power consumption. It would have been obvious to a POSITA to combine the teachings of *Park* and *Newman* such that the graphical indications displayed in the locked state of *Park* (as illustrated, for example, in figure 2a of *Park*) were displayed in black and white.

138. A POSITA would have been motivated to incorporate *Newman*’s use of black and white graphical indications when in the “sleep mode” into *Park*’s device to further reduce power consumption in *Park*. A POSITA would have recognized that the combined *Park-Ording/Park-Ording-Newman* mobile devices would have lower power consumption than had *Newman*’s teachings not been used.

139. This modification would have been the result of combining prior art elements (*e.g.*, *Park*’s flexible display and *Newman*’s device’s ability to switch from a color display mode to a reduced-color or black and white display mode) according to known methods (*e.g.*, implementing software instructions on *Park*’s device that cause the device to transition from a color display mode to a reduced-color or black

and white display mode) to yield predictable results (*e.g.*, reduced power consumption).

[1j] “a user interface module configured to respond, when the portable phone is in a locked state, to unlock gestures associated with the unlock image”

140. *Park* discloses this element. *Park* discloses a flexible touch-sensitive display unit that outputs an image on a screen, and detects user input on the display and delivers the detected user input to a controller. *Park*, ¶123. *Park* discloses that the controller may respond to detected user input by, for example, switching the state of the display. *E.g.*, *Park*, ¶¶5, 125. A POSITA would have understood that *Park*’s hardware and software enabling the disclosed device to display images, detect user input, and respond to the detected user input, correspond to the recited “user interface module.”

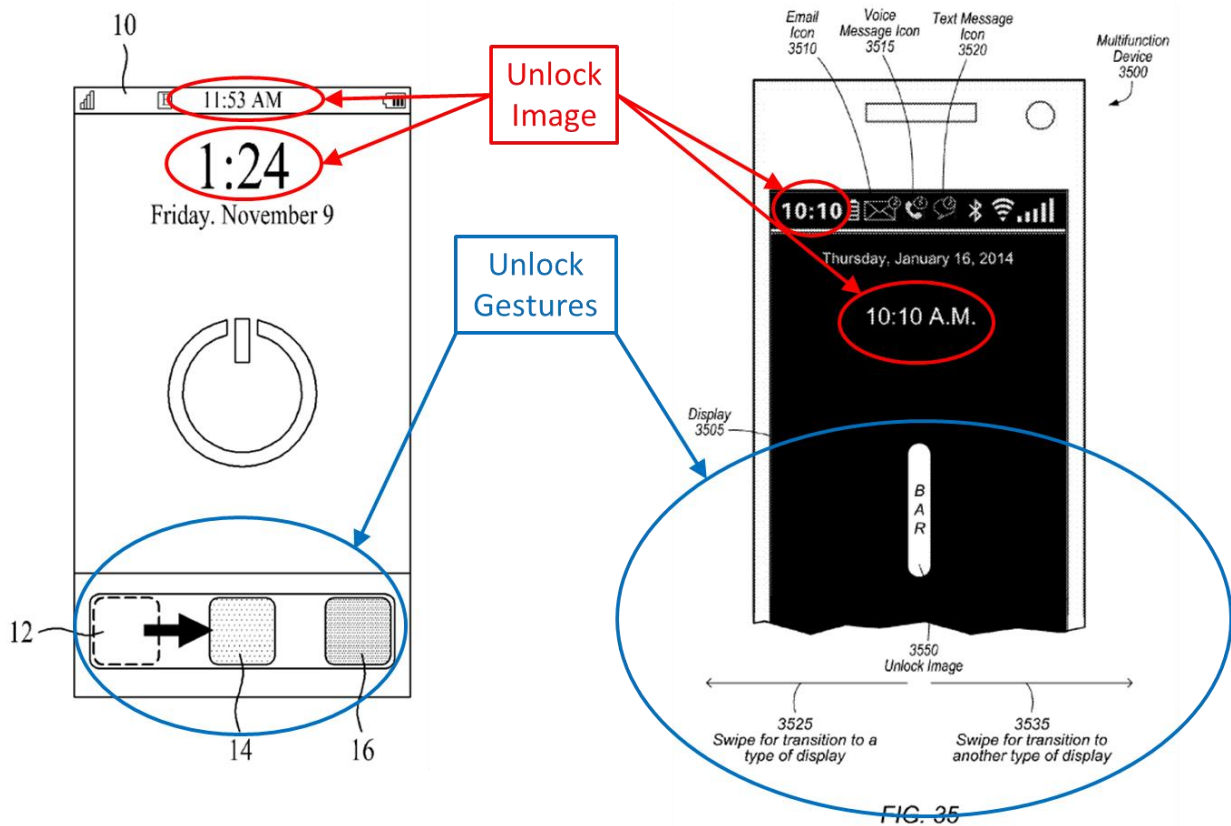
141. *Park* discloses that its portable device may be configured in the recited “locked state.” As discussed, the proper construction of “locked state” is “*a state in which a user is prevented from accessing specific functions or capabilities.*” *Park*’s locked state falls within this construction because, when in the locked state, *Park*’s “portable device cannot provide an application or content to the user through the display unit,” but it can respond to unlock gestures entered on an unlock screen. *Park*, ¶50’

142. Note that this element demonstrates that the claim requires that the recited device can simultaneously be in both “sleep mode” and a “locked state.” Elements [1f]-[1g] recite that when in “sleep mode,” an “unlock image” is displayed. Element [1j] recites that the “user interface module” responds, when in the locked state, to “gestures associated with the unlock image.” A POSITA would understand that the recited gestures could not be “associated with the unlock image” unless the unlock image was displayed, which the claim recites takes place while the phone is in “sleep mode.” This is consistent with the patent’s specification. *See* ’612 patent, 29:30-30:38.

143. *Park* further discloses that its device responds to what it calls “unlock commands” associated with the “unlock image” displayed when the device is in the recited “locked state.” *Park*, ¶¶63-67. For example, *Park* discloses that, in response to a “second unlock command,” in which a user provides touch input to slide an unlock tab to the right-side of a slide-bar (denoted by “16” in Fig. 2a), the device may switch a first portion of the flexible display to an active state and the second portion to the ready-activate state. *Park*, ¶¶66-67, Fig. 2a. *Park* further discloses that, in response to a “third unlock command,” both first and second portions of the flexible display are switched to the active state. *Park*, ¶64.

144. A POSITA would understand that each of the aforementioned unlock commands are gestures, because they involve a user touching a display and performing a swiping motion. Moreover, *Park's* “unlock commands” (swiping a slider) are similar to the unlock gestures in the '612 patent (swiping a BAR), which is seen by comparing *Park's* Fig. 2a to the '612 patent's Fig. 35:

[Fig. 2a]



The figures have been annotated to the unlock images in red and circle the unlock gestures in blue. As seen, *Park's* unlock gestures are “associated with the unlock

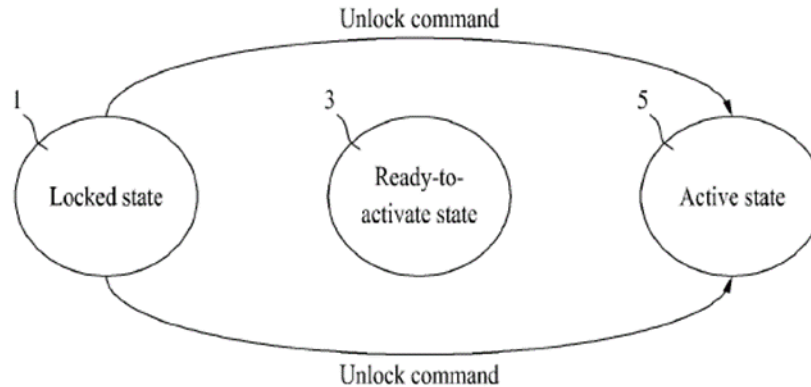
image [i.e., the time graphical indication]” in the same way as those in the ’612 patent. Accordingly, *Park* discloses this claim element.

