

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

APPLE INC.,

Petitioner

v.

FIRSTFACE CO., LTD.,

Patent Owner

Case IPR2019-00613¹
Patent 9,633,373 B2

PETITIONER'S NOTICE OF APPEAL

¹ Case IPR2019-01011 has been consolidated with this proceeding.

Director of the United States Patent and Trademark Office
c/o Office of the General Counsel
United States Patent and Trademark Office
P.O. Box. 1450
Alexandria, VA 22313-1450

Pursuant to 35 U.S.C. §§ 141, 142, and 319, and 37 C.F.R. §§ 90.2-90.3, notice is hereby given that Petitioner Apple Inc. appeals to the United States Court of Appeals for the Federal Circuit from the Final Written Decision of the Patent Trial and Appeal Board (“Board”) entered on July 31, 2020 in IPR2019-00613 (Paper 27) and IPR2019-01011 (Paper 10), and from all underlying orders, decisions, rulings, and opinions regarding these *inter partes* reviews of U.S. Patent No. 9,633,373 (“’373 patent”). A copy of the Final Written Decision is attached.

In accordance with 37 C.F.R. § 90.2(a)(3)(ii), Petitioner further indicates that the issues on appeal include, but are not limited to, the following: (1) the Board’s determination that claims 11-14 and 18 of U.S. Patent No. 9,633,373 have not been shown to be unpatentable; (2) the Board’s determination that Petitioner has not demonstrated by a preponderance of the evidence that claims 11-14 and 18 of the ’373 patent are unpatentable under 35 U.S.C. § 103 as obvious over (i) Griffin, Davis, and iOS and (ii) Goertz, Davis, and iOS; (3) the Board’s construction and application of the claim language; (4) the Board’s consideration of the expert testimony, prior art, and other evidence in the record; (5) the Board’s factual findings, conclusions of law or other determinations supporting or related to those issues; as

well as (6) all other issues decided adversely to Petitioner in any orders, decisions, rulings, and opinions.

Simultaneous with this submission, a copy of this Notice of Appeal is being filed with the PTAB through the E2E System. In addition, copies of the Notice of Appeal, along with the required docketing fee, are being filed with the Clerk's office for the United States Court of Appeals for the Federal Circuit.

Dated: September 29, 2020

Respectfully submitted,

By: *Gabrielle E. Higgins*

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CERTIFICATE OF SERVICE

The undersigned certifies that, on September 29, 2020, the foregoing
PETITIONER'S NOTICE OF APPEAL was:

(1) electronically filed through PTAB E2E

(2) filed by Federal Express with the Director of the United States Patent and
Trademark Office, at the following address:

Office of the General Counsel
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450

(3) filed in the U.S. Court of Appeals for the Federal Circuit using the
Court's CM/ECF filing system and pay.gov to pay the filing fee electronically

(4) provided as a courtesy copy via electronic mail to the following attorneys
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Dated: September 29, 2020

Respectfully submitted,

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

APPLE INC.,
Petitioner,

v.

FIRSTFACE CO., LTD.,
Patent Owner.

IPR2019-00613,
IPR2019-01011¹
Patent 9,633,373 B2

Before JUSTIN T. ARBES, MELISSA A. HAAPALA, and
RUSSELL E. CASS, *Administrative Patent Judges*.

HAAPALA, *Administrative Patent Judge*.

DECISION
Final Written Decision
Determining Some Challenged Claims Unpatentable
35 U.S.C. § 318(a)

¹ Case IPR2019-01011 was consolidated with IPR2019-00613.
Accordingly, we issue a consolidated Final Written Decision, and all
citations are to IPR2019-00613 unless otherwise indicated.

Apple Inc. (“Petitioner”) filed a Petition pursuant to 35 U.S.C. §§ 311–319 to institute an *inter partes* review of claims 1, 2, 4–6, and 11–14 of U.S. Patent No. 9,633,373 B2 (“the ’373 patent”). Paper 2 (“Pet.”). Petitioner later filed a Petition in IPR2019-01011 to institute an *inter partes* review of claims 10 and 18 of the ’373 patent. IPR2019-01011, Paper 1 (“1011 Pet.”). Firstface Co., Ltd. (“Patent Owner”) filed a Preliminary Response in IPR2019-00613 (Paper 8) and waived the filing of a preliminary response in IPR2019-01011 (IPR2019-01011, Paper 7). Applying the standard set forth in 35 U.S.C. § 314(a), we granted Petitioner’s requests and instituted an *inter partes* review of all challenged claims based on all grounds presented in both Petitions. Paper 10 (“Dec.”); Paper 14 (“1011 Dec.”).² We further consolidated both proceedings and ordered all further filings in the consolidated proceeding to be made in IPR2019-00613. 1011 Dec. 23.

During the trial, Patent Owner timely filed a Response (Paper 16, “PO Resp.”), to which Petitioner timely filed a Reply (Paper 18, “Reply”). Patent Owner further submitted a Sur-Reply (Paper 21, “Sur-Reply”) to Petitioner’s Reply. An oral hearing was held on May 5, 2020, and a copy of the transcript was entered into the record. Paper 26 (“Tr.”).

We have jurisdiction under 35 U.S.C. § 6. This Decision is a Final Written Decision under 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73 as to the patentability of the claims on which we instituted trial. For the reasons that follow, we determine that Petitioner has shown by a preponderance of the

² Although we granted Petitioner’s motions to seal certain exhibits filed with its Petitions (Paper 9; IPR2019-01011, Paper 8), we do not refer to any sealed material in either Decision Granting Institution or in this Decision.

evidence that claims 1, 2, 4–6, and 10 are unpatentable. Petitioner has not shown by a preponderance of the evidence that claims 11–14 and 18 are unpatentable.

I. BACKGROUND

A. The '373 Patent (*Ex. 1001*)

The '373 patent describes a method and mobile communication terminal for performing a specific function when a mobile communication terminal is activated. *Ex. 1001*, 1:16–18. Figure 1 of the '373 patent is reproduced below.

FIG. 1

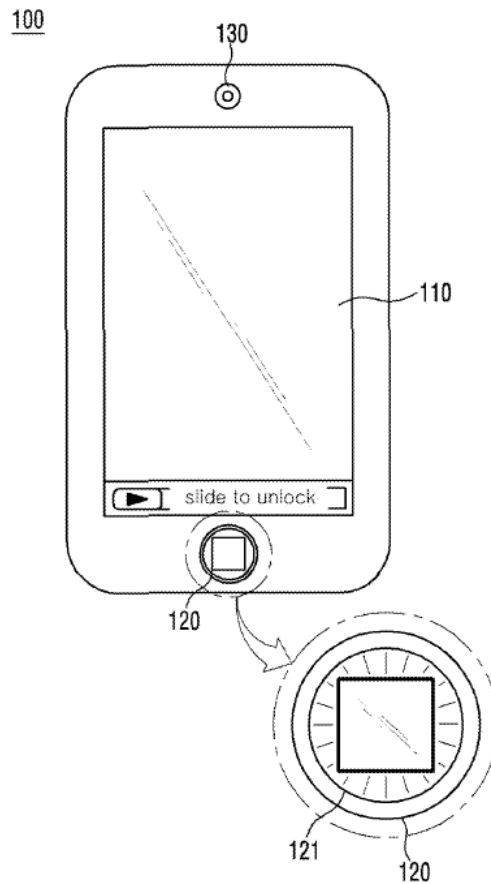


Figure 1 illustrates an external appearance of mobile communication terminal 100. *Id.* at 3:42–44. Mobile communication terminal 100 includes display unit 110 and activation button 120. *Id.* at 3:45–47. Display unit 110 displays various information regarding operation states of mobile communication terminal 100. *Id.* at 3:64–66. Activation button 120 switches mobile communication terminal 100 from an inactive state (in which the terminal is communicable but the display screen is turned off) to an active state (in which the display screen is turned on). *Id.* at 3:21–23, 3:32–37, 4:22–24.

If the user presses activation button 120 when mobile communication terminal 100 is in the inactive state, mobile communication terminal 100 performs a predetermined operation in addition to switching to the active state. *Id.* at 4:36–40. Example operations that can be performed include camera activation, user authentication (e.g., fingerprint recognition), and operation of a music player. *See id.* at 5:51–63, 7:18–8:20, 10:1–8.

The user can set the operation to be performed when the activation button is pressed. *Id.* at 4:51–53. Different operations can be set to be performed according to the number of presses or a press time of activation button 120; for example, a first operation can be performed if activation button 120 is pressed for a short time and a second operation can be set to be performed if activation button 120 is pressed for a long time. *See id.* at 4:57–5:2.

B. Illustrative Claim

Claims 1 and 11 are independent claims. Claim 1 is illustrative of the subject matter at issue:³

1. A mobile communication terminal comprising:

a touch screen display;

a camera;

a power button configured to turn on and off the terminal by pressing; and

an activation button separate from the power button and located outside the touch screen display, the activation button configured for pressing to turn on the touch screen display and to initiate one or more additional functions of the terminal,

wherein the terminal has a first function and a second function to perform in response to user input via the activation button and is configured to provide user settings for configuring at least one of the first and second functions such that at least one of the first and second functions is set to be performed in addition to turning on the touch screen display upon pressing of the activation button while the touch screen display is turned off, wherein the first and second functions are different from each other and selected from the group consisting of fingerprint authentication, activating the camera, playing music and a hands-free function,

wherein upon one-time pressing of the activation button while the touch screen display is turned off, the terminal is configured to turn on the touch screen display and further perform at least one of the first and second functions in addition to turning on the touch screen display such that:

a lock screen is displayed on the touch screen display upon turning on the touch screen display in

³ Claims 1 and 11 were corrected in a certificate of correction dated June 27, 2017. Ex. 1001.

response to the one-time pressing of the activation button while the touch screen display is turned off,

in response to the one-time pressing of the activation button, the first function is performed in addition to turning on the touch screen display for displaying the lock screen thereon, and

the second function is performed when the one-time pressing is for a long time longer than a reference time period,

wherein at least one of the first and second functions is performed subsequent to turning on the touch screen display and displaying the lock screen in response to the one-time pressing of the activation button,

wherein the touch screen display displays the lock screen when at least one of the first and second functions is being performed.

C. Instituted Grounds of Unpatentability

Petitioner relies on the following references:

1. Apple iPhone OS 3.1 User Guide (Sept. 2009) (“iOS”) (Ex. 1007).
2. U.S. Patent Application Pub. No. 2010/0017872, published Jan. 21, 2010 (“Goertz”) (Ex. 1013).
3. U.S. Patent Application Pub. No. 2010/0138914, published June 3, 2010 (“Davis”) (Ex. 1015).
4. U.S. Patent Application Pub. No. 2012/0133484, published May 31, 2012 (“Griffin”) (Ex. 1027).

We instituted trial on the following grounds:

References	Basis	Claims
Griffin, Davis, and iOS	35 U.S.C. § 103(a)	1, 2, 4–6, 10–14, 18
Goertz, Davis, and iOS	35 U.S.C. § 103(a)	1, 2, 4–6, 10–14, 18

In support of its contentions, Petitioner submitted declarations by its witness, Benjamin B. Bederson, Ph.D. Exs. 1003, 1039. In response, Patent Owner submitted a declaration by its witness, Alfred C. Weaver, Ph.D. Ex. 2001. Petitioner's expert was cross-examined during the trial, and a transcript of the deposition is in the record. Ex. 2008.

D. Related Proceedings

Petitioner and Patent Owner identify the following district court litigation involving the '373 patent: *Firstface Co. v. Apple Inc.*, Case No. 3-18-cv-02245 (N.D. Cal.). Pet. 2–3; Paper 3, 2.

II. ANALYSIS

A. Legal Principles

A claim is unpatentable under § 103(a) if the differences between the claimed subject matter and the prior art are “such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.” *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations, including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of skill in the art; and (4) objective evidence of non-obviousness, i.e., secondary considerations such as commercial success, long felt but unsolved needs, and failure of others.⁴ *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966). The obviousness inquiry further requires an analysis of “whether there was an apparent reason to combine the known elements in the fashion

⁴ The record does not include arguments or evidence regarding objective indicia of non-obviousness.

claimed by the patent at issue.” *KSR*, 550 U.S. at 418 (citing *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006) (requiring “articulated reasoning with some rational underpinning to support the legal conclusion of obviousness”)).

B. Level of Ordinary Skill in the Art

Petitioner argues that a person of ordinary skill in the art at the time of the '373 patent “would have been a person with [a] bachelor’s degree in Computer Science, Computer Engineering, or equivalent and have at least two years of relevant experience in the fields of user interface design and mobile devices, or otherwise equivalent industry experience in the relevant field.” Pet. 11–12 (citing Ex. 1003 ¶¶ 29–30). Patent Owner does not dispute Petitioner’s proposed definition of the person of ordinary skill for purposes of this trial. PO Resp. 7. Based on our review of the record, we accept the level of skill advocated by Petitioner as it is consistent with the description of the art in the '373 patent and the prior art of record. *See, e.g.*, Ex. 1001, 1:13–49.

