

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ALIVECOR, INC.,
Petitioner

v.

APPLE INC.,
Patent Owner

Case No. IPR2024-00095

U.S. Patent No. 10,568,533 B2

PETITION FOR *INTER PARTES* REVIEW
UNDER 35 U.S.C. §312 AND 37 C.F.R. §42.104

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LIST OF EXHIBITS

Exhibit	Short Name	Description
Ex. 1001	'533 Patent	U.S. Patent No. 10,568,533 B2
Ex. 1002	'533 File History	Prosecution History of U.S. Patent No. 10,568,533 B2
Ex. 1003	Rosenberg Declaration	Declaration of Dr. Craig Rosenberg
Ex. 1004	Rosenberg CV	Curriculum vitae of Dr. Craig Rosenberg
Ex. 1005		CN Patent Publication No. CN106901720
Ex. 1006	AHIT	English Translation of CN Patent Publication No. CN106901720 and Certificate of Translation
Ex. 1007	Hooper	U.S. Patent No. 7,111,157
Ex. 1008	Cho	U.S. Patent Appl. Publ. No. 2016/0196635
Ex. 1009	Petterson	U.S. Patent No. 10,685,090
Ex. 1010	Albert	U.S. Patent Appl. Publ. No. 2015/0073285
Ex. 1011	Nakada	U.S. Patent No. 7,313,435
Ex. 1012	Mayor	U.S. Patent Appl. Publ. No. 2014/0173521
Ex. 1013	Riley	U.S. Patent No. 7,771,320
Ex. 1014	Hoffman	U.S. Patent Appl. Publ. No. 2012/0116550
Ex. 1015	mHealth Devices	AARATHI PRASAD, JACOB SORBER, TIMOTHY STABLEIN, DENISE ANTHONY, AND DAVID KOTZ, <i>UNDERSTANDING SHARING PREFERENCES AND BEHAVIOR FOR MHEALTH DEVICES</i> , ASSOCIATION FOR COMPUTER MACHINERY (2012) (“mHealth Devices”)

Exhibit	Short Name	Description
Ex. 1016	mHealth Devices Publication Info.	Publication Information for mHealth Devices – https://dl.acm.org/doi/pdf/10.1145/2381966.2381983?accessTab=true
Ex. 1017	Srinivasan	U.S. Patent No. 8,152,694
Ex. 1018	DiBenedetto	U.S. Patent No. 8,200,323
Ex. 1019	Soni	U.S. Patent No. 10,437,962
Ex. 1020	Lee	U.S. Patent No. 11,073,942
Ex. 1021	Weast	U.S. Patent No. 9,011,292
Ex. 1022	Apple’s Complaint	Complaint, <i>Apple Inc. v. AliveCor, Inc.</i> , Case No. 4:22-cv-07608-HSG, Dkt. No. 1 (N.D. Cal., Dec. 12, 2022)
Ex. 1023	Apple’s Infringement Contentions	Exhibit D to Apple’s Infringement Contentions Served July 25, 2023 in <i>Apple Inc. v. AliveCor, Inc.</i> , Case No. 4:22-cv-07608-HSG
Ex. 1024	National Judicial Caseload Profile	U.S. District Courts – National Judicial Caseload Profile (accessed via https://www.uscourts.gov/sites/default/files/cms_na_distprofile0331.2022.pdf)
Ex. 1025	Hardwick	Tim Hardwick, <i>AliveCor ‘Kardia Band’ Medical Grade EKG Analyzer for Apple Watch Receives FDA Approval</i> , MacRumors (Nov. 30, 2017), https://www.macrumors.com/2017/11/30/alivecor-kardia-ekg-band-medical-fda-apple-watch/
Ex. 1026	Kardia Video	Kardia by AliveCor, <i>How to record a clean EKG with KardiaBand</i> , YouTube (Nov. 30, 2017),

Exhibit	Short Name	Description
		https://www.youtube.com/watch?v=_Vlc9VE6VO4&t=2s
Ex. 1027	Kardia Video Publication Info	Publication Information for Kardia Video Kardia by AliveCor, <i>How to record a clean EKG with KardiaBand</i> , YouTube (Nov. 30, 2017), https://www.youtube.com/watch?v=_Vlc9VE6VO4&t=2s

AliveCor, Inc. (“Petitioner”) seeks IPR under 35 U.S.C. §§311-319 and 37 C.F.R. §42 of Claims 20-22, 24, 29, and 37 (“Challenged Claims”) of Patent No. 10,568,533 (“the ’533 Patent”). Petitioner requests cancellation of the Challenged Claims.

I. STANDING UNDER 37 C.F.R. §42.104(a)

Petitioner certifies the ’533 Patent is available for IPR and that Petitioner is not barred or estopped.

II. PAYMENT OF FEES

Petitioner authorizes Account No. 16-0605 to be charged.

III. OVERVIEW OF CHALLENGES AND RELIEF REQUESTED

Pursuant to 42.22(a)(1) and 42.104(b)(1)-(2), Petitioner requests cancellation of the Challenged Claims pursuant to the grounds below. Additional support is provided in the Declaration of Dr. Rosenberg (Ex. 1003).

Ground 1: Claims 20-21, 24, 29, and 37 are unpatentable under 35 U.S.C. §103 over *AHIT*, *Hooper*, and *Cho*.

Ground 2: Claim 22 is unpatentable under 35 U.S.C. §103 over *AHIT*, *Hooper*, *Cho*, and *Mayor*.

Ground 3: Claims 20-21, 24, 29, and 37 are unpatentable under 35 U.S.C. §103 over *Petterson*, *Albert*, and *Nakada*.

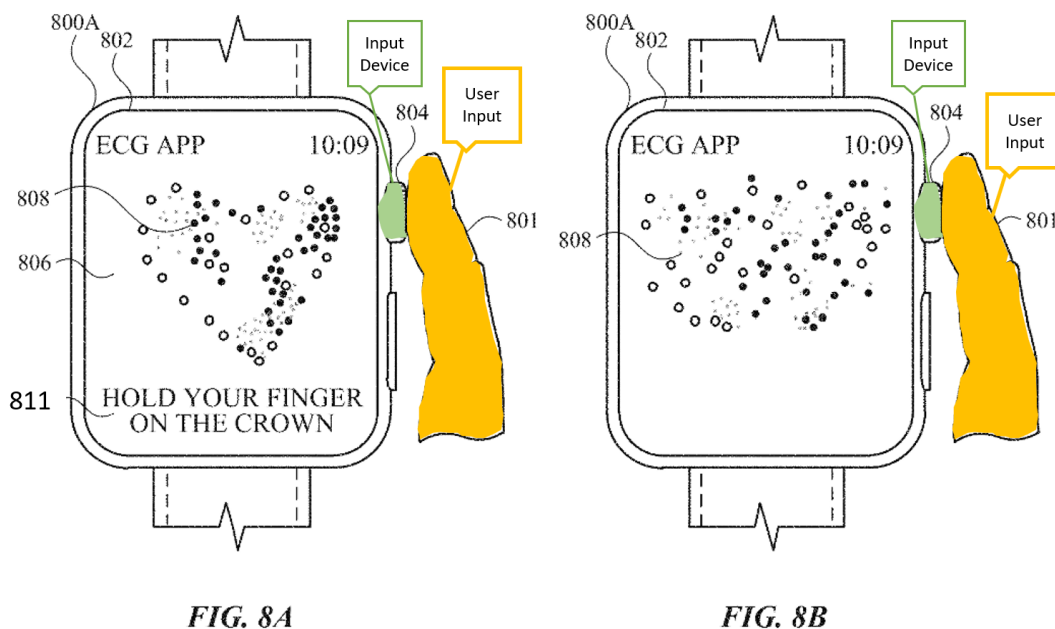
Ground 4: Claim 22 is unpatentable under 35 U.S.C. §103 over *Petterson, Albert, Nakada, and Mayor*.

IV. '533 PATENT SUMMARY

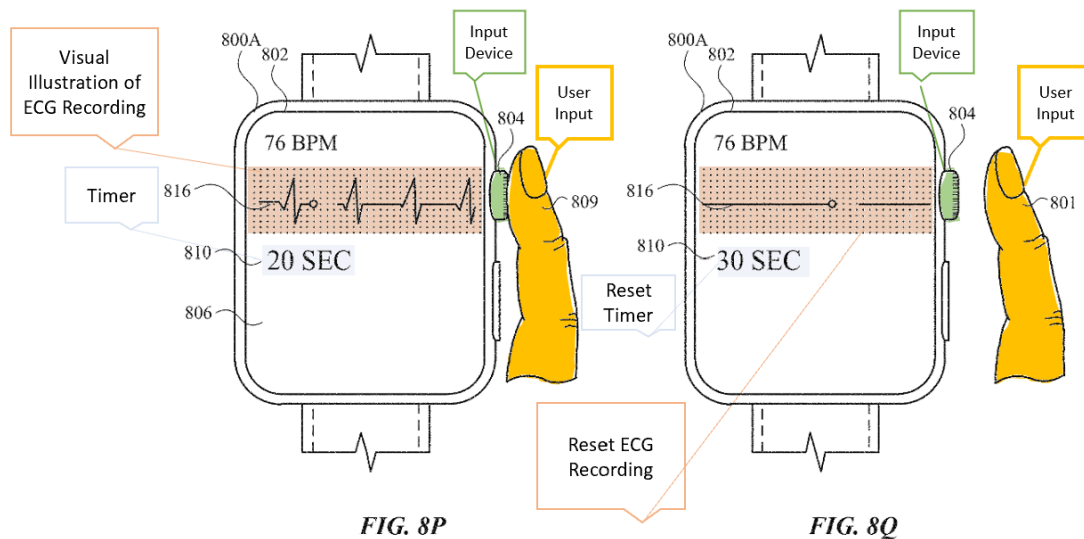
A. Specification

The '533 Patent purports to solve alleged problems relating to a user's ability to manage health monitoring using electronic devices (Ex. 1001, 4:35-60; Ex. 1003, ¶¶87-88).

Ex. 1001, Figs. 8A, 8B (annotated)



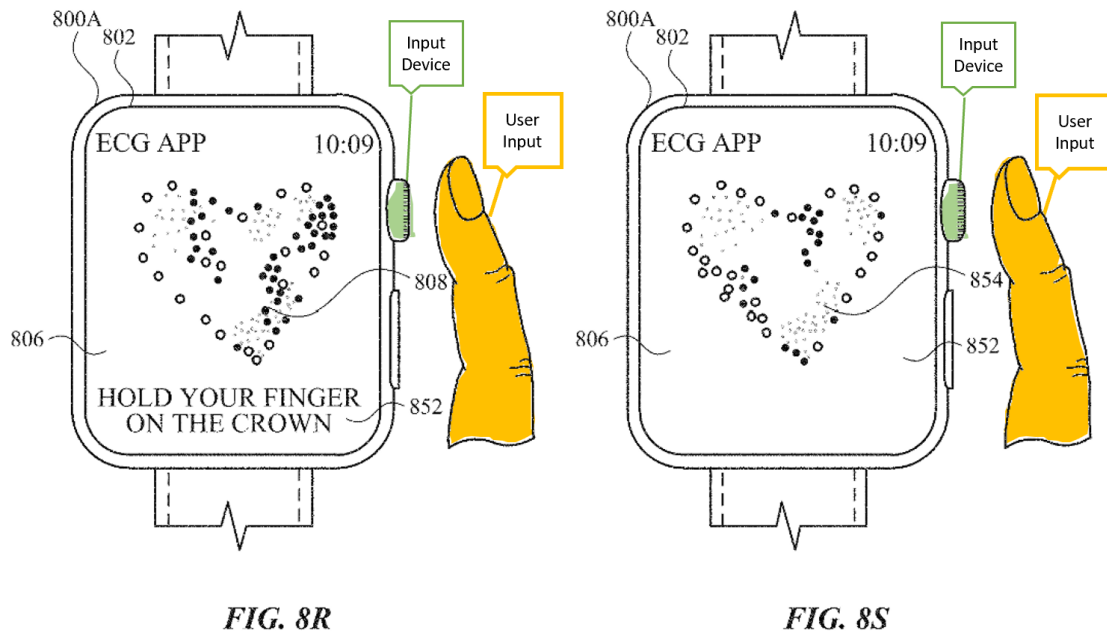
The '533 Patent discloses an “electronic device 800A” that detects a user input 801 on [an] input device” where “user input 801 is a continuous touch or contact on the input device that is below a threshold amount (e.g., an input that does not ‘click’ the input device)” (Ex. 1001, 61:28-42, FIG. 8B; Ex. 1003, ¶¶89-90).

Ex. 1001, Figs. 8P, 8Q (annotated)

The “electronic device” displays a “user interface 806 of the ECG application while performing an ECG recording corresponding to a user input 809 on input device 804” (Ex. 1001, 64:62-67, FIG. 8P; Ex. 1003, ¶91). The ’533 Patent explains that “the required duration of an ECG recording is 30 seconds” (Ex. 1001, 64:67-65:3; Ex. 1003, ¶92).

The “electronic device,” “in response to (e.g., immediately in response to or within a short period of time, such as 1 second) losing detection of the user input on input device 804,” “resets the ECG recording (e.g., terminates the previous recording and prepares to start a new recording” (Ex. 1001, 65:7-14, FIG. 8Q; Ex. 1003, ¶93). The “remaining time indicated in timer 810” is also rewound (Ex. 1001, 65:16-23, FIG. 8Q; Ex. 1003, ¶93).

Ex. 1001, Figs. 8R, 8S (annotated)



The electronic device “request[s] that the user restore the input on input device 804” “upon detecting that the user input on input device 804 has not been restored for at least a predetermined period of time (e.g., 2.5 seconds)” (Ex. 1001, 65:24-39. FIG. 8R; Ex. 1003, ¶94). The electronic device “transitions form [sic] the user interface of FIG. 8Q to the user interface of FIG. 8R upon detecting that the user input on input device 804 has not been restored for a first predetermined period of time” (Ex. 1001, 65:40-47; Ex 1003, ¶94). The electronic device transitions to “the user interface of FIG. 8S” “upon detecting that the user input on user input device 804 has not been restored for a second predetermined period of time” (Ex. 1001, 65:65-75:2, FIG. 8S; Ex. 1003, ¶95).

B. Prosecution History

U.S. Patent App. No. 16/143,959 was filed September 27, 2018 (Ex. 1003, ¶¶96-109). On April 17, 2019, the Examiner issued an Action (Ex. 1002, 645-655; Ex. 1003, ¶98). Thereafter, the Applicant held an interview (Ex. 1002, 609-610, 582-3; Ex. 1003, ¶99). In response to the Office Action, the Applicant made no amendments to the claims and added new claims (Ex. 1002, 576-607; Ex. 1003, ¶100). Applicant argued that the cited references did not disclose the claims because a teaching of “output[ting] a failure notice which indicates that the measurement has failed,” is not a disclosure or suggestion of “detecting for two different types of events that can cause the measurement of the biometric information to fail prior to completion” (Ex. 1002, 588; Ex. 1003, ¶101). Applicant referred to FIGs. 8P and 8Q as examples of the claim language in the first independent claim. (Ex. 1002, 585-586; Ex. 1003, ¶101).

The Examiner issued an Allowance (Ex. 1002, 80-86; Ex. 1003, ¶102).

C. Claim Construction

The claims are construed herein “using the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. § 282(b).” 37 C.F.R. § 42.100(b) (Nov. 13, 2018). The terms should receive their respective plain and ordinary meaning as understood by a person of ordinary skill in the art under *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005).

V. PRIOR ART

A. AHIT (Ex. 1006)

Chinese Publication No. 2007/0021677 (“*AHIT*,” Ex. 1006) published June 17, 2017 (Ex. 1006, Cover; Ex. 1003, ¶¶112-122). *AHIT* is prior art under at least 35 U.S.C. §102(a) (AIA) (Ex. 1003, ¶113).

B. Hooper (Ex. 1007)

Patent No. 7,111,157 (“*Hooper*,” Ex. 1007) issued September 19, 2006 (Ex. 1007, Cover; Ex. 1003, ¶¶123-128). *Hooper* is prior art under at least 35 U.S.C. §102(a) (AIA) (Ex. 1003, ¶124).

C. Cho (Ex. 1008)

Publication No. 2016/0196635 (“*Cho*,” Ex. 1008) published July 7, 2016 (Ex. 1008, Cover; Ex. 1003, ¶¶144-150). *Cho* is prior art under at least 35 U.S.C. §102(a) (AIA) (Ex. 1003, ¶145).

D. Petterson (Ex. 1009)

Patent No. 10,685,090 (“*Petterson*,” Ex. 1009) was filed August 31, 2017 and published March 1, 2018 (Ex. 1009, Cover; Ex. 1003, ¶¶129-137). *Petterson* is prior art under at least 35 U.S.C. §102(a) (AIA) (Ex. 1003, ¶130).

E. Albert (Ex. 1010)

Publication No. 2015/0073285 (“*Albert*,” Ex. 1010) published March 12, 2015 (Ex. 1010, Cover; Ex. 1003, ¶¶138-143). *Albert* is prior art under at least 35 U.S.C. §102(a) (AIA) (Ex. 1003, ¶139).

F. *Nakada* (Ex. 1011)

Patent No. 7,313,435 (“*Nakada*,” Ex. 1011) issued December 25, 2007 (Ex. 1011, Cover; Ex. 1003, ¶¶158-165). *Nakada* is prior art under at least 35 U.S.C. §102(a) (AIA) (Ex. 1003, ¶159).

G. *Mayor* (Ex. 1012)

Publication No. 2014/0173521 (“*Mayor*,” Ex. 1012) published June 19, 2014 (Ex. 1012, Cover; Ex. 1003, ¶¶151-157). *Mayor* is prior art under at least 35 U.S.C. §102(a) (AIA) (Ex. 1003, ¶152).