[1k] “wherein a particular unlock gesture of the unlock gestures causes: the phone to transition to an unlocked state, and the display controller to enter the full configuration mode”

145. This element requires that one of the unlock gestures recited in element [1j] cause the phone to transition to an “unlocked state” and to have the display controller enter the “full configuration mode,” in which substantially all of the display screen is in a powered-on state. *Park* discloses a particular unlock gesture, the “third unlock command,” which is a user touch input detected by the device (*Park*, ¶¶63-65) that causes the device to transition to an unlocked state (*Park*, ¶¶64, 78-79) and both portions of the display to enter the active state (i.e., the recited “full configuration mode”).⁵ *Park*’s third unlock command corresponds to the recited “particular unlock gesture.”

146. The process of transitioning to an unlocked state and entering the full configuration mode is illustrated in figure 1b of *Park* (below).

⁵ A POSITA would understand that this element indicates that the phone can simultaneously be in both “full configuration mode” and an “unlocked state.”

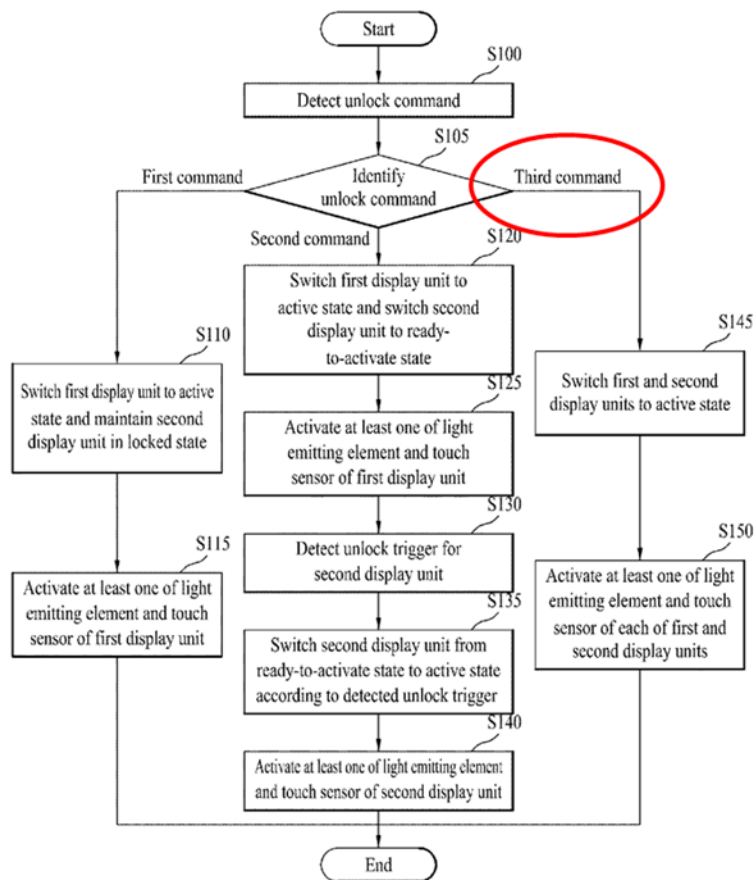


Park, Fig. 1b

Park, ¶¶59-60. *Park*’s Fig. 1b is a state diagram in which the upper and lower arrows indicate switching the first and second portions of the flexible display from a locked state to an active state, respectively, in response to an unlock command. *Park*, ¶¶55, 59-60. The result, as discussed regarding element [1e], is a device in a state like that shown in *Park*’s Fig. 4b, where both the first and second portions of its flexible display are in the active state (*i.e.*, with substantially all of the display screen in a powered-on state), thus corresponding to the “full configuration mode.” *Park*, ¶¶53, 78-79, Fig. 4b.

147. Figure 13 of *Park* (below) is a flowchart that further illustrates the transitioning of a device to an unlocked state and entering a full configuration mode in response to *Park*’s third unlock command. *Park*, ¶¶137-145, Fig. 13.

[Fig. 13]



Park, Fig. 13

148. With reference to *Park*'s Fig. 13 of *Park* (above), at step S100, a device detects an unlock command, which may be provided in the form of user touch input (i.e., an unlock gesture). *Park*, ¶137. At step S105, the device identifies the particular unlock command that has been detected. *Park*, ¶138. If the particular unlock command is identified as the "third unlock command," circled in red, the process proceeds to steps S145 and S150, in which both the first and second portions

of the flexible display are switched to *Park*'s active state, which corresponds to the recited "full configuration mode. *Park*, ¶138, 144. Accordingly, *Park* discloses "wherein a particular unlock gesture of the unlock gestures causes: the phone to transition to an unlocked state, and the display controller to enter the full configuration mode."

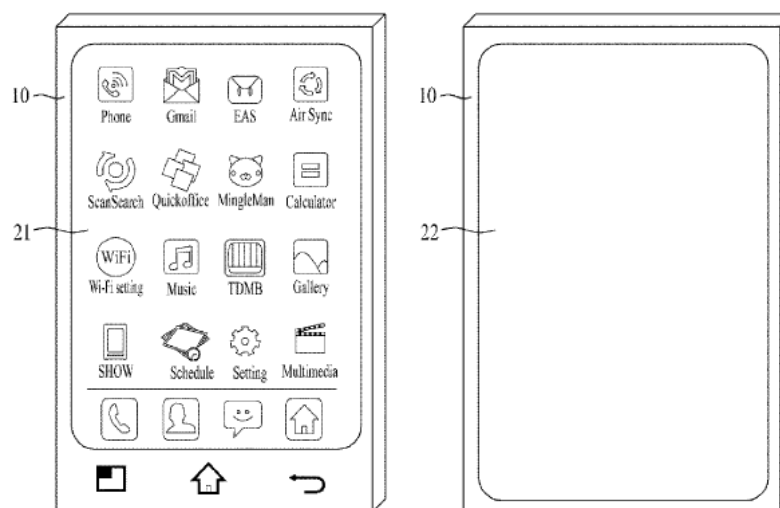
[11] "wherein another particular unlock gesture of the unlock gestures causes: the phone to transition to an unlocked state, and the display controller to enter a proportional configuration mode that puts at least a portion of the display screen in a powered-off state and another portion of the display screen in the powered-on state"

149. This element requires that one of the unlock gestures recited in element [1j] cause the phone to transition to an "unlocked state" and to have the display controller enter a "proportional configuration mode" in which at least a portion of the display screen is in a powered-off state, and another portion of the display screen is in a powered-on state.⁶ *Park* discloses an unlock gesture, called the "second unlock command," which a POSITA would understand corresponds to the recited

⁶ A POSITA would understand that this element indicates that the recited phone can simultaneously be in both the "proportional configuration mode" and an "unlocked state."

“another particular unlock gesture” because it is different from the “third unlock gesture.”

150. *Park*’s second unlock command is a user touch input detected by the device (*Park*, ¶¶63-67), that causes the device to transition to an unlocked state (*Park*, ¶67, 75-77) and the display to enter a mode as in Fig. 4a:



Park, Fig. 4a

151. In this mode, first portion 21 of the flexible display is in *Park*’s active state while second portion 22 is in *Park*’s ready-to-activate state. *Park*, ¶75. *Park* discloses that, in its ready-to-activate state, a portion of the display may be inactive since both the light emitting element and the touch sensor of the portion may be maintained in an inactive state (*i.e.*, powered-off). ¶¶50, 52, 76. Because the configuration illustrated in *Park*’s Fig. 4a includes first portion 21 in an active (*i.e.*,

powered-on) state and second portion 22 in a ready-to-activate (*i.e.*, powered-off) state, a POSITA would have understood that the configuration illustrated in *Park*'s Fig. 4a corresponds to the recited "proportional configuration mode" because "at least a portion of the display screen [is] in a powered-off state and another portion of the display screen in the powered-on state."

