

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SAMSUNG ELECTRONICS CO., LTD.;
SAMSUNG ELECTRONICS AMERICA, INC.,
Petitioner

v.

SLYDE ANALYTICS, LLC
Patent Owner.

Case No. IPR2024-00006
U.S. Patent No. 8,588,033

**PETITION FOR *INTER PARTES* REVIEW
OF U.S. PATENT NO. 8,588,033**

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LIST OF EXHIBITS¹

Ex. No.	Description
Ex-1001	U.S. Patent No. 8,588,033 (“the ’033 Patent”)
Ex-1002	Declaration of Benjamin B. Bederson
Ex-1003	Curriculum Vitae of Benjamin B. Bederson
Ex-1004	Prosecution History of the ’033 Patent (Application No. 13/631,116)
Ex-1005	U.S. Patent Application Publication No. 2009/0196124 (“Mooring”)
Ex-1006	Japanese Publication No. JP2005/242456 (“Satoshi”)
Ex-1007	Certified English translation of Satoshi
Ex-1008	U.S. Patent Application Publication No. 2008/0186808 (“Lee”)
Ex-1009	U.S. Patent Application Publication No. 2008/0168368 (“Louch”)
Ex-1010	U.S. Patent Application Publication No. 2008/0151700 (“Inoue”)
Ex-1011	U.S. Patent Application Publication No. 2005/0122844 (“Ruchonnet”)
Ex-1012	L.C. Tam, Tom Kong, and R. Du, Physical-Based Simulation of Mechanical Watches and Clocks 1-6 (2007)
Ex-1013	Declaration of Mary K. Roach on Authentication of Publication
Ex-1014	Linux Watch, https://researcher.watson.ibm.com/researcher/view_group_subpage.php?id=6102 (last visited Sept. 29, 2023).

¹ Four-digit pin citations that begin with 0 are to the branded numbers added by Samsung in the bottom right corner of the exhibits. All other pin citations are to original page, column, paragraph, or line numbers.

Ex. No.	Description
Ex-1015	Lam Chi Tam, Geometry-Based Simulation of Mechanical Movements and Virtual Library 1-113 (2008)
Ex-1016	Watch, https://en.wikipedia.org/wiki/Watch (last visited Oct. 1, 2023)
Ex-1017	ISBN Search, https://isbnsearch.org/isbn/0791843068 (last visited Oct. 5, 2023)
Ex-1018	Palm (PDA), https://en.wikipedia.org/wiki/Palm_(PDA) (last visited Sept. 27, 2023).
Ex-1019	L.C. Tam, Y. Fu, and R. Du, Virtual Library of Mechanical Watch Movements 127-136 (2007)
Ex-1020	Claim Mapping Table
Ex-1021	Chandra Narayanaswami et al., IBM's Linux Watch: The Challenge of Miniaturization 33-41 (2002).
Ex-1022	Skeleton Clock, https://en.wikipedia.org/wiki/Skeleton_clock (last visited Oct. 1, 2023)
Ex-1023	Benjamin B. Bederson & James D. Hollan, Pad++: A Zooming Graphical Interface for Exploring Alternate Interface Physics 17-26 (1994).
Ex-1024	David Rogers, Feimo Hou, Chandelle Vuolo & Benjamin B. Bederson, Tossing Objects in a Desktop Environment (1996).
Ex-1025	Benjamin B. Bederson, Fisheye Menus 217-225 (2000)
Ex-1026	Leslie E Chipman, Benjamin B. Bederson & Jennifer A. Golbeck, SlideBar: Analysis of a linear input device 1-9 (2004).
Ex-1027	Hilary Browne et al., Designing a Collaborative Finger Painting Application for Children (2000).

Ex. No.	Description
Ex-1028	Pekka Parhi, Amy K. Karlson & Benjamin B. Bederson, Target Size Study for One-Handed Thumb Use on Small Touchscreen Devices 203-210 (2006).
Ex-1029	Amy K. Karlson, Benjamin B. Bederson & José Contreras-Vidal, Understanding One-Handed Use of Mobile Devices 1-22 (2007).
Ex-1030	Test of Time Awards, https://ieevis.org/year/2021/info/awards/test-of-time-awards (last visited Oct. 3, 2023).
Ex-1031	Test of Time Awards, https://ieevis.org/year/2022/info/awards/test-of-time-awards (last visited Oct. 3, 2023).
Ex-1032	Takeo Igarashi & Ken Hinckley, Speed-dependent Automatic Zooming for Browsing Large Documents 139-148 (2000).
Ex-1033	Skeleton watch, https://en.wikipedia.org/wiki/Skeleton_watch (last visited Oct. 1, 2023)
Ex-1034	Laurie Kahle, All is Revealed (March/April 2016)
Ex-1035	Analog watch, https://en.wikipedia.org/wiki/Analog_watch (last visited Oct. 1, 2023)
Ex-1036	Quartz clock, https://en.wikipedia.org/wiki/Quartz_clock (last visited Oct. 1, 2023)
Ex-1037	Joshua Munchow, Here’s Why The Crown Is The Unsung Hero Of Watchmaking (And Why Rolex Wears The Crown), https://quillandpad.com/2018/12/09/heres-why-the-crown-is-the-unsung-hero-of-watchmaking-and-why-rolex-wears-the-crown/ (last visited Oct. 2, 2023)
Ex-1038	U.S. Patent No. 3,146,580 (“Simon”)
Ex-1039	U.S. Patent No. 3,362,154 (“Perret”)

Ex. No.	Description
Ex-1040	Kinetics (physics), https://en.wikipedia.org/wiki/Kinetics_(physics) (last visited Oct. 2, 2023)
Ex-1041	Dynamics (mechanics), https://en.wikipedia.org/wiki/Dynamics_(mechanics) (last visited Oct. 2, 2023)
Ex-1042	Gear train, https://en.wikipedia.org/wiki/Gear_train (last visited Oct. 2, 2023)
Ex-1043	Mechanical watch, https://en.wikipedia.org/wiki/Mechanical_watch (last visited Oct. 2, 2023)
Ex-1044	Accelerometer, https://en.wikipedia.org/wiki/Accelerometer (last visited Oct. 2, 2023)
Ex-1045	Benjamin Arthur, Parts of a Mechanical Watch – An Illustrated Guide, https://www.benswatchclub.com/blog/parts-of-a-mechanical-watch (last visited Oct. 2, 2023)
Ex-1046	L.C. Tam, Tom Kong, and R. Du, Physical Based Solutions of Mechanical Watches and Clocks, https://asmedigitalcollection.asme.org/IMECE/proceedings-abstract/IMECE2007/43068/123/325857 (last visited Oct. 5, 2023)
Ex-1047	Declaration of Rachel J. Waters on Authentication of Publication
Ex-1048	Automatic, https://www.collinsdictionary.com/us/dictionary/english/automatic (last visited Oct. 5, 2023)

Ex. No.	Description
Ex-1049	Matthew Catellier, How Accurate Should Your Mechanical Watch Be?, https://www.watchreviewblog.com/how-accurate-should-mechanical-watch-be/#:~:text=A%20non%2Dcertified%20watch%2C%20meanwhile,watch%20about%20once%20a%20week (last visited Oct. 10, 2023).
Ex-1050	Pusher, https://www.watch-wiki.net/doku.php?id=pusher (last visited October 10, 2023).

I. INTRODUCTION

Samsung Electronics Co., Ltd. and Samsung Electronics America, Inc. (collectively, “Petitioner”) request *inter partes* review (“IPR”) of Claims 1-19 of U.S. Patent No. 8,588,033 (“the ’033 Patent”) (Ex-1001), currently assigned to Slyde Analytics LLC (“PO”).

II. MANDATORY NOTICES UNDER 37 C.F.R. §42.8

Real Parties-in-Interest: Petitioner identifies the following real parties-in-interest: Samsung Electronics Co., Ltd. and Samsung Electronics America, Inc.

Related Matters: PO has asserted the ’033 Patent against Samsung Electronics Co., Ltd. and Samsung Electronics America, Inc. in *Slyde Analytics LLC v. Samsung Electronics Co., Ltd., et al.*, Case No. 2-23-cv-00083 (E.D. Tex.); PO has also asserted the ’033 Patent against Zepp Health Corporation in *Slyde Analytics LLC v. Zepp Health Corp.*, Case No. 2-23-cv-00172 (E.D. Tex.).

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III. FEE AUTHORIZATION

The PTO is authorized to charge any fees due during this proceeding to Deposit Account No. LA500639.

IV. GROUNDS FOR STANDING

Petitioner certifies that the '033 Patent is available for review, and Petitioner is not barred or estopped from requesting review.

V. PRECISE RELIEF REQUESTED

Petitioner requests review and cancellation of Claims 1-19 as unpatentable based on the following grounds, supported by a declaration from Dr. Benjamin B. Bederson. Ex-1002; Ex-1003.

Ground	Summary
1	Claims 1 and 11-14 are obvious over Mooring (Ex-1005) in view of Satoshi (Ex-1007). ²

² Ex-1006 is a copy of Satoshi from the Japanese Patent Office; Ex-1007 is a certified translation of Satoshi.

Ground	Summary
2	Claims 2-3, 17 and 19 are obvious over Mooring and Satoshi in further view of Lee (Ex-1008).
3	Claims 13-16 are obvious over Mooring and Satoshi in further view of Louch (Ex-1009).
4	Claims 4-5 are obvious over Mooring and Satoshi in further view of Inoue (Ex-1010) and Tam (Ex-1012).
5	Claims 6-10 and 13 are obvious over Mooring and Satoshi in further view of Tam and Ruchonnet (Ex-1011).
6	Claim 18 is obvious over Mooring and Satoshi in further view of Lee, Tam, Inoue, and Ruchonnet.

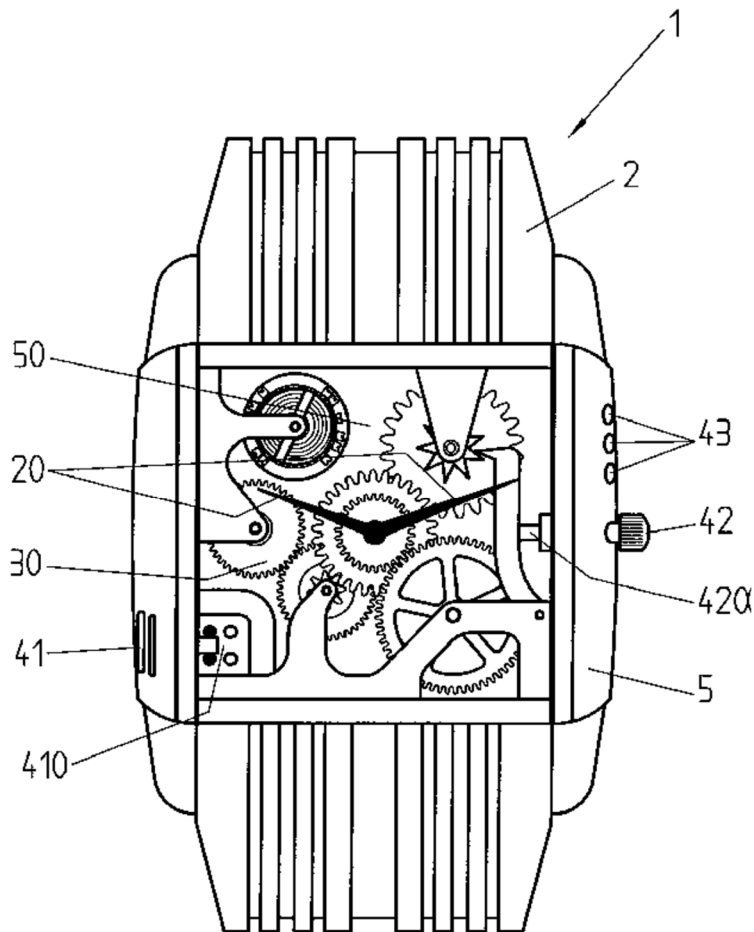
VI. THE CHALLENGED PATENT

The challenged claims are directed to simulating a mechanical watch movement on an electronic display of a wristwatch. The patent recognizes that it was well-known that people generally like the appearance of a mechanical watch movement with clock hands moving in a near-continuous fashion and that people like seeing the inner workings of a mechanical watch. *Id.*, 1:35-46. Thus, the '033

Patent proposes simulating a mechanical watch movement on an electronic display.

Id., 2:33-39.

An example of a simulated mechanical watch movement is illustrated on the cover of the '033 Patent (which corresponds to Figure 4). As shown below, this figure includes a minute hand and hour hand indicating the time. The figure also shows several gears.



All challenged claims require an electronic display simulating a mechanical watch movement that indicates the time. Independent Claims 1 and 16 recite reproducing on an “electronic display a simulation of a mechanical watch movement” and require that this “indicate the time.” Independent Claim 17 includes similar language: “displaying on an electronic display of [sic] a simulated mechanical watch movement” with “time indicators.” Independent Claims 1, 16, and 17 also require that the simulated mechanical watch movement comprise a “gear train”—in other words, rotating gears as shown in the above figure. Ex-1002 ¶49.

The '033 Patent recognizes that mechanical watches have long displayed their inner working components. Ex-1001, 1:35-46. And the patent admits it was already known that electronic watches with quartz oscillators could present the time using an electronic display, such as a liquid crystal display (LCD). *Id.*, 1:21-27. Yet the patent suggests that showing the inner workings on an electronic display is somehow inventive and patentable. *Id.*, 2:33-39. As explained in detail below, the '033 Patent claims are obvious in view of the prior art.

VII. PROSECUTION HISTORY OF THE '033 PATENT

The '033 Patent was filed September 28, 2012, as a continuation of International Patent Application PCT/EP2011/054873 filed March 30, 2011. Ex-1001. It claims priority to Swiss Patent Application CH2010/0463, filed on March 30, 2010. Ex-1001.

This Petition presents arguments not considered during prosecution. The prior art in this Petition was not before the PTO during prosecution, with the exception of Lee. Lee was mentioned in the Notice of Allowance mailed July 9, 2013, but the Examiner did not rely on it. Ex-1004, 0203. The record is silent on the Examiner's view (if any) of Lee. The Examiner materially erred in failing to apply Lee to at least Claim 2-3, 17, and 19 because Lee teaches the added features of those dependent claims. *See infra* §XII.B. Petitioners apply Lee here only as a secondary reference in combination with other references not before the Office. The Board should decline to exercise its discretion to deny institution under §325(d). *Advanced Bionics, LLC v. MED-EL Elektromedizinische Geräte GmbH*, IPR2019-01469, Paper 6 at 8 (PTAB Feb. 13, 2020) (precedential).

VIII. LEVEL OF ORDINARY SKILL IN THE ART

A person of ordinary skill in the art at the relevant time (“POSITA”) would have had a bachelor's degree in electrical engineering, computer science, computer engineering, or a related field, and 2-3 years of experience in the research, design, development, or testing of touchscreen applications and graphical user interfaces for mobile devices, with additional education substituting for experience and vice versa. Ex-1002 ¶¶35-38.

IX. PRIORITY DATE

For purposes of this proceeding only, Petitioner assumes that the '033 Patent is entitled to its earliest alleged priority date, March 30, 2010, and thus applies pre-AIA 35 U.S.C. §102.

X. CLAIM CONSTRUCTION

Petitioner interprets the claims according to *Phillips*. 37 C.F.R. §42.100(b). Petitioner presents the following two terms for construction, each of which appears in a dependent claim:

A. “means for modifying the running of said displayed regulating organ according to the accelerations to which the watch is subjected” (Claim 10)

Claim 10 recites “means for” and is presumed to invoke 35 U.S.C. §112(6). The recited function is “modifying the running of said displayed regulating organ according to the accelerations to which the watch is subjected.”

For a computer-implemented claim limitation, the corresponding structure is a processor executing the algorithm disclosed in the specification for performing the claimed specific computer function, or its equivalents. The closest algorithm is described in the specification at 3:31-66:

- (1) assigning a virtual mass to the regulating organ (Ex-1001, 3:43-45);

(2) calculating the forces to which the regulating organ is subjected according to the measured accelerations and any change in the position of the regulating organ due to those forces (*id.*, 3:45-47); and

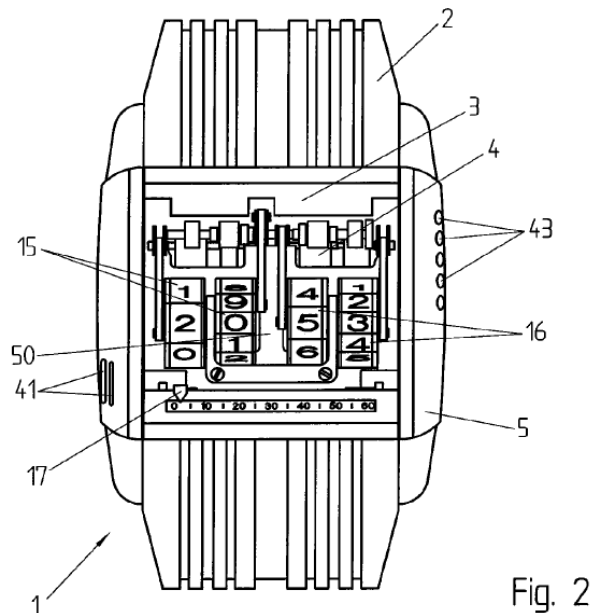
(3) displaying the new position of the regulating organ (*id.*, 3:47-48).

Thus, this three-step algorithm or its equivalent is the corresponding structure for Claim 10.

B. “means for entering and executing a request for said synchronization by the user” (claim 12)

Claim 12 recites “means for” and is presumed to invoke 35 U.S.C. §112(6). The recited function is “entering and executing a request for said synchronization by the user.” The structure for performing this function is described in the ’033 Patent at column 8, lines 44-49 with reference to Figure 2:

In one embodiment, the time displayed by the simulated and displayed mechanical movement is thus *synchronized* with the quartz time, either automatically at regular intervals or when the difference exceeds a threshold or *manually by the user interacting on one of the push-buttons 41 or on the touch sensor*.



This portion of the specification describes two synchronization modes—one automatic and the other manually by the user. The latter is the one relevant to the recited function since it is performed “by the user.” Thus, the disclosed structure that is necessary for performing “synchronization by the user” is “one of the push-buttons 41” or “the touch sensor,” or their equivalents. Push buttons 41 and touch-sensitive display screen 4 (the touch sensor) are depicted in Figure 2, above.