C. Claim Construction

In an *inter partes* review, claims of a patent shall be construed using the same claim construction standard that would be used to construe the claims in a civil action under 35 U.S.C. § 282(b), including construing the claims in accordance with the ordinary and customary meaning of such claims as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent. 37 C.F.R. § 42.100(b); *see also Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–14 (Fed. Cir. 2005).

Neither party propose constructions for any of the claim terms. Pet. 12; PO Resp. 6. We determine we need not explicitly construe any

terms to resolve the issues before us. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (holding that “we need only construe terms ‘that are in controversy, and only to the extent necessary to resolve the controversy,’” (citation omitted)).

D. Obviousness over Griffin, Davis, and iOS

Petitioner challenges claims 1, 2, 4–6, and 10–14 as obvious under 35 U.S.C. § 103(a) over Griffin, Davis, and iOS. Pet. 13–52; 1011 Pet. 26–29, 44–46, 51–52.⁵

1. Overview of Griffin

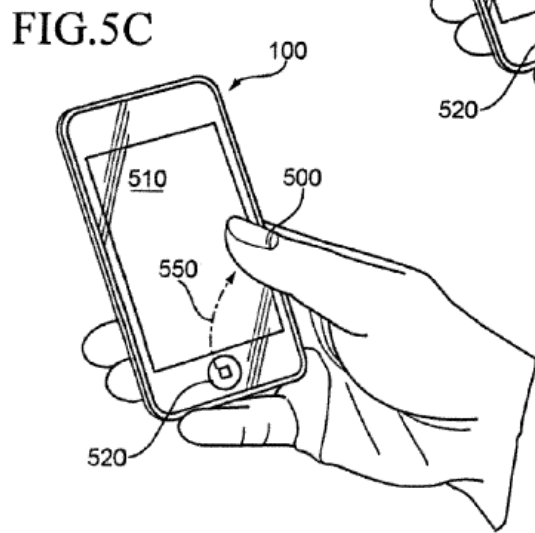
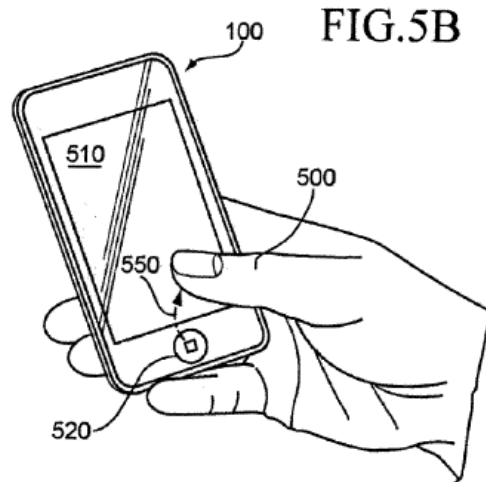
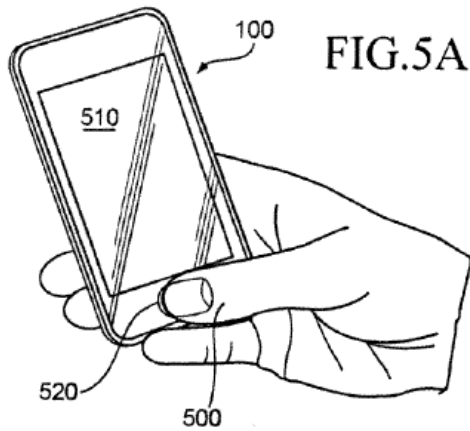
Griffin describes an electronic device configured to transition between a locked and unlocked state in response to a detected action. Ex. 1027, code (57). A locked state includes a “sleep” mode in which certain functions of the device (such as a display) are halted, and a secure or “screen lock” mode in which a user interface for a user to enter credentials is displayed to allow a user to transition to an unlocked state. *Id.* ¶¶ 25–27. An unlocked state includes an awake mode (or insecure mode) where the user input interfaces, stored data, and other functionality of the device are generally all available. *Id.* ¶ 27.

The device is unlocked in response to a single, continuous unlock action applied to at least two input mechanisms on the electronic device. *Id.* ¶ 31. In response to activation of a first user input, which remains active

⁵ As noted in our Decision Granting Institution for IPR2019-01011, Petitioner’s contentions for independent claims 1 and 11 in that proceeding present substantially the same contentions that are present in the Petition in IPR2019-00613. *See* 1011 Dec. 13, 19. Therefore, our citations to the IPR2019-01011 Petition are limited to Petitioner’s challenges of dependent claims 10 and 18.

during the locked state, a second user input interface is activated and a timer is started. *Id.* ¶ 121. The device then awaits input at the second input mechanism. *Id.* If the correct input is received within the predetermined period, the device is unlocked. *Id.* ¶ 122.

Figures 5A, 5B, and 5C of Griffin are depicted below.



Figures 5A, 5B, and 5C illustrate a single-gesture or continuous-action input as it is implemented on a handheld mobile device, such as a smartphone equipped with touchscreen display 510. *Id.* ¶ 86. Device 100 has a single “home” button or convenience button 520, positioned at the center along an edge of display 510. *Id.* As illustrated in Figure 5A, user’s thumb 500 depresses convenience button 520, which initiates an unlock action. *Id.* Upon detection of the input at convenience button 520, the device activates the second input, in this case touchscreen display 110, so that display 110 is capable of detecting further input from the user. *Id.* ¶ 87. Figures 5B and 5C illustrate user’s thumb 500 travelling in an arcuate path 550 along touchscreen display 510. *Id.* Arc 550 traced along touchscreen display 510 completes the unlock action, upon which device 100 enters the unlocked state. *Id.* Thus, the unlock action comprises detecting two distinct user inputs applied to two components (initiation at convenience button 520 and arc 550 traced on touchscreen display 510), which is carried out as a substantially continuous action by the user. *Id.*

2. Overview of Davis

Davis describes a system and method of launching applications on a device using biometric authentication. Ex. 1015 ¶ 1. Davis explains that a mobile device may automatically enter into a user-inactive mode after a period of inactivity, or a user may specifically select a menu item on the device to enter into the user-inactive mode (i.e., to lock the device). *Id.* ¶ 45. Various security measures may be required to unlock the mobile device, such as passwords, a smart card, or biometric authentication. *See id.* ¶¶ 46–47.

Figure 4 of Davis is depicted below.

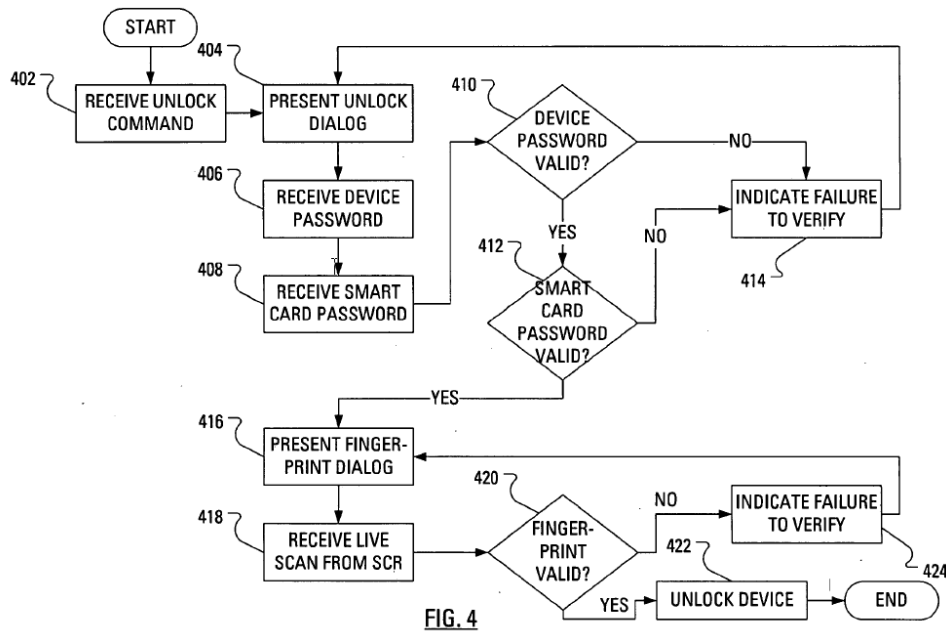


Figure 4 illustrates steps in an example method of maintaining secure access to a mobile device. *Id.* ¶ 47. The mobile device first receives an “unlock” command (step 402). *Id.* ¶ 48. Next, the mobile device presents an unlock dialog on a display to prompt the user to enter authentication factors, such as a device password and/or smart card password (step 404). *Id.* The mobile device then receives and verifies the device and smart code passwords (steps 406–412). *Id.* ¶ 49–50. At step 416, the mobile device presents a dialog on the display to prompt the user to provide a fingerprint candidate or other type of biometric data. *Id.* ¶ 50, 52. The mobile device then receives and verifies the fingerprint candidate or other biometric data (steps 418–420). *Id.* ¶ 53. If the fingerprint candidate matches a stored fingerprint template, the mobile device unlocks itself; if the fingerprint candidate does not match, the mobile device presents a fingerprint verification failure dialog and returns to step 416 to present the prompt to the user to provide a fingerprint (steps 422–424). *Id.*

3. Overview of iOS

iOS is a user guide for iPhone OS 3.1 software. Ex. 1007, 1. iOS includes a diagram of an iPhone, which is reproduced below.

iPhone at a Glance



The reproduced diagram above depicts an iPhone. *Id.* at 20. The iPhone includes a home button that, when pressed, causes the iPhone to display a home screen that contains the iPhone applications. *Id.* at 23. The iPhone also includes a sleep/wake button that allows the user to lock the iPhone. *Id.* at 26. When the iPhone is locked, nothing happens if the user touches the screen. *Id.* The iPhone can be unlocked by pressing the home button or the sleep/wake button, in combination with dragging a slider. *Id.* at 27.

4. Claim 1

Petitioner contends the combination of Griffin, Davis, and iOS teaches the limitations recited in claim 1. Pet. 13–43. A more detailed

analysis of Petitioner’s assertions, and Patent Owner’s response, is set forth below.

a. A mobile communication terminal comprising:

Petitioner asserts that Griffin discloses the preamble of claim 1 through its description of a user device 100 that “may be a mobile device with two-way communication and advanced data communication capabilities.” Pet. 28 (citing Ex. 1027 ¶ 59). To the extent the preamble is limiting, we agree with Petitioner that Griffin discloses a mobile communication terminal. *See* Ex. 1027 ¶ 59. Patent Owner has not raised arguments against this limitation in its Patent Owner Response; therefore any such arguments are waived. *See Novartis AG v. Torrent Pharms. Ltd.*, 853 F.3d 1316, 1330 (Fed. Cir. 2017); *In re NuVasive*, 842 F.3d 1376, 1381 (Fed. Cir. 2016).⁶

*b. “a touch screen display”
“a camera”*

Petitioner asserts Griffin teaches “a touch screen display” through its description that the device’s “auxiliary subsystem 112 can include devices such as: a touchscreen,” as well as a “smartphone equipped with a touchscreen display 510.” Pet. 29 (citing Ex. 1027 ¶¶ 77, 86). Petitioner further asserts that both Davis and Griffin teach a camera. *Id.* at 29–30 (citing Ex. 1015 ¶ 78; Ex. 1007, 20). Patent Owner does not present separate arguments for these limitations. Based on the evidence of record, we find that Petitioner has shown that Griffin teaches these limitations.

⁶ As in *NuVasive*, the Scheduling Order in this proceeding cautioned Patent Owner that “any arguments for patentability not raised in the response may be deemed waived.” Paper 11, 6.

- c. “a power button configured to turn on and off the terminal by pressing; and
an activation button separate from the power button and located outside the touch screen display, the activation button configured for pressing to turn on the touch screen display and to initiate one or more additional functions of the terminal”

Petitioner asserts that iOS teaches a power button (the “Sleep/Wake button”), separate from a Home button, and that the power button is configured to turn the terminal on and off when pressed. Pet. 30–31 (citing Ex. 1007, 20, 27). Petitioner submits an annotated figure of an iPhone from iOS, which is depicted below:



Id. at 31 (citing Ex. 1007, 20). The annotated iPhone diagram above shows a “Sleep/Wake button” located on the top of the device, and a “Home button” on the front of the device below the touch screen. *Id.*

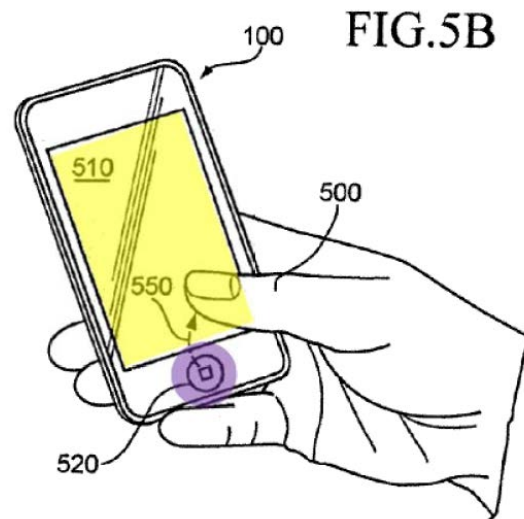
Petitioner also points to the following disclosure in iOS:

Turn iPhone completely off: Press and hold the Sleep/Wake button for a few seconds until the red slider appears, then drag the slider. . . .