VI. LEVEL OF ORDINARY SKILL IN THE ART

A person of ordinary skill in the art (“POSITA”) at the time of the alleged invention of the ’533 Patent would have been a person with a working knowledge of physiological monitoring technologies and human interface design. That person would have had a Bachelor of Science degree in an academic discipline emphasizing the design of electrical, computer, or software technologies, in combination with training or at least one to two years of related work experience with capture and processing of data or information, including but not limited to physiological monitoring technologies and human interface design. Alternatively, that person could have also had a Master of Science degree in a relevant academic discipline with less than a year of related work experience in the same discipline. (Ex. 1003,

¶45). More education can supplement practical experience and *vice versa* (Ex. 1003, ¶45).

VII. ARGUMENT

A. Ground 1: Claims 20-21, 24, 29, and 37 Are Unpatentable Under 35 U.S.C. §103 over *AHIT*, *Hooper*, and *Cho*

AHIT, *Hooper*, and *Cho* render obvious claims 20-21, 24, 29, and 37 (Ex. 1003, ¶¶166-271).

1. *Motivation to Combine*

A POSITA would have been motivated to combine *AHIT*, *Hooper*, and *Cho* (Ex. 1003, ¶¶167-184).

AHIT, *Hooper*, and *Cho* are generally directed to the same field of electronic device design (Ex. 1003, ¶168). *AHIT* is directed to a “technical field of wearable devices,” where the “wearable device” receives input performed by a user and acts based on the same (Ex. 1006, ¶¶1, 6-10; Ex. 1003, ¶168). *Hooper* is directed to a “data processing device” that detects and handles input received from a user (Ex. 1007, 2:15-41; Ex. 1003, ¶168)¹. *Cho* is directed to “[a]n electronic device and

¹ The problem to be solved by the '533 Patent includes “electronic devices that provide efficient methods and interfaces for managing health monitoring.” (Ex.

information display method” where the “electronic device includes” a display configured to display an object “associated with collected sensing information related to a human body” (Ex. 1008, Abstract; Ex. 1003, ¶168).

AHIT discloses conveniently capturing biometric information and the importance of keeping a user informed while a test is in progress (Ex. 1003, ¶170). *AHIT* describes a scenario where, “if the wearable device comprises a screen, then when collecting ECG data, the wearable device may display a preset icon via the screen or control the wearable device to vibrate, so as to prompt the user that collecting the ECG data has been started, or may display a progress of collecting the ECG data via the screen” (Ex. 1006, ¶39; Ex. 1003, ¶170). *AHIT* explains that, as a benefit of such prompts, “a user is enabled to learn whether his/her operations are correct, and promptly correct his/her mistakes during incorrect operations, for example, re-touching the electrode” (Ex.1006, ¶39; Ex. 1003, ¶170). In view of *AHIT*’s explicit teaching of providing a prompt to the user, a POSITA would have turned to *Hooper* which expressly discloses displaying a prompt for the user to

1001, 11:41-42). *Hooper* provides for efficiency by detecting and handling interrupts so as to avoid a situation where the device is indefinitely suspended (Ex. 1007, 1:55-2:18). Ex. 1003, ¶169.

perform an action to proceed once an interruption has occurred and a countdown timer to ensure the prompt is addressed within a period of time (Ex. 1003, ¶¶171-172). In view of *AHIT*'s explicit teaching of providing a prompt to the user, a POSITA would have also turned to and incorporated *Cho* which expressly discloses an electronic device for “provid[ing] an adaptive information display method for enhancing degree of understanding of information and improving visibility for displayed information” (Ex. 1008, ¶6; Ex. 1003, ¶¶173-174). Indeed, *Cho* discloses prompts to begin a measurement and when an error or interrupt is detected (Ex. 1008, ¶¶113-115; Ex. 1003, ¶174).

AHIT, *Hooper*, and *Cho* share similar goals (Ex. 1003, ¶175). *AHIT* discloses keeping a user informed as to device status during a testing operation and further discloses enabling a user “to learn whether his/her operations are correct, and ***promptly*** correct his/her mistakes during incorrect operations, for example, re-touching the electrode” (Ex.1006, ¶39; Ex. 1003, ¶175)². *Hooper* discloses displaying a warning message in order to prevent the system from waiting indefinitely for a valid user command (Ex. 1007, 3:40-51; Ex. 1003, ¶175). *Cho* discloses “provid[ing] an adaptive information display method for enhancing degree of understanding of information” so as to allow a user to correct a fault (Ex. 1008,

²All emphasis is added herein unless noted otherwise.

¶6; Ex. 1003, ¶175). It was well known that allowing a system to wait indefinitely for user input wastes resources and, in a battery powered device, results in unnecessary battery usage (Ex. 1003, ¶175). It was also well known to turn off or power down a device due to the lack of user interaction. (Ex. 1003, ¶175). As a result, the POSITA would have combined these references so as to provide the user of *AHIT* with a first duration of time to correct a fault, such as by displaying the instructions of *Cho* and resetting after a second duration (Ex. 1003, ¶175). The POSITA had a reasonable expectation of success in implementing the combination based on the explicit teaching of the references and the knowledge of the POSITA (Ex. 1003, ¶175).

A POSITA would have been motivated to combine *Hooper's* prompt for an input command with *AHIT's* instruction to prompt the user by way of a user interface screen because providing such information advantageously informs the user that the device is properly functioning (Ex. 1003, ¶176). Moreover, for tests or operations that require a particular action on the part of the user, such as interaction for an amount of time, *Hooper's* prompts advantageously avoid a situation where the user does not provide requisite input within a reasonable period of time (Ex. 1003, ¶176). A POSITA would have understood a prompt, such as the *Hooper* prompt, ensures that the test in *AHIT* proceeds in such a way that the test is completed by the user and, because the *Hooper* prompt will timeout, ensures that, when combined with

Hooper, the system of *AHIT* is not interrupted indefinitely if the test fails (Ex. 1003, ¶176).

A POSITA would have been motivated to combine *Hooper*'s determination and notification that the device is waiting for a command via displaying a user message with *AHIT*'s screen informing the user of whether his/her operations are correct in order to keep the user informed as to device status and prevent a situation where the desired testing process does not complete (Ex. 1003, ¶177). In *AHIT*, a user provides a trigger action to enable collecting ECG data (Ex. 1006, ¶¶39-40; Ex. 1003, ¶177). *AHIT* explains that "support for diagnosis of heart diseases" is provided by way of the "simple, direct, and quick" trigger method, that includes enabling a user "to learn whether his/her operations are correct, and promptly correct his/her mistakes during incorrect operations, for example, re-touching the electrode" (Ex. 1006, ¶¶39-40; Ex. 1003, ¶177). *AHIT* seeks to provide a simple, direct, and quick method that requires keeping a user informed of the need for further input if necessary, so that the collected data can be used as intended (Ex. 1003, ¶177). A POSITA would be motivated to assist the user to complete the test given the importance of the test to the user's health and wellness (Ex. 1003, ¶177). Similarly, in *Hooper*, the user has provided an interrupt signal (e.g., an affirmative action or the lack of an action) to interrupt initialization for system configuration, maintenance, diagnostic testing, or the like (Ex. 1007, 2:36-45; Ex. 1003, ¶177). A

conventional system, according to *Hooper*, may “wait indefinitely for user input,” and such indefinite waiting impairs system operation (Ex. 1007, 2:52-54, 3:16-18; Ex. 1003, ¶177). As such, the POSITA would be motivated to avoid indefinite waiting and/or interruptions and would implement the timeout of *Hooper* in the *AHIT* system (Ex. 1007, 2:52-54, 3:16-18; Ex. 1003, ¶177).

A POSITA would be motivated to combine *Cho*’s detection that the first criteria were not met with *AHIT*’s screen prompting the user to take corrective action in order to achieve *AHIT*’s stated goal of obtaining a desired amount of ECG data without wasting wearable device resources and without frustrating the user (Ex. 1006, ¶56; Ex. 1003, ¶178). The POSITA would take such an action because a user, to obtain a successful ECG test, needs to engage an electrode for the collection period (e.g., 30 seconds) and, thus, if there is an interruption with the collection, the POSITA would have known to prompt the user to reengage the electrode for the full time (Ex. 1003, ¶178). Indeed, *Cho* provides instructions regarding properly engaging the electrodes (Ex. 1003, ¶178).

Like *Cho*, *AHIT* discloses the need to obtain data from a full collection period (e.g., preset threshold) as the wearable device may “display a progress of collecting the ECG data via the screen” and “stop[] collecting ECG data when the collecting duration reaches the preset threshold” (Ex. 1006, ¶¶39, 56; Ex. 1003, ¶178). *AHIT* discloses enabling a user “to learn whether his/her operations are correct, and

promptly correct his/her mistakes during incorrect operations” (Ex. 1003, ¶39; Ex. 1003, ¶178). While *AHIT* does not explicitly teach the mechanism that allows the user to learn of and otherwise correct his/her operations, a POSITA would have looked to and would have incorporated *Cho*, which expressly discloses “provid[ing] an adaptive information display method for enhancing degree of understanding of information and improving visibility for displayed information by more dynamically displaying user related information” (Ex. 1008, ¶6; Ex. 1003, ¶179). A POSITA would have understood the importance of providing a user instructions or guidance on how to fix any problems; indeed, such tutorials were well known in user interface design. (Ex. 1003, ¶179). After a period of time or abnormal activity, *Cho* teaches changing a screen to provide additional information to the user indicating how to perform the test properly (Ex. 1003, ¶179).

A POSITA would have been motivated to combine the first period of time of *Hooper* with the system of *AHIT* to achieve *AHIT*’s stated goal of obtaining a desired amount of ECG data without wasting wearable device resources and without frustrating the user (Ex. 1006, ¶56; Ex. 1003, ¶180). The POSITA would have known that the use of the time periods would ensure a user could achieve a full data collection process if so desired, but also avoid the situation where the device is stalled indefinitely waiting for input (Ex. 1003, ¶180). In view of the disclosure of *AHIT*, the POSITA would have turned to *Hooper*, which also discloses the use of

timeouts to ensure prompt action is taken by the user after an interruption (Ex. 1003, ¶180). *Hooper* discloses a “first time period” during which the device is waiting for a valid input command and the display of the user interface has not changed (Ex. 1007, 2:62-66; Ex. 1003, ¶180). It would have been obvious to the POSITA that once there is an interruption to the operation of *AHIT*’s ECG collection (e.g., a lack of input), the system would generally transition to an error state and provide the user with time (and/or notification) to fix the error without completely resetting (Ex. 1003, ¶180).

A POSITA would have likewise been motivated to combine the second period of time of *Hooper* with the system of *AHIT* to achieve *AHIT*’s stated goal of obtaining a desired amount of ECG data without wasting wearable device resources and without frustrating the user (Ex. 1006, ¶56; Ex. 1003, ¶181). The POSITA would have known that the use of the time periods would ensure a user could achieve a full data collection process if so desired, but also avoid the situation where the device is stalled indefinitely waiting for input (Ex. 1003, ¶181). A POSITA would have been motivated to combine *Hooper*’s second period of time with *AHIT*’s screen for prompting the user to promptly correct his/her mistakes during incorrect operations, in order to achieve *AHIT*’s stated goal of obtaining a desired amount of ECG data without wasting wearable device resources (Ex. 1003, ¶181). The POSITA would have turned to *Hooper*, which discloses that, upon a second expiration of either the

keystroke or command timeouts, which were restarted after the user message was generated, the device “restarts” the program (Ex. 1007, 6:15-25; FIG. 2; Ex. 1003, ¶181). *Hooper* discloses that the system “resumes initialization of the hardware device after expiration of a second time period if the data processing device does not receive a keystroke within the second time period” (Ex. 1007, 2:22-3:3; Ex. 1003, ¶181). At the conclusion of the second expiration of timeouts, *Hooper* discloses resetting or continuing operations (Ex. 1007, 3:4-13; Ex. 1003, ¶181). A POSITA would have understood that resuming initialization or resetting the data processing device would replace the information displayed on the user interface so as to guide the user through the process (Ex. 1003, ¶181).

A POSITA would have been motivated to combine *Cho*’s visualization of the biometric information and a timer indicating an amount of time remaining with *AHIT*’s user interface to provide additional information indicating to the user how the test was progressing and because the use of a progress indicator in user interface design was well known at the time and provided the user with an enhanced degree of understanding (Ex. 1008, ¶6; Ex. 1003, ¶182).

A POSITA would have been motivated to combine *Hooper*’s user message with a warning regarding remaining time, for example a countdown timer, for entering a command with *AHIT*’s screen to keep a user informed as to the status of the device and to provide a user with a reasonable deadline prior to restart (Ex. 1003,

¶183). A POSITA would have understood that *Hooper's* user message, which includes “a message warning the user that if the user does not enter a valid command, such as within a certain time period, that device will resume operation or reset”, included a countdown timer because a warning that the valid command should be entered “within a certain time period” implies that there is a countdown in progress (Ex. 1003, ¶183). A POSITA would have understood that keeping the user informed with respect to how much time is remaining to provide input would provide valuable information to the user and enable the user to provide the requisite input to achieve the full collection of data without wasting resources (Ex. 1003, ¶183).

Modifying *AHIT* with *Hooper* and *Cho* is additionally obvious because such a combination relies on known solutions to improve similar systems and methods in the same way. Here, “when a patent ‘simply arranges old elements with each performing the same function it had been known to perform’ and yields no more than one would expect from such an arrangement, the combination is obvious.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 417 (2007). A POSITA would have known that implementing the prompts and timeouts of *Hooper* and the interfaces of *Cho* in *AHIT* would have led to predictable result of an ECG test that included the suggested prompts and time limits taught by *AHIT*.

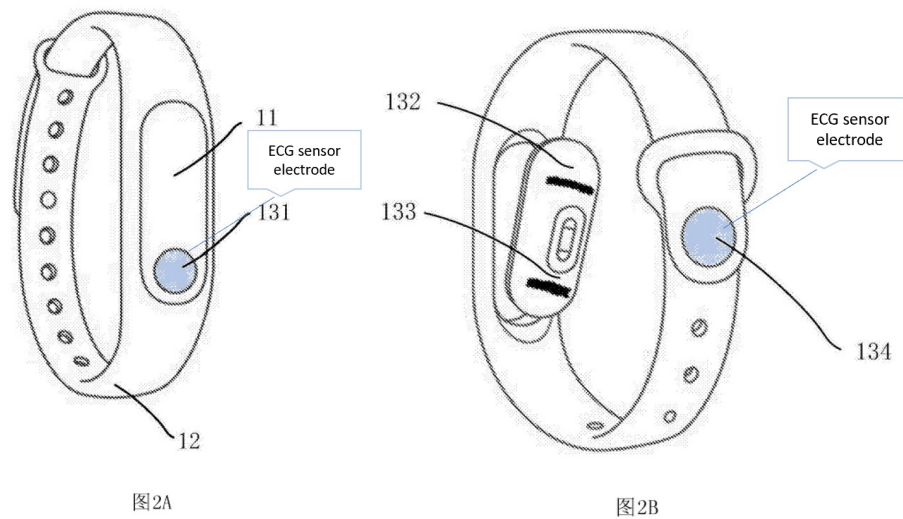
2. Claim 20

- i. ***[20.pre]: A non-transitory computer-readable storage medium storing one or more programs configured to be executed by one or more processors of a first electronic device with a display and one or more input devices including a biometric sensor, the one or more programs including instructions for:***

To the extent [20.pre] is limiting, *AHIT* discloses [20.pre] (Ex. 1003, ¶¶185-192).

AHIT discloses “a wearable device” comprising “multiple ECG sensor electrodes” for collecting electrocardiogram data” (Ex. 1006, Abstract, ¶34, FIGs. 2A, 2B; Ex. 1003, ¶¶187-191). *AHIT*'s device comprises “a processor,” and “a memory for storing instructions executable by the processor,” and the “processor is configured to execute” a “method for collecting ECG data” (Ex. 1006, ¶¶14-16; Ex. 1003, ¶188). *AHIT* discloses a display (Ex. 1006, ¶39; Ex. 1006, ¶189). *AHIT* discloses that “wearable ECG monitoring mostly starts ECG monitoring by mobile APPs” (Ex. 1006, ¶5; Ex. 1003, ¶190). *AHIT* discloses that a “user wears a wearable collecting ECG device, opens a mobile APP, connects the APP with the wearable ECG collecting device, clients the internal online collection mode of the APP, and starts the automatic collection of ECG data” (Ex. 1006, ¶5; Ex. 1003, ¶190).

Ex. 1006, FIGs. 2A, 2B (annotated)



-
- ii. ***[20.a]: displaying, on the display, a first user interface indicating that the first electronic device is ready to detect biometric information;***

AHIT and *Hooper* render obvious [20.a] (Ex. 1003, ¶¶193-203).

AHIT discloses “identifying a received trigger action” and “collecting ECG data when the trigger is identified,” so that “a user can trigger the collection of ECG data when not feeling well” (Ex. 1006, ¶40; Ex. 1003, ¶196). *AHIT* discloses that, “when a user feels symptoms such as palpitation, chest pain, or breathing difficulties, the user may tap the wristband to trigger the collection of ECG data” indicating that the interface of *AHIT* is ready to detect biometric information upon activation (Ex. 1006, ¶59; Ex. 1003, ¶196). *AHIT* discloses “when collecting ECG data, the wearable device may display a preset icon via the screen or control the wearable

device to vibrate, so as to prompt the user that collecting the ECG data has been started” (Ex. 1006, ¶39; Ex. 1003, ¶197).

AHIT discloses that when the “wearable device comprises a screen,” it further comprises “a display and control module” “configured to” “display a preset icon via the screen” “so as to prompt the user that collecting the ECG data has been started” (Ex. 1006, ¶¶81-82, FIG. 7; Ex. 1003, ¶198).