Petitioner does not believe that any other terms requires construction for purposes of resolving this Petition.³

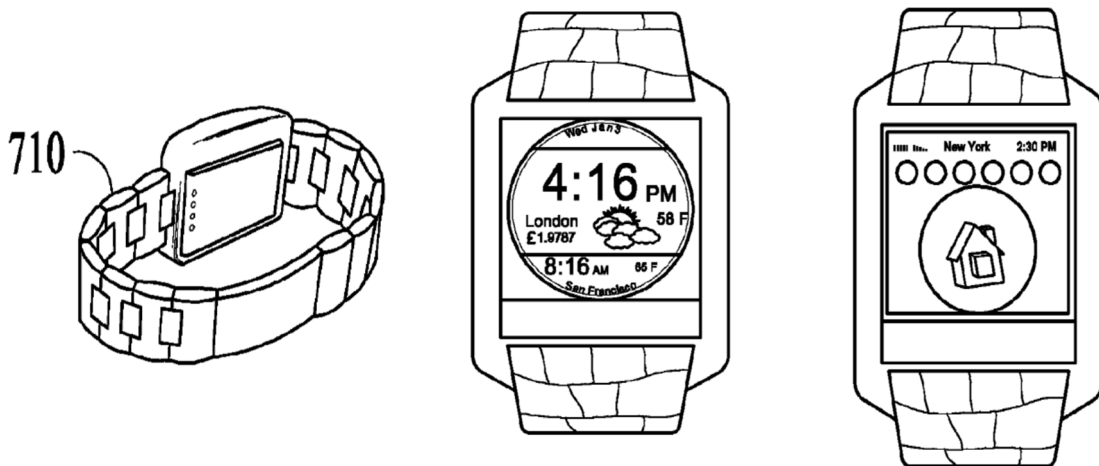
³ District court claim construction procedures have not yet begun. Petitioner reserves all rights to raise claim construction and other arguments in district court. Additionally, Petitioner will request leave to submit the district court’s claim construction as soon as it becomes available.

XI. BRIEF DESCRIPTION OF THE APPLIED PRIOR ART

A. Mooring (Ex-1005)

Mooring (U.S. Pat. Pub. No. 2009/0196124) was filed on January 31, 2008 and published on August 6, 2009. Mooring qualifies as prior art under 35 U.S.C. §102(a) and (e).

Mooring discloses a wristwatch, as illustrated below in Figures 7 and 8. Ex-1005 ¶22.



Figures 1B and 1C depict electronic movement 12b and 12c⁴ (orange) in case 14 (blue).

⁴ The figures use 12b and 12c to refer to the individual movements; like Mooring, this petition uses movement 12 to refer to them collectively. Ex-1005 ¶26.

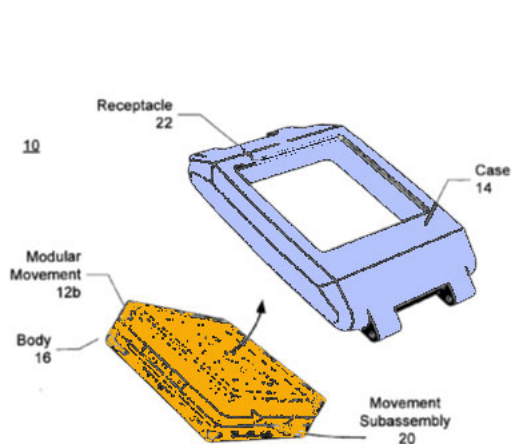


FIG. 1B

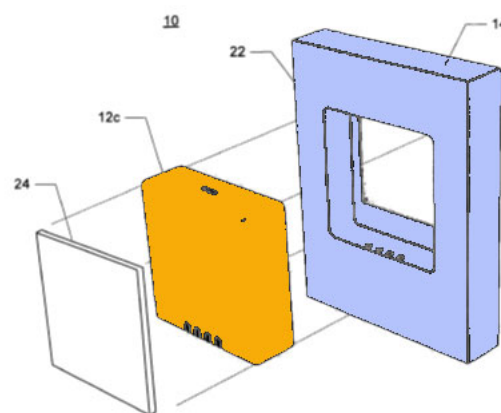


FIG. 1C

The electronic movement 12 includes LCD touchscreen 506 (yellow) and printed circuit board (PCB) 504 (green), as shown below in Figure 5. *Id.* ¶39.

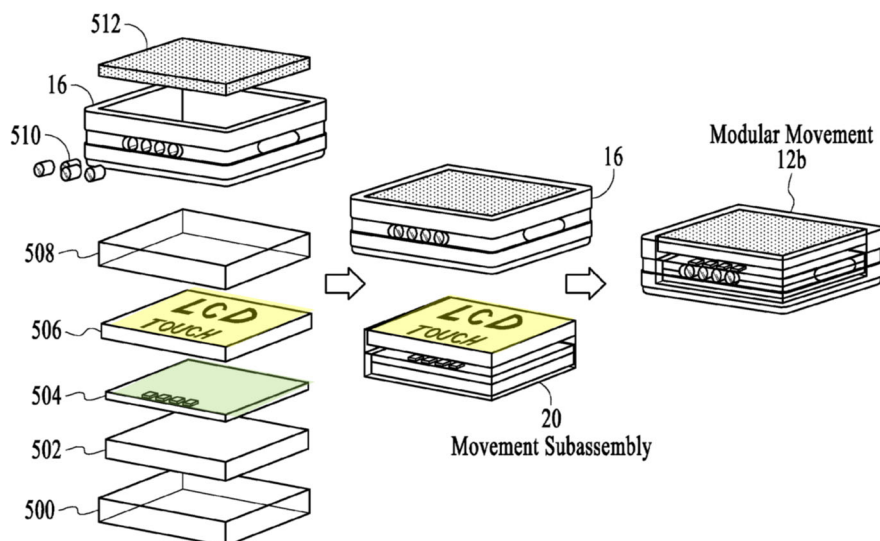


FIG.5

Below, Figure 6 illustrates computer 600 included on PCB 504. *Id.* ¶55.

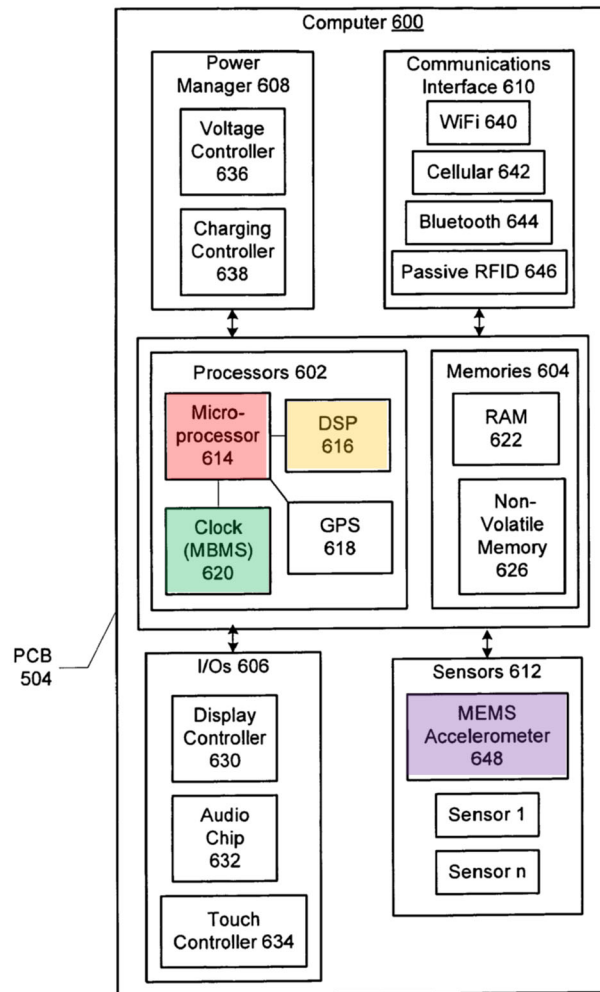


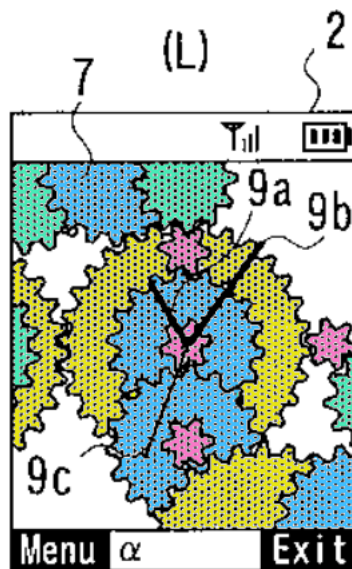
FIG. 6

Microprocessor 614 (red) and/or DSP 616 (orange) execute software to control various processes, including the operation of the touchscreen. *Id.* ¶57. To track time, clock 620 includes a “quartz crystal oscillator,” and the watch uses the vibrations of the quartz crystal to track time. *Id.* ¶¶3, 58. Also, “MEMS accelerometer 648 [purple] may be used to measure information such as position, motion, tilt, shock, and vibration for use by microprocessor 614.” Ex-1005 ¶65.

B. Satoshi (Ex-1007)

Satoshi (Japanese Pub. No. JP2005/242456) was filed on February 24, 2004 and published on September 8, 2005. Satoshi qualifies as prior art under 35 U.S.C. §102(b). Ex-1007 is a certified translation of Ex-1006.

Like Mooring, Satoshi discloses an LCD display that simulates a mechanical watch movement. Ex-1007 ¶¶4, 11. Satoshi displays a “skeleton clock” by showing the “the rotation of an hour hand, minute hand, and second hand in hour, minute, and second units respectively.” *Id.* ¶4. A POSITA would have understood that a “skeleton clock” is one that displays its internal working components. Ex-1002 ¶¶82-84. Satoshi describes that the display can include an animation of interactive gears. Ex-1007 ¶4. A user can arrange the gears in various configurations. *Id.* As shown below in Figure 5L, hour hand 9a, minute hand 9b, and second hand 9c may rotate in correspondence with the rotating gears.



Satoshi states: “hands 9 (illustrated in FIG. 5) can be displayed integrally rotating with arbitrary gears in addition to the gears 7, and by adjusting a rotation rate of a gear serving as a driving gear, a gear ratio of gears meshing together, and the like, *movement of an hour hand 9a, a minute hand 9b, and a second hand 9c of a clock such as depicted in FIG. 5(L) can be replicated.*”⁵ Ex-1007 ¶42.

Because the displayed time based on the rotations of the gears may differ from the more accurate time of the clock function of the mobile phone, Satoshi describes that the user can request to set the watch hands to “the current time . . . read from the clock function of the mobile phone.” *Id.* ¶87.

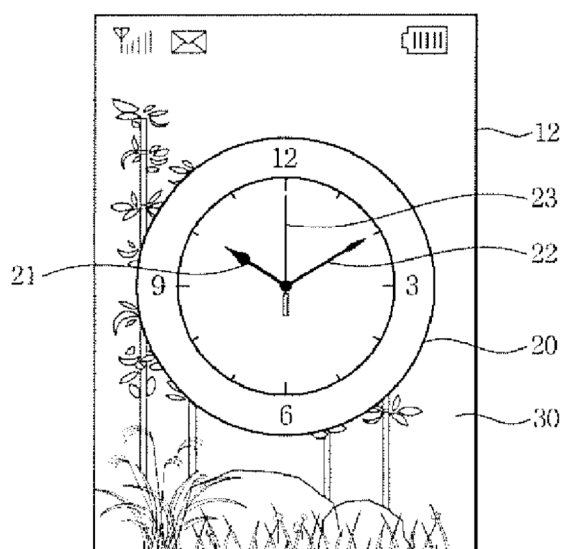
C. Lee (Ex-1008)

Lee (U.S. Pat. Pub. No. No. 2008/0186808) was filed on February 6, 2008 and published on August 7, 2008. Lee qualifies as prior art under 35 U.S.C. §102(b).

Lee is also directed to clocks displayed on a touchscreen LCD. Ex-1008 ¶¶2, 5. Figure 4 shows a clock including hour hand 21, minute hand 22, and second hand 23.

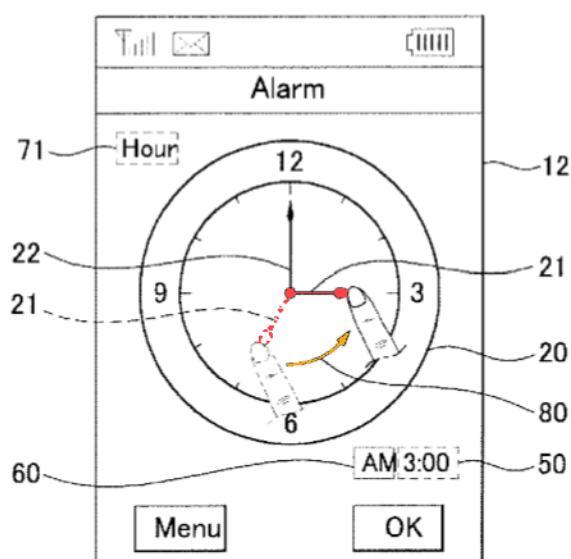
⁵ Throughout, emphasis is added unless otherwise specified.

FIG. 4



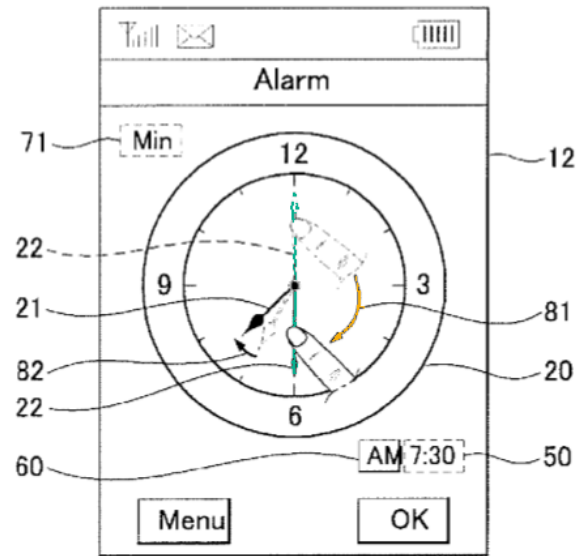
As shown below in Figure 6, a user may touch and adjust the location of hour hand 21. *Id.* ¶47.

FIG. 6



As shown below in Figure 7, a user may also touch and adjust the location of minute hand 22. *Id.* ¶¶48-49

FIG. 7



D. Louch (Ex-1009)

Louch (U.S. Pat. Pub. No. 2008/0168368) was filed on January 7, 2007 and published on July 10, 2008. Louch qualifies as prior art under 35 U.S.C. §102(b).

Louch discloses “a digital watch” with a touch sensitive display area 128 that can display a dashboard/widget, as shown below in Figure 1F. Ex-1009 ¶49.

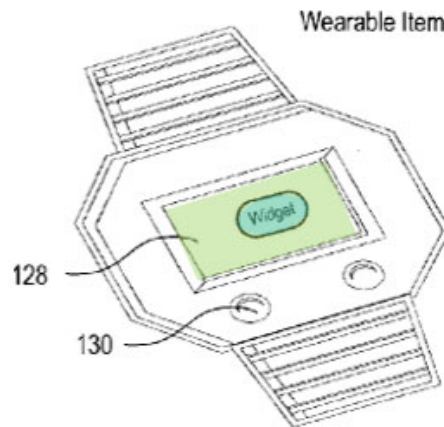


FIG. 1F

Louch teaches that a widget “can consume the entire display area 406 or a portion thereof.” *Id.* ¶67. Louch further teaches a user can move a finger horizontally or vertically across the touchscreen to scroll through available widgets to find and invoke a desired widget. *Id.* ¶¶79, 80. Below, Figure 5B illustrates a particular embodiment of this scrolling.

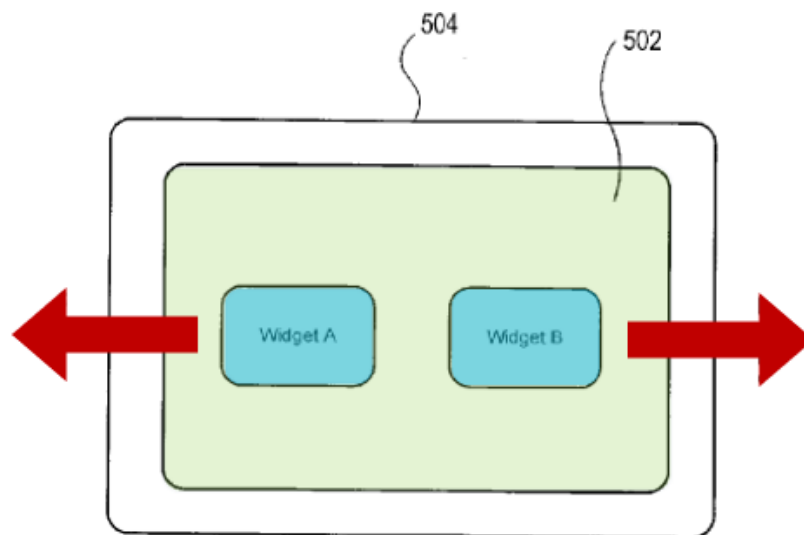


FIG. 5B

E. Inoue (Ex-1010)

Inoue (U.S. Patent Pub. No. 2008/0151700) was filed on December 19, 2007 and was published on June 26, 2008. Inoue is prior art under 35 U.S.C. §102(b).

Inoue discloses a wristwatch with LCD display 20 (yellow) for showing time, as shown below in Figure 1. Ex-1010 ¶¶15, 111, 116.

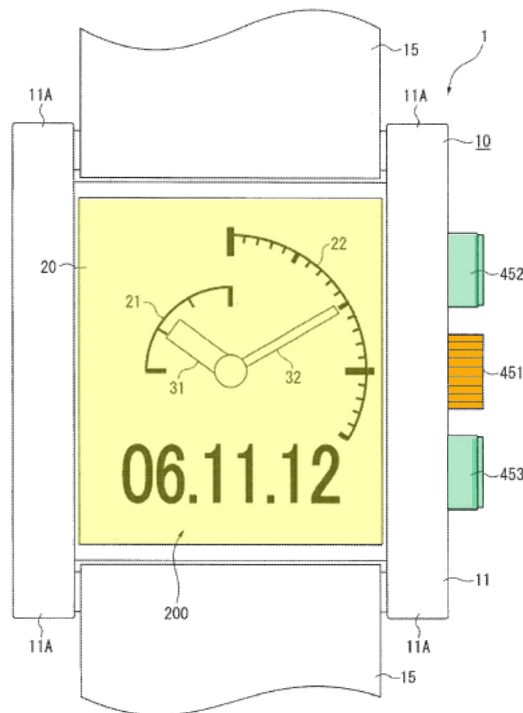


FIG. 1

Inoue's wristwatch may include crown 451 (orange) and push-buttons 452 and 453 (green) as input devices for changing the information displayed on the LCD. *Id.* ¶¶126, 159, 294. Crown 451 and push-buttons 452 and 453 can be "located on the side of the timepiece body 10," as shown above in Figure 1. *Id.* ¶126.

F. Ruchonnet (Ex-1011)

Ruchonnet (Patent Pub. No. 2005/0122844) claims priority to an application filed on July 9, 2003 and was published on June 9, 2005. Ruchonnet is prior art under 35 U.S.C. §102(b).

Ruchonnet describes a mechanical watch with various internal components, as shown below in Figure 4.