Turn iPhone on: Press and hold the Sleep/Wake button until the Apple logo appears.

Id. (citing Ex. 1007, 27).

Turning to Griffin, Petitioner argues that Griffin shows an activation button (home button or convenience button 520) located outside the touch screen display (touchscreen display 510). *Id.* at 31. To illustrate, Petitioner provides an annotated version of Griffin's Figure 5B, reproduced below:



Id. at 32 (citing Ex. 1027, Fig. 5B). As shown in Petitioner's annotated Figure 5B above,

device 100 . . . is also provided with a single 'home' button or convenience button 520, positioned at the center along an edge of the display 510. [A]n adult user's thumb is 500 is capable of depressing the convenience button 520 while the device 100 is held in the same hand, if the button 520 must be pressed in order to be actuated. The depression of the convenience button 520 . . . constitutes the initiation of an unlock action.

Id. at 31 (citing Ex. 1027 ¶ 86).

Petitioner further asserts Griffin discloses the activation button configured for pressing to turn on the touch screen display and to initiate one or more additional functions of the terminal (an unlock action). *Id.* at 33. In particular, Petitioner points to Griffin’s disclosure that the “screen may be reactivated upon detection of an input 212 received via a user input interface,” such as a keypress, and that “depression of the convenience button 520, in this example, constitutes the initiation of an unlock action.” *Id.* (citing Ex. 1027 ¶¶ 25, 86). Petitioner asserts that Griffin’s disclosure of the activation button conforms to conventional device operations, such as the description in iOS that unlocking the phone can be accomplished by pressing the Home button and dragging a slider, which necessarily requires that the touchscreen be turned back on. *Id.* at 33–34 (citing Ex. 1007, 27, 145).

Patent Owner argues that the references do not disclose an activation button separate from a power button. PO Resp. 14–16; Sur-Reply 2–4. According to Patent Owner, iOS’s “home button” is not an “activation button” because it unlocks the device but does not turn on the touch screen display. PO Resp. 14. Patent Owner further argues that iOS does not teach the required activation button, and thus cannot teach that the power button is separate from the activation button. Sur-Reply 3.

We find that Petitioner has sufficiently demonstrated that the combination of Griffin and iOS teaches these limitations. Griffin discloses a smartphone with an activation button outside the touch screen display in the form of home button 820 which, when pressed, turns on the touch screen display. Ex. 1027 ¶¶ 25, 86, Fig. 5B. iOS discloses a similar smartphone that includes a home button that looks virtually identical to Griffin’s home button, as well as an additional “Sleep/Wake” button that turns the power on

and off. Ex. 1007, 20. iOS further discloses that its home button, when pressed, turns on the display (to show a slider that can be dragged to unlock the phone). *Id.* at 26–27. Thus, the Griffin/iOS combination includes a home button that turns on the display, and a separate power button that turns the power on and off, as in claim 1. We further agree with Petitioner that Griffin discloses its activation button initiates one or more additional functions through its description that depression of the convenience button constitutes the initiation of an unlock action. *See* Pet. 33 (citing Ex. 1027 ¶ 86).

Consequently, we find that Petitioner has shown that these limitations of claim 1 are met by the combination of Griffin and iOS.

- d. “wherein the terminal has a first function and a second function to perform in response to user input via the activation button and is configured to provide user settings for configuring at least one of the first and second functions such that at least one of the first and second functions is set to be performed in addition to turning on the touch screen display upon pressing of the activation button while the touch screen is turned off, wherein the first and second functions are different from each other and selected from the group consisting of fingerprint authentication, activating the camera, playing music and a hands-free function”*

Petitioner asserts the combination of Griffin and Davis discloses these limitations. Pet. 34–40. In particular, Petitioner asserts Griffin discloses user input via the activation button turning on the touch screen display, and that after user input via the activation button, a first function is performed (a second user input interface is activated). *Id.* at 34–35 (citing Ex. 1027 ¶¶ 25, 86, 121–122, Fig. 11). Petitioner further asserts Davis teaches performing a first function (fingerprint authentication) in response to an unlock command

(Griffin’s unlock second input mechanism). *Id.* at 35–37 (citing Ex. 1015 ¶¶ 46–48, 52–53, Fig. 4). Thus, Petitioner asserts Griffin, as modified by Davis, teaches a user presses the home/convenience button (activation button), which initiates an unlock command and wakes the screen to display a fingerprint dialog (lock screen) and the second input mechanism is activated (fingerprint unlock function, including scanning a fingerprint). *Id.* at 18 (citing Ex. 1027, Fig. 11, ¶¶ 24–25, 29; Ex. 1015, Fig. 4).

With respect to the claimed “second function” different from the first function, Petitioner asserts iOS teaches detecting a long-press of the home button (activation button) to perform a hands-free function (voice control of the device). *Id.* at 38 (citing Ex. 1007, 38, 48, 77).

With respect to the “user settings for configuring at least one of the first and second functions” limitation, Petitioner asserts Griffin and Davis disclose the user configures security on the device, and iOS teaches user settings for configuring the first and second functions through its description of setting securing features that are performed each time the device is turned on or woken by pressing the activation button. *Id.* at 39–40 (citing Ex. 1027 ¶ 119; Ex. 1015 ¶¶ 46–47; Ex. 1007, 39, 45, 145).

Patent Owner does not present separate arguments for these limitations.⁷

We have reviewed the evidence of record and find that Petitioner has shown that the combination of Griffin, Davis, and iOS teaches these limitations. We further address Petitioner’s assertions regarding

⁷ We address Patent Owner’s arguments that the cited art does not disclose turning on the display and performing a first function in response to a one-time pressing of the activation button in Section II.D.4.e below.

performance of the first and second functions in addition to turning on the touch screen with respect to the “wherein” limitation discussed in Section II.D.4.e below.

- e. *“wherein upon one-time pressing of the activation button while the touch screen display is turned off, the terminal is configured to turn on the touch screen display and further perform at least one of the first and second functions in addition to turning on the touch screen display such that:
a lock screen is displayed on the touch screen display upon turning on the touch screen display in response to the one-time pressing of the activation button while the touch screen display is turned off,
in response to the one-time pressing of the activation button, the first function is performed in addition to turning on the touch screen display for displaying the lock screen thereon, and
the second function is performed when the one-time pressing is for a long time longer than a reference time period,
wherein at least one of the first and second functions is performed subsequent to turning on the touch screen display and displaying the lock screen in response to the one-time pressing of the activation button,
wherein the touch screen display displays the lock screen when at least one of the first and second functions is being performed.*

Petitioner asserts the combination of Griffin, Davis, and iOS teaches these limitations. *See* Pet. 13–19, 33–43. In particular, Petitioner argues that Griffin discloses configuring unlock procedures to use two or more input mechanisms. *Id.* at 14. More specifically, according to Petitioner, Griffin detects actuation of a first input mechanism, activates a second input mechanism to detect a second input, and then unlocks the device after the proper inputs are received. *Id.* at 14–15. Petitioner points to Griffin’s

disclosure that the first input mechanism can be an unlock action initiated by pressing the activation button, which turns on the touch screen display. *Id.* at 33 (citing Ex. 1027 ¶¶ 25, 86). After the user presses the activation button to initiate the unlock action, Griffin activates the second user input interface (the touchscreen) to receive a second input (a swiping motion). *Id.* at 34 (citing Ex. 1027 ¶¶ 121–122).

Petitioner argues that Griffin provides an open-ended system for choosing the “first” and “second” input mechanisms, with the use of the home button and touchscreen as examples. *Id.* at 15–16 (citing Ex. 1027 ¶¶ 85–88). According to Petitioner, Griffin discloses that the mobile communication terminal includes a fingerprint detector, but does not explicitly disclose using the fingerprint detector as the second input mechanism for unlocking the device. *Id.* at 16 (citing Ex. 1027 ¶ 77).

Petitioner relies on Davis to teach performing a “first function” (fingerprint authentication) in response to an unlock command to provide greater security. *Id.* at 35–36 (citing Ex. 1015 ¶¶ 46–47). Petitioner argues that Davis presents a fingerprint dialog screen, which is a “lock screen,” for entering the user’s fingerprint. *See id.* at 18 (citing Ex. 1015, Fig. 4). Petitioner asserts that Davis discloses receiving “the fingerprint candidate from a fingerprint sensor . . . on the mobile device.” *Id.* at 36–37 (quoting Ex. 1015 ¶¶ 52–53).

Based on the above disclosures, Petitioner argues that the combination of Davis and Griffin teaches an unlocking procedure that includes an unlock command followed by a fingerprint dialog and a fingerprint unlock function, without intervening input mechanisms. *Id.* at 17–18. Petitioner argues that

Griffin as modified by Davis would have been implemented by a person of ordinary skill as follows:

- (1) User presses the home/convenience button, a first input mechanism (Griffin, Fig. 11 step 1100),
 - (1a) which is the initiation of an unlock command (Griffin ¶ 86), and
 - (1b) which wakes the screen (Griffin ¶¶ 24–25, 29) to display a fingerprint dialog (i.e., a lock screen) (as taught by Davis, modified Fig. 4 steps 402 and 416);
- (2) the second input mechanism is activated (Griffin Fig. 11 step 1105);
 - (2a) Davis teaches that the second input is a fingerprint unlock function, including scanning a fingerprint and unlocking the device if the fingerprint is valid (Davis, modified Fig. 4 steps 418-422), wherein
 - (2b) the fingerprint dialog (lock screen) is displayed while the fingerprint function is performed, such that, for example, a message is displayed if the fingerprint is not valid (Davis, modified Fig. 4 step 424).

Id. at 18–19 (emphases omitted).

Petitioner further asserts iOS discloses “the second function is performed when the one-time pressing is for a long time longer than a reference time period.” *Id.* at 38, 41–42. Specifically, Petitioner argues iOS teaches detecting a long-press of the home button (activation button) to perform a hands-free function (voice control of the device) and that a person of ordinary skill in the art would have known that the detection of a “press and hold” action would have used a comparison to a reference time period. *Id.* at 38, 41 (citing Ex. 1007, 38; Ex. 1003 ¶ 67).

Patent Owner argues that the cited art does not disclose turning on the display (displaying a lock screen) and performing a first function in response

to a one-time pressing of the activation button. PO Resp. 16–25.

Specifically, Patent Owner argues “Griffin does not disclose turning on the display and performing a fingerprint authentication function in response to a one-time pressing of the activation button.” *Id.* at 16. Instead, Patent Owner argues, “the only function performed by Griffin in response to the activation button is entering a state in which it will be able to receive further user input—which is no function at all.” *Id.* at 19. Patent Owner contends that Griffin “requires multiple user actions to turn on the display and perform another function—not a single press of an activation button.” *Id.* Patent Owner relies on the testimony of Alfred C. Weaver, Ph.D., in support of its arguments. *See id.* (citing Ex. 2001 ¶ 92).

Patent Owner further argues that “Davis does not cure Griffin’s deficiencies” because “Davis does not disclose a one-time pressing of the activation button that both turns on the display and performs a first function.” *Id.* at 19–20. Instead, according to Patent Owner, Davis “discloses a multi-stage authentication system requiring multiple user actions.” *Id.* at 20 (citing Ex. 2001 ¶ 93). Patent Owner also argues that Davis never discloses its complex authentication procedure can be reduced down to simple fingerprint authentication, and, even if Petitioner’s simplified version of Figure 4 were appropriate, Petitioner’s modified figure still requires multiple steps. *Id.* at 21–22 (citing Ex. 2001 ¶ 97–98).

In reply, Petitioner argues that Patent Owner “misinterprets ‘one-time pressing’ to require that a single user action both press the activation button and scan a fingerprint.” Reply 5. According to Petitioner, the “plain language of the claims requires that a ‘one-time pressing of the activation button’ does two things: (1) turns on the touch screen display and

(2) ‘*initiates*’ one or more additional functions (e.g., a fingerprint authentication function).” *Id.* at 4. Patent Owner’s interpretation, Petitioner argues, “incorrectly reads the word ‘*initiates*’ out of the claims, for example, by requiring that a single user action both press the activation button and *scan a fingerprint.*” *Id.* Thus, according to Petitioner, “[t]he term ‘one-time pressing of the activation button,’ which initiates the fingerprint authentication function, does not preclude other inputs or user actions, such as a subsequent fingerprint scan.” *Id.* at 5–6.