Ex. 1006, Fig. 7 (annotated)

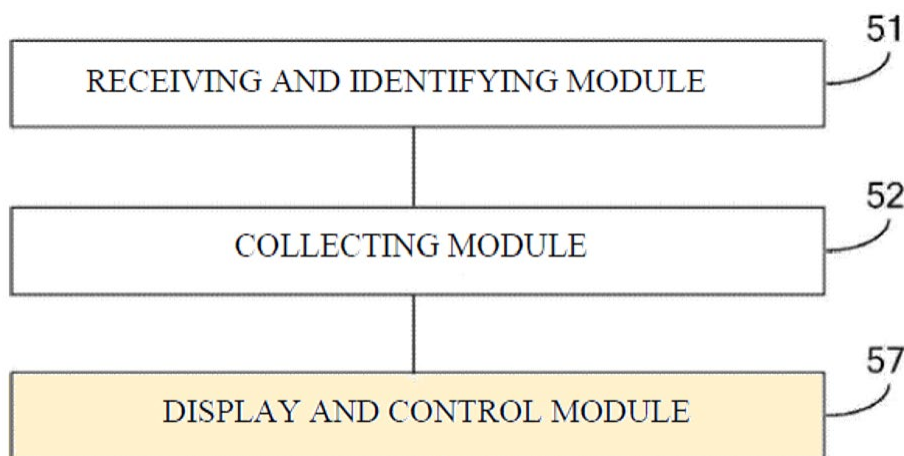


FIG. 7

A POSITA would have understood that a screen, and certainly a screen with the disclosed prompt of *AHIT*’s wearable device, would have displayed a first user interface indicating that the wearable device was ready to detect biometric information (Ex. 1003, ¶199). The POSITA would have understood that the first user interface was displayed to inform the user, prior to the collection of the ECG data, that the device was ready to collect ECG data because the user would need to be

informed that the trigger action could be effectively received by the device (Ex. 1003, ¶199).

To the extent that a POSITA sought additional detail on how to implement *AHIT*'s user interface, it would have been obvious to the POSITA to turn to *Hooper*, which also discloses displaying a first user interface indicating that the electronic device is ready to detect information, or a prompt for the user to perform an action to proceed (Ex. 1003, ¶200). *Hooper* discloses a “data processing device” that “prompts for an input command” (Ex. 1007, 2:25-37; Ex. 1003, ¶200). *Hooper* discloses that a “command line or a graphical user interface (GUI)” may be displayed, which “invites a user to enter a command” (Ex. 1007, 5:11-17; Ex. 1003, ¶200). A POSITA would have understood that *Hooper* was providing a prompt for an input command as a signal to the user that the device is ready to receive input (Ex. 1003, ¶201). A POSITA would have been motivated to modify *AHIT* with a first user interface comprising a prompt for a command as in *Hooper* because providing such information advantageously indicates that the device is properly functioning, and to avoid a situation where the user does not provide requisite input because the user is not aware that the device is ready for the input (Ex. 1003, ¶202 *see also* Motivation to Combine *supra*).

iii. [20.b]: detecting a first input with the biometric sensor that satisfies first criteria;

AHIT renders obvious [20.b] (Ex. 1003, ¶¶204-214).

The '533 Patent broadly describes a “first input” as “a touch or contact on the input device that is below a threshold amount such that the input does not ‘click’ the input device,” and/or “a continuous touch or contact on the input device” (Ex. 1001, 61:8-11, 61:32-33; Ex. 1003, ¶205). Apple does not indicate what the “first input” is but appears to equate contact between a user’s skin and the electrodes with the first input (Ex. 1023, p. 15; Ex. 1003, ¶205).

The '533 Patent also broadly describes “first criteria,” explaining that “the first input with the biometric sensor” “satisfies the first criteria when a contact (e.g., from a finger of a user) is detected on the biometric sensor” (Ex. 1001, 67:16-20; Ex. 1003, ¶206). The '533 Patent also states that “first criteria are met” when “the device has captured less than a predetermined amount of biometric information” and/or “the first input device has been activated within at least a threshold amount of time, such as 5 seconds” (Ex. 1001, 76:9-13; Ex. 1003, ¶206).

Apple indicates “examples of ‘first criteria’ include the KardiaMobile Card being powered on, a stable connection between a user’s skin and the electrodes, a wireless connection between the KardiaMobile Card and the Kardia App, and the lack of electrical interference” (Ex. 1023, p. 15; Ex. 1003, ¶207). Apple further states, “when the user’s skin makes sufficient contact with the ‘biometric sensor’ in the KardiaMobile Card, the ‘first criteria’ of a stable connection between a user’s skin and the electrodes is met” (Ex. 1023, p. 15; Ex. 1003, ¶207).

AHIT discloses “receiving a trigger action performed by a user for the wearable device,” “identifying the trigger action,” and “if the trigger action is identified to be a preset operation,” collecting “ECG data on at least one closed-loop path formed by interconnecting the multiple ECG sensor electrodes” (Ex. 1006, Abstract; Ex. 1003, ¶208).

AHIT discloses the “wearable device may comprise a button” may multiplex the multiple ECG sensor electrodes and the formation of “at least one closed-loop path formed by interconnecting the multiple ECG sensor electrodes” based on the electrodes being multiplexed as a result of the button being touched by the user (Ex. 1006, ¶¶32, 36-39; Ex. 1003, ¶¶209-210).

AHIT also discloses detecting states of ECG sensor electrodes to determine whether any one of the ECG sensor electrodes is in a detached state such that current ECG data is invalid and collecting of the is stopped (Ex. 1006, Cl. 6, ¶¶47, 53; Ex. 1003, ¶211). *AHIT* also discloses, “if a user’s finger leaves the ECG sensor electrode during the process of collecting ECG data, no closed-loop path will be formed between the ECG sensor electrodes,” “collection of the ECG data is stopped” (Ex. 1006, ¶62 Ex. 1003, ¶211). The POSITA would have understood that *AHIT*’s disclosure of a closed-loop path formed by inter-connecting the multiple ECG electrodes is a result of the user’s finger being in contact with the ECG sensor

electrodes (Ex. 1003, ¶211). Accordingly, *AHIT* discloses detecting the first input with a biometric sensor (Ex. 1003, ¶¶212-213).

A POSITA would also have understood that the performance of the trigger action, where the user contacts the button, leads to a stable contact between a user's skin and the electrodes because *AHIT* discloses recording biometric information detected by the biometric sensor in response to detecting the trigger action (Ex. 1003, ¶213).

iv. [20.c.1]: in response to detecting the first input with the biometric sensor: starting to record biometric information detected by the biometric sensor;

AHIT renders obvious [20.c.1] (Ex. 1003, ¶¶215-219).

AHIT discloses detecting the first input with a biometric sensor (*see* [20.b]; Ex. 1003, ¶216).

AHIT discloses, “if the receiving and identifying module identifies the trigger action to be a preset operation, ECG data on at least one closed-loop path formed by interconnecting the multiple ECG sensor electrodes” is collected by “a collecting module” (Ex. 1006, ¶13; Ex. 1003, ¶217). *AHIT* discloses that, “if a user's finger leaves the ECG sensor electrode” “collection of ECG data is stopped” (Ex. 1006, ¶62; Ex. 1003, ¶218). A POSITA would have understood from *AHIT*'s disclosure of collecting ECG data upon identification of the trigger action and stopping the collection of ECG data if a user's finger leaves the ECG sensor electrode, that

recording of the ECG data was responsive to detection of input by the ECG sensor electrodes (Ex. 1003, ¶218).

- v. ***[20.c.2]: displaying, on the display, a second user interface that is different from the first user interface, wherein the second user interface includes an indication of progress in recording the biometric information;***

AHIT renders obvious [20.c.2] (Ex. 1003, ¶¶220-225).

AHIT discloses prompting the user that collecting ECG data has started (Ex. 1006, ¶39; Ex. 1003, ¶221). *AHIT* further discloses that the wearable device may “display a progress of collecting the ECG data via the screen” (Ex. 1006, ¶39; Ex. 1003, ¶221). The *AHIT* “display and control module” is “configured to” “display a preset icon via the screen” “so as to prompt the user that collecting the ECG data has been started; and/or display a progress of collecting the ECG data via the screen” (Ex. 1006, ¶¶81-82; Ex. 1003, ¶221). *AHIT* discloses displaying an indication of progress so as to keep the user informed of the status of the test (Ex. 1003, ¶221).

AHIT’s disclosure of “display[ing] a preset icon via the screen” as an alternative to “display[ing] a progress of collecting the ECG data via the screen” would have informed a POSITA that the display of a preset icon via the screen is a different interface (e.g., a first user interface) from the display of progress of collecting the ECG data via the screen (e.g., a second user interface) (Ex. 1003, ¶222). The POSITA would have understood that *AHIT*’s user interface would

transition from a preset icon (e.g., a first user interface) to a display of progress (e.g., a second user interface) once recording began (Ex. 1003, ¶222).

To the extent it is argued that *AHIT* does not explicitly disclose a second user interface, modifying *AHIT* to include a second user interface would have been obvious to a POSITA (Ex. 1003, ¶223). *AHIT* explicitly discloses that the user is prompted once recording has begun (Ex. 1006, ¶39; Ex. 1003, ¶223). The ability to prompt a user via multiple mechanisms is well known and important in interface design because it maximizes user responsiveness to device requests (Ex. 1003, ¶223). Moreover, a POSITA would have understood the importance of providing feedback to the user so that mistakes can be promptly corrected (Ex. 1006, ¶39; Ex. 1003, ¶223). The POSITA would have understood that the time to provide the indication of progress is when a test is in process and not before (Ex. 1003, ¶223). Displaying an indication of progress was a well-known mechanism to provide user feedback that the recording is in process and further indicating the time to completion (Ex. 1003, ¶223). Indeed, *Cho* demonstrates the knowledge of POSITA as it discloses a state 313, where the electronic device displays (yellow below) “a progress rate of processing received biometric signal information” (Ex. 1008, ¶125, FIG. 3B; Ex. 1003, ¶224).

Ex. 1008 FIG. 3B (annotated)

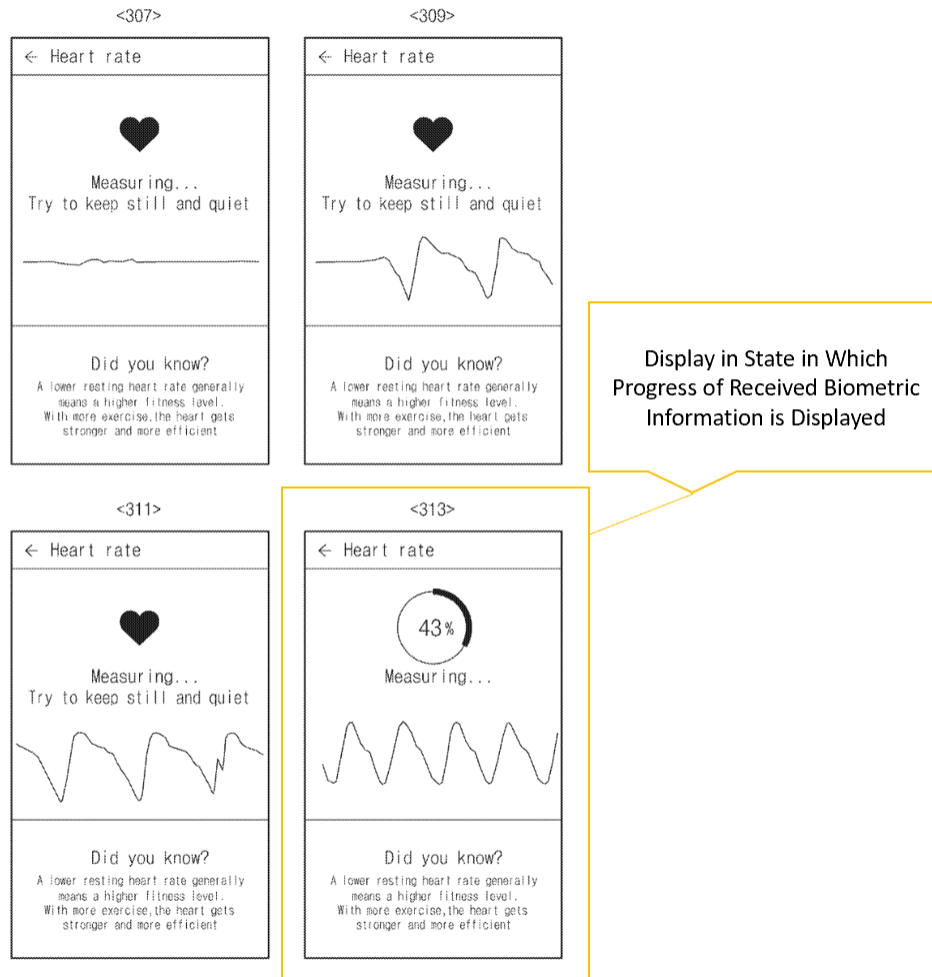


FIG. 3B

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- vi. ***[20.d]: after recording at least a portion of the biometric information, detecting, via the one or more input devices, that the first criteria are no longer met;***

AHIT and *Cho* render obvious [20.d] (Ex. 1003, ¶¶226-234).

AHIT discloses recording the biometric information (see [20.c.1]; Ex. 1003, ¶227). *AHIT* also discloses detecting, via the one or more input devices, that the first criteria are no longer met (Ex. 1003, ¶228). *AHIT* discloses that “states of ECG sensor electrodes” are detected and, “if the state of any one of the ECG sensor

electrodes is in a detached state,” then the “current ECG data” is determined to be “invalid ECG data” (Ex. 1006, ¶47; Ex. 1003, ¶228). *AHIT* discloses that, “if the user’s finger leaves the ECG sensor electrode during the process of collecting ECG data, no closed-loop path will be formed between the ECG sensor electrodes” and “the collection of ECG data is stopped” (Ex. 1006, ¶62; Ex. 1003, ¶229). *AHIT* also explains that, via the screen, the user is enabled “to learn whether his/her operations are correct, and promptly correct his/her mistakes during incorrect operations, for example, re-touching the electrode” (Ex. 1006, ¶39; Ex. 1003, ¶229).

To the extent the POSITA sought additional details regarding how to detect, via the one or more input devices, that the first criteria are no longer met, the POSITA would have looked to *Cho*, which also discloses detecting that criteria are not met, via one or more input devices (Ex. 1003, ¶230). *Cho* discloses an electronic device that can “determine whether a corresponding condition is a normal measurement condition” (Ex. 1008, ¶114; Ex. 1003, ¶230). *Cho*’s electronic device determines that “it is impossible to be measured because a human body (e.g., a finger) of a user is not in normal contact with the biometric sensor” (Ex. 1008, ¶114; Ex. 1003, ¶230).

Cho discloses a “state 301” that is “associated with an initial screen” (yellow below) “of a biometric information display function,” where a “heartbeat application” is activated “by a user input” (e.g., a touch) or a “certain condition (e.g.,

a condition in which a finger is in contact with a PPG sensor” (Ex. 1008, ¶113, FIG. 3A; Ex. 1003, ¶231). *Cho* discloses a state 305, in which, if a finger of a user is not in normal contact with the biometric sensor, “the electronic device may display” (green below) “guide information for guiding the user to bring his or her body with the biometric sensor” (Ex. 1008, ¶114, FIG. 3A; Ex. 1003, ¶231).

Ex. 1008 FIG. 3A (annotated)

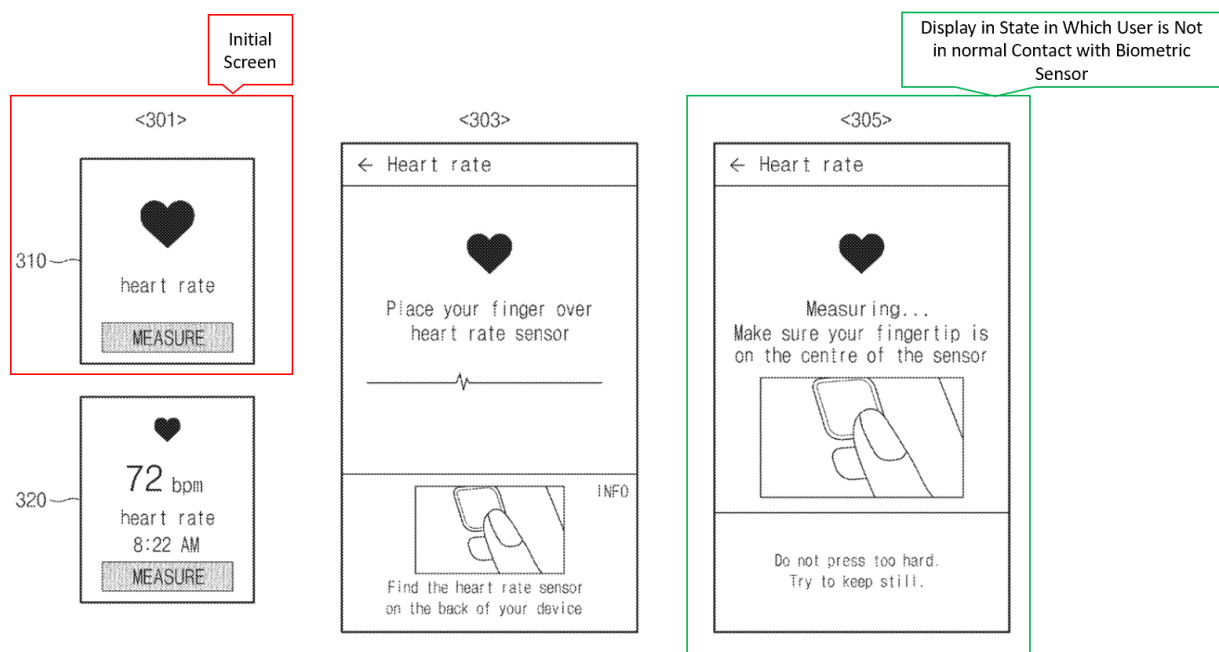


FIG.3A

A POSITA would have been motivated to combine the detection as well as user interfaces of *Cho* with the teachings of *AHIT* in order to achieve *AHIT*'s stated goal of obtaining a desired amount of ECG data without wasting wearable device resources and without frustrating the user (Ex. 1003, ¶233; *see also* Motivation to Combine *supra*).

- vii. *[20.e]: in response to detecting that the first criteria are no longer met for a first period of time, resetting the indication of progress in recording the biometric information and maintaining display of the second user interface;*

AHIT and *Hooper* render obvious [20.e] (Ex. 1003, ¶¶235-244).

The '533 patent broadly describes a “first period of time,” providing an example of the “first period of time” as “5 seconds” (Ex. 1001, 67:58-59; Ex. 103, ¶235). Apple indicates “if the AliveCor Products detect a loss of connection within ten seconds, they determine that ‘the first criteria are no longer met.’” (Ex. 1023, p. 27; Ex. 1003, ¶236).