152. The process of transitioning first portion 21 of the display to *Park*'s active state and second portion 22 to *Park*'s ready-to-activate state is illustrated in figure 1c of *Park* (below):

[Fig. 1c]



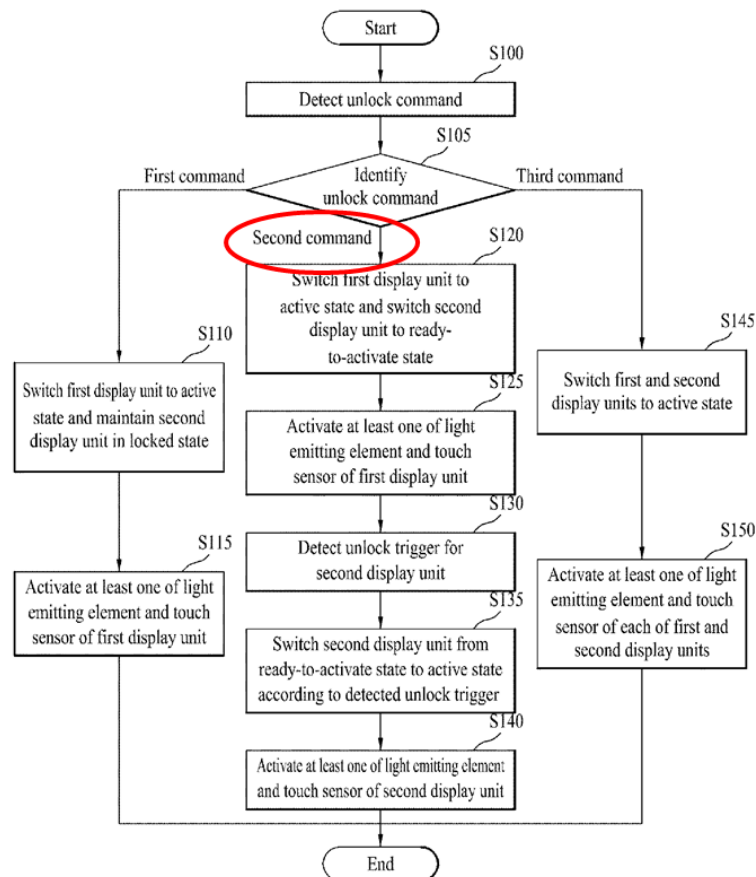
Park, Fig. 1a

Park, ¶61. Fig. 1c of *Park* is a state diagram in which the upper arrow indicates switching the first portion of the display from a locked state to an active state in response to an unlock command, while the lower left-side arrow indicates switching

the second portion to the ready-to-activate state in response to the same unlock command. *Park*, ¶¶55, 61.

153. Figure 13 of *Park* further illustrates transitioning from “sleep mode” to “proportional configuration mode” in response to *Park*’s second unlock command:

[Fig. 13]



Park, Fig. 13

Park, ¶¶137-145. With reference to Fig. 13 of *Park*, at step S100, a device detects an unlock command, which may be provided in the form of user touch input (i.e., an unlock gesture). *Park*, ¶137. At step S105, the device identifies the particular unlock command that has been detected. *Park*, ¶138. If the particular unlock command is identified as the “second unlock command (circled in red),” the process proceeds to steps S120 and S125, in which the first portion of the display switches to an active (i.e. powered-on) state while the second portion of the display switches to the ready-to-activate state, such that the display enters a “proportional configuration mode” as claimed. *Park*, ¶140.

154. *Park* also discloses that a particular unlock gesture, referred to in *Park* as the “first unlock command” causes the disclosed device to transition to an unlocked state, and the display to enter the proportional configuration mode with a first portion of the display in an active (i.e. powered-on) state, and with a second portion of the display in a locked, inactive (i.e. powered-off) state. *Park*, ¶¶64, 75-77. *Park* further discloses that the “first unlock command” may be provided in the form of user touch input that is detected by the device in accordance with the processes discussed above with respect to figures 2a-2b, 3a-3b of *Park*. *Park*, ¶65. This is an alternative that also satisfies this element.

155. Accordingly, *Park* discloses this element, and the claim is thus rendered obvious by *Park* in view of *Newman* and *Park* in view of *Newman* and *Ording*

6.2. Claim 2 - “The portable phone of claim 1, wherein when the other portion of the display screen is in the powered-on state, the other portion of the display screen is configured to perform display functions and receive user input”

156. Each element of claim 1, from which this claim depends, is disclosed as discussed above. *Park* then discloses the additional limitations of this claim. As an initial matter, a POSITA would have understood that “the other portion of the display screen,” which is recited twice in claim 2 of the ’612 patent, refers back to the recitation in claim 1 of “another portion of the display screen in the powered-on state,” when the device is in the proportional configuration mode. This is the only understanding of this language that makes sense.

157. As discussed above with respect to element [1e], *Park* discloses that when the first portion of the display is in the “active state” (i.e., powered-on), that portion of the display displays information and also receives user input. *E.g.*, *Park*, ¶¶53 (explaining that “[w]hen the display unit is switched to the active state, the portable device may activate at least one of the light emitting element and the touch sensor of the display unit”), ¶75 (explaining that when the state of the first portion of the display is switched to an active state, the first portion of the display “may be

activated to sense user touch or to display content and execute an application”). Accordingly, *Park* discloses “wherein when the other portion of the display screen is in the powered-on state, the other portion of the display screen is configured to perform display functions and receive user input,” and the claim is obvious.

6.3. Claim 5

[5a] “The portable phone of claim 1, wherein the power management module is further configured to instruct the display controller to function in a full display mode”

158. Each element of claim 1, from which this claim depends, is disclosed as discussed above. *Park* then discloses the additional limitations of this claim. As discussed above with respect to element [1d], *Park* discloses “a power management module configured to manage power consumption of the display.” *Park*, ¶¶63-64, 145. As discussed above with respect to elements [1c], [1e], and [1k], the processor of *Park*, in conjunction with the controller, instructs the device, upon detection of the third unlock command, to function in a configuration in which both first and second portions of the display are in the active state (i.e., in a full display mode). *Park*, ¶¶53, 64, 78-79, 124-125, Fig. 4b.

[5b] “wherein the full display mode configures substantially all of an available area of the display screen in the powered-on state when the display controller of the portable phone is in the full display mode”

159. *Park* discloses this limitation as well. This functionality is illustrated, for example, in Fig. 4b of *Park* in which both first portion 21 and second portion 22 of the flexible display are powered-on. *Park*’s first and second portions 21-22 constitute substantially all of the available area of the flexible display screen. *Park*, ¶¶53, 64, 78-79, Figs. 4b, 10a. Thus, this claim is obvious.

6.4. Claim 6

[6a] “The portable phone of claim 1, wherein the power management module is further configured to manage the display of the portable phone when the display is in a powered-off mode”

160. Each element of claim 1, from which this claim depends, is disclosed as discussed above. *Park* then discloses the additional limitations of this claim. As I discussed above with respect to element [1d], *Park* discloses “a power management module configured to manage power consumption of the display.” *Park*, ¶¶63-64, 145. As I discussed above with respect to elements [1c] and [1f], the processor of *Park*, in conjunction with its controller, instructs the device to function in a configuration in which both portions of the display are in a locked state (*e.g.*, “sleep mode”), which is the same as the “powered-off mode” in the context of the ’612

patent ('612 patent, 30:56-57). *Park*, ¶¶5, 50, 63, 124-125, Fig. 2a. In particular, element [6b], discussed immediately below requires the display of information while in the “powered-off mode,” indicating that, in the context of the '612 patent, at least some power must be provided to the display so that information may be displayed when the display is in the “powered-off mode.” *Park*, ¶50 (“When the display unit is in a locked state, the portable device may partially activate the touch sensor or the light emitting element of the display unit in order to detect an unlock command input by the user or to inform the user of how to input an unlock command.”). Thus, *Park*’s Fig. 2a is “powered-off,” as this term is properly interpreted in the context of this element.

[6b] “the power management module configured to direct the display controller to display at least one of a time, date or an indication of one or more messages while the display controller is in the powered-off mode”

161. *Park* also discloses this limitation. As I discussed above with respect to element [1g], *Park* discloses that the device displays the time when the display is in the locked state (i.e., powered-off mode). *Park*, ¶63, Fig. 2a. Thus, this claim is obvious.