In its Sur-Reply, Patent Owner responds that claim 1 requires “performance, not just initiation, of a first function in response to a one-time pressing of the activation button.” Sur-Reply 4–8. Patent Owner acknowledges that “[i]t is true that the claims require the activation button (rather than some other button) be configured to initiate the one or more additional functions,” but argues that Petitioner ignores a number of other claim limitations “that make clear that full performance of the function, not just initiation of the function, is required in response to a press of the activation button.” *Id.* at 5. As an example, Patent Owner points to the limitation “wherein upon one-time pressing of the activation button while the touch screen display is turned off, the *terminal is configured to turn on the touch screen display and perform* at least one of the first and second functions *in addition to turning on the touch screen display.*” *Id.*

We find that Petitioner has shown sufficiently that the combination of Griffin, Davis, and iOS teaches these limitations of claim 1. Griffin discloses that pressing an activation button (e.g., a convenience key) turns on the touch screen display from a sleep mode in which the touch screen is turned off. Ex. 1027 ¶ 25 (after the device enters a sleep mode, “[t]he screen

may be reactivated upon detection of an input 212 received via a user input interface that may also be integrated into the device, such as . . . a convenience key”). Thus, Griffin discloses “wherein upon one-time pressing of the activation button while the touch screen is turned off, the terminal is configured to turn on the touch screen display,” as recited in claim 1.

The pressing of Griffin’s activation button initiates an unlock procedure that detects a second input. *See* Ex. 1027 ¶¶ 86 (“[t]he depression of the convenience button 520, in this example, constitutes the initiation of an unlock action”), 121 (“in response to this actuation, the second user input interface is activated”). If the second input is received, the device is unlocked. *Id.* ¶ 122 (“[i]f the correct input was indeed received” from the second user input interface, “the device is unlocked”). Thus, Griffin teaches that, in response to a single press of the home button, an unlock procedure is initiated “in addition to turning on the touch screen display,” as claim 1 requires.

We also agree with Petitioner that Davis teaches further performing a first function (fingerprint authentication function) upon receiving an unlock command, such as the one in Griffin. More specifically, Figure 4 of Davis teaches an embodiment requiring entry of a smart card password and fingerprint authentication upon receiving unlock command 402. Ex. 1015 ¶¶ 45–47, 52–53. As part of this fingerprint authentication process, Davis discloses presenting a fingerprint dialog screen on the display, which is a “lock screen,” for entering the user’s fingerprint. Ex. 1015, Fig. 4, ¶¶ 50, 52–53. As an alternative, Davis discloses using fingerprint authentication without the smart card reader:

Alternatively, in an embodiment that may not require the smart card 334 or the smart card reader 110, the microprocessor 228 may receive (step 418) the fingerprint candidate from a fingerprint sensor (not shown) on the mobile device 102. During the verification, if the fingerprint candidate matches a stored fingerprint template associated with unlocking the mobile device 102, the microprocessor 228 unlocks (step 422) the mobile device 102.

Id. ¶ 53. Davis further explains that “many embodiments will only require a subset of the authentication factors discussed in this application” (*id.* ¶ 71), and discloses a process using a user fingerprint input to launch an application while the device is locked (*id.* ¶ 79, claim 1). Based on these disclosures, we find that Davis teaches the use of fingerprint authentication following an unlock command without the use of a smart card password.

We also find that the combination of Griffin and Davis teaches that the turning on of the touch screen display and the first function (fingerprint authentication) are performed “upon one-time pressing of the activation button,” as claim 1 recites. We agree with Petitioner that the ordinary meaning of the claim language is that the turning on of the display and the carrying out of the fingerprint authentication function is performed following a single press of the activation button, and does not require that the entirety of the fingerprint authentication function (including the scanning of the fingerprint) be performed with no additional user input after the activation button is pressed. This is consistent with the language elsewhere in claim 1 that “the activation button [is] configured for pressing . . . to *initiate* one or more additional functions of the terminal.”

This understanding of the ordinary meaning of the claim language also flows from claim 1’s lack of any language that would preclude

receiving additional user input (such as a fingerprint) during the fingerprint activation function. Indeed, such language is expressly included in claim 11, which closely tracks claim 1 but additionally requires that upon one-time pressing of the activation button, the first or second function is performed “*without additional user input* other than the one-time pressing.” The ’373 patent inventors could have used the “without additional user input” language in claim 1, or other language preventing additional user input during fingerprint authentication, but chose not to do so. The exclusion of such language from claim 1, as well as its inclusion in claim 11, would have indicated to one of ordinary skill that claim 1 does not prevent additional user input during fingerprint authentication. Otherwise, the “without additional user input” language in claim 11 would be superfluous. *See Curtiss-Wright Flow Control Corp. v. Velan, Inc.*, 438 F.3d 1374, 1381 (Fed. Cir. 2006) (In the case of two independent claims, “claim differentiation takes on relevance in the context of a claim construction that would render additional, or different, language in another independent claim superfluous.”)

The ordinary meaning of claim 1 is that a single press of the activation button turns on the touch screen display and initiates the first function, but does not preclude additional user input (such as a fingerprint scan) during the performance of the function. Petitioner’s combination of Griffin and Davis meets this limitation because a single press of the activation button turns on the touch screen display as in Griffin (*see* Ex. 1027 ¶¶ 24–25, 29, 86, Fig. 11), and also initiates the fingerprint dialog as in Davis (*see* Ex. 1015 ¶¶ 46–47, 50, 52–53). The fact that Davis further requires the user to present their fingerprint for scanning does not negate Petitioner’s arguments

regarding how a person of ordinary skill in the art would have understood the references' teachings in combination.

We also find unpersuasive Patent Owner's argument that Griffin alone fails to disclose "turning on the display to display a lock screen [and] the performance of any separate (enumerated) function in response to a single press of an activation button." PO Resp. 17. Petitioner relies on Davis for the limitation requiring fingerprint authentication following an unlock command; therefore, Patent Owner's argument improperly attacks Griffin individually rather than the combination relied on by Petitioner. *See Bradium Techs. LLC v. Iancu*, 923 F.3d 1032, 1050 (Fed. Cir. 2019) ("A finding of obviousness . . . cannot be overcome 'by attacking references individually where the rejection is based upon the teachings of a combination of references.'" (quoting *In re Merck & Co.*, 800 F.2d 1091, 1097 (Fed. Cir. 1986))); *In re Mouttet*, 686 F.3d 1322, 1332–33 (Fed. Cir. 2012) (holding that the test for obviousness is "what the combined teachings of the references would have suggested to those having ordinary skill in the art"); *Medichem, S.A. v. Rolabo, S.L.*, 437 F.3d 1157, 1166 (Fed. Cir. 2006) (explaining that in an obviousness analysis, "the prior art must be considered *as a whole* for what it teaches"). Additionally, we are not persuaded by Patent Owner's argument that Griffin discloses a "multi-step process" including multiple user actions to turn on the display and perform an additional function (PO Resp. 18–19) because, as discussed above, claim 1 does not preclude additional user input during performance of the first function. Similarly, Patent Owner's argument that Davis "discloses a multi-stage authentication system requiring multiple user actions" (*id.* at 19–24) fails because it is based on a misreading of claim 1 that improperly adds a

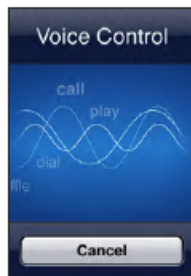
requirement that the first function be performed without additional user input following the unlock command, as discussed above.

Finally, based on the evidence, we agree with Petitioner that the combination of Griffin, Davis, and iOS teaches the remaining limitations of claim 1 for the reasons stated by Petitioner. For example, we agree with Petitioner that iOS teaches the second function is performed when the one-time pressing is for a time longer than a reference time period. Specifically, iOS discloses initiating a Voice Control function that allows “hands-free operation of the terminal” in response to a long press of the activation (Home) button, as shown in the diagram from iOS reproduced below.

Voice Control

Voice Control (available only on iPhone 3GS) lets you make phone calls and control iPod music playback using voice commands.

Note: Voice Control isn't available in all languages.



Use Voice Control: Press and hold the Home button until the Voice Control screen appears and you hear a beep. You can also press and hold the center button on the iPhone headset (or the equivalent button on your Bluetooth headset).

Use the following commands to make calls or play songs.

Ex. 1007, 38; *see also id.* at 48, 77. As shown in the portion of iOS reproduced above, iOS teaches that, to initiate Voice Control, a user can “[p]ress and hold the Home button until the Voice Control screen appears and you hear a beep.” *Id.* at 38. The user can then use voice commands to

“make phone calls and control iPod music playback” with hands-free operation. *Id.* We credit Dr. Bederson’s testimony that one of ordinary skill would have considered the button to be held down for a long-press if the time the button was pressed was greater than that of a threshold reference time period, as it is consistent with iOS’s disclosure. Ex. 1003 ¶ 67; *see* Ex. 1007, 38 (“Press and hold the Home button *until* the Voice Control screen appears and you hear a beep.” (emphasis added)).

Accordingly, for the foregoing reasons, we find that Petitioner has established that the combination of Griffin, Davis, and iOS teaches these limitations of claim 1.

f. Reason to Combine

Petitioner argues that a person of ordinary skill would have been motivated to use a fingerprint detector, as taught by Davis, for the second unlock input mechanism of Griffin, because biometric inputs provided higher levels of security and user convenience. Pet. 19 (citing Ex. 1014, 1:24–37). Because Griffin discloses a fingerprint detector in its device, and discloses that a variety of inputs may be used for the multiple-input unlock procedures, Petitioner argues that the use of a fingerprint detector, as taught by Davis, would have required “little more than a design decision.” *Id.* at 19–20. According to Petitioner, one of ordinary skill would have had a reasonable expectation of success in using Davis’s fingerprint detector for Griffin’s unlock routine, because Griffin’s “first” and “second” input mechanisms were designed to be chosen from available input mechanisms, and Davis shows that fingerprint authentication was an existing and well-known unlock input at the time of the ’373 patent. *Id.* at 19–20 (citing Ex. 1003 ¶¶ 63, 36–41).

Petitioner further argues that a person of ordinary skill would have been motivated to add a camera and power button, as taught by Davis and/or iOS, to Griffin's analogous device to provide photo-taking and power-switching capabilities to the device. *Id.* at 22. Such a combination, according to Petitioner, would have been the application of known techniques (camera and power button components) to improve similar devices in the same way. *Id.* Petitioner further argues that iOS describes well-known hardware, software, and operating system functionality for a mobile device, and that Griffin is, at the very least, in the same field of endeavor because it discloses analogous mobile devices that necessarily use similar combinations of hardware and software. *Id.* at 22–23. A person of ordinary skill, according to Petitioner, would have recognized that the functionality of the iPhone buttons in iOS would have been useful in other similar smartphone devices with similar hardware and design. *Id.* at 21–22. Thus, Petitioner asserts, a person of ordinary skill would have been motivated to apply iOS's teachings to other smartphone devices because such a person would have looked to well-known interface implementations. *Id.* at 22.

Additionally, Petitioner asserts a person of ordinary skill would have been motivated to implement voice control by determining the home button is depressed for a certain length of time, as taught by iOS, in Griffin's device and home button, to provide easy access to hands-free functions of the device at any time, and that activating the hands-free function based on a long-press of the home button was merely one known example of the many ways a person of ordinary skill may have chosen to configure the home button. *Id.* at 23. Petitioner asserts the detection of a long-press of the home

button, as taught in IOS, to trigger a hands-free voice control function would have been a basic key assignment modification well within the ability of a person of ordinary skill, and would have been the application of a known technique to improve a similar device in the same way. *Id.* at 25.

Petitioner further asserts a person of ordinary skill would have been motivated to implement user settings and a settings menu for the user to input preferences, as taught by iOS, for the first and second functions in the system of Griffin to provide a visual interface for the user to set preferences. *Id.* at 26–27. Petitioner argues that settings menus were standard components of devices, operating systems, and programs having user interactivity, and the implementation of a settings menu would have been a basic user modification well within the ability of a person of ordinary skill in the art. *Id.* at 27.

Patent Owner argues that a person of ordinary skill would not have combined Griffin with Davis in the proposed manner “because they each teach away from the simplicity achieved by the challenged claims.”