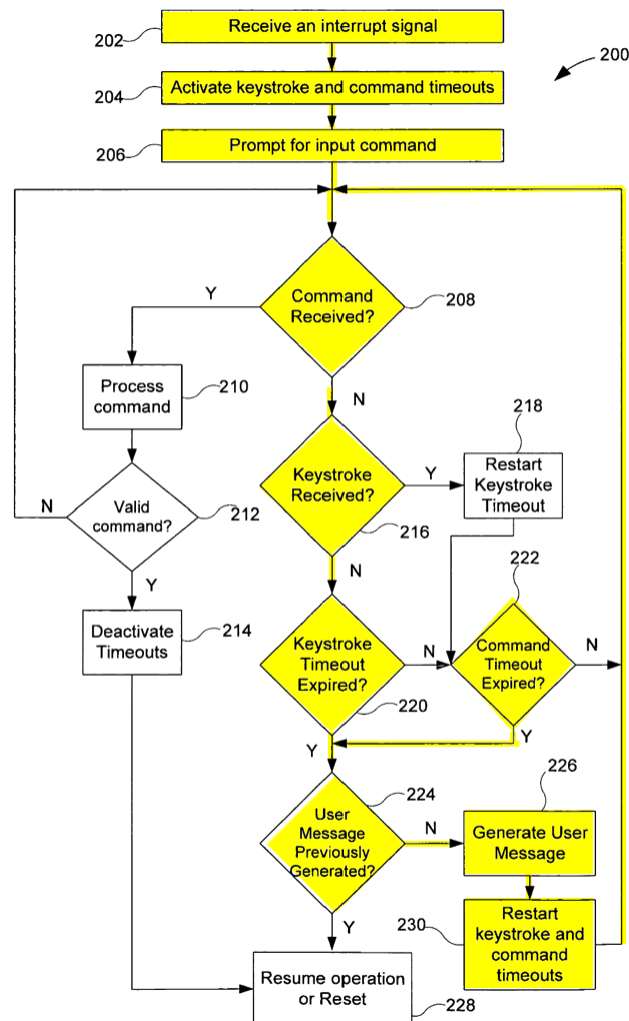
AHIT discloses “display[ing] a progress of collecting the ECG data via the screen” (Ex. 1006, ¶39; Ex. 1003, ¶240). *AHIT* discloses “counting a collecting duration,” “continuing to collect ECG data when the collecting duration does not reach [a] preset threshold,” and “stopping collecting ECG data when the collecting duration reaches the preset threshold” (Ex. 1006, ¶56; Ex. 1003, ¶240). *AHIT* explains that the use of the preset threshold achieves “the objective of obtaining a desired amount of ECG data without wasting wearable device resources” (Ex. 1006, ¶56; Ex. 1003, ¶240). *AHIT* further discloses stopping the collection of ECG data if the user’s finger leaves the ECG sensor electrode (Ex. 1006, ¶62; Ex. 103, ¶240). *AHIT* explains that, via the screen, the user is enabled “to learn whether his/her operations are correct, and ***promptly*** correct his/her mistakes during incorrect

operations, for example, re-touching the electrode” (Ex. 1006, ¶39; Ex. 1003, ¶240). A POSITA would have understood that the indication of progress would have been reset given that *AHIT* explicitly teaches detecting an incorrect operation and prompting a user to make a correction, and because such a correction would include reengaging the electrode for the full time and, thus, the full collection period (Ex. 1003, ¶240). A POSITA would have also understood that *AHIT*’s disclosure of enabling a user to “***promptly*** correct his/her mistakes during incorrect operations” teaches a first period of time because the POSITA would have understood that “prompt correction” of a mistake would provide for correcting the mistake – re-touching the electrode - within such a period of time that the operation can continue without resetting the entire device (Ex. 1003, ¶241). Indeed, a prompt response ensures that the user is in fact interested in continuing the test whereas a non-responsive user indicates that the user is no longer interested in performing the test (Ex. 1003, ¶241).

To the extent the POSITA were to seek additional implementation details for a first period of time, the POSITA would have looked to *Hooper*, which discloses that the device “presents a user message ***after expiration of a first time period*** if the data processing device does not receive a valid input command during the first time period and a user message has not been previously presented.” (Ex. 1007, 2:62-66, FIG. 2; Ex. 1003, ¶242). As depicted in FIG. 2, annotated in yellow below, *Hooper*

discloses a “first time period” during which the device is waiting for a valid input command and the display of the user interface has not changed (Ex. 1003, ¶242).

Ex. 1007, Fig. 2 (annotated)



It would have been obvious to POSITA that once there is an error (e.g., a lack of input), in user interface design, the system will generally transition to an error state and provide the user with time (and/or notification) to fix the error without completely resetting (Ex. 1003, ¶243, *see also* Motivation to Combine *supra*).

- viii. ***[20.f]: in response to detecting that the first criteria are no longer met for a second period of time that is longer than the first period of time, replacing display of the second user interface with the first user interface.***

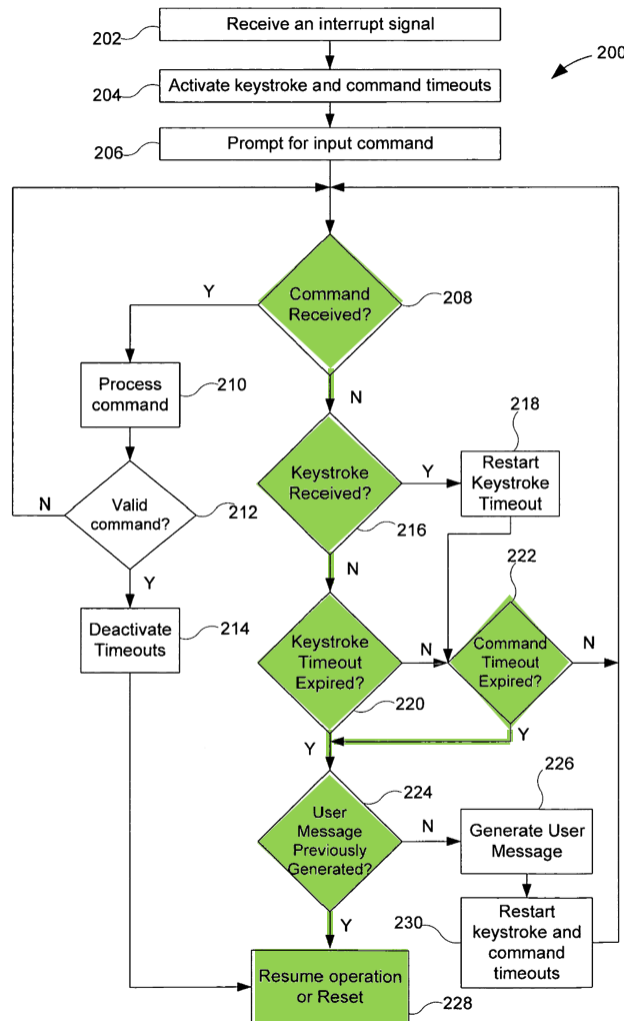
AHIT and *Hooper* render obvious [20.f] (Ex. 1003, ¶¶245-251).

The '533 Patent describes a “second period of time,” providing an example of the “second period of time” to be “longer than the first period of time (e.g., longer than 5 seconds)” (Ex. 1001, 68:14-16; Ex. 1003, ¶246). Apple indicates “the KardiaMobile Card automatically shuts off after ten seconds if no contact from the user’s skin is sensed by the KardiaMobile Card.” (Ex. 1023, p. 31; Ex. 1003, ¶247). It appears Apple is equating the “second period of time” to be any duration of time that extends beyond completion of the “first period of time” (Ex. 1003, ¶247).

AHIT discloses an “objective of obtaining a desired amount of ECG data without wasting wearable device resources” (Ex. 1006, ¶56; Ex. 1003, ¶248). *AHIT* also discloses, via the screen, the user is enabled “to learn whether his/her operations are correct, and promptly correct his/her mistakes during incorrect operations, for example, re-touching the electrode” (Ex. 1006, ¶39; Ex. 1003, ¶248). *AHIT* does not explicitly teach replacing a display in response to detecting that the first criteria are no longer met for a second period of time, although such a change in the display would have been obvious to a POSITA in view of *AHIT*’s explicit goal of promptly notifying the user and saving wearable device resources (Ex. 1003, ¶248).

To the extent a POSITA would have sought additional details for replacing the display after a second period of time, the POSITA would have turned to *Hooper*, which explicitly discloses a second period of time, during which criteria may be detected (Ex. 1003, ¶249). *Hooper* discloses that, upon a second expiration (green, below) of either the keystroke or command timeouts, which were restarted after the user message was generated, the device “restarts” the program (Ex. 1007, 6:15-25; FIG. 2; Ex. 1003, ¶249). *Hooper* discloses that the system “resumes initialization of the hardware device *after expiration of a second time period* if the data processing device does not receive a keystroke within the second time period” (Ex. 1007, 2:22-3:3; Ex. 1003, ¶249). A POSITA would have understood that resuming initialization or resetting the data processing device would replace the display (Ex. 1003, ¶248).

Ex. 1007, Fig. 2 (annotated)



A POSITA would have found it obvious, in view of *AHIT*'s disclosure of saving wearable device resources and the well-known desire to save on battery power, to revert to the first user interface after the first input was no longer detected for a second period of time (Ex. 1003, ¶250; *see also* Motivation to Combine *supra*).

3. Claim 21

- i. ***[21.pre]: The non-transitory computer-readable storage medium of claim 20,***

AHIT and *Hooper* render obvious [21.pre] (see Claim 20; Ex. 1003, ¶¶252-253).

- ii. ***[21.a]: wherein the recorded biometric information includes an electrocardiogram recording derived from the biometric information detected by the biometric sensor.***

AHIT renders obvious [21.a] (Ex. 1003, ¶¶254-255).

AHIT discloses that the recorded biometric information includes an electrocardiogram recording derived from the biometric information detected by the biometric sensor (Ex. 1003, ¶254). *AHIT* discloses “a wearable device” “compris[ing] multiple ECG sensor electrodes” “for collecting electrocardiogram data” (Ex. 1006, Abstract, ¶¶14-16; Ex. 1003, ¶254).

4. Claim 24

- i. ***[24.pre]: The non-transitory computer-readable storage medium of claim 20,***

AHIT, *Hooper*, and *Cho* render obvious [24.pre] (see Claim 20; Ex. 1003, ¶¶256-257).

- ii. ***[24.a]: wherein the biometric sensor is a contact-based sensor, and wherein the first input with the biometric sensor satisfies the first criteria when a contact is detected on the biometric sensor.***

AHIT renders obvious [24.a] (Ex. 1003, ¶¶258-259).

AHIT discloses the “wearable device may comprise a button,” and the “button may multiplex one of the multiple ECG sensor electrodes,” which “may be located at a position that can ***be easily touched*** by the user wearing the wearable device” (Ex. 1006, ¶32; Ex. 1003, ¶258). *AHIT* further discloses the “trigger action performed by a user” may be received “on the button,” and “may be identified via [a] MEMS sensor.” (Ex. 1006, ¶¶36-37; Ex. 1003, ¶258).

5. Claim 29

i. [29.pre]: The non-transitory computer-readable storage medium of claim 20,

AHIT, *Hooper*, and *Cho* render obvious [29.pre] (see Claim 20; Ex. 1003, ¶¶260-261).

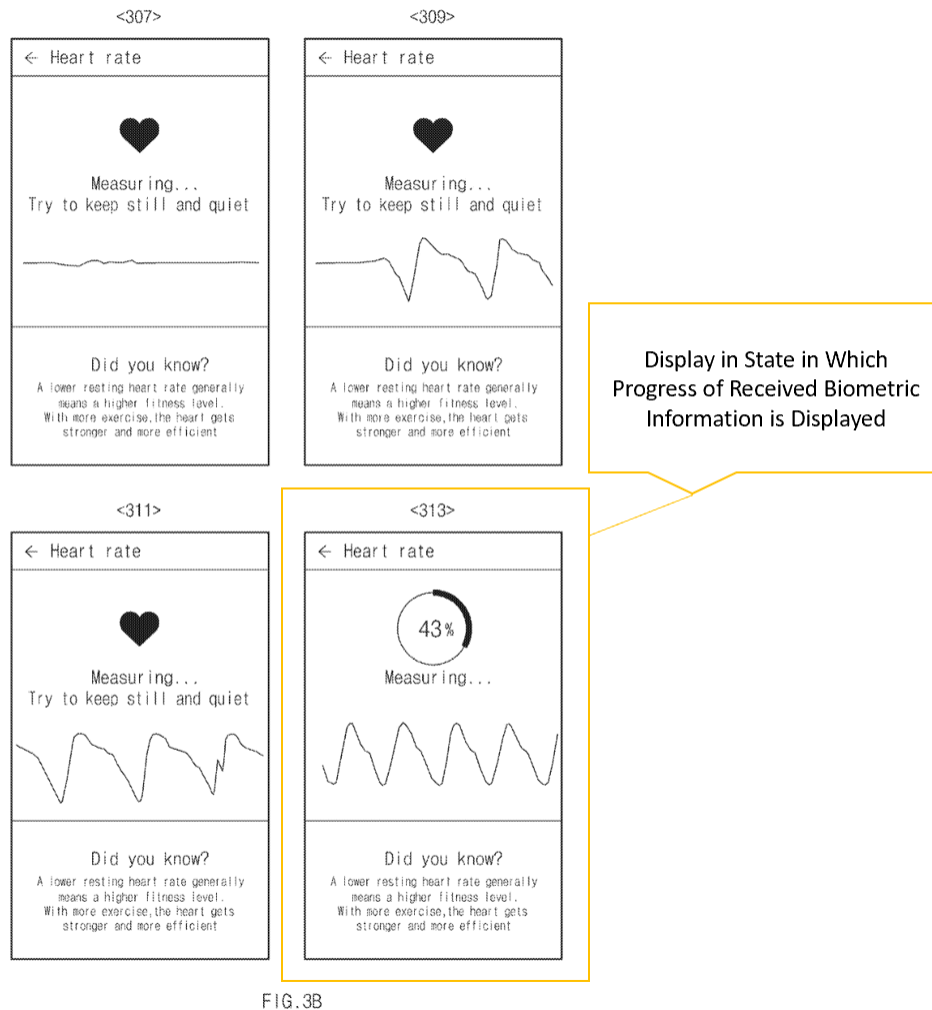
ii. [29.a]: wherein the second user interface includes a graphical representation that corresponds to a visualization of the biometric information from the recorded biometric information and a timer indicating an amount of time remaining to complete the recording of the biometric information.

AHIT and *Cho* render obvious [29.a] (Ex. 1003, ¶¶262-266).

AHIT discloses a second user interface that includes an indication of progress in recording the biometric information (see [20.c.2]; Ex. 1003, ¶262). To the extent *AHIT* does not explicitly disclose this recitation, such a modification would have been obvious to the POSITA at least in view of *Cho*, which explicitly discloses such a feature (Ex. 1003, ¶262).

Cho discloses a state 313, where the electronic device displays (yellow, below) “a progress rate of processing received biometric signal information” (Ex. 1008, ¶125, FIG. 3B; Ex. 1003, ¶263).

Ex. 1008 FIG. 3B (annotated)



Cho would further have provided the POSITA with details necessary to implement the visual representation in *AHIT*'s second user interface to provide

additional information to the user indicating how the test was progressing (Ex. 1003, ¶264).

Moreover, the use of a progress indicator in user interface design was well known at the time (Ex. 1003, ¶265). As evidenced by the disclosures of *AHIT*, *Hooper*, and *Cho*, it would have been known and/or obvious to a POSITA that an indication of progress would have been used to keep a user informed as to the status of a device (Ex. 1003, ¶265; *see also* Motivation to Combine *supra*). Further, a countdown timer was known to be a useful type of progress indicator to provide a user with information related to how much time remains for a particular task or action (Ex. 1003, ¶265).

6. Claim 37

i. [37.pre]: The non-transitory computer-readable storage medium of claim 20,

AHIT, *Hooper*, and *Cho* render obvious [37.pre] (*see* Claim 20; Ex. 1003, ¶¶267-268).

ii. [37.a]: wherein the indication of progress is a countdown timer.

AHIT and *Hooper* render obvious [37.a] (Ex. 1003, ¶¶269-272).

AHIT discloses a “display and control module” “configured to” “***display a progress of collecting the ECG data via the screen***” (Ex. 1006, ¶82; Ex. 1003, ¶269).

Hooper discloses that the device may generate a user message for viewing by a user, comprising “a message warning the user that *if the user does not enter a valid command, such as within a certain time period, that device will resume operation or reset*” (Ex. 1007, 6:15-25; Ex. 1003, ¶270).

The use of a progress indicator in user interface design was well known (Ex. 1003, ¶271). As evidenced by the disclosures of *AHIT* and *Hooper*, it would have been known and/or obvious to a POSITA that an indication of progress would have been used to keep a user informed as to the status of a device (Ex. 1003, ¶271; *see also* Motivation to Combine *supra*). Further, a countdown timer was known to be a useful type of progress indicator to provide a user with information related to how much time remains for a particular task or action (Ex. 1003, ¶271).

B. Ground 2: Claim 22 Is Unpatentable Under 35 U.S.C. §103 over *AHIT*, *Hooper*, *Cho*, and *Mayor*

AHIT, *Hooper*, *Cho*, and *Mayor* render obvious claim 22 of the ’533 Patent (Ex. 1003, ¶¶273-299).

1. Motivation to Combine

A POSITA would have been motivated to combine *Mayor* with the combination of *AHIT*, *Hooper*, and *Cho* because the POSITA would have understood that the devices of *AHIT*, *Hooper*, and *Cho* could have several applications installed thereon and the POSITA would have sought mechanisms for convenient access via a user interface to any of the applications (Ex. 1003, ¶274). In

fact, *Mayor* explicitly teaches that there are shortcomings with having to “navigate through menus and make multiple inputs to view a desired application user interface” and “requiring a user to make multiple menu selections to access a desired user interface can waste time and cause frustration for the user” (Ex. 1012, ¶2; Ex. 1003, ¶274). As a solution, *Mayor* discloses advantageously creating icons so as to be able to more quickly access the application (Ex. 1012, ¶29; Ex. 1003, ¶274). Indeed, and given the ubiquitous nature of applications, a POSITA would have had a reasonable expectation of success in implementing the combination (Ex. 1003, ¶¶275-276).