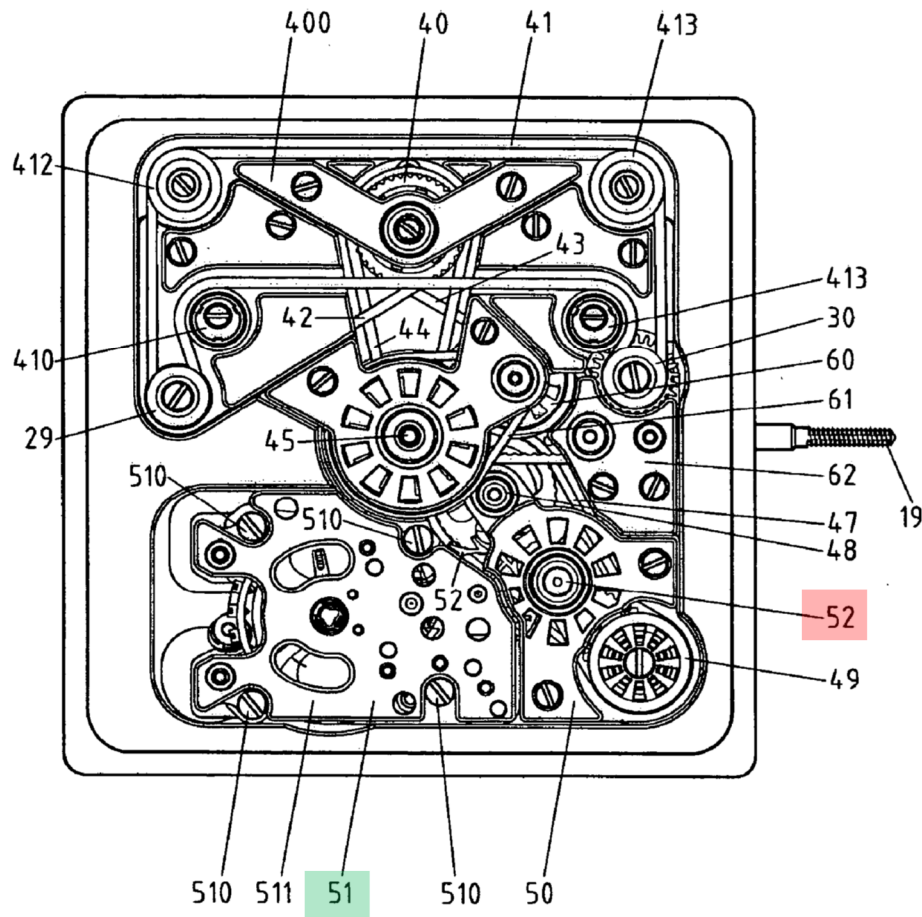


Fig. 4

For example, regulating organ 51 (green) “compris[es] an escapement and a sprung balance that determine the watch’s running.” Ex-1011 ¶4. “[R]egulating organ 51 can be conventional, karussel, tourbillon or even electronic and comprises in this example an escapement 52 [red] of which a portion is visible in FIG. 4.” *Id.* ¶45. Ruchonnet also describes other internal components not shown above, such as a “gear train” (*Id.* ¶4, 43), and an “oscillating mass” (*Id.* ¶35). The wristwatch of Ruchonnet may be a “skeleton-type” watch in which the dial is glass or transparent material so that an observer “to check the movement’s running.” *Id.* ¶31.

G. Tam (Ex-1012)

Tam was published at least as early as April 17, 2008, on which date the University of Kansas Libraries owned and cataloged it. Ex-1013 (Roach Declaration). The testimony in Ex-1013 is corroborated by Ex-1017, an ISBN search identifying that the proceeding including Tam was published in 2008.⁶ Tam is prior art under 35 U.S.C. §102(b).

Tam teaches “Physical-Based Simulation of Mechanical Watches and Clocks.” Ex-1012, p. 1. Tam recognizes the intricate mechanical operation of

⁶ In addition, the University of Wisconsin-Madison Libraries owned and cataloged Tam as of July 10, 2008. Ex-1047. And ASME published Tam on its website on May 22, 2009. Ex-1046. Tam is provided as Ex-1012 (in color) and is also included in supporting declarations Ex 1013 and Ex 1047. This petition cites to Ex-0112, but the same citations also apply to the same article in Ex-1013 and Ex-1047.

watches “fascinate[s] millions of people around the world.” *Id.* Thus, Tam teaches simulating and displaying internal mechanical watch components, such as the Swiss lever escapement (the most popular escapement for mechanical watches). *Id.* Tam teaches simulating the “kinetics” and “dynamics” of the internal watch components. Ex-1012, p. 1. Tam’s simulation calculates the forces placed on the simulated internal watch components. Ex-1002 ¶¶109-111. For example, Tam simulates the movement of a Graham escapement. Ex-1012, p. 2. This escapement includes a pendulum, which “requires a push to jump start.” *Id.* A POSITA would have understood that Tam calculates the force of the push and the force of gravity to simulate the movement and position of the pendulum. Ex-1002 ¶110. As another example, Tam states that for the Swiss lever escapement simulation, “a force input is added on the balance wheel to simulate the effect of hairspring.” Ex-1012, p. 4.

Tam further teaches displaying the simulated watch components, as shown below in Figure 7. *Id.*, p. 4.

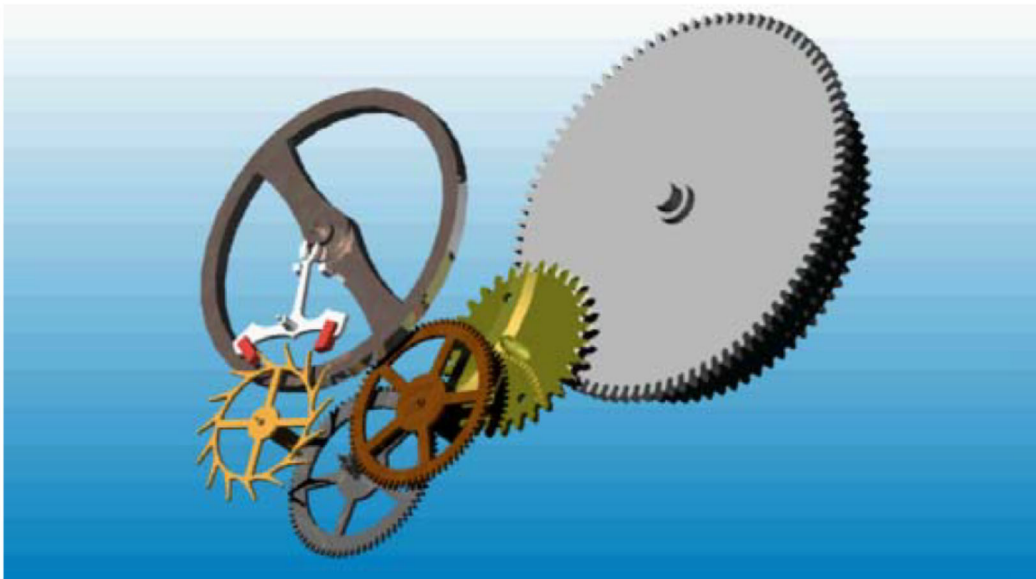


Fig. 7: The model of Swiss Lever Escapement connected to the gear train and the barrel. The escapement is on the left side while the barrel is on the right.

XII. DETAILED EXPLANATION OF THE UNPATENTABILITY GROUNDS

A. Ground 1: Claims 1 and 11-14 are obvious over Mooring in view of Satoshi.

- 1. A POSITA would have been motivated to combine Mooring and Satoshi's teachings and would have had a reasonable expectation of success.**

A POSITA would have been motivated to combine the teachings of Mooring and Satoshi and would have had a reasonable expectation of success in doing so because each relates to the same well-known technologies. Ex-1002 ¶¶126-31. Both are directed to clocks displayed on digital interfaces. Ex-1005 ¶¶22, 39; Ex-1007 ¶4. Both also describe electronic movements with LCD display screens. Ex-1005 ¶4; Ex-1007 ¶¶2-4.

Mooring discloses a wristwatch with a touchscreen LCD capable of displaying an analog representation of time (i.e., with hour and minute hands). Ex-1005 ¶¶22, 39. Satoshi also discloses an LCD device capable of displaying time using hour and minute hands. Ex-1007 ¶¶4, 11. Satoshi further discloses displaying gears that rotate in correspondence with the watch hands. *Id.* ¶4. It would have been obvious to a POSITA to apply the teachings of Satoshi to the wristwatch of Mooring to display gears that rotate in correspondence with watch hands. Ex-1002 ¶128. The '033 Patent admits that it was already known that users enjoy seeing the mechanical movement and other inner working of a mechanical watch. Ex-1001, 1:35-46. Satoshi teaches the same motivation to display the inner workings of a watch “to enhance user interest.” Ex-1007 ¶4. Moreover, watches are generally associated with displaying time, and it would have been natural for a POSITA to want to view Satoshi’s mechanical simulation of gears turning hour, minute, and second hands on a watch, as disclosed in Mooring. Ex-1002 ¶128. Thus, design incentives and market forces would have motivated a POSITA to apply the teachings of Satoshi to Mooring. *Id.*

Satoshi also teaches that the rotation rate of the driving gear and gear ratios determines the movement of the watch hands and thus, the displayed time. Ex-1007 ¶4, 42. And Satoshi discloses the user can request to set the watch hands to the current clock time of the device, thereby synchronizing the mechanical simulation

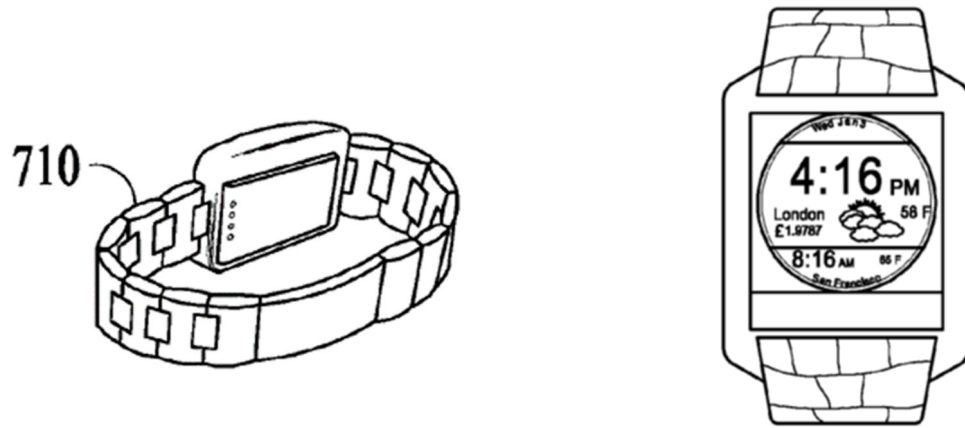
to the more accurate time maintained by Satoshi's phone. *Id.* ¶87. Because clock 620 in Mooring is based on a quartz oscillator (Ex-1005 ¶¶3, 39, 58), it would have been obvious to a POSITA that Satoshi's user request in the combined Mooring-Satoshi system would result in synchronizing the time displayed by the watch hands with the clock time based on Mooring's quartz oscillator. Ex-1002 ¶129.

A POSITA would have had a reasonable expectation of success in combining Mooring and Satoshi. Ex-1002 ¶130. A POSITA would have understood that different electronic watch displays (analog or digital in Mooring; analog with gears in Satoshi) are programmable on standard microprocessors and displayable on standard LCD screens and are interchangeable. *Id.* ¶¶57-63, 64-68, 130. A POSITA would have understood, therefore, that these references disclose interrelated teachings based on routine technologies that would have been amenable to various well-understood and predictable combinations to provide more features and enhance user interest. *Id.* ¶¶57-63, 64-68, 131.

2. Independent Claim 1

a. Element 1[pre]: Wristwatch comprising:

Mooring discloses the preamble, to the extent it is limiting. Ex-1002 ¶¶132-34. As shown below in Figures 7 and 8 below, Mooring discloses a wristwatch: "a modular movement that is both fully functional standalone as well as interchangeable in other portable devices, *such as watches.*" Ex-1005 ¶22.



b. Element 1[a]: a watchcase;

Mooring discloses Element 1[a]. Ex-1002 ¶¶135-37.

The claimed “watchcase” corresponds to “*case 14*” in Mooring. Ex-1005 ¶37; Ex-1002 ¶136. Figures 1A, 1B, and 1C illustrate case 14, which is shaded blue in the annotated figures below.

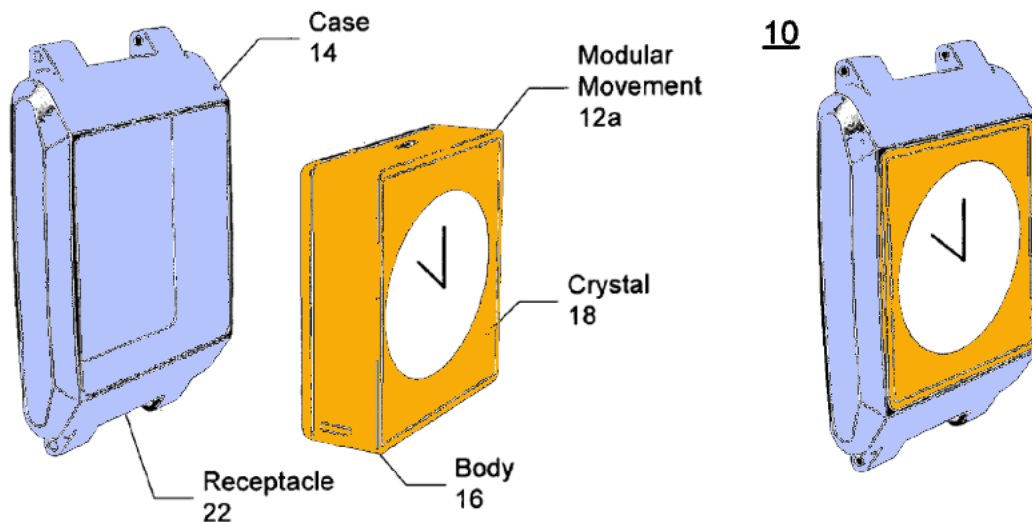


FIG. 1A

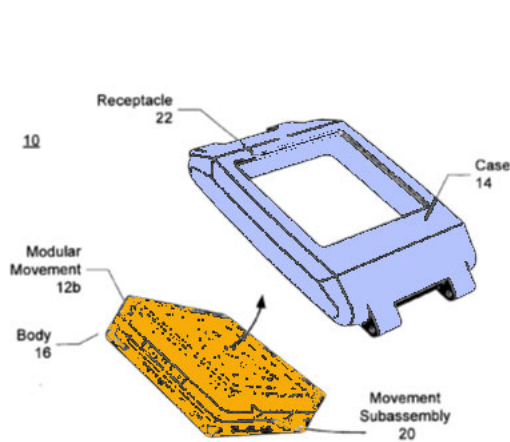


FIG. 1B

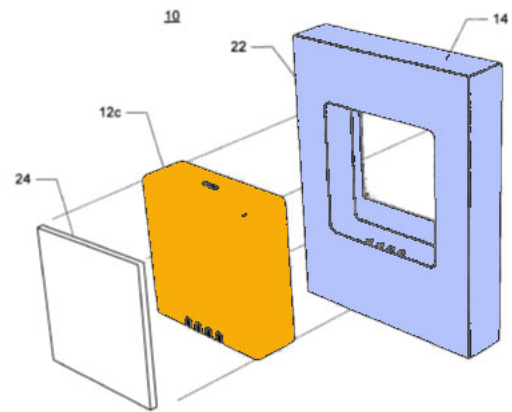


FIG. 1C

c. Element 1[b]: an electronic display in said watchcase;

Mooring discloses Element 1[b]. Ex-1002 ¶¶138-41.

Mooring teaches that electronic movements 12b and 12c in Figures 1B and 1C below include an electronic display. Mooring states that an electronic movement “may include a computer-based movement with *a touchscreen or LCD display.*” Ex-1005 ¶39. An LCD touchscreen display is an electronic display. Ex-1002 ¶¶55-63, 139.

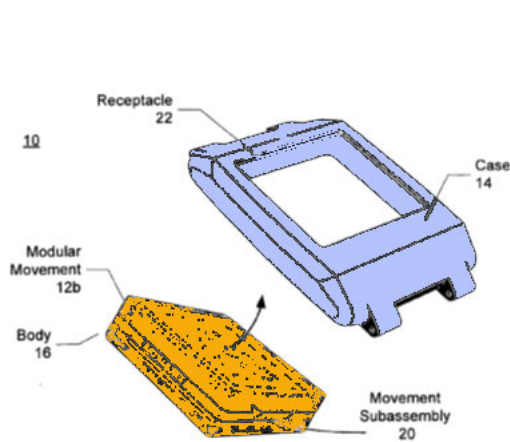


FIG. 1B

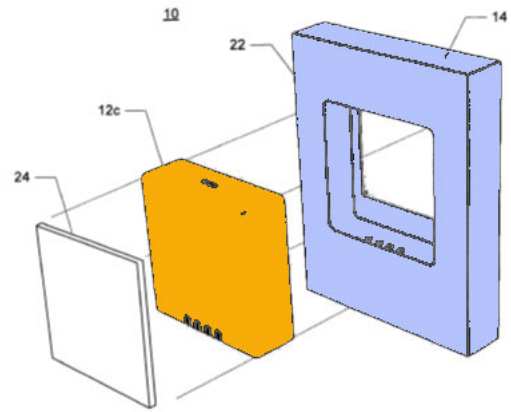


FIG. 1C

As illustrated in annotated Figures 1B and 1C, the electronic movements 12b and 12c (shaded yellow) with digital displays are in case 14.

d. Element 1[c]: a quartz oscillator,

Mooring discloses Element 1[c]. *Id.* ¶¶142-45.

The claimed “quartz oscillator” is clock 620 in Figure 6 below, which Mooring states “may utilize a *quartz crystal oscillator*.” Ex-1005 ¶58.

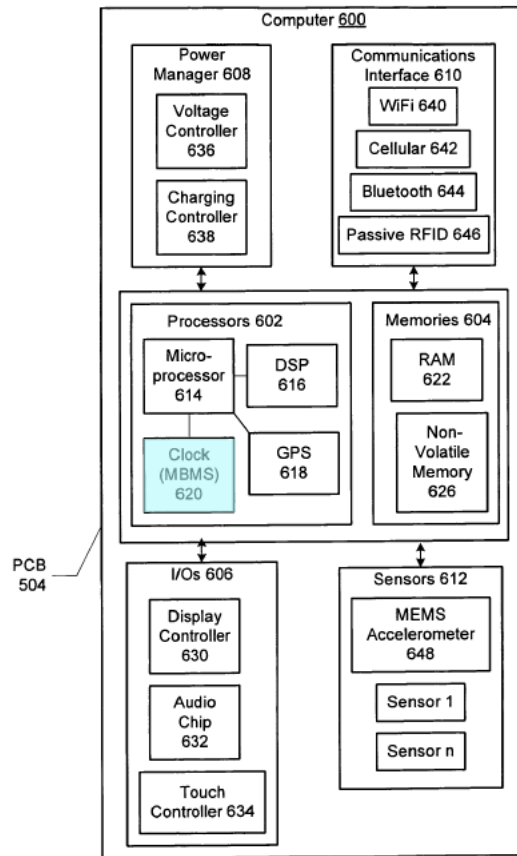


FIG. 6

Mooring's electronic movement “may include a *quartz movement*.” *Id.* ¶39; *see also id.* Claim 10 (“the electronic movement comprising a *quartz movement*”). Mooring explains that “a quartz movement used in quartz watches ... utilizes frequency of vibrations of a quartz crystal to accurately regulate the operation of the watch.” *Id.* ¶3. A POSITA would have understood that the quartz oscillator of clock 620 in Figure 6 is the component used to accurately keep time by means of a very precise oscillation frequency. Ex-1036, p. 1; Ex-1002 ¶144.