6.5. Claim 9

[9a] “The portable phone of claim 1, wherein the display is a touch-sensitive display”

162. Each element of claim 1, from which this claim depends, is disclosed as discussed above. *Park* then discloses the additional limitation of this claim. *Park* discloses use of a touch-sensitive display. *See e.g., Park*, ¶123 (“The display unit 106 may be used as the touch sensor described above when the display unit is a touch sensitive display. Accordingly, the display unit 106 may detect user input on the display unit 106 and may deliver the detected user input to the controller 109.”).

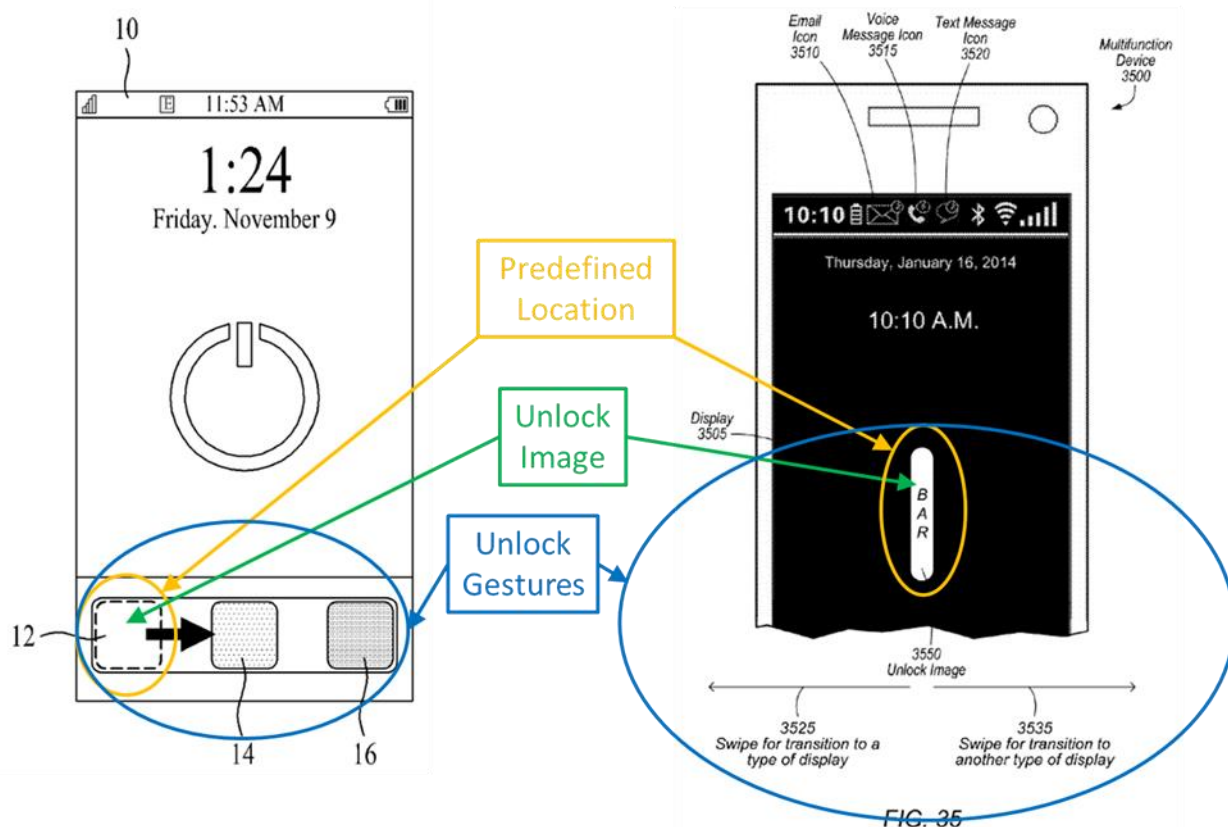
[9b] “and wherein to respond to unlock gestures the user interface module is further configured to: detect a contact with the touch-sensitive display at a first predefined location corresponding to an unlock image”

163. A POSITA would recognize that the “unlock image” recited in claim 9 is different from the “unlock image” recited in claim 1. First, the “unlock image” recited in claim 9 is introduced using indefinite article “an,” rather than a definite article, which I understand would have been if the unlock image of claim 9 is the same as in claim 1. Claim 9 further requires that “contact” with the touchscreen be at a “predefined location corresponding to an unlock image.” A POSITA would understand that this requires the user to touch the “unlock image” recited in claim 9 because it recites that the “predefined location” corresponds to the recited “unlock

image.” In contrast, claim 1 recites that its “unlock image” comprise and further recites unlocking a device using gestures “associated” with the unlock image. A POSITA would understand that associating a gesture with an unlock image is distinct from contacting a display at a predefined location “corresponding” to the unlock image. Moreover, claim 9 does not require that the “unlock image” recited therein belong to a subset of a plurality of graphical indications that are also displayed in a full configuration mode

164. Under this interpretation of “unlock image” recited in claim 9, *Park* discloses this element. As I discussed regarding element [1j], *Park* discloses “a user interface module.” *Park*, ¶¶66-72. *Park* also discloses an unlock gesture where a user first touches “an unlock tab 12 located in a dotted portion in FIG. 2a.” *Park*, ¶66. The dotted portion in Fig. 2a corresponds to the recited “first predefined location corresponding to an unlock image” because that location is the same as that of the unlock tab, which is displayed simultaneously with the unlock image (i.e. time indication).which corresponds to the “unlock image” recited in claim 9. This is similar to the ’612 patent, where contact with BAR, which is at a first predefined location, is detected, as seen by comparing *Park*’s Fig. 2a to the ’612 patent’s Fig. 35:

[Fig. 2a]



165. The figures are annotated to green-circle the unlock images, blue-circle the “unlock gestures” and yellow-circle the “predefined locations.” Accordingly, *Park* discloses this claim element.

166. Alternatively, should the “unlock image” recited in this element be interpreted to be the same as the unlock image recited in claim 1, this element is rendered obvious by *Park*’s teachings. As I discussed above with respect to element [1j], *Park* disclosed “a user interface module configured to respond, when the portable phone is in a locked state, to unlock gestures associated with the unlock

image.” *Park*, ¶¶66-72, Figs. 2a-2b, 3a-3b. *Park* also discloses an unlock gesture where a user first touches “an unlock tab 12 located in a dotted portion in FIG. 2a.” *Park*, ¶66. The dotted portion in Fig. 2a corresponds to the recited “first predefined location⁷ corresponding to an unlock image” because that location is the same as that of the unlock tab, which is displayed simultaneously with the unlock image (*i.e.* time indication). This is similar to the ’612 patent, where contact with BAR, which is at a first predefined location, is detected, as seen by comparing *Park*’s Fig. 2a to the ’612 patent’s Fig. 35:

⁷ In this claim’s context, a predefined location must be understood to be broad enough to include a region of the display screen to be consistent with the specification.

[Fig. 2a]