PO Resp. 25. Specifically, Patent Owner argues that

Griffin and Davis each recognize that unlocking a device should not be an insecure or accident-prone process. Griffin teaches that a complex wake-up or unlock action may be desirable to prevent accidental waking or unlocking of a device and, thus, requires two separate user inputs. Similarly, Davis teaches that a multi-step authentication process is desirable so that security is maximized. It explicitly criticizes single-factor, password-based authentication while arguing in favor of two- or three-factor authentication. Thus, combining Griffin and Davis in a way that makes authentication *easier* is counterintuitive. A proposed combination cannot make a prior art invention unsatisfactory for its intended purpose. A [person of ordinary skill in the art] would not combine Griffin and

Davis because doing so runs contrary to the express security consciousness of those disclosures.

Id. at 25–26 (citations omitted).

Patent Owner further argues that Petitioner’s proposed combination “is riddled with hindsight bias because it uses the ’373 patent as a roadmap to weave together various elements from the prior art.” *Id.* at 26. Patent Owner criticizes as conclusory Petitioner’s argument that one of ordinary skill would have been motivated to use Davis’s fingerprint authentication as Griffin’s second unlock mechanism because biometric inputs provided higher levels of security and increased user convenience. *Id.* As to the combination of Griffin and iOS, Patent Owner argues that Petitioner has provided “[n]o clear explanation as to why one of ordinary skill in the art would be motivated to combine Griffin with iOS.” *Id.* at 27.

We find that Petitioner has shown that one of ordinary skill would have been motivated to combine Griffin and Davis as Petitioner proposes. Griffin discloses using first and second inputs for authentication. Ex. 1027 ¶¶ 32, 33, 35. Upon detection of the first input at the first input mechanism, the second input mechanism is activated such that the second input mechanism is capable of detecting the second input. *Id.* ¶ 34. Davis teaches that biometric information, such as a fingerprint, may be used “[t]o increase security even further” than could be achieved by requiring entry of a password, because even if a nefarious person were to gain control of the password, “the lack of the correct biometric data should keep the nefarious person from gaining access to the computer of interest.” Ex. 1015 ¶ 4. We are persuaded by the testimony of Dr. Bederson that Davis’s teaching that fingerprint authentication provides a higher level of security would have

motivated one of ordinary skill to use Davis's fingerprint authentication as Griffin's second input mechanism. *See* Ex. 1003 ¶ 63.

In reaching this decision, we credit the testimony of Petitioner's expert, Dr. Bederson, that using Davis's fingerprint detector for Griffin's second input mechanism would have been simply a design decision, and that a person of ordinary skill would have had a reasonable expectation of success in making this combination because fingerprint authentication was an existing and well-known unlock input at the time of the '373 patent. *Id.* Based on the evidence presented, we find that using Davis's fingerprint authentication as Griffin's second input mechanism would have been simply "the predictable use of prior art elements according to their established functions," and would have been no more than the "combination of familiar elements according to known methods" that "does no more than yield predictable results." *See KSR*, 550 U.S. at 417. Additionally, as the Supreme Court has explained, "if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond that person's skill." *Id.* Based on the evidence of record, including Davis and Dr. Bederson's testimony, we find that one of ordinary skill would have recognized that the fingerprint authentication technique used to improve Davis's device would also improve similar devices (such as that of Griffin) in the same way (by increasing security), and that using this technique would have been within the level of ordinary skill. *See* Ex. 1003 ¶ 63 (testifying that a person of ordinary skill would have had a "reasonable expectation of success" in using Davis's fingerprint detector in Griffin, and doing so was merely a "design decision").

For these reasons, and because Petitioner's arguments are based on specific teachings of the prior art, as explained above, we disagree with Patent Owner's contention that the combination of Griffin and Davis "is riddled with hindsight bias." *See* PO Resp. 26.

We also are not persuaded by Patent Owner's argument that Griffin and Davis "each teach away from the simplicity achieved by the challenged claims." *See id.* at 25. As discussed above, the limitations of claim 1 are satisfied by a device that is unlocked using two user inputs, a pressing of the activation button and a fingerprint. Thus, the fact that Griffin and Davis use multiple user inputs does not teach away from the claims. Moreover, we disagree that Griffin teaches that the unlock action must be "complex." *See id.* To the contrary, Griffin teaches that the two user inputs may be selected from a wide variety of different input mechanisms. Ex. 1027 ¶ 35.

Similarly, although Davis discloses the use of multiple inputs for increased security, it also teaches using fewer inputs if less security is needed, because "many embodiments will only require a subset of the authentication factors discussed in [Davis]." Ex. 1015 ¶ 71. Paragraphs 2–4 of Davis, upon which Patent Owner relies, do not "teach away" from single factor authentication; they merely describe the advantages of biometric authentication (including fingerprint authentication) over use of a password and/or smart card because it provides "something that is unique to the user." *See id.* ¶ 4 ("[E]ven if the smart card falls into the hands of a nefarious person who also gains knowledge of the device password and the smart card password, the lack of the correct biometric data should keep the nefarious person from gaining access to the computer of interest."). Therefore, this portion of Davis, if anything, suggests using biometric data (such as

fingerprint authentication data) in an authentication system such as Griffin. For these reasons, we also disagree with Patent Owner that combining Griffin and Davis would be “counterintuitive,” or would render either reference unsuitable for its intended purpose. *See* PO Resp. 25–26.

We also find that Petitioner has shown a sufficient motivation to combine Griffin and iOS. Griffin and iOS disclose very similar smartphone devices with a touch screen and a home button in virtually identical locations. iOS discloses a well-known smartphone interface with a camera, a power button separate from the home button, and voice control by pressing and holding the home button. Given the similarity between the devices disclosed in Griffin and iOS, and the well-known nature of the iOS design, we find that using iOS’s camera, separate power button, and long-press hands-free function in Griffin would have been simply “the predictable use of prior art elements according to their established functions.” *See KSR*, 550 U.S. at 417. Additionally, we find the proposed combination is merely the combination of familiar elements according to known methods, which yields predictable results. *See id.*

Additionally, we determine Petitioner provides sufficient reason to implement user settings and a settings menu, as taught by iOS, in Griffin. *See* Pet. 26–27. We are persuaded by the testimony of Dr. Bederson, which we credit, that one of ordinary skill would have been motivated to implement a settings menu for the user to input preferences regarding authentication functions and enabling or disabling long-press hands-free functionality, thereby providing a visual interface for the user to set his or her preferences. Ex. 1003 ¶ 75. We further credit Dr. Bederson’s testimony that the implementation of a settings menu would have been a basic user

interface modification well within the skill of a person of ordinary skill in the art, and that a person of skill would have had a reasonable expectation of success in implementing known settings menus of mobile devices in other mobile devices. *Id.*

Accordingly, for the foregoing reasons, we find that Petitioner has established that one of ordinary skill would have been motivated to combine Griffin, Davis, and iOS in the manner proposed by Petitioner.

g. Conclusion

For the foregoing reasons, we conclude Petitioner has demonstrated, by a preponderance of the evidence, that claim 1 would have been obvious over the combination of Griffin, Davis, and iOS.

5. Claims 2, 4–6, and 10

Claims 2 depends from claim 1 and recites “wherein the first function is the fingerprint authentication.” Petitioner cites to its analysis for the first function limitation cited in claim 1 to support its assertion that Davis teaches fingerprint authentication. *See* Pet. 43; *see also id.* at 35–36 (Petitioner’s assertions that Davis teaches fingerprint authentication). Patent Owner does not present separate arguments for this claim. Based on the evidence of record, we find Petitioner establishes, by a preponderance of the evidence, that claim 2 would have been obvious over the combination of Griffin, Davis, and iOS.

Claim 4 depends from claim 1 and recites

wherein one of the first and second functions comprises the fingerprint authentication, wherein the terminal is configured to turn on the touch screen display for displaying the lock screen and further configured to display the lock screen when the fingerprint authentication is being performed in response to the

one-time pressing of the activation button while the touch screen display is turned off.

Petitioner relies on its analysis for the similar limitations recited in claim 1 to support its assertion that the Griffin-Davis-iOS combination teaches the limitations set forth in claim 4. *See id.* at 43–44; *see also id.* at 33–36, 40–43 (Petitioner’s assertions that Davis teaches fingerprint authentication and that Griffin, Davis, and iOS teach displaying a lock screen when the fingerprint authentication is being performed in response to the one-time pressing of the activation button while the touch screen is turned-off).

Patent Owner does not present separate arguments for this claim. Based on the evidence of record, and for the reasons discussed above of the similar limitations recited in claim 1, we find Petitioner establishes, by a preponderance of the evidence, that claim 4 would have been obvious over the combination of Griffin, Davis, and iOS. *See supra* Sections II.D.4.e–f.

Claim 5 depends from claim 4 and recites “wherein the terminal is configured to continue its lock state when the fingerprint authentication fails to authenticate a user, whereas the terminal is configured to release the lock state and make its other functions available when the fingerprint authentication authenticates a user.” Petitioner asserts that Davis teaches “a lock state of the terminal continuing when the fingerprint unlock fails and making other functions available when the fingerprint unlock is successful.” Pet. 44 (citing Ex. 1015 ¶¶ 13, 53). Patent Owner does not present separate arguments for this claim. Based on the evidence of record, we find Petitioner establishes, by a preponderance of the evidence, that claim 5 would have been obvious over the combination of Griffin, Davis, and iOS.

Claim 6 depends from claim 5 and recites “wherein the terminal is configured to display a message on the touch screen display when the lock state continues due to failure of user authentication by the fingerprint authentication.” Petitioner points to Davis for this limitation, arguing that Davis “discloses displaying a message on the touch screen display (failure dialog) when the lock state continues due to failure of the fingerprint authentication function.” *Id.* (citing Ex. 1015 ¶ 53). Patent Owner does not separately argue claim 6. Based on the evidence of record, we find that Petitioner has established, by a preponderance of the evidence, that claim 6 would have been obvious over the combination of Griffin, Davis, and iOS.

Claim 10 depends from claim 1 and recites “wherein the terminal comprises a smartphone which comprises an activation sensor configured to detect pressing of the activation button and a user identification module configured to perform the fingerprint authentication.” Petitioner argues that Griffin discloses a terminal that comprises a smartphone and an activation button (“home button” or “convenience button”) to initiate an unlock action and reactivate the device. 1011 Pet. 26, 44–45 (citing Ex. 1027 ¶ 86). With respect to the “activation sensor,” Petitioner argues that Griffin discloses an “‘actuation’ of a user input mechanism . . . by pressing a button,” and that “[w]hen one of those active *input mechanisms detects a user input, such as a keypress*, the processor can then be signaled to . . . return the device to an awake and operative state.” *Id.* at 27 (citing Ex. 1027 ¶¶ 25, 58). Petitioner also points to Griffin’s disclosure in Figure 11 of the step of “[d]etect[ing] actuation of first input mechanism 1100.” *Id.* (citing Ex. 1027, Fig. 11). Petitioner argues that a person of ordinary skill in the art would have understood that Griffin’s disclosure of an “input mechanism” that “detects”

a user input to wake the device is a disclosure of “an activation sensor configured to detect pressing of the activation button.” *Id.* According to Petitioner, Griffin uses the term “input mechanism” broadly to encompass both the physical “home button” that the user presses as well as the sensor that detects the press of the home button and translates it into a signal. *Id.* at 27–28. Thus, Petitioner argues, a person of ordinary skill would have understood that Griffin discloses both an activation button and an activation sensor. *Id.* at 28.

With respect to the “user identification module,” Petitioner argues that Davis discloses that the authentication functions are implemented via security module 230C installed on the phone, and that this security module interfaces the fingerprint sensor into the phone. *Id.* at 29 (citing Ex. 1015 ¶¶ 21, 30, 47, 50–53, 72, Figs. 2–3). Therefore, Petitioner argues, Griffin in view of Davis discloses “a user identification module configured to perform the fingerprint authentication.” *Id.* Petitioner further argues that a person of ordinary skill in the art would have been motivated and found it obvious and straightforward to employ Davis’s teachings of a security module that interfaces with the fingerprint sensor in implementing Griffin’s unlock routine for its higher levels of security and user convenience. *Id.*

Patent Owner does not separately argue claim 10. Based on the evidence of record, we find that Petitioner has established, by a preponderance of the evidence, that claim 10 would have been obvious over the combination of Griffin, Davis, and iOS.

6. Claim 11

Independent claim 11 is a method claim that recites limitations similar to claim 1, but also requires “performing at least one of the first and

second functions *without additional user input other than the one-time pressing.*”

a. The Parties’ Arguments Regarding the “Without Additional User Input” Limitation

For this limitation, Petitioner points to its analysis for claim 1 and asserts no additional user input is input for the first function (fingerprint authentication after initiating unlock or the second function (voice control). Pet. 48 (citing Ex. 1027, Fig. 11; Ex. 1015, Fig. 4; Ex. 1007, 38, 48, 77).