- e. **Element 1[d]: a microcontroller being arranged for reproducing on said electronic display the simulation of a mechanical watch movement comprising a gear train, said simulation being visible so as to indicate the time, said microcontroller being further arranged for synchronizing the displayed time by said displayed mechanical movement with that of said quartz oscillator.**

Mooring-Satoshi teaches Element 1[d]. Ex-1002 ¶¶146-62.

Mooring discloses “a microcontroller being arranged for reproducing on said electronic display the simulation of a mechanical watch movement.” Ex-1002 ¶147. The claimed “microcontroller” corresponds to display controller 630 together with microprocessor 614 and/or digital signal processor (DSP) 616 in Figure 6 of Mooring. *Id.* According to Mooring, “[d]isplay controller 630 may access RAM 622 and transfer processed data, such as time and date and/or a user interface, to the touchscreen 506 for display.” Ex-1005 ¶60. The processor in Mooring “execut[es] software that displays a user interface on the touchscreen and operates the modular movement.” *Id.* ¶12. That processor executing software may include microprocessor 614 and/or DSP 616. *Id.* ¶57. Thus, display controller 630 and microprocessor 614 and/or DSP 616 correspond to the claimed microcontroller in Element 1[d]. Ex-1002 ¶¶148-49.

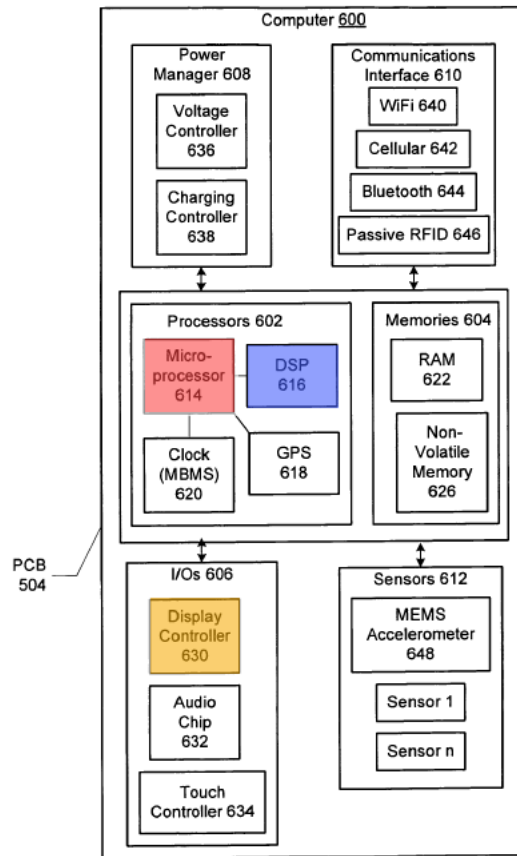


FIG. 6

Mooring discloses that the electronic movement may include “an analog or digital display.” Ex-1005 ¶39. A POSITA would have understood that an “analog display” uses hour and minute hands to indicate the time and that a “digital display” uses digital numbers to indicate the time. Ex-1002 ¶150. An example of an analog display is shown in Figure 1A.

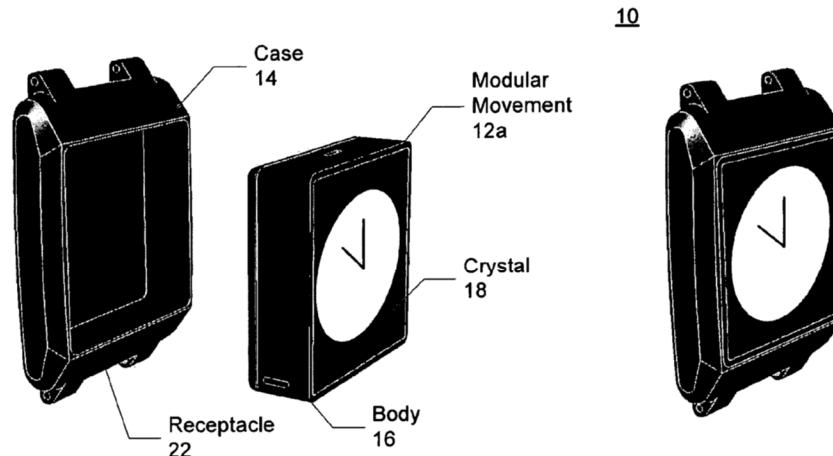


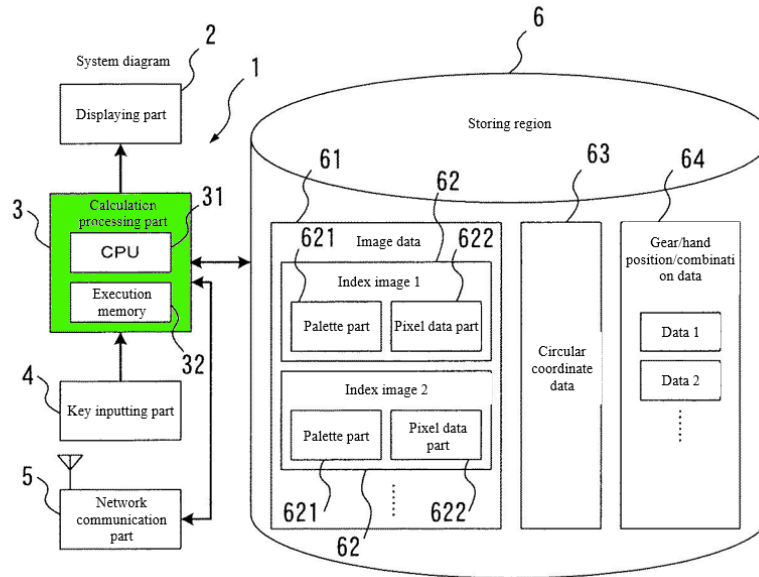
FIG. 1A

Thus, the microcontroller in Mooring displays on the touchscreen a simulation of the movement of hour and minute hands to indicate the time. *Id.* Displaying the movement of an hour hand and minute hand is the claimed “simulation of a mechanical watch movement.” *Id.*

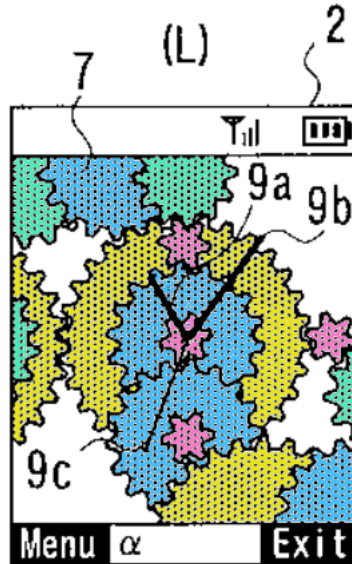
Like Mooring, Satoshi also teaches an electronic LCD display capable of displaying a simulation of a mechanical watch movement. Ex-1007 ¶¶11, 40. For example, Satoshi displays a “skeleton clock” by showing the “the rotation of an hour hand, minute hand, and second hand in hour, minute, and second units respectively.” *Id.* ¶4; Ex-1002 ¶¶78-88. Satoshi also discloses a microcontroller (calculation processing part 3) that controls the display of the mechanical watch movement. Ex-1002 ¶152. With reference to Figure 1, below, Satoshi states that “calculation processing part 3 executes the rotating body image display program of the present

invention and functions as display controlling means and color changing means of the present invention.” Ex-1007 ¶40.

[FIG. 1]



Satoshi discloses a “simulation of a mechanical watch movement comprising a gear train, said simulation being visible so as to indicate the time.” Ex-1002 ¶153. Satoshi’s claim 1 reads: “A rotating body image display device for displaying animation of a plurality of rotating bodies such as gears that can synchronously rotate with each other....” Ex-1007, p.3. This claimed display of rotating gears is exemplified by Satoshi’s Figure 5L:



Moreover, Satoshi discloses coupling the “gear train” with watch hands that rotate in synchronization with the gears. Ex-1007 ¶4; Ex-1002 ¶154. Satoshi explains that the applicants developed “a program for displaying an animation of interactively operable gears of any number for mobile phone users to arrange and display in a plurality of combinations.” Ex-1007 ¶4. This program “can also display *watch hands that rotate corresponding to the rotation of each gear.*” *Id.* Satoshi states: “hands 9 (illustrated in FIG. 5) can be displayed integrally rotating with arbitrary gears in addition to the gears 7, and by adjusting a rotation rate of a gear serving as a driving gear, a gear ratio of gears meshing together, and the like, *movement of an hour hand 9a, a minute hand 9b, and a second hand 9c of a clock such as depicted in FIG. 5(L) can be replicated.*” *Id.* ¶42.

It would have been obvious to a POSITA to implement the watch face and gears of Satoshi in the electronic display of the wristwatch of Mooring, as illustrated by Dr. Bederson in this modified version of Figure 8 of Mooring. Ex-1002 ¶155.



The '033 Patent admits that it was already known that users enjoy seeing the mechanical movement and other inner working of a mechanical watch. Ex-1001, 1:35-46. Satoshi teaches the same motivation: “to enhance user interest.” Ex-1007 ¶4. Thus, design incentives and market forces would have motivated a POSITA to apply the teachings of Satoshi to Mooring. Ex-1002 ¶¶155-56.

This combination of Mooring and Satoshi further teaches “synchronizing the displayed time by said displayed mechanical movement with that of said quartz oscillator,” as recited in Element 1[d]. *Id.* ¶157. Satoshi teaches that the rotation rate of the driving gear and gear ratios determines the movement of the watch hands

and thus the time displayed by the watch hands. Ex-1007 ¶¶4, 42. Thus, a POSITA would have recognized that the “time displayed by the watch hands” might not match the time kept by Satoshi’s mobile phone. Ex-1002 ¶158. Satoshi further teaches that the user can request to set the watch hands to “the current time . . . read from the clock function of the mobile phone.” *Id.* ¶87. A POSITA would have understood that Satoshi’s gear display keeps time using a mechanical movement simulation, but discloses synchronizing the display time with the more accurate time of the clock function of the mobile phone. Ex-1002 ¶159. A POSITA would have understood that this accurate “clock function” in Satoshi corresponds to the accurate quartz clock 620 in Mooring (Ex-1005 ¶58). Ex-1002 ¶159. Thus, in applying Satoshi’s disclosure of synchronization to the wristwatch of Mooring (which is not a mobile phone), a POSITA would have understood to synchronize the displayed time (based on the rotation of the gears) with the time in clock 620, which is based on a quartz oscillator as explained in Element 1[d] (§XII.A.2.d). *Id.* A POSITA would have realized that the timekeeping of the quartz oscillator is more precise than that of the rotating gears, and thus would have been motivated to (at least periodically) synchronize the displayed time with the time of the quartz oscillator. *Id.* ¶160-61. Accordingly, Mooring-Satoshi teaches “synchronizing the displayed time by said displayed mechanical movement with that of said quartz oscillator.” *Id.* ¶162.

3. Dependent Claim 11: The wristwatch of claim 1, arranged for performing said synchronization periodically in an automatic manner.

Mooring-Satoshi teaches Claim 11. Ex-1002 ¶¶163-67.

As described above for Element 1[d] (§XII.A.2.e), Mooring-Satoshi teaches “synchronizing the displayed time by said displayed mechanical movement with that of said quartz oscillator.” Ex-1002 ¶164. Satoshi teaches that a user can manually request to set the watch hands to “the current time . . . read from the clock function of the mobile phone.” Ex-1007 ¶87. In the Mooring-Satoshi combination, a POSITA would have been motivated to keep the time displayed by the watch hands closer to the correct time (as determined by the more precise clock 620 in Mooring) by performing this synchronization periodically in an automatic manner (for example, once per minute, once per hour, or once per day). Ex-1002 ¶¶165-66. A POSITA would have realized that this periodic synchronization would provide a user with a realistic and authentic simulation of a mechanical watch movement and, by periodically synchronizing the displayed time with the more accurate time of the quartz oscillator, also mitigate the timing errors associated with mechanical watch movements to provide accuracy. *Id.*

Accordingly, Mooring-Satoshi teaches the periodic synchronization limitation in Claim 11. *Id.* ¶167.

4. Dependent Claim 12: The wristwatch of claim 11, comprising means for entering and executing a request for said synchronization by the user.

Mooring-Satoshi teaches Claim 12. *Id.* ¶¶168-73.

As discussed in Section X.B above, this term should be construed under 35 U.S.C. §112(6). *Id.* ¶169. The recited function is “entering and executing a request for said synchronization by the user,” and the disclosed corresponding structure is “one of the push-buttons 41” or “the touch sensor,” described in the ’033 Patent at column 8, lines 44-49, or their equivalents.

Mooring-Satoshi teaches the recited function. Ex-1002 ¶¶170-73. Satoshi states that “based on an *operation by the user*, the current time can be read from the clock function of the mobile phone 1, and corresponding to the hour, minute, and second that was read, a process is performed in which the hour hand 9a, the minute hand 9b, and the second hand 9c are respectively set to an angle for the current hour, an angle for the current minute, and an angle for the current second (steps S23, 24, and 25),” and “by operating the set key, the angles of the hands 9 are fixed and the process ends (step S26).” Ex-1007 ¶87. This “operation by the user” ending by “operating the set key” is the claimed “request for said synchronization by the user.” Ex-1002 ¶170-71.

A POSITA would have been motivated to include Satoshi’s user request for synchronization in the combined Mooring-Satoshi system so that a user could update

the displayed time to the more accurate time of the quartz oscillator. *Id.* ¶171. For example, if a user were trying to catch a train, the user would want the ability to manually synchronize the time to have the most accurate time possible at that particular moment while still enjoying the traditional and authentic feel of a more traditional mechanical timepiece.

Mooring-Satoshi also teaches the corresponding structure. Mooring teaches “a movement subassembly that includes a touchscreen” and “software that displays a user interface on the touchscreen.” Ex-1005 ¶12. Satoshi teaches displaying a mechanical watch simulation on a mobile phone and further discloses a “set key” which can be actuated for entering certain commands. Ex-1007 ¶¶67, 87. In applying the teachings of Satoshi to Mooring, a POSITA would have been motivated to implement the user input (the “operation by the user” in Satoshi that is completed by “operating the set key” (*id.* ¶87)) using the touchscreen user interface of Mooring, the set key of Satoshi, or a combination of both, to perform the user request for synchronization. Ex-1002 ¶172. Thus, the claimed function is performed by either the disclosed touchscreen of Mooring or the disclosed “set key” of Satoshi, or a combination of the two, which is the equivalent of the disclosed structure in the challenged patent (“one of the push-buttons 41” or “the touch sensor,” described in the ’033 Patent at column 8, lines 44-49, or their equivalents.) *Id.*

Thus, Mooring-Satoshi teaches the “means for entering and executing a request for said synchronization by the user,” as recited in Claim 12.

5. Dependent Claim 13: The wristwatch of claim 1, arranged for displaying said mechanical movement on the whole surface of the electronic display so as to occupy the position and the dimensions of a real mechanical movement.

Mooring-Satoshi teaches Claim 13. Ex-1002 ¶¶174-81.

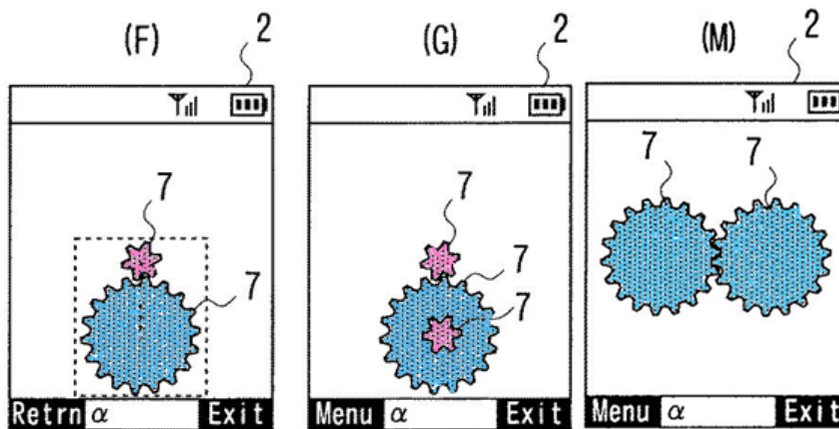
Mooring-Satoshi teaches “displaying said mechanical movement on the whole surface of the electronic display” in Figure 5-L. *Id.* ¶175.



In the combination, it would have been obvious to a POSITA to omit Satoshi’s bar on top (showing the battery) and the bar on bottom (showing “Menu” and “Exit”) to make the display more mechanical watch-like, which is the point of a skeleton clock or watch. *Id.* ¶176. A POSITA would have been motivated to display the mechanical movement on the whole surface of the watch display to make it

correspond to the size of an actual watch movement, which would enhance the realism of the display and appeal to the desire of a user to visualize the mechanical details of the watch mechanism. *Id.* ¶¶176-80. The '033 Patent admits that users enjoy seeing the mechanical movement and other inner working of a mechanical watch. Ex-1001, 1:35-46. Satoshi teaches the same motivation to display the inner workings of a watch “to enhance user interest.” Ex-1007 ¶4; Ex-1002 ¶176.

Moreover, it would have been obvious to modify the number and size of gears so that the gears do not extend beyond the display. Ex-1002 ¶177. For example, Satoshi’s Figures 5-F, 5-G, and 5-M disclose embodiments where the entire gear mechanism is displayed within the bounds of the screen. *Id.*



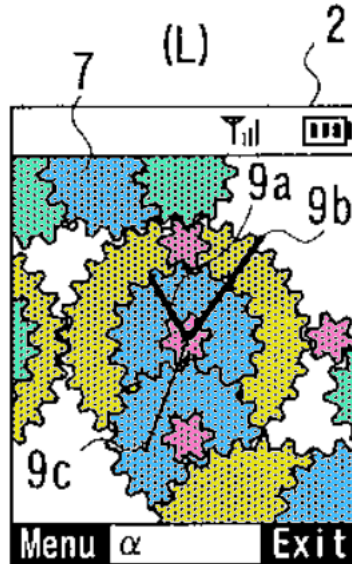
Satoshi also teaches that the gears can “occupy the position and the dimensions of a real mechanical movement,” as recited in Claim 13. *Id.* ¶178. Satoshi states that the rotation of the gears can “replicate” the movement of clock

hands and thus enable the “design of a skeleton clock in which the gears 7 are exposed is enabled.” Ex-1007 ¶42. A POSITA would have understood that a skeleton clock is a “real mechanical movement,” as recited in Claim 13. Ex-1002 ¶¶179-81.

6. Dependent Claim 14: The wristwatch of claim 1, said microcontroller being arranged for enabling different mechanical movements selectable by the user for display.

Mooring-Satoshi teaches Claim 14. *Id.* ¶¶182-85.

Satoshi discloses a user can select different combinations of gears to simulate the mechanical movement of a clock. *Id.* ¶183. Regarding Figure 5L, Satoshi states: “In addition, to enhance user interest, the content described above can also display watch hands that rotate corresponding to the rotation of each gear *which, by a user successfully arranging gears in combination, enables the rotation of an hour hand, minute hand, and second hand in hour, minute, and second units respectively, as well a display such as of a so-called skeleton clock.*” Ex-1007 ¶4.