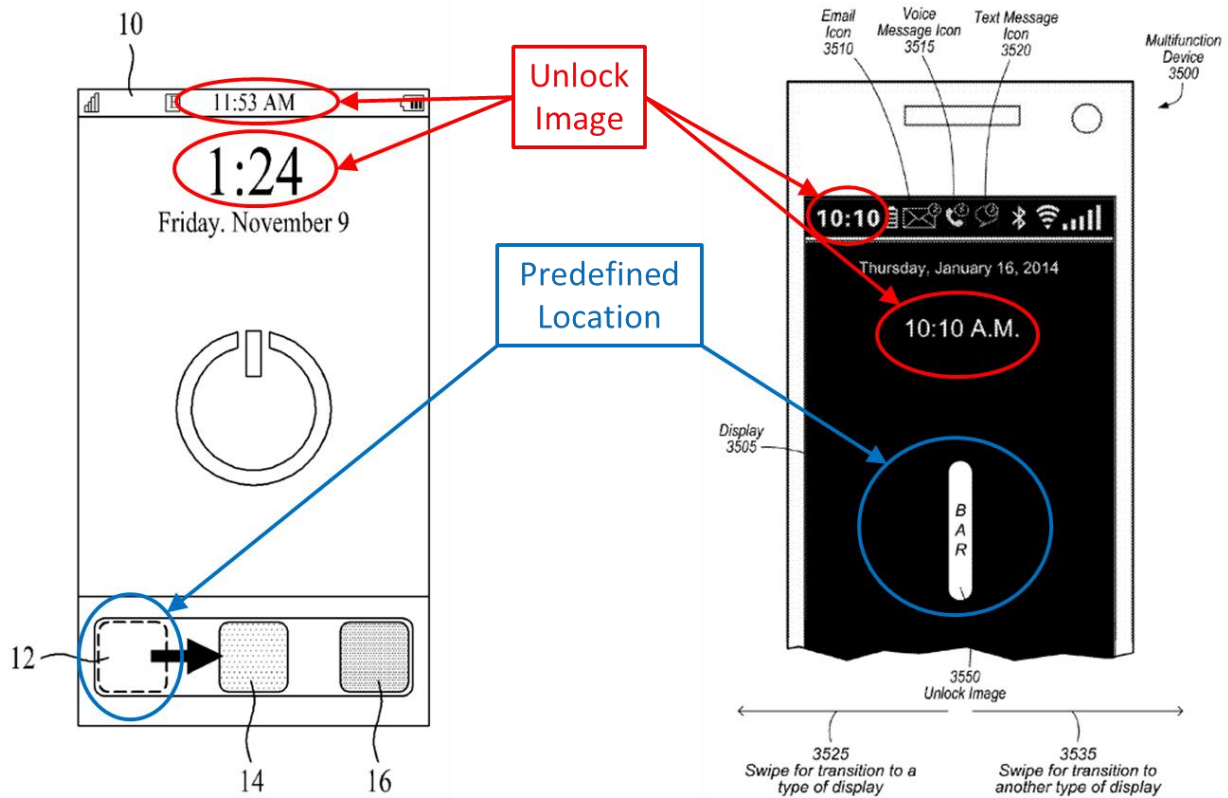


FIG. 35

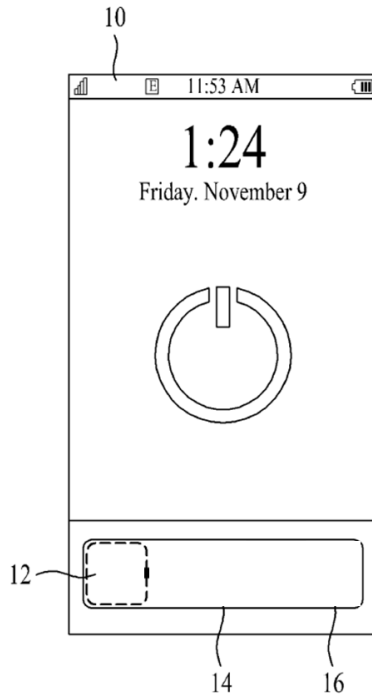
The figures are annotated to circle the unlock images in red and circle the “predefined locations” in blue. A POSITA would understand that *Park*’s “first predefined location correspond[s] to an unlock image [i.e., the time graphical indication]” in the same way as in the ’612 patent. *Id.* Accordingly, *Park* discloses this claim element. *Id.*

[9c] “continuously move the unlock image on the touch-sensitive display in accordance with movement of the contact while continuous contact with the display screen is maintained as part of the gestures”

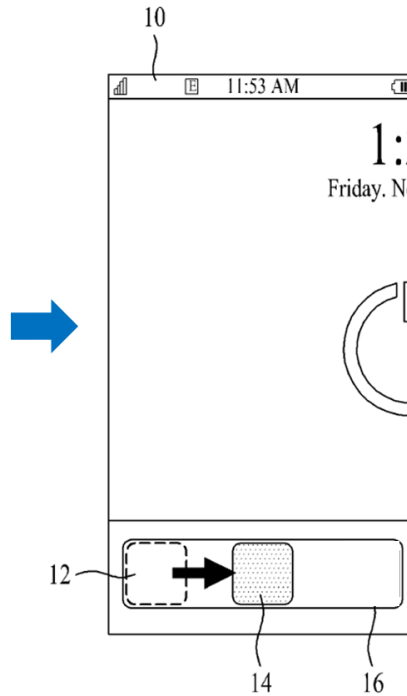
167. With continued reference to Fig. 2a of *Park*, *Park* discloses that, when performing an unlock command, a user “move[s]” or “slide[s]” the unlock tab 12 “through touch input” to the right, either to the center of the slide bar (as denoted by “14” in Fig. 2a) or to the right boundary of the slide bar (as denoted by “16” in figure 2a). *Park*, ¶¶66-67, Fig. 2a. A POSITA would have understood that to “move” or “slide” the unlock tab 12 along a “slide bar through touch input” in the ordinary manner as described in *Park* involves substantially continuous contact with the touch-sensitive display screen. *See Park*, ¶¶66-67, Fig. 2a. Thus, *Park* discloses this claim element.

168. Alternatively, should the “unlock image” recited in this element be interpreted to be the same as the unlock image recited in claim 1, this element is rendered obvious by *Park*’s teachings. A POSITA would have understood that the time graphic in *Park* could move with unlock tab 12, as shown in the annotated and modified drawings below:

[Fig. 2a] [MODIFIED]



[Fig. 2a] [MODIFIED]



[Fig. 2a] [MODIFIED]



With such a modification, the time graphic moves in conjunction with swipes of unlock tab 12. The left-side drawing shows the unlock screen prior to a swipe. The middle drawing shows the unlock screen with unlock tab 12 swiped half-way through slide-bar. The right-side drawing shows the unlock screen with unlock tab swiped all the way to the left. As seen, the time graphic has moved to the right in conjunction with unlock tab 12. POSITA would have been motivated to modify *Park* in this way because it would have allowed the user to see the progress of their swipe, thus confirming that the unlock gesture was in progress even though a user might not see unlock tab, which would provide a better user experience. This would be even more advantageous in a system like *Park*, since a partial swipe is one of

Park's unlock commands. Thus, should the “unlock image” recited in claim 9 be interpreted to be the same as the unlock image recited in claim 1, it would have been obvious to modify *Park* in such a way.

[9d] “wherein the unlock image is a graphical, interactive user-interface object with which a user interacts in order to unlock the portable phone”

169. A POSITA would have understood that when *Park*'s unlock tab 12 is a “graphical, interactive user-interface object” since it is displayed. A POSITA would further understand that unlock tab 12 is “interactive” because it moves as the user slides it across the screen. Finally, unlock tab 12 is used to unlock the device. *See e.g., Park*, ¶66. Thus, claim 9 is obvious.

170. The claim is also obvious should the should the “unlock image” recited in claim 9 be interpreted to be the same as the unlock image recited in claim 1. A POSITA would have understood that when *Park* is modified as I described Section 6.5.[9c], the time graphic is “graphical, interactive user-interface object.” The time graphic is plainly a “graphical” object. A POSITA would further understand that the time graphic is “interactive” because it moves as a user swipes unlock tab 12 across the screen. Thus, when modified as discussed, *Park* discloses that a user interacts with the time graphic by moving unlock tab 12 along a “slide-bar” to unlock

the phone into, *e.g.*, the modes shown in Figs. 4a-4b. *Park*, ¶¶63-64. Accordingly, claim 9 is obvious.

6.6. Claim 10

171. Claim 10 is nearly identical to claim 1, with the main differences being that claim 10 is a method claim, and that unlike elements [1e] and [1f], which recite that a “display controller” displays graphical indications,⁸ corresponding elements [10c] and [10d] correctly recite that the display is the structure displaying graphical indications.⁹ Regardless, the analysis demonstrating that claim 10 is obvious is the same as in claim 1, and thus claim 10 is obvious for the reasons discussed regarding their corresponding elements.

[10p] “A method comprising”

172. To the extent the preamble is limiting, *Park* discloses this element. For example, *Park* provides a flowchart and accompanying text, which describe a method. *Park*, ¶¶137-145, Fig. 13.

⁸ See, *e.g.*, element [1e], which states: “...power management module directs a **display controller to display** a set of a plurality of graphical indications...”).

⁹ See, *e.g.*, element [10c], which states: “...the power management module directs **the display to display** a set of a plurality of graphical indications...”).