Patent Owner argues claim 11 together with claim 1 and asserts that the claims require performance, not just initiation, of a function in response to a one-time pressing of the activation button. *See* PO Resp. 16–17; Sur-Reply 4–8.

Petitioner responds that Patent Owner’s interpretation of claim 11 is incorrect. Reply 9. According to Petitioner, the “without additional user input” language “merely clarifies that no additional user input beyond the one-time pressing is required by the device to *initiate* the function.” *Id.* at 9–10. To support this interpretation, Petitioner points to the language elsewhere in claim 11 stating that “wherein . . . the terminal operates such that . . . at least one of the first and second function is initiated . . . in response to the one-time pressing of the activation button.” *Id.* at 9 (emphasis omitted). Petitioner contends that “‘one-time pressing of the activation button’ addresses how many times the activation button is pressed, and ‘without additional user input’ addresses whether the claim is limited to a single input to *‘initiate’* the function.” *Id.* at 10.

Petitioner also makes a number of arguments based on the Specification and other claims. Petitioner argues that the ’373 patent

Specification discloses separate units for detecting the activation button press and operating the user identification function, which “confirms that the claims encompass multiple inputs and/or steps for pressing the activation button and scanning a fingerprint.” *Id.* at 6–7. Petitioner further contends that the Specification does not support an embodiment that uses a single user action or single input to both press the activation button and scan a fingerprint, and the one sentence in the Specification regarding fingerprint authentication says nothing about using a single user action or single input to both press the activation button and scan a fingerprint. *Id.* at 7–8 (citing Ex. 1001, 8:13–20). Finally, Petitioner argues that Patent Owner’s interpretation would read out of the claims embodiments, such as the “hands-free function” that uses voice input and the embodiment disclosed in the Specification that would allow “a password matching method” to “be performed by pressing the activation button” because such an embodiment necessarily requires additional user inputs. *Id.* at 8–9 (citing Ex. 1001, 8:13–20).

We are not persuaded by Petitioner’s arguments. First, we do not agree that the “without additional user input” language in claim 11 applies only to the “initiation” of the first or second function. Claim 11 requires that, in response to the one-time pressing of the activation button, the device both changes the terminal from the inactive to the active state in which the touch screen display is turned on and further “perform[s] at least one of the first and second additional functions without additional user input other than the one-time pressing.” The ordinary meaning of this claim language requires that the device **performs** at least one of the first and second

functions without additional user input, not merely that it “initiates” the function without additional user input.

We also disagree with Petitioner’s arguments that the Specification compels a different reading of claim 11. We agree with Petitioner that the Specification describes separate units for detecting the press of the activation button and operating the user identification function. *See* Ex. 1001, 7:23–28 (describing separate activation button press and user identification functions); 8:13–20 (describing the fingerprint authentication function as an alternative to iris recognition). As discussed above, however, claim 11 clearly states on its face that turning on the screen and performing a first or second function is done by a single press of the activation button “without additional user input other than the one-time pressing.” Interpreting claim 11 to allow additional user input during the performance of the function would effectively read this limitation out of the claim, which would be improper. *See Warner-Jenkinson Co. v. Hilton Davis Chem. Co.*, 520 U.S. 17, 29 (1997) (“Each element contained in a patent claim is deemed material to defining the scope of the patented invention.”); *Bicon, Inc. v. Straumann Co.*, 441 F.3d 945, 950–52 (Fed. Cir. 2006) (holding that “claims are interpreted with an eye toward giving effect to all terms in the claim,” and a claim construction that reads limitations out of a claim is “contrary to the principle that claim language should not [be] treated as meaningless”); *Texas Instruments Inc. v. U.S. Int’l Trade Comm’n*, 988 F.2d 1165, 1171 (Fed. Cir. 1993) (refusing to interpret claims in a manner that “would read an express limitation out of the claims” because “[c]ourts can neither broaden nor narrow claims to give the patentee something different than what he has set forth”).

Finally, we are not persuaded by Petitioner’s argument that giving effect to the “without additional user input” language would improperly read out embodiments of the claim. *See* Reply 8–9. Petitioner points to the claimed “hands-free function,” but we are not persuaded a hands-free function requires voice input.⁸ *See id.* at 8. Rather, we agree with Patent Owner that Petitioner cites nothing for the proposition that performance of a hands-free function would require a voice input from a user and that the hands-free function could simply be the activation of a microphone (at which point presumably the user could initiate additional functions through voice commands). *See* Sur-Reply 6–7. Further, the Specification does not describe the hand-free function as requiring voice input. *See* Ex. 1001, 9:22–33. Petitioner also points to claim 9, but claim 9 does not require the entry of a password, it merely requires the performance of “a third function other than the first and second functions.” *See* Reply 8–9. And, although password entry is described in the ’373 patent Specification, “a claim need not cover all embodiments,” especially where, as here, the patentee drafts “different claims to cover different embodiments” (e.g., claim 1 which has no “without additional user input” limitation, and claim 10 which includes it). *See Intamin, Ltd. v. Magnetar Techs. Corp.*, 483 F.3d 1328, 1337 (Fed. Cir. 2007).

⁸ We also note that although claim 11 recites that the first and second function are selected from a group consisting of fingerprint authentication, activating the camera, playing music, and a hand-free function, the claim does not require the first or second function that is performed to be a hands-free function.

*b. Application of the “Without Additional User Input”
Limitation to the Prior Art*

Turning to the application of the claim language to the prior art, Petitioner’s arguments for claim 11 are largely based on the premise that the “without additional user input” claim language only applies to the initiation of the fingerprint authentication function, rather than the performance of fingerprint authentication (including receiving a user’s fingerprint). *See* Pet. 13–19, 48; Reply 9–14. As discussed above, we do not agree with this reading of claim 11, and therefore find Petitioner’s arguments unpersuasive.

In its claim chart for claim 11, Petitioner further summarily states that: “No additional user input is input for the first function (fingerprint authentication after initiating unlock[]); Griffin Fig. 11 step 1105, Davis Fig. 4 (modified) step 416) or the second function (Voice Control; iOS pp. 28, 48, 77).” Pet. 48 (emphasis omitted). Petitioner also asserts that because Davis “teaches that unlocking procedures were customizable” and their order could be rearranged, “a single biometric input mechanism may have been used to unlock a device and launch an application.” *Id.* at 17–18 (citing Ex. 1015, claim 1).

We find that these cursory statements by Petitioner are insufficient to show that the proposed combination teaches the “without additional user input” limitation of claim 11. Griffin discloses an unlock procedure that uses two user inputs. *See* Ex. 1027 ¶¶ 32–25. Davis also fails to disclose a single user input that turns on a screen and authenticates a fingerprint, but rather discloses the use of multiple user inputs, such as having the user first enter an unlock command and then enter a fingerprint for authentication. *See* Ex. 1015, Fig. 4, ¶¶ 46, 50, 52–56; Ex. 2001 ¶ 107. For example, Figure

4 of Davis illustrates receiving a first user input in the form of unlock command 402, which activates the screen to present an unlock dialog, and then receiving additional user inputs in the form of passwords and/or a user's fingerprint. *See* Ex. 1015, Fig. 4, ¶¶ 46, 50, 52–56. Petitioner failed, either in its briefing or at the Oral Hearing, to point to any disclosure in Davis that uses a single user input to both turn on the screen and authenticate a fingerprint, and the mere statement in Davis that the order of authentication factors can be varied is not sufficient to constitute such a disclosure. *See* Pet. 17–18, 46; Tr. 17:18–20:21. Moreover, claim 1 of Davis, which Petitioner cites, merely states that a biometric candidate may result in unlocking the device and launching execution of an application. It does not disclose using a single input to both turn on the screen and authenticate a fingerprint, as required by claim 11.

c. Conclusion as to Claim 11

For the foregoing reasons, we conclude that Petitioner has failed to prove, by a preponderance of the evidence, that claim 11 would have been obvious to a person of ordinary skill over the combination of Griffin, Davis, and iOS.

7. Claims 12–14 and 18

Claims 12–14 and 18 depend from claim 11. Petitioner relies on the combination of Griffin, Davis, and iOS for the limitations of these claims, and does not present further evidence with regard to the “without additional user input” limitation in claim 11, discussed above. *See* Pet. 50–52; 1011 Pet. 51–52. Because we find that Petitioner has failed to prove, by a preponderance of the evidence, that claim 11 is unpatentable over this

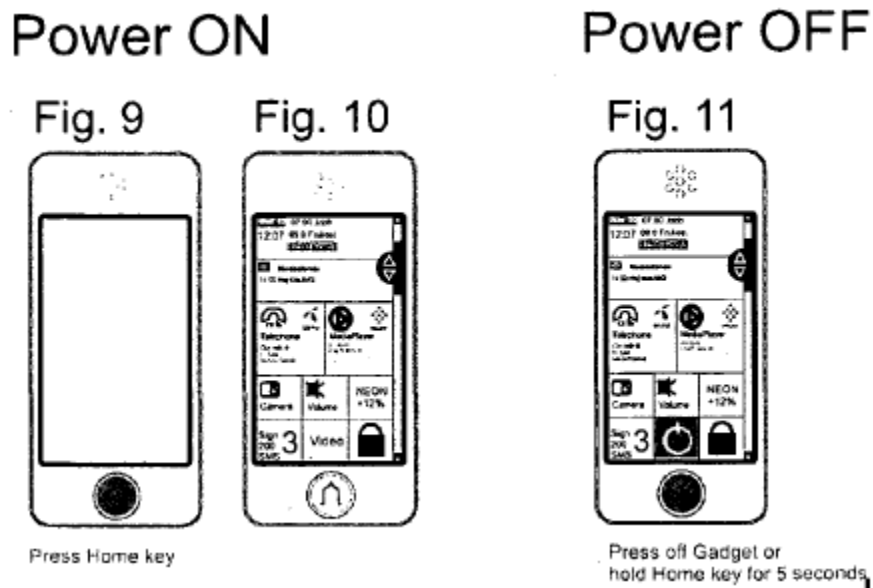
combination, we similarly find that Petitioner has failed to prove that dependent claims 12–14 and 18 are unpatentable.

E. Obviousness over Goertz, Davis, and iOS

Petitioner challenges claims 1, 2, 4–6, 10–14, and 18 as obvious under 35 U.S.C. § 103(a) over Goertz, Davis, and iOS. Pet. 53–86; 1011 Pet. 63–66, 78–80, 84–85.

1. Overview of Goertz

Goertz describes touch screen user interfaces for electronic devices. Ex. 1013 ¶ 2. Figures 9, 10, and 11 of Goertz are depicted below.

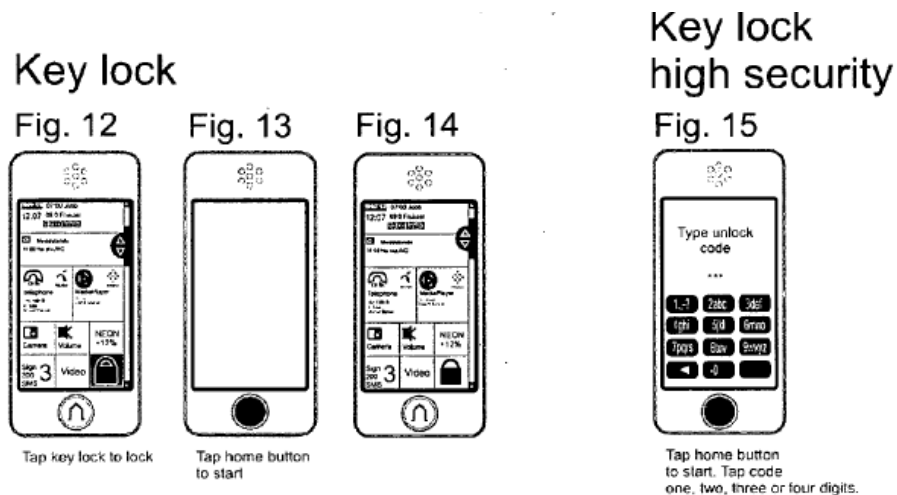


Figures 9, 10, and 11 illustrate turning a phone on and off. *Id.* ¶ 23. Figure 9 displays a first phone with a blank screen indicating that power is off. *Id.* ¶ 59. Figure 10 displays a second phone with gadgets displayed thereon, indicating that power is on. *Id.* A “home key” is displayed at the bottom of the phones, where activating the home key (e.g., touching the key) causes the power to be turned on. *Id.* Figure 11 displays a single phone, where

touching the home key for an extended period of time (e.g., five seconds) causes the phone to power off. *Id.*

Goertz further describes touch screens for phones with key lock. *Id.*

¶ 60. Figures, 12, 13, 14, and 15 of Goertz are depicted below.