2. Claim 22

- i. [22.pre]: The non-transitory computer-readable storage medium of claim 20, wherein the one or more programs further include instructions for:**

AHIT, *Hooper*, and *Cho* render obvious [22.pre] (see Claim 20; Ex. 1003, ¶¶277-279).

- ii. [22.a]: prior to displaying the first user interface, displaying a homescreen that includes an application affordance corresponding to a health monitoring application;**

AHIT and *Mayor* render obvious [22.a] (Ex. 1003, ¶¶280-289).

AHIT discloses “wearable ECG monitoring mostly starts ECG monitoring by mobile APPs” (Ex. 1006, ¶5; Ex. 1003, ¶281). *AHIT* discloses a “user wears a wearable collecting ECG device, opens a mobile APP, connects the APP with the

wearable ECG collecting device, clicks the internal online collection mode of the APP, and starts the automatic collection of ECG data” (Ex. 1006, ¶5; Ex. 1003, ¶281). A POSITA would have understood *AHIT*’s disclosure of “open[ing] a mobile APP” to be an application invokable via an application affordance (Ex. 1003, ¶282).

To the extent POSITA sought more details regarding displaying a homescreen that includes an application affordance corresponding to a health monitoring application, such information was well known (Ex. 1003, ¶283). Moreover, the POSITA would have turned to *Mayor*, which explicitly discloses enabling a user to “select an application user interface shortcut to invoke [an] application user interface or subscreen associated with the shortcut” (Ex. 1012, ¶3; Ex. 1003, ¶¶283-284). *Mayor* describes a “graphical user interface 100 for invoking applications on a mobile device,” where “GUI 100 can include graphical objects 102 and 104 for invoking respective applications” (Ex. 1012, ¶21, FIG. 1; Ex. 1003, ¶285). *Mayor* teaches “graphical objects 102 and 104” which “can be icons or images,” “when selected by a user, [can] cause invocation of a corresponding application that is installed on the mobile device” (Ex. 1012, ¶21; Ex. 1003, ¶286).

Ex. 1012, Fig. 1 (annotated)

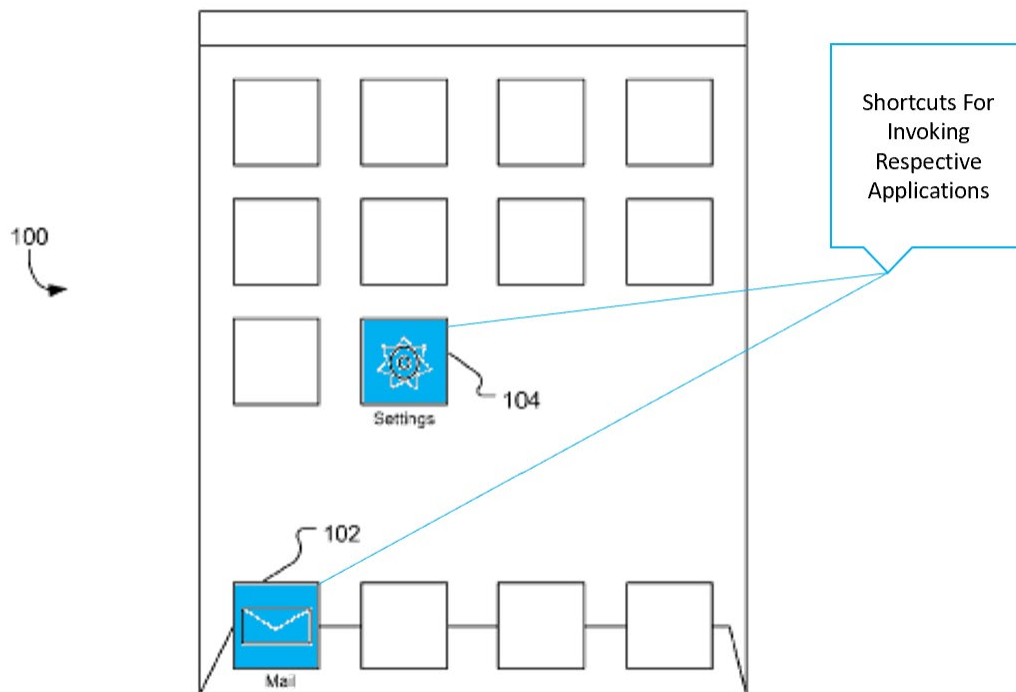


FIG. 1

- iii. *[22.b]: detecting, via the one or more input devices, a user activation of the application affordance; and in response to detecting the user activation of the application affordance, displaying, on the display, the first user interface.*

AHIT and *Mayor* render obvious [22.b] (Ex 1003, ¶¶290-299).

A POSITA would have understood *AHIT*'s disclosure of "open[ing] a mobile APP" to be an activation of an application affordance (*see* Ex. 1006, ¶5; Ex. 1003, ¶¶291-292).

To the extent the POSITA sought more details regarding displaying the first user interface in response to detecting a user activation of an application affordance,

such information was well known (Ex. 1003, ¶293). The POSITA would have turned to *Mayor*, which discloses selecting a “GUI shortcut” to invoke an application (Ex. 1012, ¶¶36-37, FIG. 9; Ex. 1003, ¶¶293-294). *Mayor* explains “GUI shortcut 902 can be selected to invoke” a “Friends’ email folder” (Ex. 1012, ¶36; Ex. 1003, ¶297). *Mayor* explains, “when “GUI shortcut 902 is invoked (e.g., selected by a user),” an application identifier associated therewith “can be used by the mobile device to invoke the application” (Ex. 1012, ¶37; Ex. 1003, ¶297).

Ex. 1012, Fig. 9 (annotated)

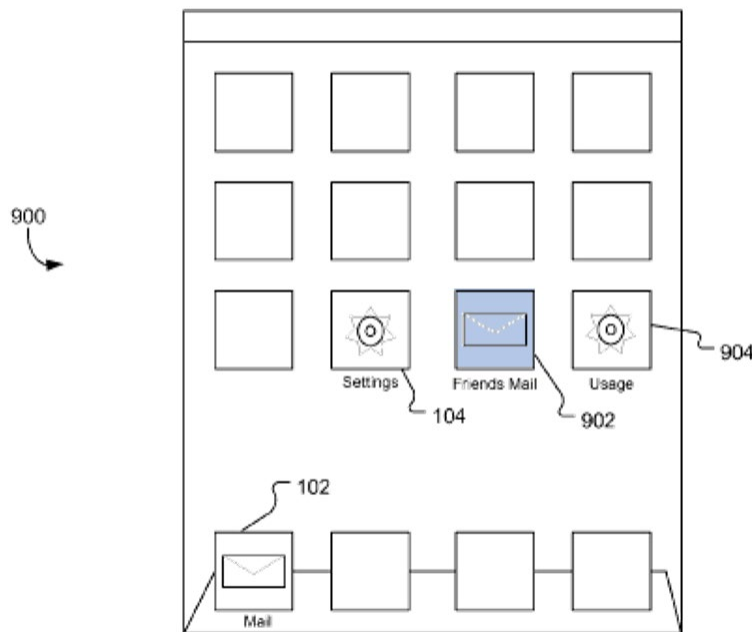


FIG. 9

Mayor explicitly depicts a process “for invoking an application using a graphical user interface shortcut” (Ex. 1012, ¶46, FIG. 10B; Ex. 1003, ¶298).

Ex. 1012, Fig. 10B (annotated)

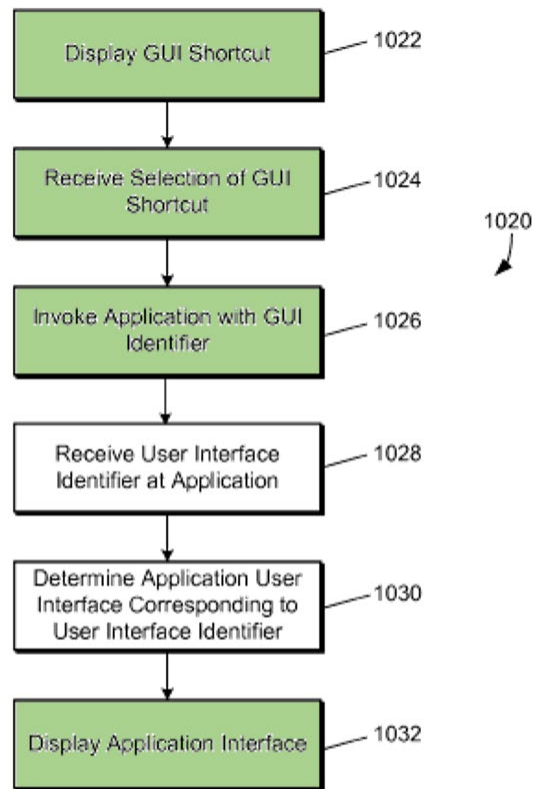


FIG. 10B

C. Ground 3: Claims 20-21, 24, 29, and 37 Are Unpatentable Under 35 U.S.C. §103 over *Petterson, Albert, and Nakada*

Petterson, Albert, and Nakada render obvious claims 20-21, 24, 29, and 37 (Ex. 1003, ¶¶300-404).

1. Motivation to Combine

A POSITA would have been motivated to combine *Petterson, Albert, and Nakada* (Ex. 1003, ¶¶301-309).

Petterson, Albert, and Nakada are generally directed to the field of monitoring health related metrics (Ex. 1003, ¶302). *Petterson* relates to “monitoring, recording, and tracking cardiac health related metrics using an associated computing device” (Ex. 1009, Abstract; Ex. 1003, ¶302). *Albert* relates to “ECG sensing devices for use with mobile telecommunications devices such as smartphones, tablet computers, smart watches, wearable computing devices, and the like so that the mobile telecommunications device may receive biological signals measured directly from a patient” (Ex. 1010, Abstract, ¶6; Ex. 1003, ¶302). *Nakada* relates to “an apparatus capable of carrying out an accurate bioelectrical impedance measurement” (Ex. 1011, Abstract, 6:18-28; Ex. 1003, ¶302). These references, like the ’533 Patent, are directed to user interface design and processing to reduce wasted time and wasted energy (Ex. 1001, 1:36-52; *see also* 11:41-42; Ex. 1003, ¶302).

Petterson discloses the importance of providing a user with a test duration and celebrating a user when they complete the test (Ex. 1003, ¶303). *Petterson* expressly discloses providing a patient with the ability to perform a test for a required period of time, as prescribed by a healthcare provider, and to provide the user with a congratulatory message upon completion of the test (Ex. 1009, 12:38-13:13; Ex. 1003, ¶303). To ensure the user completes the test and the ability to send the congratulatory message, a POSITA would have looked to the various displays of

Nakada to ensure the user was informed as to the progress of the test (Ex. 1003, ¶303).

Petterson, Albert, and Nakada share similar goals (Ex. 1003, ¶304). *Petterson* looks to provide “effective healthcare to a patient while increasing the efficiency of the healthcare provider” by “monitoring of the physical parameters and therapeutic objectives of the patient” and “provide a communication link between a patient and a healthcare provider” (Ex. 1009, 4:10-23; Ex. 1003, ¶304). *Albert* also looks to provide apparatuses for use with mobile telecommunications devices for use of data “by the subject as well as healthcare professionals to guide preventative and therapeutic treatment decision making” (Ex. 1010, ¶¶4-5; Ex. 1003, ¶304). *Nakada* also looks to ensure the measurements obtained from a body are accurate and complete (Ex. 1011, 3:29-37), which leads to better monitoring of physical parameters and informed treatment decisions (Ex. 1003, ¶304). A POSITA would have understood that each of the references is focused on efficient testing to ensure that users perform the testing so that they can take care of themselves (Ex. 1003, ¶304). Given the overlap and in view of the disclosures below, the POSITA would have had a reasonable expectation of success of the combination (Ex. 1003, ¶304).

A POSITA would have been motivated to combine *Petterson’s* ECG sensing device with *Albert’s* of detection of the first input by the biometric sensor because the POSITA would have known that contact with the biometric sensor was required

(Ex. 1003, ¶305). Specifically, *Albert* provides the details necessary for the POSITA to implement detection of the first input (Ex. 1003, ¶305).

A POSITA would have been further motivated to combine *Petterson* with teachings related to recording of biometric information in *Albert* to enable a user to compare recordings over time as well as sharing with health care professionals (Ex. 1003, ¶306). *Petterson* specifically looks to “monitor” “physical parameters and therapeutic objectives of the patient” and “provide a communication link between a patient and a healthcare provider” (Ex. 1009, 4:10-23; Ex. 1003, ¶306). *Albert* also looks to provide apparatuses for use with mobile telecommunications devices for use of data “by the subject as well as healthcare professionals to guide preventative and therapeutic treatment decision making” (Ex. 1010, ¶¶4-5; Ex. 1003, ¶306). The POSITA would have understood that the ability to compare biometric information over time is essential to health monitoring and diagnosis (Ex. 1003, ¶315). *Albert* would have further confirmed details with respect to recording biometric information to the POSITA (Ex. 1003, ¶306).

A POSITA would have been motivated to combine *Nakada*’s maintaining of a second user interface and resetting an indication of progress with *Petterson*’s user interface in order to achieve *Petterson*’s stated goals of providing a patient with the ability to perform a test for a set period of time, as prescribed by a healthcare provider, and providing the user with a congratulatory message upon completion of

the test (Ex. 1006, 12:38-13:13; Ex. 1003, ¶307). To ensure the user completes the test and the ability to send the congratulatory message in *Petterson*, a POSITA would have looked to ensure the user was informed as to successful progress of the test (Ex. 1003, ¶307). The POSITA would have known that the use of time periods would ensure a user could achieve a full data collection process if so desired, and that waiting indefinitely to send a congratulatory message to a user may not lead to a user taking better care of themselves (Ex. 1003, ¶307). Moreover, without a time period, the *Petterson* device would remain in testing mode indefinitely, leading to a drain in resources, such as processing power and battery life (Ex. 1003, ¶307). A POSITA would have understood the importance of a standby or inactive state to save battery (Ex. 1003, ¶¶65-76, 307).

A POSITA would have been motivated to combine *Nakada*'s reset after the lapse of time, and display of an error message, with *Petterson*'s user interface to keep a user informed of progress of a recording and/or maintain battery life of the device (Ex. 1003, ¶308). *Nakada* discloses a second condition, where, if "the contact condition is not normal" and "30 seconds have already elapsed," the device "determines that an accurate measurement could not be made" and "displays an error" (Ex. 1011, 9:45-57; Ex. 1003, ¶307). The POSITA would have understood that *Petterson* could have been modified to include the change of the display as in *Nakada*, as a result of the error condition, so as to maintain battery life of the device

as well as keep the user informed as to device and/or recording status (Ex. 1003, ¶307).

Modifying *Petterson* with *Albert* and *Nakada* is obvious because such a combination relies on known solutions to improve similar systems and methods in the same way. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 417 (2007). Here, a POSITA would have known and recognized that implementing the detecting contact and tracking testing of *Albert*, and implementing *Nakada*’s resetting an indication of progress and time periods in *Petterson* would have led to predictable result of an ECG test that included the suggested prompts and time limits taught by *Petterson*.

2. Claim 20

i. [20.pre]

To the extent [20.pre] is limiting, *Petterson* and *Albert* disclose [20.pre] (Ex. 1003, ¶¶310-323).

Petterson discloses “monitoring, recording, and tracking cardiac health related metrics using an associated computing device” (Ex. 1009, Abstract; Ex. 1003, ¶312). *Petterson* discloses improved ways of monitoring health and placing health management more with the patient (Ex. 1009, 1:12-27; Ex. 1003, ¶313).

Petterson describes “a platform” having a “patient application” with “a software module for receiving sensed data from a sensor configured to sense a physiologic parameter of a patient,” where the “platform comprises the sensor”

“configured to operably couple with a mobile computing device” (Ex. 1009, 1:38-41, 1:67-2:2; Ex. 1003, ¶314). The sensor comprises “two ECG electrodes” (Ex. 1009, 2:2-5; Ex. 1003, ¶314). *Petterson* explains that “one or more sensors (or ‘sensing devices’) are configured to monitor one or more physiologic parameters of an individual” (Ex. 1009, 6:6-23; Ex. 1003, ¶315).

Petterson’s “patient application” is “configured to receive, organize, and/or track” “a sensed ECG of a patient” (Ex. 1009, 6:64-7:3; Ex. 1003, ¶316). The “patient application comprises one or more interfaces” that “enable the patient to” “obtain physiological information from a sensing device or from other health-based software applications (e.g. Apple Health), store sensed data from a sensing device” (Ex. 1009, 7:55-61; Ex. 1003, ¶316).

Albert discloses “ECG sensing devices for use with mobile telecommunications devices” (Ex. 1010, ¶6, Abstract; Ex. 1003, ¶¶317-322). *Albert* further discloses an “ECG electrode module” “to sense an ECG signal from the patient/subject” (Ex. 1010, ¶¶89, 91, 98; Ex. 1003, ¶321). *Albert*’s ECG sensing system includes a “mobile device” having “a display” that “displays an ECG wave” (Ex. 1010, ¶142; Ex. 1003, ¶322).

ii. [20.a]

Petterson renders obvious [20.a] (Ex. 1003, ¶¶324-334).

As described above in Ground 1 [20.a], and in view of the '533 Patent, a POSITA would have understood that an indication the device is ready to detect biometric information could be a button or selectable element that allows a user to activate a measurement (Ex. 1003, ¶325).

Apple includes a screenshot that allegedly provides a “display” of “a first user interface indicating that the first electronic device is ready to detect biometric information” (Ex. 1023, p. 14; Ex. 1003, ¶326).