[10a] “managing a display of a portable phone, wherein managing the display comprises”

173. *Park* discloses this element. As I discussed above with respect to claim 1, the method described by *Park* includes steps for managing a display of a portable phone. *Park*, ¶¶137-145, Fig. 13.

[10b] “directing, by a power management module, the display”

174. *Park* discloses this element. *See* element [1d] above.

[10c] “wherein when the display is not in a sleep mode, the power management module directs the display to display a set of a plurality of graphical indications in color in a full configuration mode that puts substantially all of the display of the portable phone in a powered-on state”

175. The only substantive difference between element [10c] and [1e] is that [10c] requires that the power management module direct the display (as opposed to a display controller) “to display a set of a plurality of graphical indications in color in a full configuration mode.” As I discussed in Section 6.1.[1e], *Park* discloses that when its device is not in a sleep mode, the power management module directs its display to display a set of a plurality of graphical indications in a full configuration mode that puts substantially all of the display screen in a powered-on state. *Park*, ¶¶50, 53-78-79. Likewise, *Newman* discloses displaying graphical content in color when not in sleep mode. *Newman*, ¶147. Thus, *Park* in view of *Newman* (Grounds

1A) and *Park* in view of *Newman* and *Ording* (Grounds 1B) disclose this element for the same reasons as I discuss regarding element [1e].

[10d] “when the display is in a sleep mode, directing the display, by the power management module, to display a subset of the plurality of graphical indications”

176. *Park-Newman* (Grounds 1A) and *Park-Newman-Ording* (Grounds 1B) disclose this element. *See* element [1f] above. As discussed, the only substantive difference between element [10d] and [1f] is that [10d] requires that the power management module direct the display (as opposed to a display controller) “to display a subset of the plurality of graphical indications.” As discussed in Section 6.1.[1f], when *Park-Newman* and *Park-Newman-Ording* are in a sleep mode, the power management module directs its display to display a subset of the plurality of graphical indications. *See, e.g., Ording*, 12:8-20, 12:36-63 and Figs. 3-4; *Park*, ¶5, 50, 63 and 66-67 and Fig. 2a. This element is plainly in the prior art.

[10e] “the subset comprising an unlock image comprising at least one of, time, date, or an indication of an email, text message, or voice message”

177. *Park-Newman* (Grounds 1A) and *Park-Newman-Ording* (Grounds 1B) disclose this element. *See* element [1g] above.

[10f] “wherein the subset of the plurality of graphical indications are displayed in a portion of the display”

178. *Park-Newman* (Grounds 1A) and *Park-Newman-Ording* (Grounds 1B)

disclose this element. *See* element [1h] above.

[10g] “are displayed in black, white or grayscale, instead of displayed in color”

179. *Park-Newman* (Grounds 1A) and *Park-Newman-Ording* (Grounds 1B)

disclose this element. *See* element [1i] above.

[10h] “responding, by a user interface module when the portable phone is in a locked state, to unlock gestures associated with the unlock image”

180. *Park-Newman* (Grounds 1A) and *Park-Newman-Ording* (Grounds 1B)

disclose this element. *See* element [1j] above.

[10i] “wherein responding to a particular unlock gesture of the unlock gestures comprises: transitioning the portable phone to an unlocked state, and causing the display to enter the full configuration mode”

181. *Park-Newman* (Grounds 1A) and *Park-Newman-Ording* (Grounds 1B)

disclose this element. *See* element [1k] above.

[10j] “wherein responding to another particular unlock gesture of the unlock gestures comprises: transitioning the portable phone to an unlocked state, and causing the display to enter a proportional configuration mode that puts at least a portion of the display in a powered-on state and another portion of the display in the powered-off state”

182. *See* element [11] above. Note, however, that in element [11], the recited “at least a portion of the display” is stated to be in the “powered-off state,” whereas in element [10j], the recited “at least a portion of the display” is stated to be in the “powered-on state.” Likewise, in element [11], the recited “another portion of the display” is stated to be in the “powered-on state,” whereas in element [10j], the recited “another portion of the display” is stated to be in the “powered-off state. This inconsistent use of terminology does not affect the analysis, which is the same for both elements [11] and [10j].

6.7. Claim 11

[11a] “The method of claim 10, wherein said responding to the other particular unlock gesture further comprises causing the other portion of the display to not perform display functions”

183. *Park-Newman* and *Park-Newman-Ording* renders this claim obvious. Each element of claim 11, from which this claim depends, is disclosed as discussed above. *Park* then discloses the additional limitation of this claim. As an initial matter, I note that a POSITA would have understood that “the other particular unlock

gesture” in claim 11 refers back to the recited “another particular unlock gesture” recited in element [10j]. Likewise, a POSITA would have understood that “the other portion of the display” in claim 11 refers back to the “another portion of the display,” also recited in element [10j]. As I discussed in Section 6.6.[10j], in claim 10, the “another portion of the display” is powered-off.

184. As I discussed regarding element [11], *Park* discloses a device in which the first portion of the display is switched to an active (i.e., powered-on) state and the second portion of the display is switched to a ready-to-activate (i.e., powered-off) state to reduce power consumption. *E.g.*, *Park*, ¶¶140-141, 145. *Park* discloses that when the second portion of the display is in the ready-to-activate state, it does not perform display functions. *Park*, ¶52 (“In the ready-to-activate state, the portable device is in a state before providing an application or content to the user through the display unit, similar to the locked state.”); *see also Park*, ¶76

[11b] “and not receive user input”

185. *Park* discloses that when the second portion of the display is in the ready-to-activate state, it does not receive user input. *Park*, ¶52 (“When the display unit is in the ready-to-activate state, at least one of the light emitting element and **the touch sensor of the display unit is inactive.**”); *see also Park*, ¶76. Thus, *Park-Newman* and *Park-Newman-Ording* render claim 11 obvious.

6.8. Claim 12 - “The method of claim 11, wherein said responding to the particular unlock gesture further comprises causing the portion of the display to perform display functions and receive user input”

186. *Park-Newman* and *Park-Newman-Ording* renders this claim obvious.

Each element of claim 11, from which this claim depends, is disclosed as discussed above. *Park* then discloses the additional limitation of this claim. *See* element [2a] above.

6.9. Claim 13

[13a] “The method of claim 12, further comprising instructing the display to function in a full configuration mode”

187. *Park-Newman* and *Park-Newman-Ording* renders this claim obvious.

Each element of claim 12, from which this claim depends, is disclosed as discussed above. *Park* then discloses the additional limitation of this claim. *See* element [1e] above.

[13b] “wherein the full configuration mode configures substantially all of the display in a powered-on state”

188. *Park* discloses this element. *See* element [1e] above.

6.10. Claim 14-15 and 18

189. Claims 14-15 and 18 are nearly identical to claims 1-2 and 5 with the difference being that unlike elements [1e] and [1f], which recite a “display

controller” that displays graphical indications,¹⁰ corresponding elements [14e] and [14f] more appropriately recite a display that displays graphical indications.¹¹ Regardless, the analysis demonstrating that claim 14 is obvious is the same as I provided for claim 1, and thus claim 14 is obvious for the reasons discussed regarding their corresponding claims and elements:

Claim	Unpatentable as discussed regarding:
14	Claim 1 (Sections 6.1.[1p]- 6.1.[1l])
15	Claim 2 (Section 6.2)
18	Claim 5 (Sections 6.3.[5a]-6.3.[5b])

190. The only substantive differences between elements [14e]-[14f] and elements [1e]-[1f] is that elements [14e]-[14f] require that the power management module direct the display (as opposed to a display controller) to display graphical indications in color in a full configuration mode. As I discussed in Section 6.1.[1e], *Park* discloses that when its device is not in a sleep mode, the power management module directs its display to display a set of a plurality of graphical indications in a full configuration mode that puts substantially all of the display screen in a powered-

¹⁰ See, e.g., element [1d], which states: “...power management module directs a **display controller to display** ...”).