A POSITA would have understood that the different combinations of gears disclosed by Satoshi are “different mechanical movements” and because the user can arrange the gear combinations in whatever manner they wish, those different mechanical movements are “selectable by the user for display,” as required by Claim 14. Ex-1002 ¶184. A POSITA would have been motivated to make different mechanical movements selectable, as Satoshi teaches, in the Mooring-Satoshi combination with a reasonable expectation of success for the same reasons as combining Mooring with Satoshi’s teaching of a visible gear-based mechanical movement described in §XII.A.1.

B. Ground 2: Claims 2-3, 17, and 19 are obvious over Mooring and Satoshi in further view of Lee.

1. A POSITA would have been motivated to combine Mooring and Satoshi's teachings with Lee's teachings and would have had a reasonable expectation of success.

A POSITA would have been motivated to combine the teachings of Mooring and Satoshi with the teachings of Lee and would have had a reasonable expectation of success in doing so because each relates to the same well-known technologies. *Id.* ¶¶186-88. All three references are directed to clocks displayed on microcontroller-based digital interfaces. Ex-1005 ¶¶22, 39; Ex-1007 ¶4; Ex-1008 ¶2. All three references also describe electronic movements with LCD and/or touch-sensitive display screens. Ex-1005 ¶4; Ex-1007 ¶¶2-4; Ex-1008 ¶5.

Lee further describes using the touchscreen to adjust the position of watch hands. Ex-1008 ¶47. Because the wristwatch in Mooring has a touchscreen and the method of adjusting time in Lee uses a touchscreen, it would have been obvious to a POSITA to apply the teachings of Lee to the wristwatch in Mooring. Ex-1002 ¶¶57-63, 187. A user of the Mooring-Satoshi watch would have needed a way to adjust the time, such as when changing time zones or setting the time after a period of unuse. *Id.* ¶187. Thus, a POSITA would have been motivated to apply the teachings of Lee to adjust the time using the touchscreen of Mooring. *Id.* In addition, a POSITA would have recognized that incorporating the additional touch-interactive components taught by Lee into the touchscreen wristwatch taught by

Mooring-Satoshi would appeal to watch users. *Id.* Thus, design incentives and market forces would have motivated a POSITA to apply the teachings of Lee to Mooring-Satoshi. *Id.*

A POSITA would have had a reasonable expectation of success in combining Lee and Mooring-Satoshi. *Id.* ¶188. A POSITA would have understood that different gestures and user input can be interchangeably implemented on microcontroller-based touchscreens. *Id.* ¶¶55-63, 188. A POSITA also would have understood that these references disclose interrelated teachings based on routine technologies that would have been amenable to various well-understood and predictable combinations. *Id.*

2. Dependent Claim 2

a. Element 2[pre]: The wristwatch of claim 1, wherein:

The Mooring-Satoshi combination teaches Claim 1. *See supra* §XII.A.2.

b. Element 2[a]: said electronic display is associated with a touch sensor;

Mooring teaches Element 2[a]. Ex-1002 ¶¶190-91.

As described above for Element 1[b] (§XII.A.2.c), Mooring discloses an electronic display. Mooring further discloses the electronic display is a “touchscreen.” Ex-1005 ¶12. A touchscreen is an “electronic display . . . associated with a touch sensor,” as recited in Element 2[a]. Ex-1002 ¶191.

- c. **Element 2[b]: and the position of at least one component of said movement can be modified by pressing on the position of said electronic display corresponding to said component.**

Mooring-Satoshi-Lee teaches Element 2[b]. *Id.* ¶¶192-96.

Lee teaches that “the position of at least one component of said movement can be modified by pressing on the position of said electronic display corresponding to said component” in Figures 6 and 7. *Id.* ¶193.

FIG. 6

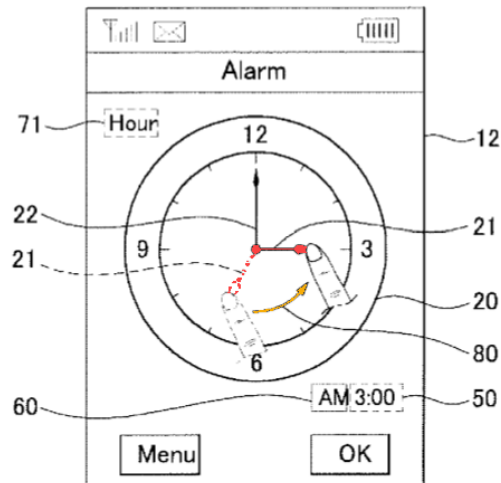
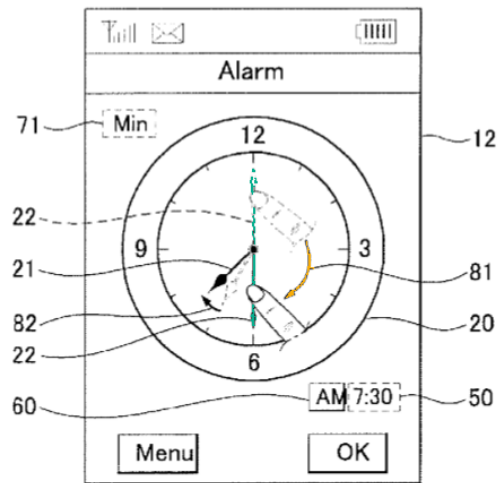


FIG. 7



Describing Figures 6 and 7, Lee states that they “depict examples for adjusting displayed position of a selected clock hand relative to locations on the touchscreen display that user contact occurs.” Ex-1008 ¶47. Specifically, Figure 6 depicts a scenario where “the user contacts the touchscreen relative to hour hand 21 (dashed lines) and then slides a finger or stylus, for example, in direction 80 until the hour hand is located at a desired location.” *Id.* ¶47. Figure 7 similarly shows a similar procedure where “the user selects and drags the minute hand 22” to move that

component “from a first location to a second location.” *Id.* ¶¶48-49. In Figure 7, the “movement of the minute hand causes hour hand 21 to correspondingly move in direction 82.” *Id.* ¶¶48-49.

It would have been obvious to a POSITA to apply the method of adjusting time in Lee to the Mooring-Satoshi combination described above for Claim 1 for the reasons described above (§XII.B.1). Ex-1002 ¶195.

3. Dependent Claim 3

a. Element 3[pre]: The wristwatch of claim 2, wherein:

The Mooring-Satoshi-Lee combination teaches Claim 2. *See supra* §XII.B.2.

b. Element 3[a]: wherein said microcontroller is arranged for displaying the simulation of a movement and

The Mooring-Satoshi combination teaches Element 3[a]. Ex-1002 ¶¶198-99.

Element 1[d] includes the limitation of Element 3[a], and thus, Mooring-Satoshi teaches Element 3[a] for the same reasons described above for Element 1[d] (§XII.A.2.e). *Id.* ¶199. Ex 1020, element 3[a].

c. Element 3[b]: wherein the angular position of at least one element of said gear-train can be modified by pressing on said touch sensor.

Mooring-Satoshi-Lee teach Element 3[b]. Ex-1002 ¶¶200-03.

As discussed in Element 2[b] (§XII.B.2.c), Lee discloses that “the position of at least one component of said movement can be modified by pressing on the

position of said electronic display corresponding to said component” in Figures 6 and 7. Ex-1002 ¶201.

FIG. 6

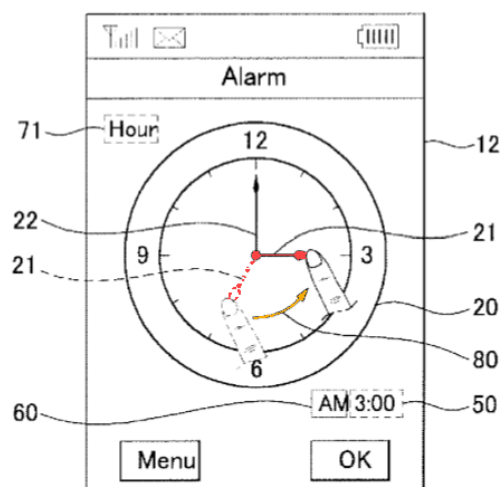
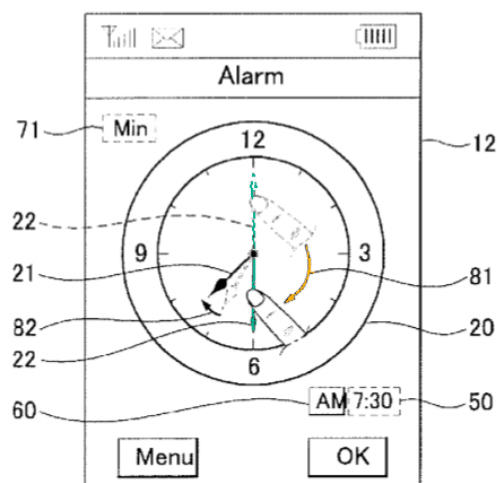


FIG. 7



It would have been obvious to a POSITA to apply the method of adjusting time in Lee to the Mooring-Satoshi combination. *See supra* Section XII.B.1.

Satoshi discloses “watch hands . . . rotate corresponding to the rotation of each gear.” Ex-1007 ¶4. Thus, adjusting the watch hands, as taught in Lee, would automatically rotate the gears as taught in Satoshi to make the gear simulation as realistic as possible. Ex-1002 ¶202. Thus, it would have been obvious to a POSITA that applying Lee’s teachings to Satoshi to change the time would also modify the “angular position of at least one element of said gear-train,” as recited in Element 3[b]. *Id.* ¶¶202-03.

4. Independent Claim 17:

- a. Element 17[pre]: Method for displaying time in a wristwatch, comprising displaying on an electronic display of a simulated mechanical watch movement comprising a gear train and of time indicators so as to simulate a mechanical watch,**

To the extent the preamble is limiting, the Mooring-Satoshi combination teaches a “wristwatch” as described above for Element 1[preamble] (§XII.A.2.a), an “electronic display” as described for Element 1[b] (§XII.A.2.c), and “a simulated mechanical watch movement comprising a gear train and of time indicators so as to simulate a mechanical watch” as described above for Element 1[d] (§XII.A.2.e). Ex-1020, Element 17[pre]; Ex-1002 ¶204.

- b. Element 17[a]: said method comprising a step of modifying a position of at least one component of said mechanical movement by detecting displacement of a finger on that component with a touch sensor connected to said display.**

Mooring-Satoshi-Lee teaches Element 17[a] for the same reasons described above for Element 2[b] (§XII.B.2.c). Ex-1020, Element 17[a]; Ex-1002 ¶205.

5. Dependent Claim 19: The method of claim 17, comprising a step of loading new displayable mechanical movements through an input-output interface of the watch.

Mooring-Satoshi-Lee teaches Claim 19. Ex-1002 ¶¶206-09.

Each of Mooring, Satoshi, and Lee discloses an “input-output interface.” Ex-1005 ¶64 (communication interface 610); Ex-1007 ¶64 (communications part 5);

Ex-1008 ¶31 (mobile communication module 10). Moreover, Satoshi describes using the input-output interface to load “a file created by the rotating body image display program.” Ex-1007 ¶31. Satoshi states that “downloading this [file] allows . . . for a display of gears 7 / hands 9 to be performed.” *Id.* ¶94. It would have been obvious to include this download capability using Communications Interface 610, such as WiFi, cellular, etc., because that is what such capabilities are for. Ex-1002 ¶208. For the reasons described above for Element 1[d] (§XII.A.2.e), this display of gears and hands is a “new displayable mechanical movement” as recited in Claim 19. *Id.* ¶¶208-09.

C. Ground 3: Claims 13-16 are obvious over Mooring and Satoshi in further view of Louch.

1. A POSITA would have been motivated to combine Mooring and Satoshi’s teachings with Louch’s teachings and would have had a reasonable expectation of success.

A POSITA would have been motivated to combine the teachings of Mooring-Satoshi with the teachings of Louch and would have had a reasonable expectation of success in doing so because each relates to the same well-known technologies. Ex-1002 ¶¶210-216. All three references include teachings directed to clocks displayed on microcontroller-based digital interfaces. Ex-1005 ¶¶22, 39; Ex-1007 ¶4; Ex-1009 ¶67. They also describe electronic movements with LCD and/or touch-sensitive display screens. Ex-1005 ¶4; Ex-1007 ¶¶2-4; Ex-1009 ¶¶11-14, 114. Louch further describes various user interactions with widgets and dashboards on

touch-sensitive displays, and in particular, on a watch with such a display. Ex-1009 ¶¶79-87.

As described above for Element 1[d] (§XII.A.2.e), it would have been obvious to a POSITA to implement the clockface animation described in Satoshi in the touchscreen of the wristwatch described in Mooring, as Dr. Bederson shows in this modified version of Figure 8 of Mooring. Ex-1002 ¶211.



Similarly, Louch discloses “a digital watch” with a touch sensitive display presenting widgets, or applications, as shown in Figure 1F. Ex-1009 ¶49. Louch’s “world clock” is an example of a widget that fills the entire display. *Id.* ¶67

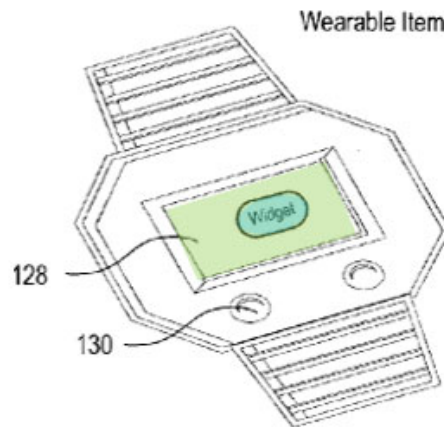


FIG. 1F

Louch allows a user to interact with the watch by scrolling through widgets, as shown below in Figure 5B below. Ex-1009 ¶80.

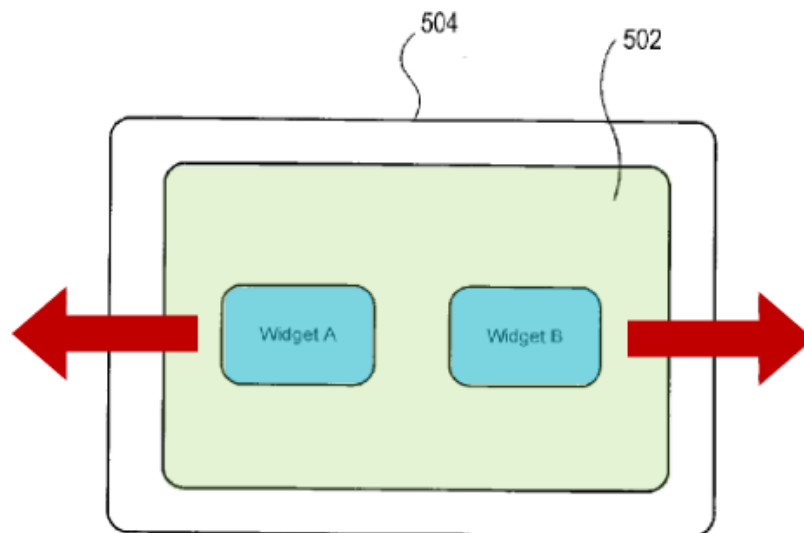


FIG. 5B

It would have been obvious to apply Louch's teachings regarding scrolling to the Mooring-Satoshi wristwatch. Ex-1002 ¶¶55-63, 214. A POSITA would have been motivated to apply the scrolling of Louch to the touchscreen of Mooring to

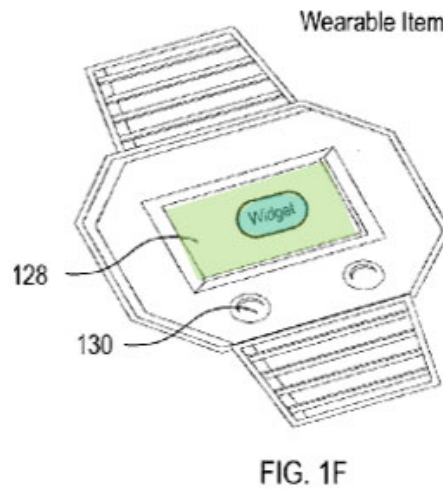
switch between different screen screens and clock movements, or, other applications. Ex-1002 ¶215. A POSITA would also have recognized that Louch’s user-friendly touch navigation would appeal to watch users. *Id.* Thus, design incentives and market forces would have motivated a POSITA to apply the teachings of Louch to Satoshi and Mooring. *Id.*

A POSITA would have had a reasonable expectation of success in combining Louch with Mooring and Satoshi. Ex-1002 ¶¶55-63, 216. A POSITA would have understood that these references disclose interrelated teachings based on routine microcontroller-based, touch screen technologies that would have been amenable to various well-understood and predictable combinations. *Id.*

2. Dependent Claim 13: The wristwatch of claim 1, arranged for displaying said mechanical movement on the whole surface of the electronic display so as to occupy the position and the dimensions of a real mechanical movement.

As described above, Mooring-Satoshi teaches Claim 13. *See supra* §XII.A.5.

Alternatively, Mooring-Satoshi in further combination with Louch also teach Claim 13. Ex-1002 ¶¶217-22. Louch discloses “a digital watch” with a touch sensitive display area 128 that can display a dashboard/widget, as shown below in Figure 1F. Ex-1009 ¶49.



Louch’s “world clock widget 402” can display the time, and “can *consume the entire display area 406.*” Ex-1009 ¶67.

A POSITA would have found it obvious to apply Louch’s disclosure of a clock that fill an entire display screen to the display of Satoshi’s mechanical watch movement (with a gear train) on the touchscreen of Mooring’s wristwatch. Ex-1002 ¶221.

3. Dependent Claim 14: The wristwatch of claim 1, said microcontroller being arranged for enabling different mechanical movements selectable by the user for display.

As described above, Mooring-Satoshi teaches Claim 14. *See supra* §XII.A.6.

Alternatively, Mooring-Satoshi in further combination with Louch also teaches Claim 14. Ex-1002 ¶¶223-227. Louch discloses “a digital watch” with a touch sensitive display area 128 that can display a dashboard/widget, as shown below in Figure 1F. Ex-1009 ¶49.

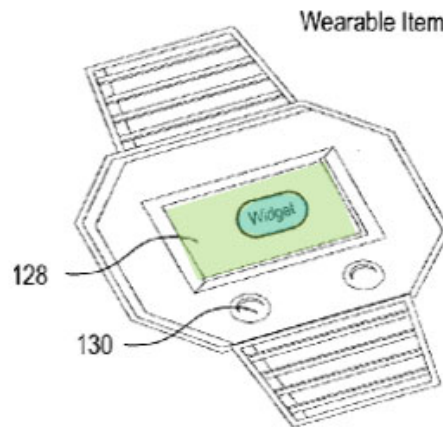


FIG. 1F

Louch states, “In some implementations, the user *can scroll (horizontally or vertically) through dashboards or widgets* across the display area 502 by touching the widgets and making the appropriate finger gestures in horizontal or vertical directions,” as shown below in Figure 5B below. Ex-1009 ¶80.