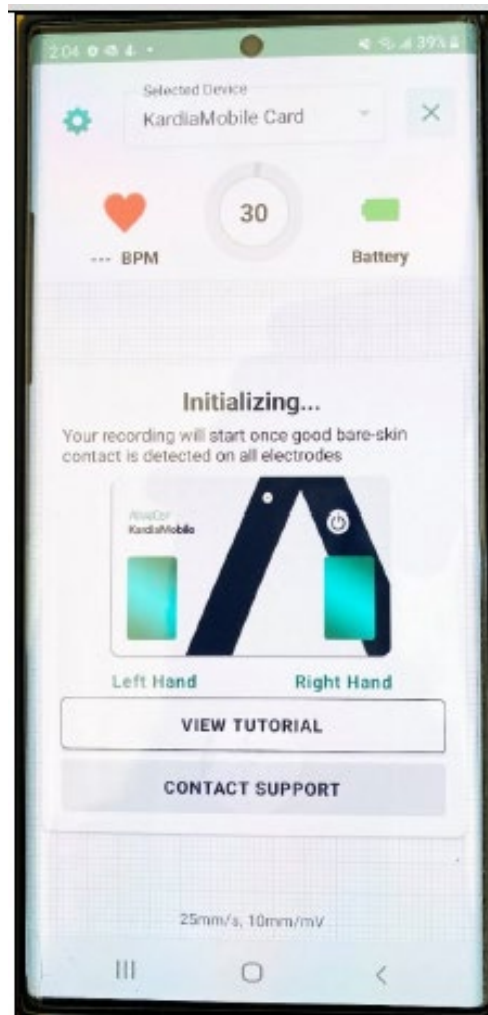


FIG. 2B of *Petterson* shows “a patient interface component 204” “that provides the patient with the ability to select to record an ECG” using “an ECG sensing device” “configured to interact with the software application” after the patient has logged in (Ex. 1009, 7:55-61, 9:7-15, FIG. 2B; Ex. 1003, ¶¶327-330). *Petterson* discloses that the “patient engages with” “interface 204” to sense “one or more physiologic parameters” (Ex. 1009, 9:15-27; Ex. 1003, ¶329). *Petterson* explicitly states a “patient application may instruct the patient to place a cardiac health monitoring device in contact with his or her skin” to “take a baseline ECG

measurement” (Ex. 1009, 12:44-46; Ex. 1003, ¶329). When “engaged by the patient, the interface 204 causes the sensing of a physiologic parameter of a patient” (Ex. 1009, 9:22-27; Ex. 1003, ¶329). The “Record now” element of FIG. 2B thus would have been understood by the POSITA to be an indication that the device is ready to detect biometric information upon activation (Ex. 1009, 9:7-15, FIG. 2B; Ex. 1003, ¶¶330-332).

Ex. 1009, Fig. 2B (annotated)

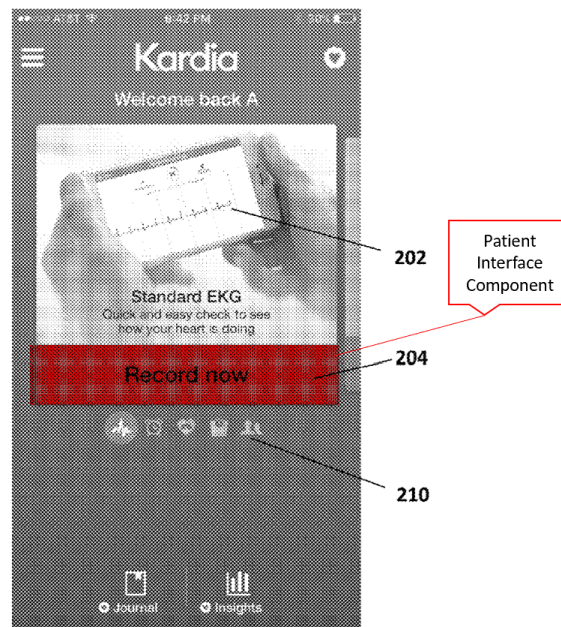


FIG. 2B

The POSITA would have further understood *Petterson's* “Record now” button to be an indication that the device was ready to detect biometric information because *Petterson*, in FIG. 3, shows “an exemplary patient interface a patient encounters during the sensing of an ECG – displayed on the interface at 300 – using

an ECG sensing device” (Ex. 1009, 9:38-41; Ex. 1003, ¶331). Indeed, the POSITA would have understood that upon selection of “Record now,” *Petterson* transitions from FIG. 2B to FIG. 3, which shows the connection signal, an indication of progress, a countdown timer, and an ECG indicator, all of which suggest that the *Petterson* device was ready to detect biometric information and is, in fact, recording biometric information (Ex. 1003, ¶¶331-333).

Ex. 1009, Fig. 3 (annotated)

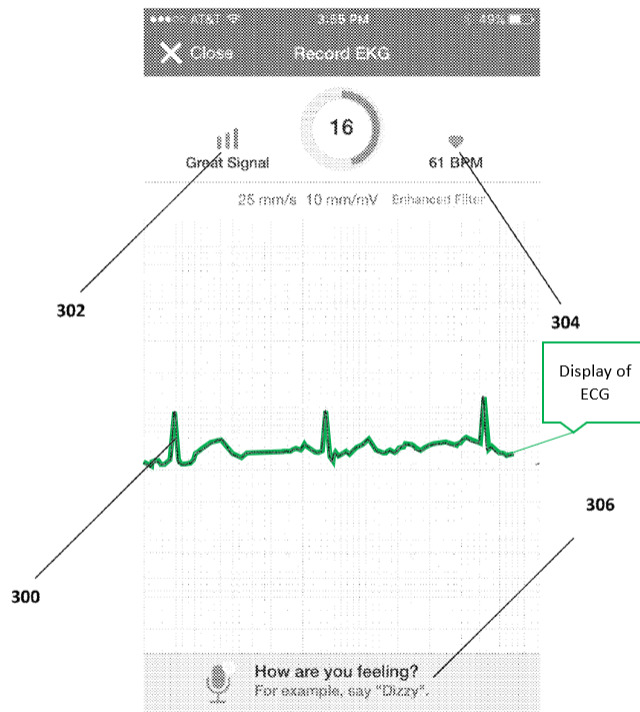


FIG. 3

iii. [20.b]

Petterson and *Albert* render obvious [20.b] (Ex. 1003, ¶¶335-345).

As was outlined in [20.b] of Ground 1, Apple appears to be equating contact with a first input (Ex. 1003, ¶337). Also outlined in [20.b] of Ground 1 are examples from the '533 Patent of “first criteria” (Ex. 1001, 67:16-20, 76:9-13; Ex. 1003, ¶338), as well as what Apple indicates as examples of “first criteria” (Ex. 1023, p. 15; Ex. 1003, ¶339).

Petterson states that a “patient application may instruct the patient to place a cardiac health monitoring device in contact with his or her skin” to “take a baseline ECG measurement” (Ex. 1009, 12:44-46; Ex. 1003, ¶340). *Petterson* discloses that “interface 204,” “***when engaged by the patient***” “causes the sensing of a physiologic parameter of a patient by a sensing device 200, 206, or 208” (Ex. 1009, 6:64-7:3, 9:9-29; Ex. 1003, ¶341).

Once interface 204 is engaged, sensing begins as is shown in FIG. 3, which displays an ECG 300 “during the sensing of an ECG” “using an ECG sensing device” (Ex. 1009, 9:38-41; Ex. 1003, ¶¶341-342).

Ex. 1009, Fig. 3 (annotated)

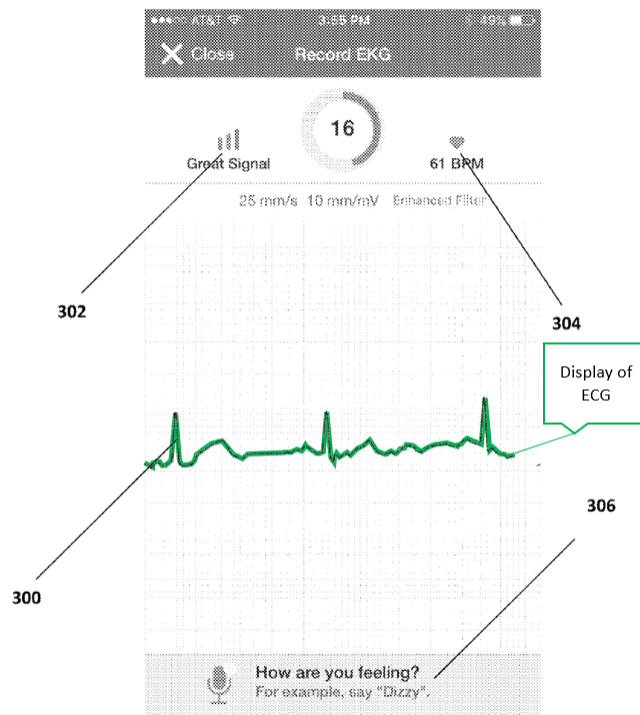


FIG. 3

The POSITA would have understood that *Petterson's* device had received input and was sensing the ECG data after the “record now” button is selected (Ex. 1003, ¶343). To the extent the POSITA sought additional detail regarding detecting input with a sensor that satisfies a first criteria, the POSITA would have turned to *Albert*, which also discloses detecting a first input with the biometric sensor that satisfies first criteria (Ex. 1003, ¶344). *Albert* discloses “an ECG electrode module” including “two or more electrodes” “configured to be contacted by or to a patient/subject to sense an ECG signal from the patient/subject” (Ex. 1010, ¶[0098]; Ex. 1003, ¶344). The POSITA would have known to include *Albert's* explicit

detection in the system of *Petterson* because proper sensing of an ECG for a user requires detection of contact with sensors (Ex. 1003, ¶344 *see also* Motivation to Combine *supra*).

iv. [20.c.1]

Petterson and *Albert* render obvious [20.c.1] (Ex. 1003, ¶¶346-346).

Petterson discloses that “a patient may utilize an ECG monitor, a blood pressure monitor or a pulse oximeter, and the patient application *to record* and save or store his or her cardiac electric activity and blood pressure” (Ex. 1009, 6:64-7:3, 7:33-47; Ex. 1003, ¶¶347-348).

Petterson discloses that “interface 204,” “when engaged by the patient” “causes the sensing of a physiologic parameter of a patient by a sensing device 200, 206, or 208” (Ex. 1009, 9:22-29, FIG. 2B; Ex. 1003, ¶349). *Petterson* illustrates, in FIG. 3, an interface encountered during the sensing of the ECG that illustrates recording biometric information detected by the biometric sensor (Ex. 1009, 9:38-41; Ex. 1003, ¶350).

Ex. 1009, Fig. 3 (annotated)

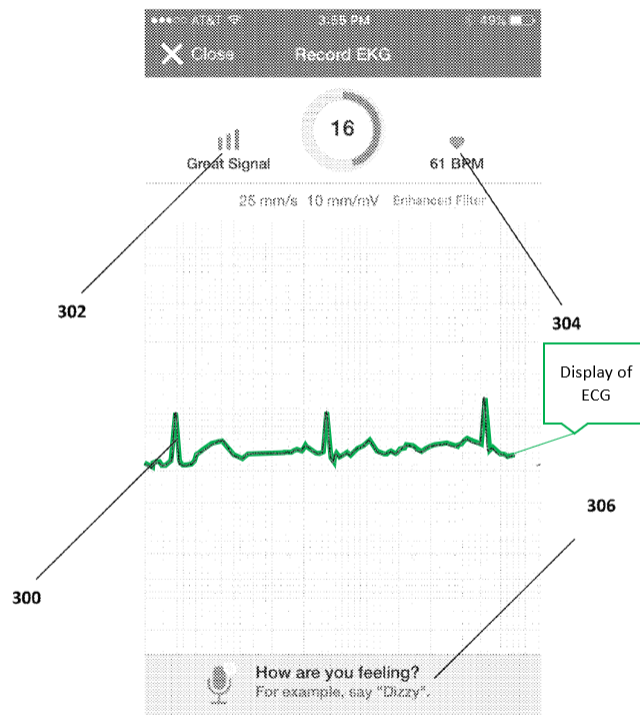


FIG. 3

A POSITA would have understood that *Petterson's* device had received input and began recording the sensed ECG data after the “record now” button is selected and the user has engaged the electrodes based on the display of Fig. 3 (Ex. 1003, ¶¶351-352; *see also* Ex. 1009, 12:63-67).

To the extent the POSITA sought additional detail regarding starting to record biometric information detected by the biometric sensor, the POSITA would have turned to *Albert*, which expressly discloses recording the sensed ECG data (Ex. 1003, ¶362). *Albert* discloses a method for sensing an ECG of a subject (Ex. 1010, ¶85, FIG. 19; Ex. 1003, ¶353). *Albert* discloses an “ECG module” which “may

comprise first and second sensor electrodes that the subject may contact with his or her skin,” such that a “sensed ECG signal may be converted to a wired or wireless signal by the ECG module,” and “transmitted to the mobile computing device” (Ex. 1010, ¶¶131-134; Ex. 1003, ¶354). A POSITA would have understood that storing ECG data was recording the ECG data (Ex. 1003, ¶354).

Ex. 1010, Fig. 19 (annotated)

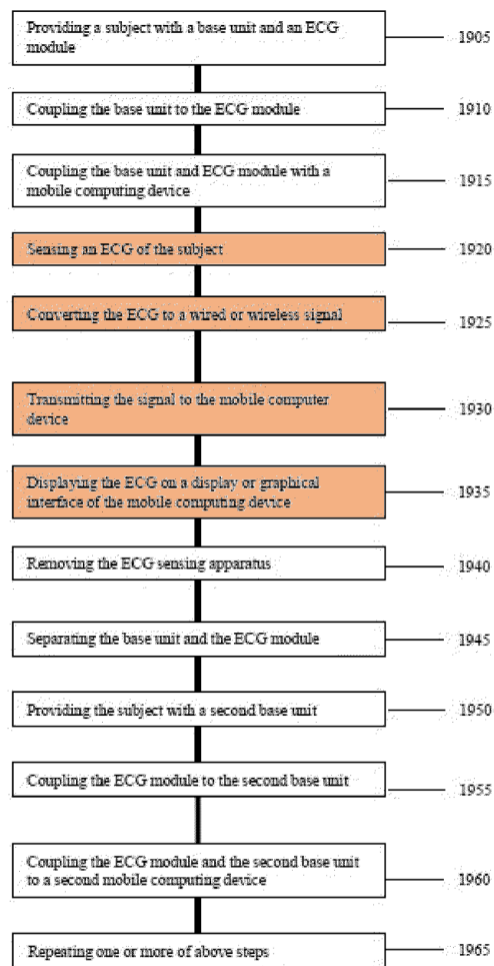


FIG. 19

A POSITA would have been motivated to include in *Petterson* the recording of biometric information from *Albert* to enable comparisons of recordings over time as well as sharing with health care professionals (Ex. 1003, ¶355, *see also* Motivation to Combine *supra*).

v. [20.c.2]

Petterson renders obvious [20.c.2] (Ex. 1003, ¶¶357-361).

Apple includes a “Screenshot of the Kardia App,” annotated to indicate an alleged “indication of progress” (Ex. 1023, p. 28; Ex. 1003, ¶358). A substantially similar image is disclosed in *Petterson*. (See 1009, Fig. 3).³

³ *Petterson* and *Albert* are references assigned to Petitioner, AliveCor. As is shown throughout this ground, the functionality and interfaces that Apple identifies in its infringement contentions as allegedly meeting the claim recitations are substantially similar to those disclosed in *Petterson* and *Albert*.

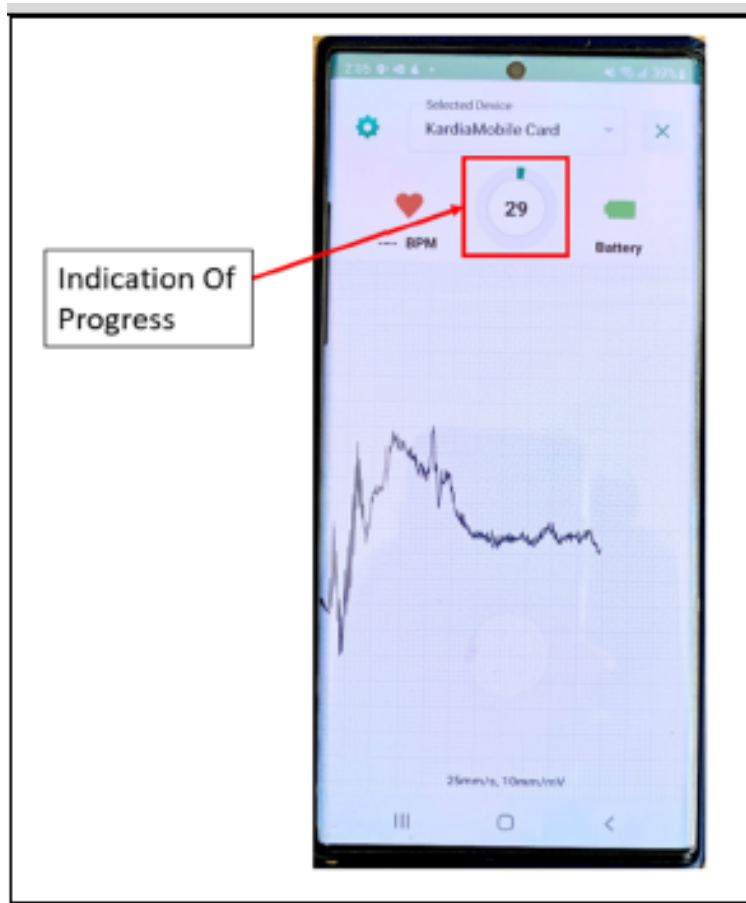


FIG. 3 of *Petterson* shows an interface displaying an ECG during sensing of the ECG (Ex. 1009, 9:38-41, FIG. 3; Ex. 1003, ¶359). *Petterson* discloses “[t]he patient interface may also display an ECG at 300” “over a period of time,” where the ECG and time “may be displayed graphically or textually” (Ex. 1009, 10:13-16, FIG. 3; Ex. 1003, ¶360).