¹¹ See, e.g., element [14e], which states: “...power management module directs **the display to display** ...”).

on state. *Park*, ¶¶50, 53-78-79. Likewise, as I discussed in Section 6.1.[1f], when *Park-Newman* (Grounds 1A) and *Park-Newman-Ording* (Grounds 1B) are in a sleep mode, the power management module directs its display to display a subset of the plurality of graphical indications. See, e.g., *Ording*, 12:8-20, 12:36-63 and Figs. 3-4; *Park*, ¶5, 50, 63 and 66-67 and Fig. 2a;. Thus, claims 14-15 and 18 are obvious.

7. *PARKIN VIEW OF NEWMAN AND SIWINSKI* (GROUNDS 2A) AND *PARKIN VIEW OF NEWMAN, ORDING AND SIWINSKI* (GROUNDS 2B) RENDERS CLAIMS 3-4 AND 16-17 OBVIOUS

7.1. Claim 3 - “The portable phone of claim 2, wherein the powered-on state configures the other portion of the display screen to function in a grayscale color mode”

191. As an initial matter, I note that a POSITA would have understood that “the other portion of the display screen” in claims 2 and 3 of the ’612 patent refers to “another portion of the display screen in the powered-on state” recited in claim 1, when the device is in the proportional configuration mode. Additionally, each and every limitation of claim 2, from which this claim depends is disclosed by the *Park-Newman* (Grounds 1A) and *Park-Newman-Ording* (Grounds 1B) combinations, as explained above.

192. As discussed above with respect to element [11], *Park* discloses a device in which the first portion of the display is switched to an active (i.e. powered-on)

state while the second portion of the display is switched to a ready-to-activate (i.e. powered-off) state to reduce power consumption. *E.g., Park*, ¶¶140, 145.

193. *Park* does not expressly state that the first portion of the display functions in a grayscale color mode in this reduced-power configuration. *Newman*, however, discloses that, when operating in a low power mode (called second mode), a “display may be configured such that it uses less power (e.g. by reducing the colour and/or brightness, and/or changing the colour scheme of the display).” *Newman*, ¶94. *Newman* also discloses that in low power mode (second mode), information may be displayed “in black and white.” *Newman*, ¶147. A POSITA would have understood that any standard color mobile display screen such as OLED screens used by *Park* and *Newman* could display black, white and grayscale images, in addition to images having other colors.

194. To the extent Dareltech asserts that POSITAs would not find it obvious to use grayscale color mode in *Park-Newman/Park-Newman-Ording*, *Siwinski* discloses an OLED display that can switch to a grayscale mode to reduce power consumption. *E.g., Siwinski*, 3:43-50, *see also* 2:15-22.

195. It would have been obvious to a POSITA to combine *Siwinski*’s teachings regarding use of grayscale color mode for reducing power consumption

into the *Park-Newman/Park-Newman-Ording* device such that the graphical indications shown in *Park* were displayed in a grayscale color mode. Like *Park*, *Siwinski* relates primarily to preventing unnecessary power consumption in battery-powered devices. *Siwinski*, 1:23-26. *Siwinski* teaches how to construct OLED displays so that grayscale color mode significantly reduces power consumption (*Id.*, 3:43-50). Given *Park's* and *Newman's* teachings regarding the desirability of reducing power consumption, a POSITA would have been motivated to adapt an OLED screen like that *Siwinski* for use in *Park-Newman/Park-Newman-Ording*. .

196. A POSITA would have been motivated to use *Siwinski's* teachings to enable *Park-Newman/Park-Newman-Ording* devices to switch from a color display mode to a grayscale display mode. Indeed, it was well-known to POSITAs that grayscale color mode could be used to reduce power consumption in battery-powered devices. *See e.g., Saba*, filed 5/19/2011 (Ex. 1038), ¶26 (“Other actions may reduce the power consumption of the display. For instance, the display may be dimmed or the **image presented on the display may be converted from color to grayscale.**”). Thus, a POSITA would have been motivated to use *Siwinski* with *Park-Newman/Park-Newman-Ording* since reducing power consumption in battery-powered devices is highly desirable. Moreover, in my experience, availability of a

grayscale display option in mobile devices with a color display was ubiquitous in the art.

197. This modification would have been the result of combining prior art elements (*e.g.*, *Park*'s portable phone and *Siwinski*'s screen having a low-power grayscale mode) according to known methods (*e.g.*, including a white LED in each pixel in *Park*'s display and implementing software instructions on *Park*'s device to take advantage of *Siwinski*'s low-power grayscale mode) to yield predictable results (*e.g.*, reduced power consumption).

7.2. Claim 4

[4a] “The portable phone of claim 3, wherein the powered-off state configures the portion of the of the display screen to not perform display functions”

198. *Park-Newman-Siwinski* (Grounds 2A) and *Park-Newman-Ording-Siwinski* (Grounds B) disclose this element. As an initial matter, a POSITA would have understood that “the portion of the of the [sic] display screen” in claim 4 of the '612 patent refers to “a portion of the display screen in a powered-off state” recited in claim 1, when the device is in the proportional configuration mode.

199. As discussed above with respect to element [11], *Park* discloses a device in which the first portion of the display is switched to an active (*i.e.* powered-on)

state and the second portion of the display is switched to a ready-to-activate (i.e. powered-off) state to reduce power consumption. *E.g.*, *Park*, ¶¶138-139, 145. *Park* discloses that when the second portion of the display is in the ready-to-activate state, it does not perform display functions. *Park*, ¶52 (“In the ready-to-activate state, the portable device is in a state before providing an application or content to the user through the display unit, similar to the locked state.”); *see also Park*, ¶76.

[4b] “and to not receive user input”

200. *Park* discloses that when the second portion of the display is in the ready-to-activate state, it does not receive user input. *Park*, ¶52 (“When the display unit is in the ready-to-activate state, at least one of the light emitting element and **the touch sensor of the display unit is inactive.**”); *see also Park*, ¶76. Thus, *Park-Newman-Siwinski* and *Park-Newman-Ording-Siwinski* render claim 4 obvious.

7.3. Claim 16

[16a] “The portable phone of claim 15, wherein the locked state of the portable phone configures the display to function in a grayscale color mode”

201. *Park-Newman-Siwinski* (Grounds 2A) and *Park-Newman-Ording-Munteanu* (Grounds 2B)discloses this element. Claim 16 includes the same dependent limitations as claim 3, except that claim 16 requires that the display

function in a grayscale color mode when the device is in the locked state, whereas claim 3 requires that the display function in a grayscale color mode when the device is in the proportional configuration mode. As I discussed above with respect to claim 3, *Newman* discloses switching to a reduced-color or black and white mode to reduce power consumption, while *Siwinski* discloses an OLED display that can switch to grayscale mode to reduce power consumption. *Newman*, ¶¶94, 147; *Siwinski*, 3:43-50. It would have been obvious to a POSITA to combine *Siwinski*'s teachings into the *Park-Newman/Park-Newman-Ording* device, such that the locked state of the *Park* device functioned in a grayscale color mode to reduce power consumption, for the same reasons discussed above with respect to claim 3, and the claim is therefore obvious.

7.4. Claim 17

[17a] “The portable phone of claim 16, wherein the powered-off state of the proportional configuration mode configures the other portion of the display to not perform display functions”

202. *Park*, in view *Newman* and *Siwinski* (Grounds 2A), and *Park* in view of *Newman*, *Ording*, and *Siwinski* (Grounds 2B) disclose this element. See claims 14-16 above and the corresponding language with respect to limitation 4[a] above.

[17b] “and to not receive user input”

203. *Park*, in view *Newman and Munteanu* (Grounds 2A), and *Park* in view of *Newman, Ordning*, and *Munteanu* (Grounds 2B) disclose this element. *See* element [4b] above. Thus, this claim is obvious for the same reasons as claim 4.

8. *PARK IN VIEW OF NEWMAN AND YANG* (GROUNDS 3A) AND *PARK IN VIEW OF NEWMAN, ORDING, AND YANG* (GROUNDS 3B) RENDER OBVIOUS CLAIMS 7, 8, AND 19

8.1. Claim 7

[7a] “The portable phone of claim 1, wherein the power management module is further configured to direct the display controller to transition between modes based on a configurable battery power threshold¹²”

204. As noted above, each and every element of claim 1, from which this claim depends, is present in this combination. *Park* discloses that power may be supplied to a portable device by a battery provided in the device. *Park*, ¶124. *Park* does not expressly state that the display described therein transitions between modes based on a configurable battery power threshold, but such commonplace functionality in a smartphone would have been obvious at the time.