Figures 12, 13, 14, and 15 illustrate locking and unlocking a phone. *Id.* ¶ 24. In Figure 12, a lock gadget is displayed in a lower right corner of the screen. *Id.* ¶ 60. Activating the lock gadget (e.g., pressing on it) causes the phone to lock, and when the phone is locked, activation of the phone is restricted in some manner. *Id.* As shown in Figure 13, the user activates a home key, located at bottom center of device, to unlock the phone. *Id.* Figure 14 shows the phone after it has been unlocked; gadgets are now displayed on screen and are activated in response to user input. *Id.* Figure 15 shows the phone displaying a keypad when the home key is activated (e.g., by touching the home key), and prompting a user to enter a security code. *Id.* ¶ 61. As Goertz describes, the phone cannot be unlocked unless the security code is entered. *Id.* Goertz further describes that optional additional security is implemented by use of fingerprint identification, wherein the phone cannot be unlocked unless the fingerprint is authenticated. *Id.*

2. Claim 1

Petitioner asserts the combination of Goertz, Davis, and iOS teaches the limitations recited in claim 1. Pet. 53–77. Petitioner relies primarily on Goertz to disclose most of the limitations and relies on Davis and iOS in a similar manner as in its challenge based on Griffin. *See generally id.* A more detailed analysis of Petitioner’s assertions for specific limitations, and Patent Owner’s response, is set forth below.

- a. *“an activation button separate from the power button and located outside the touch screen display, the activation button configured for pressing to turn on the touch screen display”*

Petitioner asserts Goertz discloses an activation button (home key) located outside the touch screen display. Pet. 67. Petitioner further asserts Goertz discloses the activation button is configured for pressing to turn on the touch screen display. *Id.* at 69–70 (citing *e.g.*, Ex. 1013 ¶ 59, Figs. 12–14). Similar to its contentions in its challenge based on Griffin, Petitioner relies on iOS to disclose a power button separate from the activation button. *Id.* at 68, 70 (citing Ex. 1007, 20, 27).

Patent Owner argues Goertz does not disclose an activation button, separate from a power button, that turns on a display in response to a press. PO Resp. 31–34. In particular, Patent Owner asserts Goertz never states or confirms the display is off in Figure 13, but rather Goertz discloses that the device shown in Figure 13 is locked, which means the activation of the phone is restricted in some manner. *Id.* at 32; *see also* Sur-Reply 15 (asserting nothing in Goertz says that Figure 13 shows a display that is off). Patent Owner argues that it is “equally plausible” Figure 13 only emphasizes the action of pressing the home button, and that nothing in the written

portion of Goertz addresses use of the home button to turn on the display. PO Resp. 32. Patent Owner also asserts that Figures 9 and 10 of Goertz do not show this claim limitation because they show using the home button to power on the device, but the claims differentiate between a power button and an activation button that is separate from the power button. *Id.* at 33. Patent Owner asserts that if the home key in Figures 9–10 of Goertz is a power button used to turn the device on and off, it cannot be an activation button that turns on the display. *Id.* Additionally, Patent Owner argues that the “home button” in iOS is not an “activation button” and iOS does not disclose the home button is used to turn on the touch screen display. *Id.* at 33–34; Sur-Reply 15–16.

In reply, Petitioner asserts Figures 9–11 of Goertz illustrate what a display looks like when the display is on (Figs. 10–11) and off (Fig. 9) and, as is apparent from the series of figures, the same display-off state is shown in Figure 13, depicting the locked phone. Reply 20. Petitioner asserts that in describing the unlock operation resulting in the state shown in Figure 14, Goertz explains that “gadgets are *now* displayed on screen,” which further confirms that Figure 13 depicts a display-off state. *Id.* at 20–21 (citing Ex. 1013 ¶ 60, Ex. 1039 ¶¶ 46–49). Petitioner asserts that the only figures with blank screens in Goertz are Figures 9 and 13 (power off and locked states), such that a person of ordinary skill in the art would have understood the display is off in both figures, and it is an implausible reading of Goertz to suggest the blank screen in Figure 13 was intended to indicate a display with gadgets. *Id.* (citing Ex. 1039 ¶ 50). Additionally, Petitioner asserts that iOS expressly discloses a device with an activation button (home button), similar

to Goertz's home button, and a separate power button (Sleep/Wake button) that turns on and off the terminal. *Id.* at 21–22 (citing Ex. 1007, 26–27).⁹

We determine Petitioner sufficiently demonstrates that the combination of Goertz and iOS teaches the recited “activation button” limitation. Goertz discloses an activation button (home key) located outside the touch screen display and iOS discloses a smartphone that includes a home button to turn on the display and an additional Sleep/Wake button that turns the power on and off. *See* Ex. 1013 ¶¶ 59–60; Ex. 1007, 20, 26–27. Goertz further discloses that “[i]n order to unlock the phone, the user activates the home key . . . as shown in FIG. 13” and that “FIG. 14 shows the phone after it has been unlocked: gadgets are now displayed on screen and are activated in response to user input.” Ex. 1013 ¶ 60, Figs. 13, 14.

We are not persuaded by Patent Owner's argument that Figure 13 does not show the display is off before the button is pressed. Goertz explicitly states gadgets are “*now*” displayed after the phone is unlocked, which corresponds to the change from the illustration of Figure 13 (depicting a blank screen for when the phone is locked) to that of Figure 14 (illustrating gadgets displayed on the screen after the phone has been unlocked). *See id.* In view of this disclosure, we are not persuaded by Dr. Weaver's testimony that it is plausible that Figure 13 only emphasizes the action of pressing the

⁹ Petitioner additionally asserts that iOS discloses its home button also turns on the display. Reply 22–23. However, as noted by Petitioner, Petitioner relied on Goertz in the Petition, and not iOS, for the activation button configured for pressing to turn on the touch screen display. *See id.*; Pet. 67–68. We decline to consider Petitioner's new assertion because it raises a new issue and exceeds the scope of a proper reply. *See* 37 C.F.R. § 42.23(b).

home button, and that nothing in the written description of Goertz addresses the use of the home button to turn on the display. *See* Ex. 2001 ¶ 110.

Rather, we agree with Dr. Bederson that Goertz’s disclosure does not support Patent Owner’s reading. *See* Ex. 1039 ¶ 50. Thus, we determine Petitioner shows sufficiently that Goertz teaches an activation button configured for pressing to turn on the touch screen display.

We conclude Petitioner has demonstrated the combination of Goertz and iOS teaches the “activation button” limitation of claim 1.

- b. “[an activation button configured for pressing] to initiate one or more additional functions of the terminal, wherein the terminal has a first function and a second function to perform in response to user input via the activation button . . . wherein the first and second functions are different from each other and selected from the group consisting of fingerprint authentication, activating the camera, playing music and a hands-free function wherein upon one-time pressing of the activation button while the touch screen is turned off, the terminal is configured to turn on the touch screen and further perform at least one of the first and second functions in addition to turning on the touch screen display”*

Petitioner asserts Goertz discloses an activation button configured to initiate one or more additional functions of the terminal. Pet. 69–70 (citing *e.g.*, Ex. 1013 ¶¶ 60–61). Petitioner asserts Goertz discloses the terminal has a first function (fingerprint authentication) to perform in response to user input via the activation button (pressing the home button). *Id.* at 71 (citing Ex. 1013 ¶ 61). Petitioner asserts iOS teaches the claimed second function through its description that detecting a long-press of the home button

(activation button) performs a hands-free function (voice control of the device). *Id.* at 73 (citing Ex. 1007, 38).

Petitioner further asserts that the combination of Goertz, Davis, and iOS discloses pressing the home key (activation button) to wake the terminal, turn on the touch screen display, and initiate the unlock function and further perform the first function (fingerprint authentication) or second function (hands-free voice control). *Id.* at 74–75 (citing *id.* at 69–73). Petitioner relies on Goertz to teach an activation button that initiates performance of fingerprint authentication. *See id.* at 69, 71. Petitioner asserts Davis teaches steps for performing Goertz’s fingerprint authentication in response to an unlock command (Goertz’s pressing of the home key). *Id.* at 71–72 (citing Ex. 1015, Fig. 4, ¶¶ 47–48, 53). Petitioner also asserts Davis teaches customizing authentication factors by changing their order and/or limiting them to a subset of factors (i.e., one embodiment includes the fingerprint authentication without password/smartcard authentication). *Id.* at 72–73 (citing Ex. 1015 ¶ 71, Fig. 4, claim 1); *see also id.* at 55–56 (Petitioner’s assertions that Davis teaches customizable authentication and an unlocking procedure that includes an unlock command followed by a fingerprint authentication).

Patent Owner argues that the cited prior art does not disclose turning on the display and performing a first function in response to a one-time pressing of the activation button. PO Resp. 34–37. Specifically, Patent Owner asserts Goertz does not disclose the display and timing requirements in the challenged claims, but rather discloses a multi-step process requiring multiple user inputs. *Id.* at 34–36. Patent Owner asserts that, while Goertz discloses “additional security is implemented by use of fingerprint

authentication,” it does not disclose the authentication sequence is any different when fingerprint recognition is used in addition to a security code. *Id.* at 36 (citing Ex. 1013 ¶ 61). Thus, Patent Owner asserts that even if Petitioner is correct that a press of the activation button causes the display to turn on, the Goertz authentication sequence is a two-step process in which the display turns on and then the device prompts the user to perform authentication (after the display turns on). *Id.* Patent Owner further asserts that Davis does not cure the Goertz deficiencies, but instead discloses a multi-stage authentication system requiring multiple user inputs. *Id.* at 37 (citing Ex. 2001 ¶ 116).

In reply, Petitioner argues Goertz discloses that pressing the home button turns on the display and also initiates a high security function, such as fingerprint authentication. Reply 23. Petitioner argues that Patent Owner’s arguments that Goertz discloses a multi-step sequential process requiring multiple user inputs is irrelevant because the claims are not limited to a single step or user action to both press the activation button and scan a fingerprint. *Id.* at 24. Similar to its assertions in the challenge based on Griffin, Patent Owner responds that Petitioner’s interpretation of the claims is wrong because the claims require performance, not just initiation of the first function (fingerprint authentication) in response to a one-time pressing of the activation button. Sur-Reply 16–17.

We determine that Petitioner shows sufficiently the combination of Goertz and Davis teaches these limitations of claim 1. Goertz teaches upon pressing of an activation button (home key) while the touch screen is turned off, the terminal is configured to turn on the touch screen display. *See* Ex. 1013 ¶ 60, Figs. 13, 14. Goertz also discloses “[w]hen the home key is

activated, such as by touching the home key . . . a user is prompted to enter a security code” and “[o]ptionally, additional security is implemented by use of fingerprint authentication, wherein the phone cannot be unlocked unless a fingerprint is authenticated.” Ex. 1013 ¶ 61. *Id.* As discussed previously, Davis discloses steps for performing fingerprint authentication in response to an unlock command. *See* Ex. 1015 ¶¶ 46, 50, 53, Fig. 4; *see also id.* ¶ 71, 79, claim 1 (describing that many embodiments will only require a subset of authentication factors and using a fingerprint input to launch an application while the device is locked). Thus, we are persuaded that the combination of Goertz and Davis teaches an activation button configured to initiate one or more additional functions and wherein upon one-time pressing of the activation button (Goertz’s pressing of the home key) while the touch screen is turned off, the terminal is configured to turn on the touch screen and further perform a first function (fingerprint authentication). We further agree with Petitioner that iOS teaches the recited “second function” through its description of voice control of the device (hands-free function). *See* Ex. 1007, 38.

We are not persuaded by Patent Owner’s arguments that Goertz and Davis both disclose multi-step authentication systems. For the reasons discussed previously in our analysis of the challenge based on Griffin, claim 1 does not preclude additional user input during the performance of the fingerprint authentication function (first function) or second function. *See supra* Section II.D.4.f.

We conclude Petitioner has established the combination of Goertz and Davis teaches these limitations of claim 1.

c. Remaining Limitations

Petitioner asserts the combination of Goertz, Davis, and iOS teaches the remaining limitations recited in claim 1. *See* Pet. 64–67, 73–77. Specifically, Petitioner asserts Goertz discloses a mobile communication terminal, a touch screen display, and a camera. *Id.* at 64–66 (citing Ex. 1013 ¶¶ 59–61, 78, Figs. 9–15, 40–42). Petitioner asserts iOS also discloses a camera and the recited “power button” limitation. *Id.* at 66–68 (citing Ex. 1007, 20, 27). As in its challenge based on Griffin, Petitioner relies on Davis and iOS to teach the “wherein the terminal . . . is configured to provide user settings” limitation. *Id.* at 73–74 (citing Ex. 1015 ¶¶ 46–47; Ex. 1007, 39, 45, 145). And for the “lock screen” and subsequent remaining limitations, Petitioner points to its analysis of previous limitations of claim 1 to support its assertion that the Goertz-Davis-iOS combination teaches these limitations. *See id.* at 75–77. Patent Owner does not present separate arguments for these limitations.