Ex. 1009, FIG. 3 (annotated)

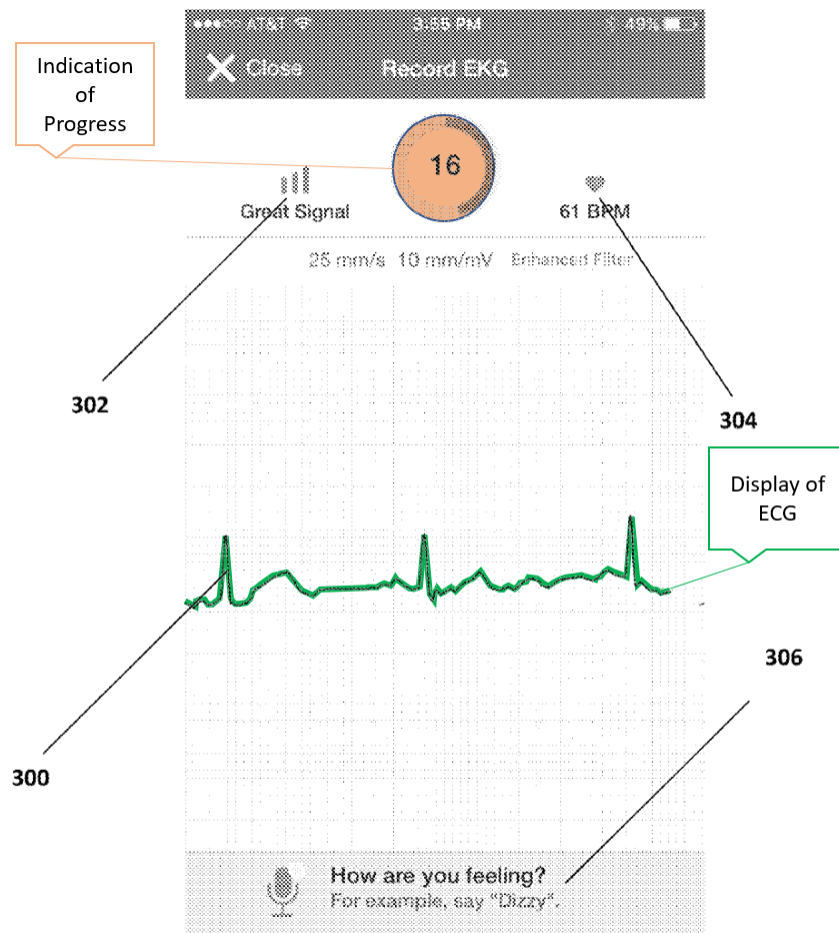


FIG. 3

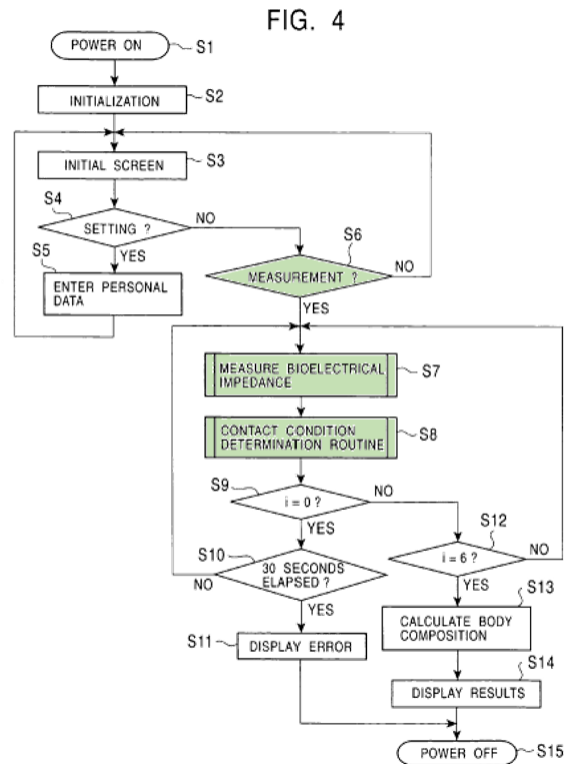
vi. [20.d]

Petterson, Albert, and Nakada render obvious [20.d] (Ex. 1003, ¶¶362-367).

Petterson and *Albert* both disclose recording the biometric information and displaying the progress of the recording while the first criteria are met (see [20.b], [20.c.1], [20.c.2]; Ex. 1003, ¶363). It would have been obvious to a POSITA that the first criteria were evaluated for the entire intended duration of the ECG recording

because the POSITA would have known that ECG data needs to be acquired for a minimum duration (Ex. 1003, ¶364). Indeed, the '533 Patent confirms that such a required duration is 30 seconds (Ex. 1001, 64:67-65:3; Ex. 1003, ¶92; *see also* Ex. 1011, 9:45-57, FIG. 4; Ex. 1003, ¶364). The POSITA would have known that displaying the progress of the recording to the user was intended to inform the user that the first criteria needed to be satisfied for a given duration (i.e., 30 seconds) so as to assist the user in completing the test (Ex. 1003, ¶364).

To the extent the POSITA sought additional details regarding how to implement detecting that the first criteria were no longer met, the POSITA would have looked to *Nakada*, which also discloses detecting that criteria are not met, via one or more input devices (Ex. 1003, ¶365).



Nakada discloses a “contact condition determination routine” which checks “whether the contact condition is normal,” and, if “the contact condition is not normal” and “30 seconds have not yet elapsed,” the measurement continues (Ex. 1011, 9:45-57, FIG. 4; Ex. 1003, ¶365). The POSITA would have known that *Petterson* and *Nakada* could be combined to include explicit detection that the first criteria were not met because the POSITA would have known that a successful ECG recording needed to be acquired over a minimum duration of time (Ex. 1003, ¶366; *see also* Motivation to Combine *supra*).

vii. [20.e]

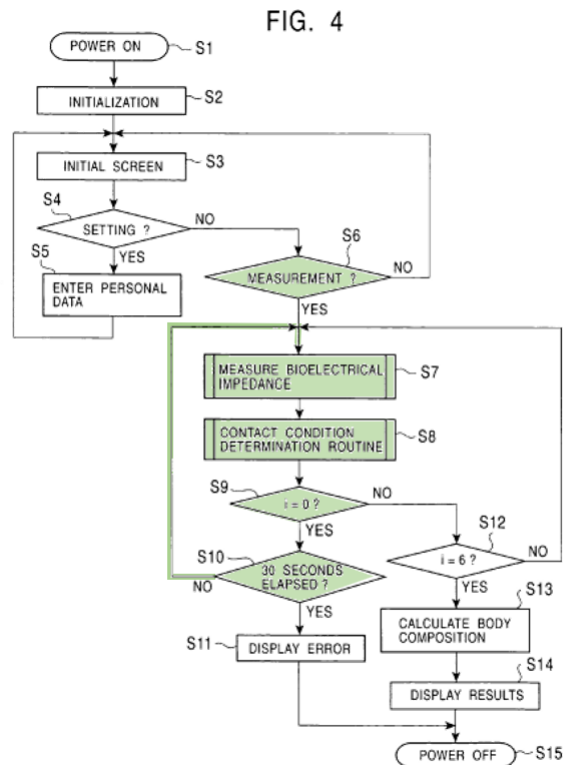
Petterson, Albert, and Nakada render obvious [20.e] (Ex. 1003, ¶¶368-375).

In [20.e] in Ground 1, examples of the “first period of time” from the ’533 are outlined (Ex. 1001, 67:58-59; Ex. 103, ¶369), as is what Apple indicates is the “first period of time” (Ex. 1023, p. 27; Ex. 1003, ¶370).

Petterson discloses the display of the second user interface (see [20.c.2]; Ex. 1003, ¶371). It would have been obvious to a POSITA to reset *Petterson*’s indication of progress and maintain the display of the second user interface, as taught in *Nakada*, because *Petterson* expressly discloses an interest in providing a patient with the ability to perform a test for a set period of time, as prescribed by a healthcare provider, and to provide the user with a congratulatory message upon completion of the test (Ex. 1009, 12:38-13:13; Ex. 1003, ¶371). Given that the test itself requires both proper contact and a particular duration of data, according to the ’533 Patent, the POSITA would have known that any loss of data connection would require another 30 second test (Ex. 1001, 64:67-65:3; Ex. 1003, ¶¶92, 371). Indeed, and to ensure the user completes the test and the ability to send the congratulatory message, a POSITA would have looked to *Nakada* to ensure the user was informed as to successful progress of the test (Ex. 1003, ¶371 *see also* Motivation to Combine *supra*).

Nakada discloses a “contact condition determination routine” which checks “whether the contact condition is normal,” and, if “the contact condition *is not normal*” and “*30 seconds have not yet elapsed*,” the measurement continues because the test is ongoing but incomplete (Ex. 1011, 9:45-57; Ex. 1003, ¶372).

Ex. 1011, FIG. 4 (annotated)



Nakada discloses a first condition where a “contact condition is not normal” and “30 seconds have not yet elapsed,” where the measurement may continue (Ex. 1011, 9:45-57; Ex. 1003, ¶374). If “30 seconds have not yet elapsed,” the device returns to STEP S7 and continues the measurement (Ex. 1011, 9:51-47; Ex. 1003, ¶374). Therefore, *Nakada* discloses *a first period of time* (i.e., 30 seconds have not

yet elapsed) during which the device detects that the first input does not satisfy the first criteria (i.e., a contact condition is not normal) (Ex. 1003, ¶374). A POSITA would have understood that *Nakada's* return to the bioelectrical impedance measuring routine was a resetting of the progress indication because *Nakada* was starting the routine over (Ex. 1003, ¶374).

viii. [20.f]

Petterson, Albert, and Nakada render obvious [20.f] (Ex. 1003, ¶¶376-383).

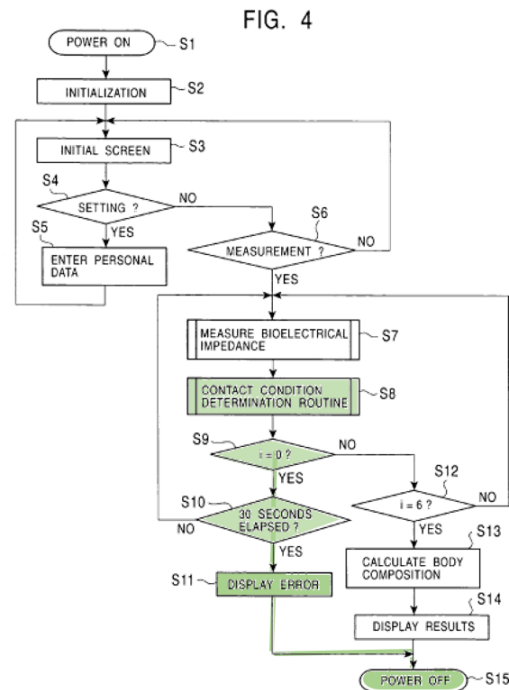
As outlined in [20.f] in Ground 1, the '533 Patent provides an example of the “second period of time” of “longer than the first period of time (e.g., longer than 5 seconds)” (Ex. 1001, 68:14-16; Ex. 1003, ¶377). It appears Apple is equating the “second period of time” to any duration of time that extends beyond the completion of the “first period of time” (Ex. 1003, ¶378).

In view of *Petterson*, the POSITA would have understood that a device would not remain in a recording mode indefinitely if the first criteria were no longer met for a second period of time after which it would not make sense to continue attempting to record (Ex. 1003, ¶379). The POSITA would have understood that, in user interface design, it would have been preferred to return from FIG. 3 back to FIG. 2B of *Petterson* in the absence of the first criteria being met because the POSITA would have understood that resetting the user interface at least because of

lack of interaction is suggestive that the user wants to start over or, alternatively, that the user has moved on to another activity (Ex. 1003, ¶379).

To the extent the POSITA sought additional details regarding implementing replacing display of the second user interface with the first user interface, the POSITA would have turned to *Nakada*, which explicitly discloses a second condition, where, if “the contact condition *is not normal*” and “*30 seconds have already elapsed*,” the device “determines that an accurate measurement could not be made” and “displays an error on the display section” (Ex. 1011, 9:45-57; Ex. 1003, ¶¶380-382).

Ex. 1011, Fig. 4 (annotated)



A POSITA would have understood the lapsing of the 30 seconds to be a second period of time because the second condition is satisfied only after completion of the first period of time (e.g., the 30 seconds of *Nakada*'s first condition) (Ex. 1003, ¶382). That is, in view of *Nakada*, the POSITA would have understood the first period of time to be less than 30 seconds and the second period of time to be greater than or equal to 30 seconds (Ex. 1003, ¶371). The POSITA would have understood that, in user interface design, it would have been preferred to use the lapsing of a specific period of time to return back to FIG. 2B of *Petterson* in the absence of the first criteria being met because the POSITA would have understood that resetting the user interface at least because of lack of interaction is suggestive

that the user wants to start over (Ex. 1003, ¶382; *see also* Motivation to Combine *supra*). Indeed, *Nakada* confirms that after 30 seconds have elapsed an error is displayed and then the system is returned to the beginning state of the routine, which in the case of *Petterson* would be FIG. 2B (Ex. 1003, ¶382).

3. Claim 21

i. [21.pre]

Petterson Albert, and *Nakada* render obvious [21.pre] (*see* Claim 20; Ex. 1003, ¶¶384-385).

ii. [21.a]

Petterson renders obvious [21.a] (Ex. 1003, ¶¶385-389).

Apple includes a “Screenshot of the Kardia App” for claim 21 (Ex. 1023, p. 38; Ex. 1003, ¶386).

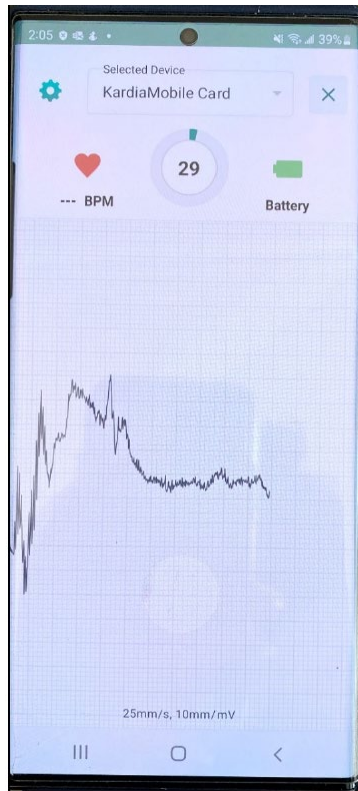


FIG. 3 of *Petterson* shows recorded biometric information including an electrocardiogram recording derived from the biometric information (Ex-1009, 9:38-41, 6:16-29; Ex. 1003, ¶387).

Ex. 1009, Fig. 3 (annotated)

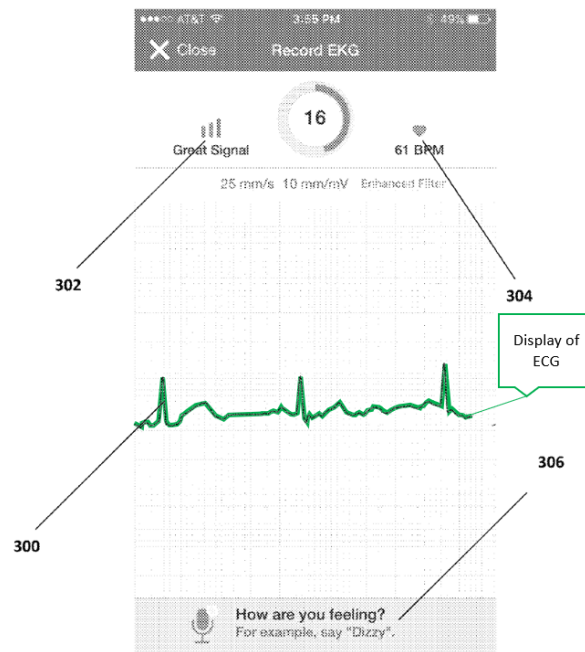


FIG. 3

4. Claim 24

i. [24.pre]

Petterson, Albert, and Nakada render obvious [24.pre] (see Claim 20; Ex. 1003, ¶¶391-392).

ii. [24.a]

Petterson and Albert render obvious [24.a] (Ex. 1003, ¶¶392-394).

Petterson discloses that “the sensor comprises two ECG electrodes” (Ex. 1009, 19:7-8; Ex. 1003, ¶393). *Petterson* discloses that a “patient application may instruct [a] patient to place a cardiac health monitoring device in contact with his or

her skin” to “take a baseline ECG measurement” (Ex. 1009, 12:44-46; Ex. 1003, ¶393).

Albert discloses “an ECG electrode module” which “includes two or more electrodes,” “configured to be contacted by or to a patient/subject to sense an ECG signal from the patient/subject” (Ex. 1010, ¶98; Ex. 1003, ¶394).

5. Claim 29

i. [29.pre]

Petterson, Albert, and Nakada render obvious [29.pre] (*see* Claim 20; Ex. 1003, ¶¶395-396).

ii. [29.a]

Petterson renders obvious [29.a] (Ex. 1003, ¶¶396-398).

FIG. 3 of *Petterson* shows a “patient interface” “display[ing] an ECG at 300 and heart rate recordings at 304 over a period of time” (Ex. 1009, 9:38-41, 10:13-16; Ex. 1003, ¶397).