¹² In context, it is clear that “battery power” refers to a measured or estimated amount of energy stored in the battery at the time and “battery power threshold” refers to a corresponding reference value for comparison.

205. *Yang* discloses a battery-powered device, such as a “mobile telephone (e.g., smartphone)” that switches between an “original screen mode (OSM),” analogous to the “full configuration mode” of the ’612 patent, and an “adjusted screen mode (ASM),” analogous to the “proportional configuration mode” of the ’612 patent. *Yang*, ¶¶20-21. *Yang* discloses that the purpose of switching to the adjusted screen mode is to reduce power consumption. *E.g.*, *Yang*, Abstract, ¶¶18, 29. *Yang* further discloses that the device may switch from the original screen mode to the adjusted screen mode based on a battery power threshold. *Yang*, ¶¶33 (“In an embodiment, display 102 may also be automatically switched from OSM to ASM, such as if selected by the user as the default display 102 mode or in response to detecting that the battery is has reached a predetermined threshold. For example, if the battery reaches a capacity that is at or below a certain percentage of total battery capacity (e.g., 30%, 25%, 20%, 15%, 10%, 5%) display 102 may be automatically switched from OSM to ASM to conserve the remainder of the battery power.”), 0090 (disclosing “detecting if battery power is less than a battery power threshold, and if less than the battery power threshold, automatically switching from the original screen mode to the adjusted screen mode”).

206. *Yang* also discloses that the battery power threshold at which the device switches between modes is configurable. *Yang*, ¶33 (“In an embodiment, display

102 screen configuration responsive to a determination of a low battery may be a default configuration or one that is preconfigured by the user. Additionally, the threshold battery level at which display 102 is switched to ASM may be a default value or a value designated by the user.”).

207. A POSITA would have found it obvious to incorporate *Yang*’s battery-power threshold into the *Park-Newman/Park-Newman-Ording* device such that *Park*’s switching of display modes could have been performed based on a configurable battery power threshold, as required by this element. Like *Park*, *Yang* is (i) directed to reducing power consumption in a portable device, and discloses a device configured to operate in multiple display modes to reduce power consumption (*Yang*, Abstract, ¶¶18, 29), and (ii) discloses that a device may switch between display modes in response to user commands (*Yang*, ¶32). *Yang* further discloses that the device may automatically switch to a reduced-power display mode upon detecting that a battery power of the device is less than a configurable battery power threshold. *Yang*, ¶¶33, 90.

208. A POSITA would have been motivated to use *Yang*’s teachings to enable the *Park* device to switch to a reduced-power display mode upon detecting that battery power of the device is less than a configurable battery power threshold because such a feature would further reduce power consumption. In particular,

Yang's teachings are complementary with those in *Park*. They can work together without any substantial modifications or experimentation. They each provide improvements to power consumption and thus a POSITA would naturally be motivated to use them together (and indeed, the teachings do not interfere with each other in such a way that would preclude use of both). Finally, as of the effective filing date, use of multiple different power-savings technologies in portable devices was commonplace.

209. Modifying *Park* to include *Yang's* teachings would have been the result of combining prior art elements (*e.g.*, *Park's* portable phone display, which operates in both normal and power-saving modes, and *Yang's* device's ability to switch to a reduced-power display mode upon detecting that a battery power of the device is less than a configurable battery power threshold) according to known methods (*e.g.*, implementing software instructions on *Park's* device that cause the device to switch display modes in response to a detected battery power level) to yield predictable results (*e.g.*, reduced power consumption). *Yang*, ¶¶33, 90.

[7b] “wherein the power management module is further configured to: determine that a battery power of the portable phone reaches the configurable battery power threshold”

210. *Yang* discloses that the battery power of the device must be “detect[ed],” and that it must be compared to the battery power threshold to determine whether the battery power “reaches a capacity that is at or below a certain percentage of total battery capacity” or “is less than a battery power threshold.” *Yang*, ¶33 (“In an embodiment, display 102 may also be automatically switched from OSM to ASM, such as if selected by the user as the default display 102 mode or in response to detecting that the battery is has reached a predetermined threshold. For example, if the battery reaches a capacity that is at or below a certain percentage of total battery capacity (e.g., 30%, 25%, 20%, 15%, 10%, 5%) display 102 may be automatically switched from OSM to ASM to conserve the remainder of the battery power. Furthermore, display 102 may be instructed to take on an ASM configuration (e.g., size/placement of reduced size displaying area and inactive area) determined to use the least amount of battery while still being of benefit to the user. In an embodiment, display 102 screen configuration responsive to a determination of a low battery may be a default configuration or one that is preconfigured by the user. Additionally, the threshold battery level at which display 102 is switched to ASM

may be a default value or a value designated by the user.”); *see also id.*, 90. Thus, *Yang* teaches this element.

[7c] “subsequent to said determine, instruct the display controller to change from a full configuration mode to the proportional configuration mode”

211. *Yang* discloses that upon detecting that the battery power of the device is less than a battery power threshold, the device automatically changes from the original screen mode (i.e., full configuration mode) to the adjusted screen mode (i.e., proportional configuration mode). *Yang*, ¶¶33 (quoted above), 90. Thus, claim 7 is obvious.

8.2. Claim 8

[8a] “The portable phone of claim 7, wherein the configurable battery power threshold is a configurable setting in a user interface of the portable phone”

212. As noted above, each and every element of claim 7, from which this claim depends, is present in this combination. *Yang* discloses the additional limitations of this claim. As discussed above with respect to claim 7, *Yang* discloses that the battery power threshold at which the device switches between modes is configurable. *Yang*, ¶33 (disclosing that the threshold may be “preconfigured by the user” or may be “a value designated by the user”). *Yang* discloses a user interface

that allows a user to configure settings of the device described therein. *Yang*, ¶¶83-84. Configuring portable phone settings via a user interface was well-known long before the '612 patent was filed, and a POSITA would have understood that such a user interface would have been used to allow a user to configure the battery power threshold in the device disclosed by *Yang*. *See Yang* ¶1 (“a user typically interacts with the portable electronic device through an interface displayed on the display screen”). Thus, claim 8 is obvious.

8.3. Claim 19

[19a] “The portable phone of claim 14 wherein the power management module is further configured to direct the display to change between modes based on a configurable battery power threshold”

213. *Park* in view of *Newman* and *Yang* (Grounds 3A) *Park* in view of *Newman*, *Ording*, and *Yang* (Grounds 3B) disclose this element. As noted above, each and every element of claim 14, from which this claim depends, is present in this combination. *Park* also discloses the additional limitations. *See* element 7[a] above.

[19b] “wherein the power management module is further configured to: determine that a battery power of the portable phone has reached the configurable battery power threshold”

214. *See* element 7[b] above.

[19c] “subsequent to said determination, instruct the display to shift from the full configuration mode to the proportional configuration mode”

215. *See* element 7[c] above. Thus, this claim obvious for the same reasons discussed with respect to claim 7.

9. AVAILABILITY FOR CROSS-EXAMINATION

216. In signing this declaration, I recognize 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 also recognize that I may be subject to cross examination in the 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 a time as mutually agreed between the parties.

10. RIGHT TO SUPPLEMENT

217. I reserve the right to supplement my opinions in the future to respond to any arguments that the Patent Owner raises. This declaration represents only those opinions that I have formed to date. I reserve the right to revise, supplement, and/or amend my opinions stated herein based on new information that becomes available to me and on my continuing analysis of the materials already provided.

11. JURAT

218. I declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further 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.

September 4, 2019
Date

Andrew Wolfe, Ph.D.


10. RIGHT TO SUPPLEMENT

217. I reserve the right to supplement my opinions in the future to respond to any arguments that the Patent Owner raises. This declaration represents only those opinions that I have formed to date. I reserve the right to revise, supplement, and/or amend my opinions stated herein based on new information that becomes available to me and on my continuing analysis of the materials already provided.

11. JURAT

218. I declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further 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.

September 4, 2019
Date



Andrew Wolfe, Ph.D.