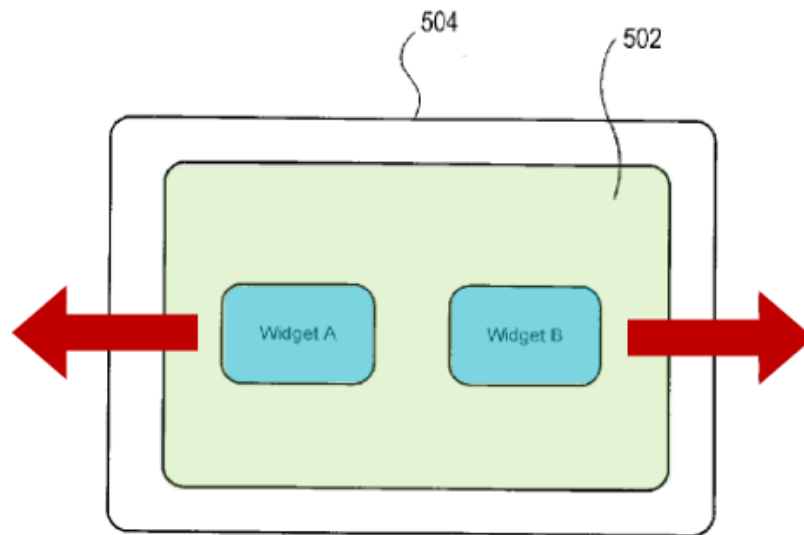


FIG. 5B

It would have been obvious to apply the user interface in Louch to the wristwatch taught by the combination of Mooring and Satoshi. Ex-1002 ¶226. As

explained above (§XII.B.6), Satoshi discloses that a user can select different combinations of gears to simulate the mechanical movement of a clock. *Id.* Thus, a user can create different mechanical movements by creating different combination of gears. *Id.* By associating the different mechanical movements with different widgets, a user could have selected different mechanical movements for display by scrolling widgets as taught in Louch. *Id.*

4. Dependent Claim 15

a. Element 15[preamble]: The wristwatch of claim 1, wherein:

The Mooring-Satoshi combination teaches Claim 1. *See supra* §XII.A.2.

b. Element 15[a]: said display being a display associated with a touch sensor enabling the displacements of at least one finger along at least two different directions to be detected, with the microcontroller being specifically arranged for interpreting signals from the touch sensor, for selecting one screen from among several available screens depending on these signals, and for displaying this screen on the entirety of said display,

Mooring-Satoshi in further combination with Louch teaches Element 15[a].

Ex-1002 ¶¶229-35.

Louch discloses “a display associated with a touch sensor enabling the displacements of at least one finger along at least two different directions to be detected, with the microcontroller being specifically arranged for interpreting signals from the touch sensor, for selecting one screen from among several available screens

depending on these signals, and for displaying this screen on the entirety of said display,” as recited Element 15[a]. *Id.* For example, Louch discloses “a digital watch” with a touch sensitive display area 128, as shown below in Figure 1F. Ex-1009 ¶49.

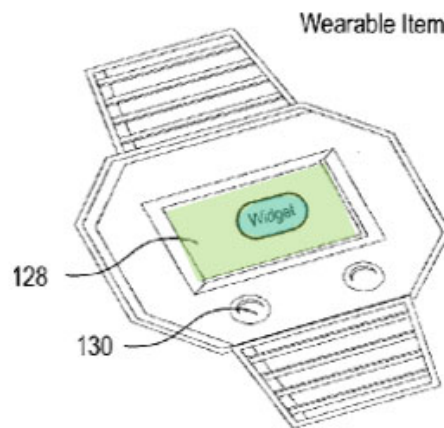


FIG. 1F

Louch describes widgets that fill the entire touchscreen display to present information or perform tasks, such as “provide a clock.” Ex-1009 ¶35, 67.

Louch further states, “In some implementations, the user ***can scroll (horizontally or vertically) through dashboards or widgets*** across the display area 502 by touching the widgets and making the appropriate finger gestures in horizontal or vertical directions,” as shown in Figure 5B below. Ex-1009 ¶80.

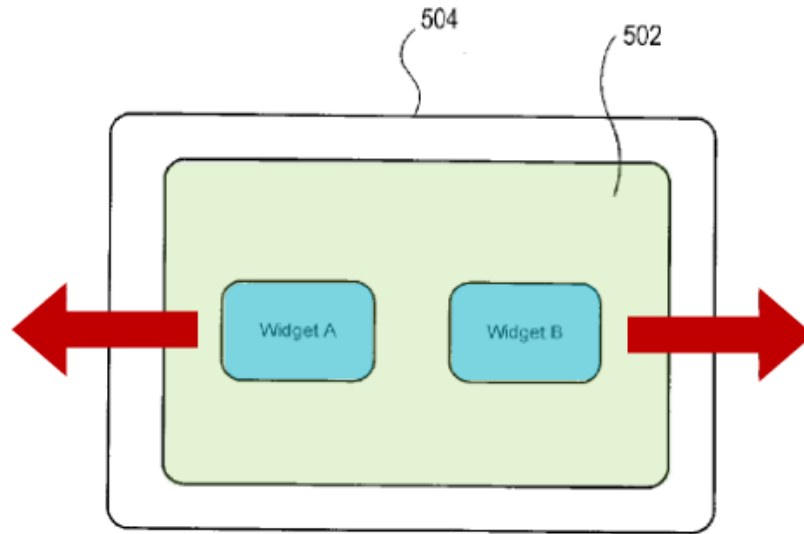


FIG. 5B

And Louch teaches that this selected widget would then take up the entire display. Ex-1002 232. Louch states, “When a desired dashboard/widget is found, the user can click or touch the dashboard/widget to invoke the widget. In some implementations, when the dashboard/widget is invoked *the dashboard/widget is displayed to cover the entire display area 502 (full screen).*” Ex-1009 ¶80.

It would have been obvious to apply the user interface in Louch to the wristwatch taught by the combination of Mooring and Satoshi as discussed above (§XII.C.1 and §XII.C.3). Ex-1002 ¶¶233-235.

- c. **Element 15[b]: said microcontroller being further specifically arranged so as to cause screens to scroll by in order to replace durably the screen displayed initially by another screen, with the orientation and the direction of scrolling depending on the orientation and direction of said displacement,**

Mooring-Satoshi in further combination with Louch teaches Element 15[b].

Ex-1002 ¶¶236-41.

Louch teaches “caus[ing] screens to scroll by in order to replace durably the screen displayed initially by another screen, with the orientation and the direction of scrolling depending on the orientation and direction of said displacement,” as recited in Element 15[b]. Louch describes this scrolling with reference to Figure 5B.

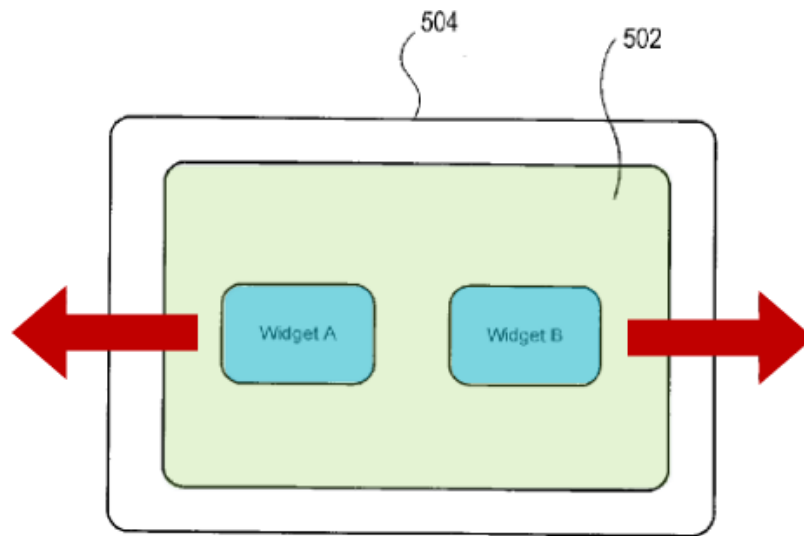


FIG. 5B

During scrolling, one widget lastingly replaces another so that a user can find a desired widget. Ex-1002 ¶238. Louch states, “When a desired dashboard/widget is found, the user can click or touch the dashboard/widget to invoke the widget. In

some implementations, when the dashboard/widget is invoked the dashboard/widget is displayed to cover the entire display area 502 (full screen).” Ex-1009 ¶80.

In Louch, the direction of a finger gesture on the touchscreen corresponds to the direction of the scrolling: “In some implementations, the user *can scroll (horizontally or vertically)* through dashboards or widgets across the display area 502 by touching the widgets and making the appropriate *finger gestures in horizontal or vertical directions.*” Ex-1009 ¶80. Thus, “the orientation and the direction of scrolling depend[s] on the orientation and direction of said displacement,” as recited in Element 15[b].

For the same reasons described above for Element 15[a] (§XII.C.4.b), it would have been obvious to apply the user interface in Louch to the wristwatch taught by the combination of Mooring and Satoshi. Ex-1002 ¶¶240-41.

d. Element 15[c]: wherein at least two of said screens correspond to two distinct mechanical movements that can be selected by the user.

Mooring-Satoshi-Louch teaches Element 15[c]. Ex-1002 ¶¶242-44.

As explained above (§XII.A.6), Satoshi discloses that a user can select different combinations of gears to simulate the mechanical movement of a clock. Ex-1002 ¶243. It would have been obvious to a POSITA that different combinations of gears could be associated with different widgets in Louch. *Id.* ¶244. Thus, by

scrolling widgets as taught in Louch, a user can select different mechanical movements for display. *Id.*

5. Independent Claim 16

a. Element 16[pre]: Wristwatch comprising:

To the extent the preamble is limiting, Mooring-Satoshi teaches the preamble for the same reasons described above for Element 1[pre] (§XII.A.2.a). Ex-1020, Element 16[pre]; Ex-1002 ¶245.

b. Element 16[a]: a watchcase;

Mooring-Satoshi teaches Element 16[a] for the same reasons described above for Element 1[a] (§XII.A.2.b). Ex-1020, Element 16[a]; Ex-1002 ¶246.

c. Element 16[b]: an electronic display in said watchcase;

Mooring-Satoshi teaches Element 16[b] for the same reasons described above for Element 1[b] (§XII.A.2.c). Ex-1020, Element 16[b]; Ex-1002 ¶247.

d. Element 16[c]: a touch sensor associated with said display and enabling the displacement of at least one finger along at least two different directions to be detected

Mooring-Satoshi-Louch teaches Element 16[c] for the same reasons described above for Element 15[a] (§XII.C.4.b). Ex-1020, Element 16[c]; Ex-1002 ¶248.

e. Element 16[d]: a quartz oscillator,

Mooring-Satoshi teaches Element 16[d] for the same reasons described above for Element 1[c] (§XII.A.2.d). Ex-1020, Element 16[d]; Ex-1002 ¶249.

- f. Element 16[e]: a microcontroller being arranged for reproducing on said electronic display a simulation of a mechanical watch movement comprising a gear train visible so as to indicate the time and for synchronizing the displayed time by said displayed mechanical movement with that of said quartz oscillator,**

Mooring-Satoshi teaches Element 16[e] for the same reasons described above for Element 1[d] (§XII.A.2.e). Ex-1020, Element 16[e]; Ex-1002 ¶250.

- g. Element 16[f]: said microcontroller being further arranged for interpreting signals from the touch sensor, for selecting one screen from among several available screens depending on these signals, and for displaying this screen on the entirety of said display,**

Mooring-Satoshi in combination with Louch teaches Element 16[f] for the same reasons described above for Element 15[a] (§XII.C.4.b) and Element 16[c] (§XII.C.5.d). Ex-1020, Element 16[f]; Ex-1002 ¶251.

- h. Element 16[g]: said microcontroller being further specifically arranged so as to cause screens to scroll by in order to replace durably the screen displayed initially by another screen, with the orientation and the direction of scrolling depending on the orientation and direction of said displacement,**

Mooring-Satoshi in combination with Louch teaches Element 16[g] for the same reasons described above for Element 15[b] (§XII.C.4.c). Ex-1020, Element 16[g]; Ex-1002 ¶252.

- i. **Element 16[h]: wherein at least two of said screens correspond to two distinct mechanical movements that can be selected by the user.**

Mooring-Satoshi teaches Element 16[h] for the same reasons described above for Element 15[c] (§XII.C.4.d). Ex-1020, Element 16[h]; Ex-1002 ¶253.

D. Ground 4: Claims 4-5 are obvious over Mooring and Satoshi in further view of Inoue and Tam.

1. **A POSITA would have been motivated to combine Mooring and Satoshi's teachings with the teachings of Tam and Inoue and would have had a reasonable expectation of success.**

It would have been obvious to combine Mooring and Satoshi for the reasons described above (§XII.A.1). A POSITA would have been motivated to further apply the teachings of Tam and Inoue to Mooring-Satoshi, and would have had a reasonable expectation of success in doing so. Ex-1002 ¶¶254-63.

It would have been obvious to apply the teachings of Inoue to Mooring-Satoshi. Ex-1002 ¶255. Both Mooring and Satoshi disclose a wristwatch with a touchscreen LCD capable of displaying an analog representation of time (*i.e.*, with hour and minute hands). Ex-1005 ¶¶22, 39; Ex-1007 ¶¶4, 11. Similarly, Inoue discloses a wristwatch with an LCD for displaying time Ex-1010 ¶¶3, 15. Inoue further discloses that such a wristwatch may include a crown and push-buttons as input devices for changing the information displayed on the LCD. *Id.* ¶¶126, 159, 294.

It would have been obvious to a POSITA to apply Inoue's teaching to use a crown and push-buttons to control a LCD display on a wristwatch to the LCD-wristwatch of Mooring-Satoshi. Ex-1002 ¶256. A POSITA would have recognized that a crown and push-buttons are common input and control devices on watches. *Id.* Because users are already familiar with these types of input devices, a POSITA would have been motivated to apply them to control the LCD display of the wristwatch of Mooring-Satoshi (as Inoue teaches) to provide the convenience of familiar control elements. *Id.* For example, use of a crown to adjust the time or date has been a familiar feature of watches for decades. *Id.* Moreover, both the challenged patent and Satoshi note the desirability of displaying the mechanical movement and inner workings of a watch, and providing push-buttons or a crown would enhance this realism and improve the user's experience. Ex 1001, 1:35-46; Ex 1007 ¶4; Ex-1002 ¶256.

It would have been obvious to a POSITA to further apply the teachings of Tam to the wristwatch of Mooring-Satoshi-Inoue. *Id.* ¶¶57-68, 257. As stated in its title, Tam teaches "Physical-Based Simulations of Mechanical Watches and Clocks." Ex-1012, p. 1. In particular, Tam teaches simulating internal mechanical watch components, such as the gear train and Swiss lever escapement (the most popular escapement for mechanical watches), to show the kinetics and dynamics of escapements. *Id.* Just as Tam discloses simulating this Swiss lever escapement, a

POSITA would have understood that the other internal components of a watch can be simulated and displayed to enhance user interest. Ex-1002 ¶257. A POSITA would have understood that the crown on the outside of a watch case interacts with a crown stem inside the watchcase and that a push-button similarly interacts with internal components in a mechanical watch. *Id.* ¶¶258-59. Thus, it would have been obvious to simulate these internal components (the crown stem and elements with which the push-buttons interact) using the process described in Tam. *Id.* ¶260.

Tam further teaches displaying the simulated watch components, as shown below in Figure 7. Ex-1012, p. 4.

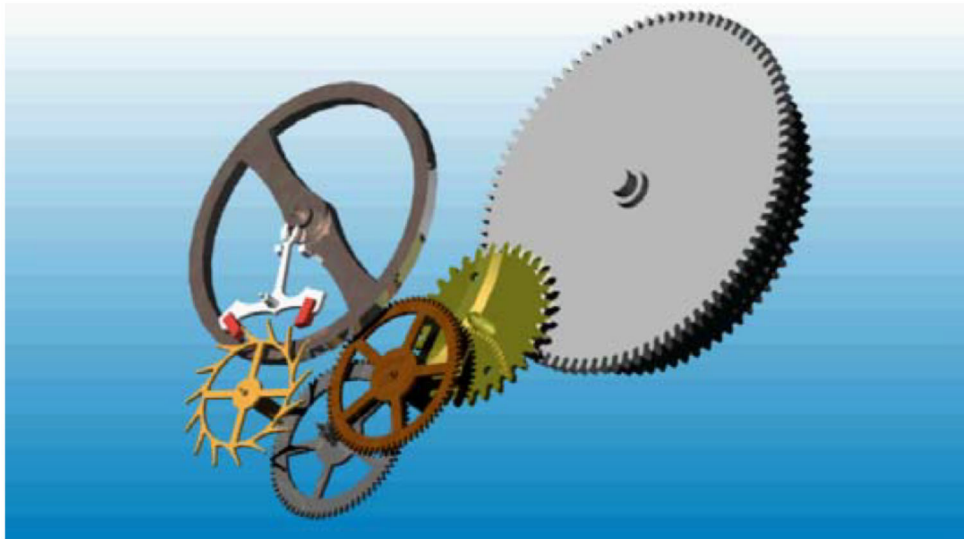


Fig. 7: The model of Swiss Lever Escapement connected to the gear train and the barrel. The escapement is on the left side while the barrel is on the right.

Based on Tam's teaching to display the simulated watch components, it would have been obvious to display the interior portions of the component (such as the portions

of the crown stem and push-buttons elements that extend into the watch) on the LCD of the wristwatch of Mooring-Satoshi-Inoue. This would result in a more realistic simulated skeleton watch. Ex-1002 ¶262.

A POSITA would have been motivated to show the internal workings of a mechanical watch. *Id.* The '033 Patent admits that it was already known that users enjoy seeing the mechanical movement and other inner working of a mechanical watch. Ex-1001, 1:35-46. Tam and Satoshi teach the same. Ex-1012, p. 1 (“Mechanical watches and clocks are intricate mechanical devices that fascinate millions of people around the world.”); Ex-1007 ¶4 (describes displaying gears “to enhance user interest”). Thus, design incentives and market forces would have motivated a POSITA to apply the teaching of Tam (to simulate and display internal watch components) to the combination of Mooring-Satoshi-Inoue, by displaying the inner workings of the crown and push-buttons on the LCD display. Ex-1002 ¶262.

A POSITA would have had a reasonable expectation of success in combining Mooring-Satoshi with Tam and Inoue. *Id.* ¶263. A POSITA would have understood that these references disclose interrelated teachings based on routine technologies that would have been amenable to various well-understood and predictable combinations. *Id.*

2. **Dependent Claim 4: The wristwatch of claim 1, comprising a crown outside said watchcase; a crown stem being displayed on said display opposite said crown, the position of said displayed crown stem being modified by said microcontroller when said microcontroller detects that said crown has been actuated, so as to simulate a direct action by said crown on said displayed crown stem.**

Mooring-Satoshi-Inoue-Tam teaches Claim 4. *Id.* ¶¶. 264-67

As described above, Mooring-Satoshi teaches the wristwatch of Claim 1. *See supra* §XII.A.2.

Mooring-Satoshi-Inoue-Tam teaches “a crown outside said watchcase,” as recited in Claim 4. Ex-1002 ¶265. As shown below in Figure 1, Inoue discloses a “**crown** . . . for setting or operating the timepiece.” Ex-1010 ¶125. Inoue teaches that crown 451 can be used to adjust the information displayed on the LCD display of the wristwatch. *Id.* ¶159.