We have reviewed Petitioner’s analysis and supporting evidence. We determine Petitioner establishes that the combination of Goertz, Davis, and iOS teaches each of these limitations recited in claim 1.

d. Reason to Combine

Petitioner asserts a person of ordinary skill would have been motivated to implement the fingerprint function taught by Davis for the fingerprint authentication of Goertz because Goertz mentions fingerprint authentication but does not explain any steps in detail, and is, thus, ready for improvement by known techniques. Pet. 56; Reply 25–26. Petitioner asserts that the modification would have been well within the abilities of the person of ordinary skill, the use of a lock screen to display a lock/unlock dialog

would have been little more than the use of a known technique to yield the predictable result of displaying device status to a user, and a person of ordinary skill would have had a reasonable expectation of success in implementing the fingerprint authentication and lock screen display techniques because such techniques already existed and their application would have been similar and routine. Pet. 56–57 (citing Ex. 1003 ¶¶ 85, 36–41).

Petitioner further asserts a person of ordinary skill would have been motivated to include a power button, as taught by iOS, in Goertz’s mobile device because the combination would have been the application of a known technique to improve a similar device in the same way. *Id.* at 59. Petitioner asserts a person of skill would have been motivated to implement voice control by determining the home button is depressed for a certain length of time, as taught by iOS, in Goertz’s device to provide easy access to hands-free functions of the device at any time, and activating the hands-free function based on a long-press of the home button was merely one known example of many ways a person of skill may have chosen to configure the home button. *Id.* at 60–61. Petitioner asserts the detection of a long-press of the home button to trigger a hands-free voice control function would have been a basic key assignment modification and would have been the application of a known technique to improve a similar device in the same way. *Id.* at 62 (citing Ex. 1003 ¶¶ 90–94, 39–41).

Additionally, Petitioner asserts a person of skill would have been motivated to implement user settings and a settings menu for the user to input preferences, as taught by Davis and iOS, for the first and second functions in the system of Goertz to provide a visual interface for the user to

set preferences. *Id.* at 63–64. Petitioner asserts settings and settings menus were standard components of devices and the implementation would have been a basic user modification well within the skill of a person of ordinary skill in the art. *Id.* at 64.

Patent Owner argues a person of ordinary skill would not have combined Goertz with Davis in the proposed manner because Goertz already teaches a method of fingerprint authentication so there is no reason to look to Davis and there is no indication why one of skill in the art would use anything other than the fingerprint mechanism already disclosed in Goertz. PO Resp. 37–38; Sur-Reply 18. Patent Owner argues Goertz actively discourages the display and timing requirements of the challenged claims because Goertz discloses a multi-step process requiring multiple user inputs. PO Resp. 35–36. Patent Owner also argues Petitioner’s analysis is improperly based on hindsight bias because it uses the ’373 patent as a roadmap to cobble together separate components from the prior art and does not provide a clear motivation as to why one would have been motivated to combine the references in the proposed manner. *See* PO Resp. 38–43; Sur-Reply 19.

We determine Petitioner has shown that one of ordinary skill would have had reason to combine Griffin and Davis in the proposed manner. We are not persuaded by Patent Owner’s arguments that Goertz discloses specific timing requirements for fingerprint authentication. We agree with Patent Owner’s statements, made during oral argument, that Goertz discloses that in key lock security mode, the user presses a button and a keypad is displayed and it prompts the user to enter a security code. Tr. 35:6–8; Ex. 1013 ¶ 61. However, we disagree with Patent Owner’s argument that Goertz

teaches fingerprint authentication being done the same way, and thus, the timing is present in Goertz. *See* Tr. 35:8–36:2. Goertz merely discloses that “[o]ptionally, additional security is implemented by use of fingerprint authentication, wherein the phone cannot be unlocked unless a fingerprint is authenticated.” Ex. 1013 ¶ 61. We agree with Petitioner’s assertions, supported by the testimony of Dr. Bederson, that Goertz mentions fingerprint authentication but does not explain any steps in detail and does not limit itself to requesting a fingerprint after a password input. Reply 25; Ex. 1039 ¶ 61. Thus, we are persuaded that a person of ordinary skill in the art would have understood that Goertz was ready for improvement by implementing the known fingerprint function taught by Davis, which does disclose the details on how to implement fingerprint authentication to unlock a phone. *See, e.g.*, Ex. 1015 ¶¶ 52–53, Fig. 4. We find that using the fingerprint authentication taught by Davis in Goertz would have been simply the predictable use of prior elements according to known methods that does no more than yield predictable results. *See KSR*, 550 U.S. at 417.

We also are not persuaded by Patent Owner’s argument that Goertz discourages the display and timing requirements of claim 1 because it discloses a multi-step process requiring multiple user inputs. As discussed previously, the limitations of claim 1 are satisfied by a device that is unlocked using multiple inputs (a pressing of the activation button and a fingerprint). *See supra* Section II.D.4.e. Further, because we find Petitioner provides sufficient rationale for why one of skill in the art would have combined the references in the proposed manner, premised on the teachings of the references themselves, we disagree with Patent Owner’s argument that the combination is improperly based on hindsight bias.

Additionally, we find Petitioner provides sufficient rationale to combine Goertz with iOS to include a separate power button, and to implement voice control (hands free function) by determining the home button is depressed for a certain length of time. We are persuaded that the power button and long-press function were well-known components of mobile devices and a person of skill in the art would have had a reasonable expectation of success in implementing such features in other mobile devices, such as the device taught by Goertz. *See* Pet. 62. We find the proposed combination is merely the combination of familiar elements according to known methods, which yields predictable results.

We further determine Petitioner provides sufficient reason to implement user settings and a settings menu, as taught by Davis and iOS, in Goertz. *See* Pet. 63–64. We credit the testimony of Dr. Bederson that one of skill in the art would have been motivated to make the combination to provide a well-known visual interface for a user to set preferences, and the implementation of a settings menu for a mobile device would have been a basic modification for a person of ordinary skill in the art. Ex. 1003 ¶ 96.

Accordingly, we find Petitioner establishes that one of ordinary skill would have had reason to combine Goertz, Davis, and iOS in the proposed manner.

e. Conclusion

For the foregoing reasons, we conclude Petitioner has demonstrated, by a preponderance of the evidence, that claim 1 would have been obvious over the combination of Goertz, Davis, and iOS.

3. Claims 2, 4–6, and 10

Claims 2, 4–6, and 10 depend from claim 1. Petitioner relies on its analysis of the references’ teachings for claim 1 to support its assertion that the combination of Goertz, Davis, and iOS teaches the limitations recited in claims 2 and 4, which are similar to those in claim 1. *See* Pet. 77–78.

Petitioner asserts the combination of Goertz and Davis teaches the limitations recited in claim 5. *Id.* at 78 (citing Ex. 1013 ¶¶ 60, 61; Ex. 1015 ¶¶ 13, 53). Similar to its challenge based on Griffin, Petitioner relies on Davis to teach the limitations recited in claim 6. *Id.* at 78–79 (citing Ex. 1015 ¶ 53). For claim 10, Petitioner asserts Goertz discloses the recited smartphone and activation sensor and asserts Davis discloses the recited user identification module. 1011 Pet. 79–80 (citing Ex. 1013 ¶¶ 23–24, 56, 59, 60–62, Figs. 3, 9–11, 13; Ex. 1015 ¶¶ 4, 21, 30, 47, 50–53, 87, Figs. 2, 3). Patent Owner does not present separate arguments for these claims.

We have reviewed Petitioner’s analysis and supporting evidence. We determine Petitioner establishes, by a preponderance of the evidence, that claims 2, 4–6, and 10 would have been obvious over the combination of Goertz, Davis, and iOS.

4. Claim 11

Petitioner asserts the combination of Goertz, Davis, and iOS teaches the limitations recited in claim 11. Pet. 79–83 (citing to analysis for claim 1); *see also id.* at 64–77 (analysis for claim 1). As we noted previously, claim 11 is similar to claim 1, but also requires “*performing* at least one of the first and second functions *without additional user input other than the one-time pressing.*” Claim 11 further recites “at least one of the first and second functions is initiated . . . in response to the one-time pressing of the

activation button.” For the reasons discussed in our analysis of the challenge based on Griffin, the ordinary meaning of the claim language requires that, in response to the one-time pressing of the activation button, the device performs at least one of the first and second function without additional user input, not merely that it initiates the function. *See supra* Section II.D.6.

Petitioner relies on its analysis of claim 1 to support its assertion that the combination of Goertz and Davis teaches the “without additional user input limitation.” Pet. 81. Petitioner further asserts that no additional user input occurs for the first function (fingerprint authentication after pressing the home key) or the second function (voice control). *Id.*

Patent Owner argues the combination of Goertz and Davis does not teach performing a first function in response to a one-time pressing of the activation button. PO Resp. 34–37; Sur-Reply 16–18. Patent Owner argues that, as admitted by Petitioner, Goertz does not disclose the display and timing requirements, and the Goertz authentication sequence is a two-step process in which the display turns on and then the device prompts the user to perform authentication. PO Resp. 35–36 (citing Pet. 54; Ex. 2001 ¶ 115). Patent Owner argues that Davis also discloses a multi-stage authentication system requiring multiple user actions (receiving an unlock command and then receiving the fingerprint in response to a prompt). *Id.* at 37 (citing Ex. 2001 ¶ 116).

As in the challenge based on Griffin, Petitioner’s arguments for claim 11 are based on the premise that “without additional user input” only applies to the initiation of the first or second function. *See* Pet. 71–75, 81; Reply 23–25. Because we do not agree with this premise, we find Petitioner’s arguments unpersuasive. *See supra* Section II.D.6. We agree with Patent

Owner that Goertz discloses a two-step process in which the user unlocks the phone by activating the home key and then authentication is performed. *See* Ex. 1013 ¶¶ 60–61. And, for the reasons discussed above in our analysis of the challenge based on Griffin, we agree Davis and iOS also fail to disclose performance of the first or second function without additional user input other than the one-time pressing. *See supra* Section II.D.6. Therefore, we conclude Petitioner has failed to establish, by a preponderance of the evidence, that claim 11 would have been obvious over the combination of Goertz, Davis, and iOS.

4. Claim 12–14 and 18

Claims 12–14 and 18 depend from claim 11. Petitioner relies on the combination of Goertz, Davis, and iOS for the limitations of these claims, and does not present further evidence with regard to the “without additional user input” limitation in claim 11, discussed above. *See* Pet. 83–86; 1011 Pet. 84–85; *see also* Pet. 77–79; 1011 Pet. 44–46 (Petitioner’s analysis of dependent claims 2, 4–6, and 10 cited to in Petitioner’s analysis of dependent claims 12–14, 18). Because we conclude that Petitioner has failed to prove, by a preponderance of the evidence, that claim 11 is unpatentable over this combination, we similarly conclude that Petitioner has failed to prove that dependent claims 12–14 and 18 are unpatentable.

III. CONCLUSION

Petitioner has demonstrated by a preponderance of the evidence that claims 1, 2, 4–6, and 10 are unpatentable. Petitioner has not demonstrated

by a preponderance of the evidence that claims 11–14 and 18 are unpatentable.¹⁰

In summary:

Claims	35 U.S.C. §	Reference(s)/Basis	Claims Shown Unpatentable	Claims Not shown Unpatentable
1, 2, 4–6, 10–14, 18	103(a)	Griffin, Davis, iOS	1, 2, 4–6, 10	11–14, 18
1, 2, 4–6, 10–14, 18	103(a)	Goertz, Davis, iOS	1, 2, 4–6, 10	11–14, 18
Overall Outcome			1, 2, 4–6, 10	11–14, 18

IV. ORDER

It is

ORDERED that Petitioner has shown by a preponderance of the evidence that claims 1, 2, 4–6, and 10 of the '373 patent are unpatentable;

¹⁰ Should Patent Owner wish to pursue amendment of the challenged claims in a reissue or reexamination proceedings subsequent to the issuance of this decision, we draw Patent Owner's attention to the April 2019 *Notice Regarding Options for Amendments by Patent Owner Through Reissue or Reexamination During a Pending AIA Trial Proceeding*. See 84 Fed. Reg. 16,654 (Apr. 22, 2019). If Patent Owner chooses to file a reissue application or request for reexamination of the challenged patent, we remind Patent Owner of its continuing obligation to notify the Board of any such related matters in updated mandatory notices. See 37 C.F.R. § 42.8(a)(3), (b)(2).

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FURTHER ORDERED that Petitioner has not demonstrated by a preponderance of the evidence that claims 11–14 and 18 of the '373 patent are unpatentable; and

FURTHER ORDERED, that because this is a final written decision of the Board under 35 U.S.C. § 318(a), any party to this proceeding seeking judicial review of our decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

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