Ex. 1009, FIG. 3 (annotated)

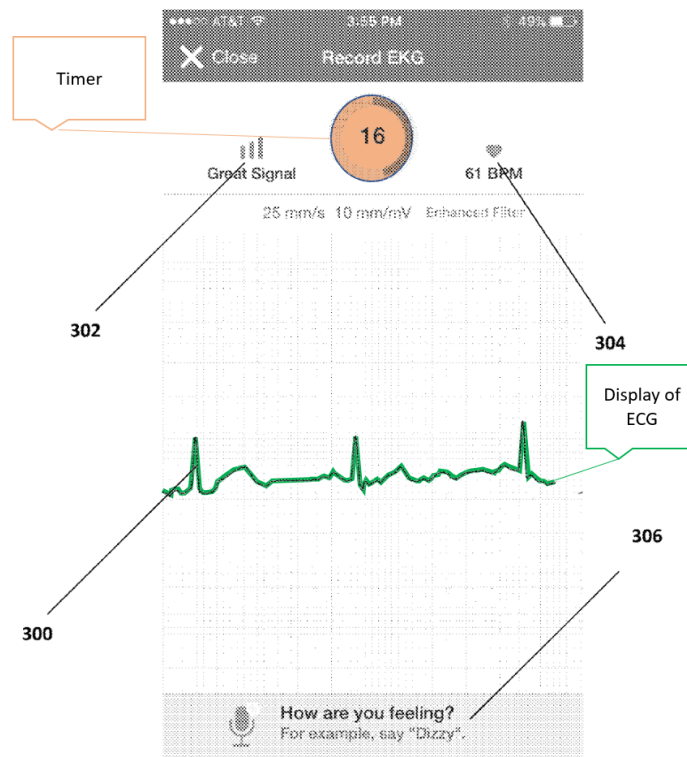


FIG. 3

6. *Claim 37*

i. *[37.pre]*

Petterson, Albert, and Nakada render obvious [37.pre] (see Claim 20; Ex. 1003, ¶¶399-400).

ii. *[37.a]*

Petterson renders obvious [37.a] (Ex. 1003, ¶¶400-403).

Apple includes “Screenshots of the Kardia App,” annotated to indicate an alleged “indication of progress” that “is a countdown timer” (Ex. 1023, p. 57; Ex. 1003, ¶401).

Ex. 1023, p. 57 (annotations in original)

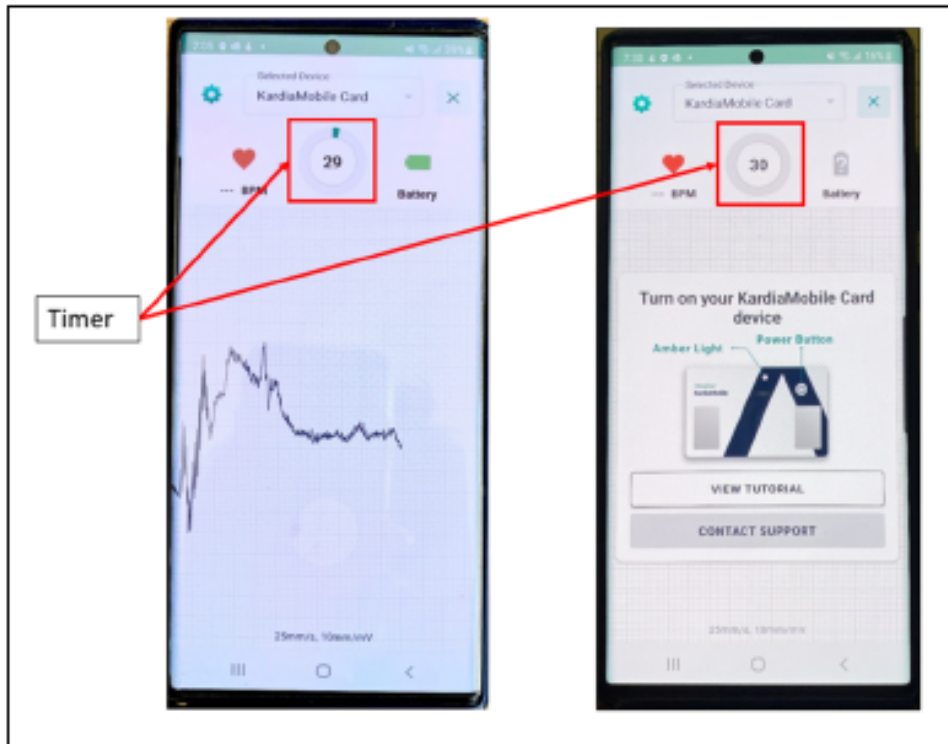


FIG. 3 of *Petterson* shows a “patient interface” “display[ing] an ECG at 300” “over a period of time” (Ex. 1009, 9:38-41, 10:13-16; Ex. 1003, ¶402).

Ex. 1009, FIG. 3 (annotated)

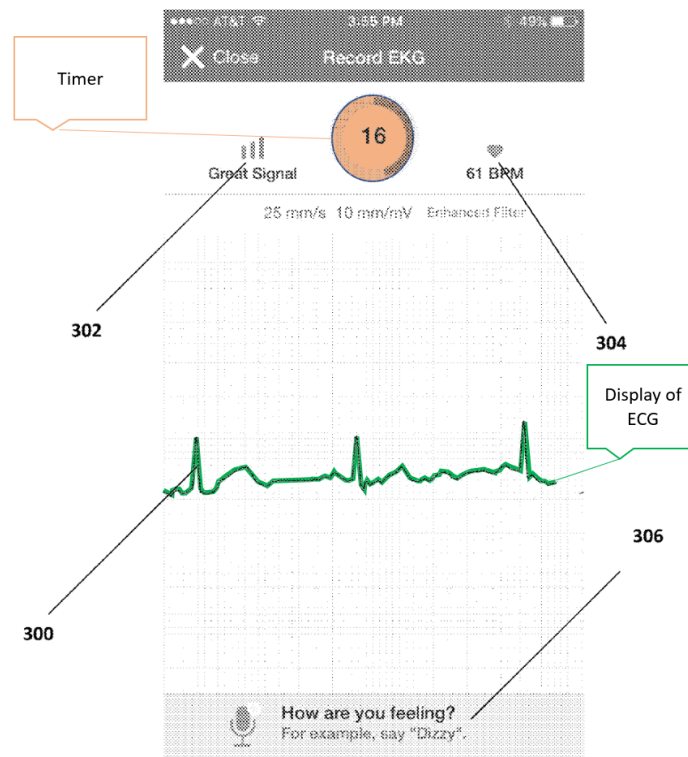


FIG. 3

D. Ground 4: Claim 22 Is Unpatentable Under 35 U.S.C. §103 over *Petterson, Albert, Nakada, and Mayor*

Petterson, Albert, Nakada, and Mayor render obvious claim 22 of the '533 Patent (Ex. 1003, ¶¶405-429).

1. Motivation to Combine

A POSITA would have been motivated to combine *Mayor* with the combination of *Petterson, Albert, and Nakada* because the POSITA would have understood that the devices of *Petterson, Albert, and Nakada* could have several applications installed thereon and the POSITA would have sought mechanisms for

convenient access via a user interface to any of the applications (Ex. 1003, ¶406). *Mayor* explicitly teaches that there are shortcomings with having to “navigate through menus and make multiple inputs to view a desired application user interface” and “requiring a user to make multiple menu selections to access a desired user interface can waste time and cause frustration for the user” (Ex. 1012, ¶2; Ex. 1003, ¶406). As a solution, *Mayor* discloses advantageously creating icons so as to be able to more quickly access the application (Ex. 1012, ¶29; Ex. 1003, ¶406). Indeed, and given the ubiquitous nature of applications, a POSITA would have had a reasonable expectation of success in implementing the combination (Ex. 1003, ¶¶407-408).

2. Claim 22

i. [22.pre]

Pettersoni, Albert, and Nakada render obvious [22.pre] (see Claim 20; Ex. 1003, ¶¶409-411).

ii. [22.a]

Petterson and *Mayor* render obvious [22.a] (Ex. 1003, ¶¶412-420).

FIG. 2A of *Petterson* shows an “initial home screen interface encountered by a patient when he or she has not yet signed into a patient application that is operating on a computing device” (Ex. 1009, 8:20-23; Ex. 1003, ¶413).

Ex. 1009, Fig. 2A (annotated)

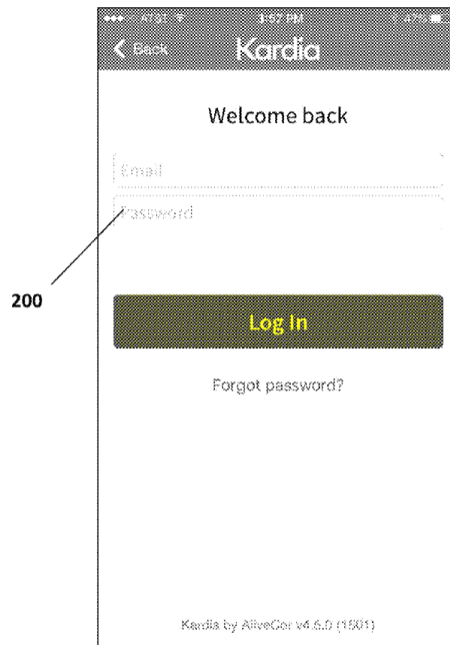


FIG. 2A

A POSITA would have understood that the “Log In” element of FIG. 2A of *Petterson* was an application affordance corresponding to a health monitoring application because, upon selection of the “Log In” element, the patient encounters FIG. 2B of *Petterson*, which depicts “a patient interface component 204” “that provides the patient with the ability to select to record an ECG” using “an ECG sensing device” “configured to interact with the software application” after the patient has logged in (Ex. 1009, 9:7-15, FIG. 2B; Ex. 1003, ¶413).

To the extent the POSITA sought additional detail regarding displaying a homescreen that includes an application affordance corresponding to a health monitoring application, such information was well known (Ex. 1003, ¶414). The

POSITA would have turned to *Mayor* which discloses displaying a homescreen that includes an application affordance corresponding to a health monitoring application for at least the reasons described above with regard to Claim 22 of Ground 2. (See Claim 22, Ground 2; Ex. 1003, ¶¶415-420).

iii. [22.b]

Petterson and *Mayor* render obvious [22.b] (Ex 1003, ¶¶421-429).

FIG. 2A of *Petterson* shows an “initial home screen interface encountered by a patient when he or she has not yet signed into a patient application that is operating on a computing device” (Ex. 1012, 8:20-23; Ex. 1003, ¶422). FIG. 2B of *Petterson* depicts “a patient interface component 204” “that provides the patient with the ability to select to record an ECG” using “an ECG sensing device” “configured to interact with the software application” after the patient has logged in (Ex. 1012, 9:7-15, FIG. 2B; Ex. 1003, ¶422). A POSITA would have understood a patient logging into an application to be an activation of an application affordance that led to the display of the first user interface, which is FIG. 2B (Ex. 1003, ¶422).

To the extent the POSITA sought more details regarding displaying the first user interface in response to detecting a user activation of an application affordance, such information was well known (Ex. 1003, ¶423). The POSITA would have turned to *Mayor* which discloses detecting, via the one or more input devices, a user activation of the application affordance; and in response to detecting the user

activation of the application affordance, displaying, on the display, the first user interface for at least the reasons described above with regard to Claim 22 of Ground 2. (See Claim 22, Ground 2; Ex. 1003, ¶¶423-429).

VIII. PRIOR ART NOT PREVIOUSLY PRESENTED TO THE OFFICE

Under *Advanced Bionics*, the Board should not deny institution under §325(d). *Advanced Bionics, LLC v. MED-EL Elektromedizinische Geräte GmbH*, IPR2019-01469, Paper 6 at 7 (PTAB Feb. 13, 2020) (precedential).

The Board has held that the first prong of *Advanced Bionics* is not met where “neither [the combination references] nor similar prior art was before the examiner... the prosecution history does not include any overlapping arguments directed to this prior art.” *Godbersen-Smith Constr. Co. v. Guntert & Zimmerman Const. Div., Inc.* No. IPR2021-00050, Paper 24 (P.T.A.B. May 7, 2021), at 19–21. And in such a case, the Board “need not address part two of the analysis.” *Id.* at 21.

At least one prior art reference in each ground was not cited during prosecution and is not cumulative of the art considered by the Examiner during prosecution. For example, in Grounds 1 and 2, *AHIT*, *Hooper*, *Nakada*, and *Mayor* were not cited during prosecution and, in Grounds 3 and 4, none of the references were cited in prosecution. *Cho*, which is relied on in Grounds 1 and 2 was merely cited by the Examiner as a tertiary reference for rejecting dependent claims that are not at issue in this Petition. See Ex. 1002, 650-652.

IX. THE *FINTIV* FACTORS FAVOR INSTITUTION

The Board balances six factors in considering discretionary denial. *Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11 (PTAB Mar. 20, 2020) (precedential). Here, the factors favor institution.

Fintiv Factor 1 (potential for stay) favors institution at least because a motion to stay has been filed in the district court case.

Fintiv Factor 2 (timing of trial) favors institution. A trial will not occur before the Final Written Decision because this Petition is being filed only 3.5 months after the Court's case management conference, and no schedule after the Markman hearing including a date for trial has been set. The median-time-to-trial for civil cases in N.D. Cal. is 31.1 months (Ex. 1024, 66). Assuming that timing from the original filing date of December 2, 2022, the trial date is July 7, 2025, over 2 months after the final written decision.

Fintiv Factor 3 (litigation investment) favors institution. The district court case is at the very outset, and although the parties have served preliminary discovery requests, discovery has not yet begun in earnest. The parties have not yet begun claim construction briefing.

Fintiv Factor 4 (overlap of issues) favors institution. Apple asserts five claims in the district court, while this Petition addresses additional claims. Petitioners stipulate that if this IPR proceeding is instituted, they will withdraw any identical

grounds from the district court litigation, which weighs in favor of institution. *See Sand Revolution II, LLC v. Continental Intermodal Grp - Trucking LLC*, IPR2019-01393, Paper 24 at 12 n.5 (PTAB June 16, 2020).

Fintiv Factor 5 (overlap in parties) weighs against institution because Petitioners are parties in this Petition as well as in the parallel district court litigation.

Fintiv Factor 6 (other circumstances) favors institution because this Petition presents a compelling case and “plainly lead[s] to a conclusion that one or more claims are unpatentable.” *CommScope Technologies LLC v. Dali Wireless, Inc.*, IPR2022-01242, Paper 23 at 4 (PTAB Feb. 27, 2023) (precedential).

Each of Grounds 1-4 are highly likely to prevail with respect to at least one challenged claim, insofar as they each set out functionality that meets the point of alleged novelty found in the ’533 Patent.

X. CONCLUSION

Petitioner requests cancellation of the Challenged Claims.

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

A. Real Party in Interest Under 37 C.F.R. §42.8(b)(1)

The real party-in-interest is Petitioner AliveCor, Inc.

B. Related Matters Under 37 C.F.R. §42.8(b)(2)

A claim of infringement of the '533 Patent was asserted in *Apple Inc. v. AliveCor, Inc.*, Case 4:22-cv-07608-HSG, filed on December 2, 2022. Petitioner has filed petitions for IPR of related U.S. Patent No. 10,076,257 under the case heading IPR2023-00950, U.S. Patent No. 10,270,898 under the case heading IPR2022-01434, and U.S. Patent No. 10,866,619 under the case headings IPR2023-00948 and IPR2023-00949.

C. Designation of Counsel Under 37 C.F.R. §42.8(b)(3)

Petitioner provides the following designation of counsel.

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Pursuant to 37 C.F.R §42.10(b), a Power of Attorney is being submitted with this Petition.

D. Service Information

Please address all correspondence and service to the address listed above.

Petitioner consents to electronic service directed to apple-alivecor-ndcal@alston.com.

Date: October 30, 2023

By: /Christopher TL Douglas/
Christopher TL Douglas
Reg. No. 56,950

CLAIMS APPENDIX

<u>Claim</u>	<u>Recitation</u>
20.pre	A non-transitory computer-readable storage medium storing one or more programs configured to be executed by one or more processors of a first electronic device with a display and one or more input devices including a biometric sensor, the one or more programs including instructions for:
20.a	displaying, on the display, a first user interface indicating that the first electronic device is ready to detect biometric information;
20.b	detecting a first input with the biometric sensor that satisfies first criteria;
20.c.1	in response to detecting the first input with the biometric sensor: starting to record biometric information detected by the biometric sensor; and
20.c.2	displaying, on the display, a second user interface that is different from the first user interface, wherein the second user interface includes an indication of progress in recording the biometric information;
20.d	after recording at least a portion of the biometric information, detecting, via the one or more input devices, that the first criteria are no longer met;
20.e	in response to detecting that the first criteria are no longer met for a first period of time, resetting the indication of progress in recording the biometric information and maintaining display of the second user interface; and
20.f	in response to detecting that the first criteria are no longer met for a second period of time that is longer than the first period of time, replacing display of the second user interface with the first user interface.
21.pre	The non-transitory computer-readable storage medium of claim 20,

<u>Claim</u>	<u>Recitation</u>
21.a	wherein the recorded biometric information includes an electrocardiogram recording derived from the biometric information detected by the biometric sensor.
22.pre	The non-transitory computer-readable storage medium of claim 20, wherein the one or more programs further include instructions for:
22.a	prior to displaying the first user interface, displaying a homescreen that includes an application affordance corresponding to a health monitoring application;
22.b	detecting, via the one or more input devices, a user activation of the application affordance; and
22.c	in response to detecting the user activation of the application affordance, displaying, on the display, the first user interface.
24.pre	The non-transitory computer-readable storage medium of claim 20,
24.a	wherein the biometric sensor is a contact-based sensor, and wherein the first input with the biometric sensor satisfies the first criteria when a contact is detected on the biometric sensor.
29.pre	The non-transitory computer-readable storage medium of claim 20,
29.a	wherein the second user interface includes a graphical representation that corresponds to a visualization of the biometric information from the recorded biometric information and a timer indicating an amount of time remaining to complete the recording of the biometric information.
37.pre	The non-transitory computer-readable storage medium of claim 20,
37.a	wherein the indication of progress is a countdown timer.

CERTIFICATION UNDER 37 C.F.R. §42.24

Under the provisions of 37 CFR §42.24, the undersigned hereby certifies that the word count for the foregoing Petition for *inter partes* review totals 13,965 words (Sections I-X), which is less than the 14,000 allowed under 37 CFR §42.24(a)(i).

Date: October 30, 2023

By: /Christopher TL Douglas/
Christopher TL Douglas

CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. §§42.6(e), 42.105, the undersigned hereby certifies that true and correct copies of the above-captioned PETITION FOR INTER PARTES REVIEW OF U.S. PATENT NO. 10,568,533, all associated exhibits, and Petitioner's Power of Attorney were served in their entireties on October 30, 2023, upon the following parties via UPS Next Day Air®:

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Petitioners knows these to be an additional address likely to effect service
under 37 C.F.R. § 42.105.

Date: October 30, 2023

By: /Christopher TL Douglas/
Christopher TL Douglas