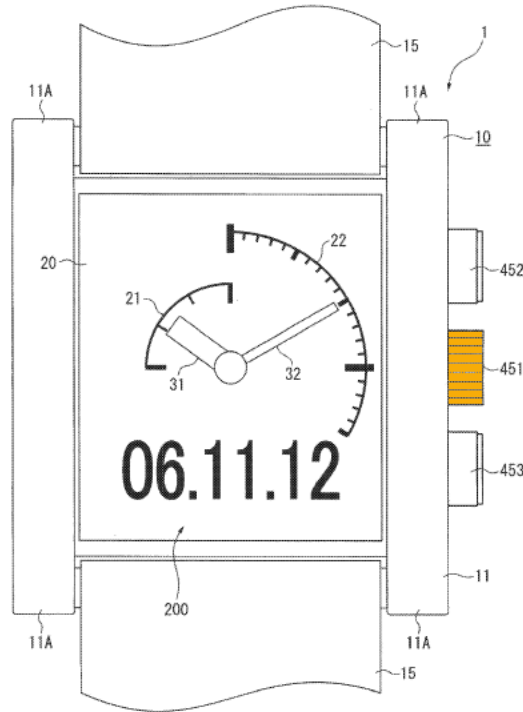


FIG. 1

Inoue teaches that crown 451 can be “located on the side of the timepiece body 10,” as shown above in Figure 1. *Id.* ¶126. Thus, Inoue teaches “a crown outside said watchcase,” as recited in Claim 4. Ex-1002 ¶265-66.

Mooring-Satoshi-Inoue-Tam also teaches “a crown stem being displayed on said display opposite said crown, the [internal] position of said displayed crown stem being modified by said microcontroller when said microcontroller detects that said crown has been actuated, so as to simulate a direct action by said crown on said displayed crown stem.” *Id.* ¶266. As described above (§XII.E.1), it would have been obvious to apply the Tam’s teaching to simulate and display internal watch components to the crown of Inoue. *Id.* ¶267. A POSITA would have recognized a

crown is a common watch component, as taught in Inoue. *Id.* A POSITA would have also understood that the movement of a crown outside a watch case also results in movement of the crown stem inside the watch case, which in turn results in movement of the simulated hands and gear train. *Id.* Based on Tam, it would have been obvious to simulate and display the movement of the crown stem. *See supra* §XII.E.1. Thus, it would have been obvious to display “a crown stem . . . on said display opposite said crown, the position of said displayed crown stem being modified by said microcontroller when said microcontroller detects that said crown has been actuated, so as to simulate a direct action by said crown on said displayed crown stem,” as recited in Claim 4. Ex-1002 ¶267.

Mooring-Satoshi-Inoue-Tam teaches Claim 4. *Id.*

3. **Dependent Claim 5: The wristwatch of claim 1, comprising a push-button outside said watchcase; an element displayed on said display opposite said push-button, the position of said element being modifiable by said microcontroller when said microcontroller detects that said push-button has been actuated, so as to simulate a direct action by said push-button on said displayed element.**

Mooring-Satoshi-Inoue-Tam teaches Claim 5. *Id.* ¶¶268-70.

As described above, Mooring-Satoshi teaches the wristwatch of Claim 1. *See supra* §XII.A.2.

Mooring-Satoshi-Inoue-Tam teaches “a push-button outside said watchcase,” as recited in Claim 5. Ex-1002 ¶269. As shown below in Figure 1, Inoue further

displayed on the LCD display of the wristwatch. *Id.* ¶159.

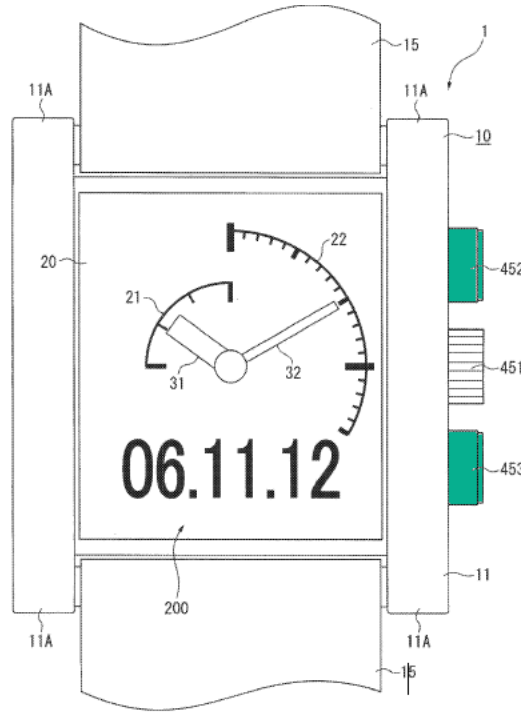


FIG. 1

push-button outside said watchcase,” as recited in Claim 5. Ex-1002 ¶¶269-70.

been actuated, so as to simulate a direct action by said push-button on said displayed

element,” as recited in Claim 5. Ex-1002 ¶270. As described above (§XII.E.1), it would have been obvious to apply the Tam’s teaching to simulate and display internal watch components to the crown of Inoue. *Id.* A POSITA would have recognized a push-button as a common watch component, as taught in Inoue. *Id.* A POSITA would have also understood that the movement of the push-button outside a watch case results in movement of an element opposite the push-button inside the watch case. *Id.* For example, a POSITA would have been aware that push buttons on the side of a conventional watch can be used to access certain watch features, such as starting or stopping a chronograph. *Id.* Based on Tam, it would have been obvious to simulate and to display the movement of these internal components because a user would have had an interest in the inner workings of a watch mechanism and would have desired to see how a pushbutton would interact with internal watch components to initiate functions such as starting or stopping a chronograph. *See supra* §XII.E.1; Ex-1002 ¶270. Thus, it would have been obvious to display “an element . . . opposite said push-button, the position of said element being modifiable by said microcontroller when said microcontroller detects that said push-button has been actuated, so as to simulate a direct action by said push-button on said displayed element,” as recited in Claim 5. Ex-1002 ¶270.

Mooring-Satoshi-Inoue-Tam teaches Claim 5. *Id.*

E. Ground 5: Claims 6-10 and 13 are obvious over Mooring and Satoshi in further view of Tam and Ruchonnet.

- 1. A POSITA would have been motivated to combine Mooring and Satoshi's teachings with the teachings of Tam and Ruchonnet and would have had a reasonable expectation of success.**

It would have been obvious to combine Mooring and Satoshi for the reasons described above (§XII.A.1). A POSITA would have been motivated to apply the teachings of Tam and Ruchonnet to Mooring-Satoshi, and would have had a reasonable expectation of success in doing so. Ex-1002 ¶¶271-78.

As indicated by its title, Tam teaches “Physical-Based Simulations of Mechanical Watches and Clocks.” Ex-1012, p. 1. In particular, Tam teaches simulating internal mechanical watch components, such as the Swiss Lever Escapement shown below in Figure 7 below. Ex-1012, p. 1, 4.

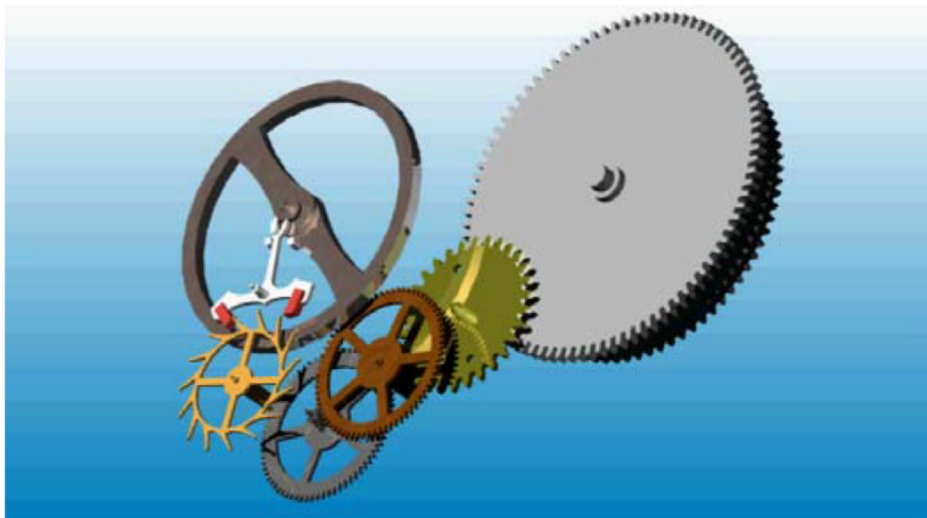


Fig. 7: The model of Swiss Lever Escapement connected to the gear train and the barrel. The escapement is on the left side while the barrel is on the right.

Based on Tam's teaching to simulate and display internal watch components, it would have been obvious to simulate and display internal watch components on the LCD of the wristwatch of Mooring-Satoshi. Ex-1002 ¶273. Ruchonnet describes a mechanical watch with various internal components, including a "gear train" (Ex-1011 ¶4), an "oscillating mass" (*Id.* ¶35), a "regulating organ" (*Id.* ¶4), a "balance" (*Id.*), a "tourbillon" (*Id.* ¶45), and a regulating organ with a balance, a returning element, and an escapement (i.e., "a regulating organ . . . comprising an escapement and a sprung balance") (*Id.*). In view of Tam's teachings to simulate and display internal components of a mechanical watch, including an escapement, it would have been obvious to simulate and display these additional internal components taught in Ruchonnet. Ex-1002 ¶274.

A POSITA would have been motivated to show the internal workings of a mechanical watch. *Id.* ¶275. The '033 Patent admits that it was already known that users enjoy seeing the mechanical movement and other inner working of a mechanical watch. Ex-1001, 1:35-46. Tam and Satoshi teach the same. Ex-1012, p. 1 ("Mechanical watches and clocks are intricate mechanical devices that fascinate millions of people around the world."); Ex-1007 ¶4 (describes displaying gears "to enhance user interest"). Thus, design incentives and market forces would have motivated a POSITA to combine the teachings of Mooring, Satoshi, Tam, and Ruchonnet to result in a wristwatch displaying on a touchscreen an authentic

simulation of a mechanical watch movement, including internal watch components (such as an oscillating mass, a regulating organ, a balance, a tourbillon, and a regulating organ with a balance, a returning element, and an escapement). Ex-1002 ¶275.

Moreover, based on the teachings of Tam, a POSITA would have understood that a realistic simulation and display of the internal components involves calculating the forces operating on those components. *Id.* ¶276. Tam teaches simulating the “kinetics” and “dynamics” of the internal watch components. Ex-1012, p. 1.⁷ Tam’s simulation calculates the forces placed on the simulated internal watch components. Ex-1002 ¶¶107-112, 276. For example, Tam simulates the movement of a Graham escapement. Ex-1012, p. 2. Tam describes that this escapement includes a pendulum, which “requires a push to jump start.” *Id.* A POSITA would have realized that Tam calculates the force of the push and the force of gravity to simulate the movement and position of the pendulum. Ex-1002 ¶267. As another example, Tam states that for the Swiss lever escapement simulation, “a force input is added on the balance wheel to simulate the effect of hairspring.” Ex-1012, p. 4.

⁷ The ’033 Patent assumes that simulating internal watch components is within the knowledge of a POSITA.

Based on the teachings a Tam, a POSITA would have been motivated to use the accelerometer (already in the wristwatch based on Mooring) to measure the forces caused by changes in motion (accelerations) and applied to the internal components. Ex-1002 ¶277. The wristwatch of Mooring-Satoshi includes an accelerometer, as shown below in Figure 6.

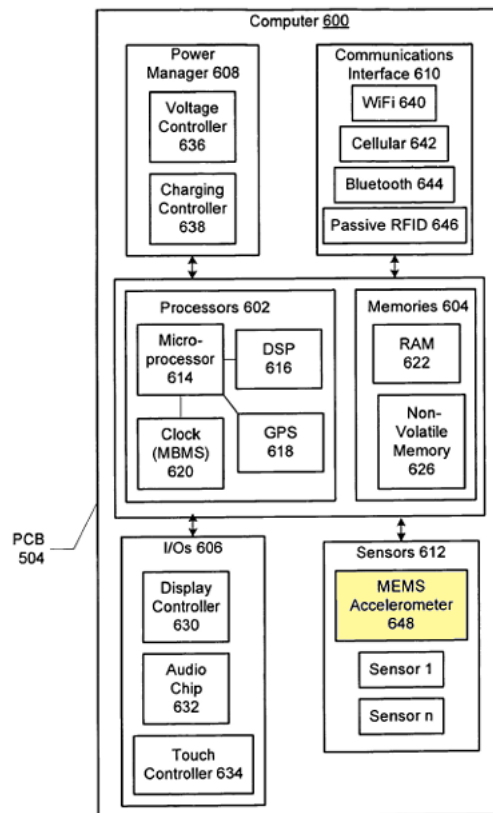


FIG. 6

Mooring states, “MEMS accelerometer 648 may be used to measure information such as position, motion, tilt, shock, and vibration for use by microprocessor 614.” Ex-1005 ¶65. A POSITA would have understood that the accelerometer measures the forces caused by changes in motion (accelerations) and applied to the wristwatch

of Mooring. Ex-1002 ¶278. As taught in Tam, a POSITA would have motivated to use the information from the accelerometer to calculate a more realistic simulation of the internal watch components. *Id.* Thus, it would have been obvious to a POSITA to adjust the position and movement of the simulated internal components based on the information from the accelerometer. *Id.*

2. Dependent Claim 6: The wristwatch of claim 1, further comprising an accelerometer, said microcontroller being arranged for modifying the position of at least one of said elements of said movement according to the data from said accelerometer.

Mooring-Satoshi-Tam-Ruchonnet teaches Claim 6. *Id.* ¶¶. 279-83

As described above, Mooring-Satoshi teaches the wristwatch of Claim 1, which includes touchscreen displaying a simulation of a mechanical watch movement comprising a gear train. *See supra* XII.A.1-2. And, as shown below in Figure 6, Mooring’s wristwatch includes an “accelerometer,” as recited in Claim 6. Ex-1002 ¶281.

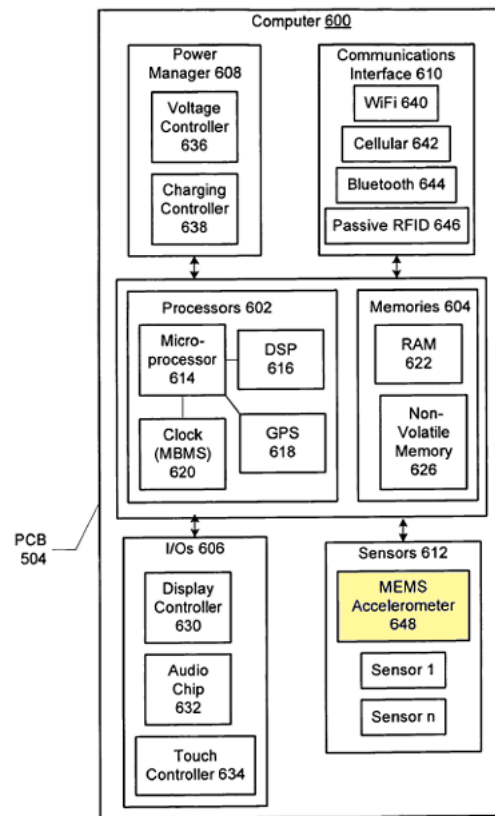


FIG. 6

Mooring-Satoshi-Tam-Ruchonnet further teaches “said microcontroller being arranged for modifying the position of at least one of said elements of said movement according to the data from said accelerometer,” as recited in Claim 6. Ex-1002 ¶282. As described above (§XII.E.1), it would have been obvious to apply the teachings of Tam and Ruchonnet to simulate and display the internal components of a mechanical watch, and it would have been obvious to a POSITA to adjust the position and movement of the simulated internal components based on information from the accelerometer. *Id.* ¶282.

Thus Mooring-Satoshi-Tam-Ruchonnet teaches Claim 6. *Id.* ¶283.

3. **Dependent Claim 7: The wristwatch of claim 6, wherein said displayed mechanical movement is an automatic movement with an oscillating mass, the position of said displayed oscillating mass depending on an output signal from said accelerometer.**

Mooring-Satoshi-Tam-Ruchonnet teaches Claim 7. Ex-1002 ¶¶284-88.

Mooring-Satoshi-Tam-Ruchonnet teaches displaying “an automatic movement with an oscillating mass,” as recited in Claim 7. *Id.* ¶290. As described above (§XII.E.1), it would have been obvious to apply the teachings of Tam and Ruchonnet to simulate and display the internal components of a mechanical watch. *Id.* Ruchonnet discloses a mechanical watch with an “oscillating mass.” Ex-1011 ¶¶30, 35, 44.

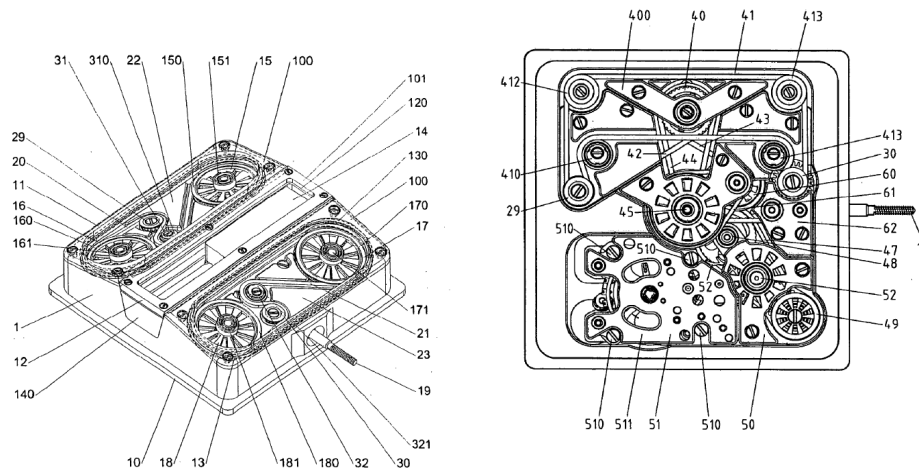


Fig. 4

Based on the teachings of Tam and Ruchonnet, it would have been obvious to display a simulated mechanical movement including “an automatic movement with an oscillating mass,” as recited in Claim 7. Ex-1002 ¶291.

Mooring-Satoshi-Tam-Ruchonnet further teaches that “the position of said displayed oscillating mass depend[s] on an output signal from said accelerometer,” as recited in Claim 7. *Id.* ¶292. As described above (§XII.E.1), it would have been obvious to adjust the position and movement of simulated internal components (such as the oscillating mass) based on information from the accelerometer of Mooring. *Id.*

Thus Mooring-Satoshi-Tam-Ruchonnet teaches Claim 7. *Id.*

4. **Dependent Claim 8: The wristwatch of claim 6, wherein said displayed mechanical movement comprises a regulating organ with a balance and/or a tourbillon displayed on said display, the position of said displayed balance and/or tourbillon depending on an output signal from said accelerometer.**

Mooring-Satoshi-Tam-Ruchonnet teaches Claim 8. Ex-1002 ¶¶289-92.

Mooring-Satoshi-Tam-Ruchonnet teaches displaying a “mechanical movement compris[ing] a regulating organ with a balance and/or a tourbillon displayed on said display,” as recited in Claim 8. *Id.* ¶290. As described above (§XII.E.1), it would have been obvious to apply the teachings of Tam and Ruchonnet to simulate and display the internal components of a mechanical watch. *Id.* Ruchonnet discloses a mechanical watch with a regulating organ with a balance and/or a tourbillon. Ex-1011 ¶¶4 (“**regulating organ** . . . comprising an escapement

and a sprung *balance* that determine the watch's running”), 45 (stating the regulating organ may be a “*tourbillon*”).

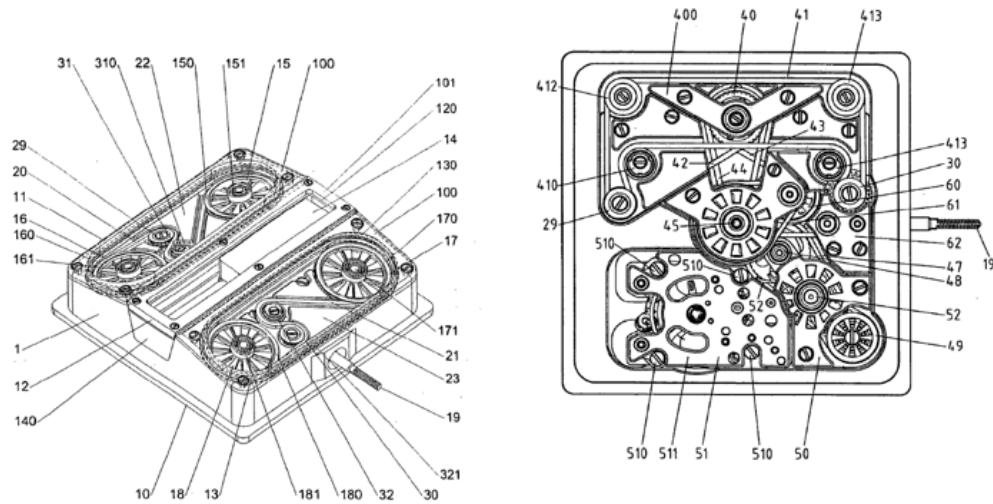


Fig. 4

Thus, based on the teachings of Tam and Ruchonnet, it would have been obvious to display a “mechanical movement compris[ing] a regulating organ with a balance and/or a tourbillon displayed on said display.” Ex-1002 ¶291.

Mooring-Satoshi-Tam-Ruchonnet further teaches that “the position of said displayed balance and/or tourbillon depend[s] on an output signal from said accelerometer,” as recited in Claim 8. Ex-1002 ¶292. As described above (§XII.E.1), it would have been obvious to adjust the position and movement of simulated internal components (such as the balance and/or tourbillon) based on information from the accelerometer of Mooring. *Id.*

Thus Mooring-Satoshi-Tam-Ruchonnet teaches Claim 8. *Id.*

5. **Dependent Claim 9: The wristwatch of claim 1, wherein said displayed mechanical movement comprises a regulating organ with a balance, a returning element and an escapement, the microcontroller being arranged for calculating and displaying a simulation of the oscillations of said displayed regulating organ taking into account the mass of said balance and the rigidity of said returning element, wherein the displayed time depends on said simulation.**

Mooring-Satoshi-Tam-Ruchonnet teaches Claim 9. Ex-1002 ¶¶293-98.

Mooring-Satoshi-Tam-Ruchonnet teaches displaying a “mechanical movement compris[ing] a regulating organ with a balance, a returning element and an escapement,” as recited in Claim 9. *Id.* ¶294. As described above (§XII.E.1), it would have been obvious to apply the teachings of Tam and Ruchonnet to simulate and display the internal components of a mechanical watch. *Id.* Ruchonnet discloses a mechanical watch with a regulating organ with a balance, a returning element and an escapement. Ex-1011 ¶4 (“***regulating organ*** . . . comprising an ***escapement*** and a ***sprung balance***⁸ that determines the watch’s running”).

⁸ A “sprung balance” discloses a balance and a returning element. Ex-1002 ¶295. The word “sprung” indicates a spring is the returning element. *Id.*

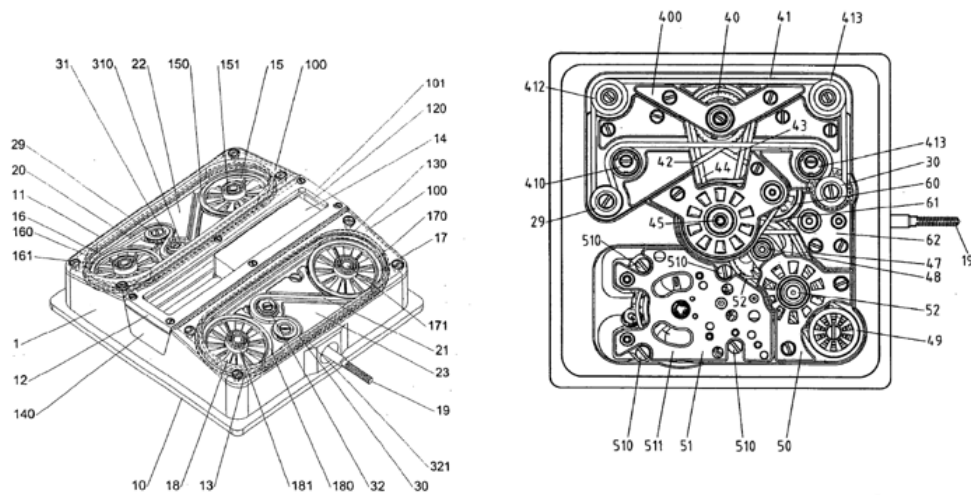


Fig. 4

Thus, based on the teachings of Tam and Ruchonnet, it would have been obvious to display a “a “mechanical movement compris[ing] a regulating organ with a balance, a returning element and an escapement.” Ex-1002 ¶296.

Mooring-Satoshi-Tam-Ruchonnet further teaches that “the microcontroller calculate[es] and display[s] a simulation of the oscillations of said displayed regulating organ taking into account the mass of said balance and the rigidity of said returning element,” as recited in Claim 9. *Id.* ¶297. Tam teaches to simulate internal watch components, including the effect of forces on those internal watch components. *See supra* §XII.E.1; Ex-1002 ¶297. Tam states, “In this simulation model, a force input is added on the balance wheel to simulate the effect of hairspring.” Ex-1012, p. 4. Because the rigidity of the returning element produces a force like a hairspring, it would have been obvious that a simulation of the returning element would have to take into account its rigidity. Ex-1002 ¶297.

Similarly, it would have been obvious that simulating a balance would have to take into account its mass, just as the simulation of the pendulum in Tam had to take into account its mass. *Id.* As described above (§XII.E.1), a POSITA would have been motivated to apply Tam’s teachings to make the display of the simulated oscillations of the regulating organ more realistic. *Id.*

Mooring-Satoshi-Tam-Ruchonnet also teaches “the displayed time depends on said simulation,” as recited in Claim 9. *Id.* ¶298. Satoshi teaches that the rotation rate of the driving gear and gear ratios determines the movement of the watch hands. Ex-1007 ¶¶4, 42. Just as the movement of the simulated gears in Satoshi determines the movement of the hands, the movement of the internal watch components in a simulated mechanical movement determines the movement of the watch hands and thus the displayed time. Ex-1002 ¶298. As a result, the display time depends on the simulation. *Id.*

Thus Mooring-Satoshi-Tam-Ruchonnet teaches Claim 9. *Id.*

6. Dependent Claim 10: The wristwatch of claim 9, comprising means for modifying the running of said displayed regulating organ according to the accelerations to which the watch is subjected.

Mooring-Satoshi-Tam-Ruchonnet teaches Claim 10. *Id.* ¶¶299-301.

As discussed in Section X above, this term should be construed under 35 U.S.C. §112(6). The recited function is “modifying the running of said displayed

regulating organ according to the accelerations to which the watch is subjected,” and the corresponding structure is the closest algorithm in the specification:

- (1) assigning a virtual mass to the regulating organ (Ex-1001, 3:43-45);
- (2) calculating the forces to which the regulating organ is subjected according to the measured acceleration and any change in the position of the regulating organ due to those forces (*Id.*, 3:45-47); and
- (3) displaying the new position of the regulating organ (*Id.*, 3:47-48).

As described above (§XII.E.5), it would have been obvious to a POSITA that the combination of Mooring-Satoshi-Tam-Ruchonnet employs the above algorithm to modify the running of said displayed regulating organ. Tam teaches to simulate internal watch components, including the effect of forces on those internal watch components. *See supra* §XII.E.1; Ex-1002 ¶300. For example, Tam states, “In this simulation model, a force input is added on the balance wheel to simulate the effect of hairspring.” Ex-1012, p. 4. As another example, Tam describes a Graham Escapement mechanism with a pendulum and states the “whole movement launches by a push on the pendulum.” *Id.*, p. 2. Tam’s Figure 5 shows the displacement of the pendulum over time. *Id.*, p. 3.

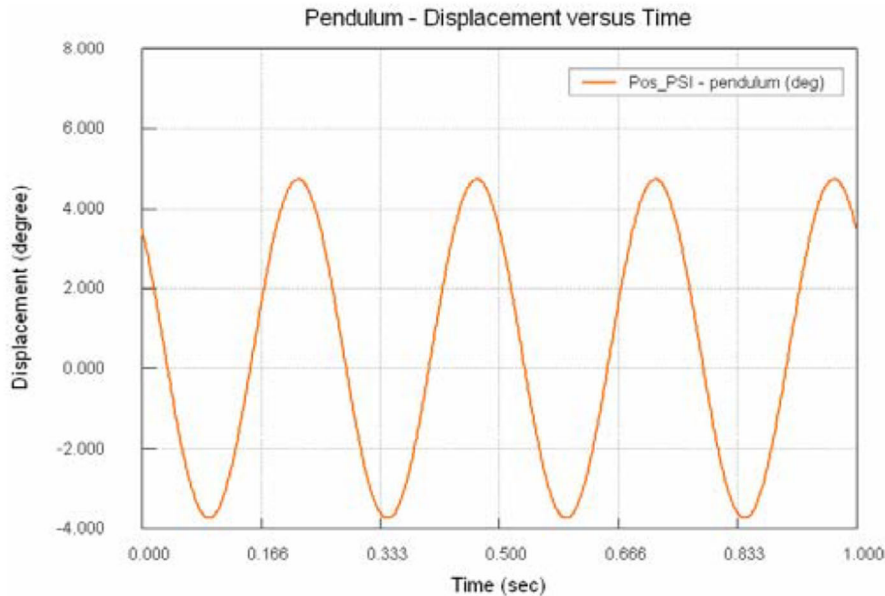


Fig. 5: Displacement versus time of the pendulum.

A POSITA would have understood that Tam's simulation of the pendulum, requires (1) assigning a virtual mass to the pendulum; (2) calculating the forces (such as the initial push and gravity) to which the pendulum is subjected and any change in the position of the pendulum due to those forces; and (3) displaying the new position of the pendulum. Ex-1002 ¶300-01.

It would have been obvious to use this same algorithm to simulate the regulating organ in Mooring-Satoshi-Tam-Ruchonnet: (1) assigning a virtual mass to the regulating organ; (2) calculating the forces to which the regulating organ is subjected according to the measured acceleration from the accelerometer of Mooring and calculating any change in the position of the pendulum due to those forces; and

(3) displaying the new position of the regulating organ. *Id.* ¶301. Thus, Mooring-Satoshi-Tam-Ruchonnet teaches the algorithm for Claim 10. *Id.*

Mooring-Satoshi-Tam-Ruchonnet teaches Claim 10. *Id.*

7. Dependent Claim 13: The wristwatch of claim 1, arranged for displaying said mechanical movement on the whole surface of the electronic display so as to occupy the position and the dimensions of a real mechanical movement.

As described above, the Mooring-Satoshi combination teaches Claim 13. *See supra* (§XII.A.5).

Alternatively, Mooring-Satoshi in combination with Tam and Ruchonnet teaches Claim 13. Ex-1002 ¶¶302-04.

Ruchonnet specifically discloses a “skeleton-type” watch in which the dial is glass or transparent material so that an observer “to check the movement’s running.” Ex-1011 ¶31. Tam teaches simulating mechanical watch components, such as the Swiss lever escapement, to show the kinetics and dynamics of escapements. Ex-1012, p. 1. It would have been obvious to apply the teachings of Tam to simulate a skeleton watch (as taught in Ruchonnet) for display on the LCD display of the wristwatch of Mooring-Satoshi. Ex-1002 ¶303. As taught in Tam, the simulation would involve simulating the position and the dimensions of a real mechanical movement, namely the skeleton-type mechanical watch in Ruchonnet. *Id.* ¶304. A POSITA would have understood that, in skeleton-type wristwatch, the mechanical

movement occupies the face of wristwatch. *Id.* Thus, simulating a skeleton watch for display on the LCD display of the wristwatch of Mooring-Satoshi would involve “displaying said mechanical movement on the whole surface of the electronic display so as to occupy the position and the dimensions of a real mechanical movement,” as recited in Claim 13. *Id.*

Thus Mooring-Satoshi-Tam-Ruchonnet teaches Claim 13. *Id.*

F. Ground 6: Claim 18 is obvious over Mooring and Satoshi in further view of Lee, Tam, Inoue, and Ruchonnet.

It would have been obvious to apply the teaching of Lee to Mooring-Satoshi for the reasons described above in Ground 2. *See supra* §XII.B.1. It would have been obvious to further apply the teachings of Tam and Inoue to Mooring-Satoshi for the reasons described above in Ground 4. *See supra* §XII.d.1. It would have been obvious to further apply the teachings of Tam and Ruchonnet to Mooring-Satoshi for the reasons described above in Ground 5. *See supra* §XII.E.1.

As shown in Exhibit Ex-1020, the limitations in Claim 18 correspond to the limitation already discussed above.

- Element 18[a] corresponds to Element 2[b] (§XII.B.2.c).
- Element 18[b] corresponds to Claim 4 (§XII.D.2).
- Element 18[c] corresponds to Claim 5 (§XII.D.3).
- Element 18[d] corresponds to Claim 6 (§XII.E.2).

- Element 18[e] corresponds to Claim 7 (§XII.E.3).
- Element 18[f] corresponds to Claim 8 (§XII.E.4).
- Element 18[g] corresponds to Claim 9 (§XII.E.5).
- Element 18[h] corresponds to Claim 10 (§XII.E.6).
- Element 18[i] corresponds to either Claim 11 (§XII.A.3) or Claim 12 (§XII.A.4).⁹
- Element 18[j] corresponds to Claim 13 (§XII.E.7).
- Element 18[j] corresponds to Claim 14 (§XII.C.3).

Ex-1020, Cl. 18. Thus, for the reasons described above for these corresponding claims and elements, Mooring-Satoshi-Lee-Tam-Ruchonnet teaches Claim 18. Ex-1002 ¶¶305-320.

XIII. THE BOARD SHOULD NOT USE ITS DISCRETION TO DENY INSTITUTION UNDER *FINTIV*.

The Board should decline to exercise its discretion to deny institution under 35 U.S.C. §314(a). While Director Vidal’s June 21, 2022 Guidance made clear that “*Fintiv* is limited to facts of that case,” for completeness, Petitioner addresses the factors set forth in *Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11 (PTAB Mar.

⁹ The prior art disclosures teaching of either Claims 11 or 12 would individually be sufficient to teach Element 18[i].

20, 2020) (precedential). As explained below, the six factors set out in *Fintiv* do not justify denying institution.

The **first *Fintiv* factor** is neutral here because Samsung has not yet moved to stay the district court proceedings pending IPR, and the PTAB will not infer how the district court would rule should a stay be requested. *See, e.g., Hulu LLC v. SITO Mobile R&D IP, LLC et al.*, IPR2021-00298, Paper 11 at 10-11 (PTAB May 19, 2021).

For the **second *Fintiv* factor**, the district court has set February 18, 2025 as the trial date in the *Samsung* matter. Even if trial proceeds in February 2025, the above timing does not tip in favor of denying the petition in this case. *See, e.g., Apple Inc. v. Koss Corp.*, IPR2021-00305, Paper 14, 13 (PTAB June 3, 2021). This Petition is filed in October 2023. An institution decision should be issued within six months of docketing, around April 2024. And a final written decision (FWD) should be issued in April 2025. Thus, the earliest estimated trial date is around the same time as the FWD. Recent PTAB cases analyzing similar schedules have weighed the second factor as neutral or, at most, slightly in favor of denial. *See, e.g., Google LLC et al. v. Parus Holdings, Inc.*, IPR2020-00847, Paper 9, 12 (PTAB Oct. 21, 2020) (trial scheduled for three months before FWD weighs “at best, neutral”); *Apple Inc. v. Koss Corp.*, IPR2021-00305, Paper 14, 13-14 (PTAB June 3, 2021)

(trial scheduled for two months before FWD weighs “at most, minimally in favor” of denial).

The **third *Fintiv* factor** weighs strongly against denial. No hearing has been set and no substantive activity has occurred in the case. Because the investment in the trial has been minimal and Petitioner acted diligently, filing this Petition within two months of being served with infringement contentions, this factor weighs strongly against discretionary denial. *See, e.g., Hulu*, Paper 11, 13.

The **fourth *Fintiv* factor** also weighs against denial. As explained above, a FWD in this matter will occur within about two months of the currently-scheduled trial in the district court (assuming it holds to that date). Thus, “there is a reasonable likelihood that the Board will address the overlapping validity issues prior to the district court reaching them at trial..., thereby providing the possibility of simplifying issues for trial.” *Juniper Networks, Inc. v. Packet Intelligence LLC*, IPR2020-0039, Paper 21, 18 (PTAB Sept. 10, 2020); *see also MED-EL Elektromedizinische Geraete GmbH v. Sonova AG*, IPR2020-00176, Paper 13, 15 (PTAB June 3, 2020) (“[Overlap exists between the invalidity issues in this case and in the district court. This overlap may inure to the district court’s benefit, however, by simplifying issues for trial should we reach our determination on the challenges raised in the Petition before trial.]”).

On the **fifth *Fintiv* factor**, the Board should give little weight to the fact that Petitioner and PO are the same parties as in district court. *See Weatherford U.S., L.P., v. Enventure Global Tech., Inc.*, Paper 16, 11-13 (PTAB Apr. 14, 2021). Although Samsung is both petitioner and litigation defendant, this factor does not outweigh the other factors that strongly weigh against discretionary denial.

“Other circumstances” under the **sixth *Fintiv* factor** further weigh against discretionary denial. The merits of the Petition are especially strong, rendering most claims obvious. *See Align Tech., Inc. v. 3Shape A/S*, IPR2020-01087, Paper 15, 42-43 (PTAB Jan. 20, 2021). *See supra* §XII.

Taken together holistically, the *Fintiv* factors strongly weigh against denial.

XIV. CONCLUSION

Petitioner requests institution of IPR for Claims 1-19 of the '033 Patent based on each of the grounds in this Petition.

Respectfully Submitted,

/s/ William M. Fink
William M. Fink (Reg. No. 72,332)

CERTIFICATE OF WORD COUNT

Pursuant to 37 C.F.R. §42.24(d), Petitioner certifies that this petition includes 13,832 words, as measured by Microsoft Word, exclusive of the table of contents, mandatory notices under §42.8, certificates of service, word count, and exhibits.

CERTIFICATE OF SERVICE (37 C.F.R. §42.6(e)(1))

The undersigned hereby certifies that the above document was served on October 16, 2023, by filing this document through the Patent Trial and Appeal Board P-TACTS System, as well as delivering a copy via express mail upon the following attorneys of record for the Patent Owner and Petitioner:

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