UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

APPLE INC.,

Petitioner

v.

FIRSTFACE CO., LTD.,

Patent Owner

Case IPR2019-00614[1]
Patent 9,779,419 B2

PETITIONER'S NOTICE OF APPEAL

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[1] Case IPR2019-01012 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 IPR2019-00614 (Paper 27) and IPR2019-01012 (Paper 10), and from all underlying orders, decisions, rulings, and opinions regarding these *inter partes* reviews of U.S. Patent No. 9,779,419 ("'419 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 10-13 and 15-17 of U.S. Patent No. 9,779,419 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 10-13 and 15-17 of the '419 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,

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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

of record for the Patent Owner listed below:

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Counsel for Petitioner Apple Inc.

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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APPLE INC.,
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FIRSTFACE CO., LTD.,
Patent Owner.

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IPR2019-00614,
IPR2019-01012
Patent 9,779,419 B2

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

CASS, *Administrative Patent Judge*.

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

Apple Inc. ("Petitioner") filed a Petition in IPR2019-00614 pursuant to 35 U.S.C. §§ 311–319 to institute an *inter partes* review of claims 1–4, 6, 7, 10–13, and 15–17 of U.S. Patent No. 9,779,419 B2 ("the '419 patent"). IPR2019-00614, Paper 2 ("Pet."). Petitioner later filed a Petition in IPR2019-01012 to institute *inter partes* review of claim 9 of the '419 patent. IPR2019-01012, Paper 1 ("-1012 Pet."). Firstface Co., Ltd. ("Patent Owner") filed a Preliminary Response in both cases. IPR2019-00614, Paper 8 ("Prelim. Resp."); IPR2019-01012, Paper 7. Pursuant to 35 U.S.C. § 314, we instituted *inter partes* review of all of the challenged claims based on all the grounds presented in both Petitions. IPR2019-00614, Paper 10 ("Inst. Dec."); IPR2019-01012, Paper 9. We further consolidated both proceedings and ordered all further filings in the consolidated proceeding to be made in IPR2019-00614. IPR2019-01012, Paper 9 at 27.

In the consolidated proceedings, Patent Owner filed a Response (Paper 16,[1] "PO Resp."), Petitioner filed a Reply (Paper 18, "Pet. Reply"), and Patent Owner filed a Sur-reply (Paper 21, "PO Sur-reply"). On May 5, 2020, we conducted an oral hearing. A copy of the transcript of the oral hearing (Paper 26, "Tr.") is included in the record.

We have jurisdiction under 35 U.S.C. § 6(b). For the reasons that follow, we determine that Petitioner has shown by a preponderance of the evidence that claims 1–4, 6, 7, and 9 of the '419 patent are unpatentable, and that Petitioner has not shown by a preponderance of the evidence that claims

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[1] Unless otherwise specified with the prefix "-1012," we refer herein to papers and exhibits filed in IPR2019-00614.

10–13 and 15–17 of the '419 patent are unpatentable.[2] This final written decision is issued pursuant to 35 U.S.C. § 318(a).

I. BACKGROUND

A. The '419 Patent (Ex. 1001)

The '419 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 '419 patent is reproduced below.

FIG. 1

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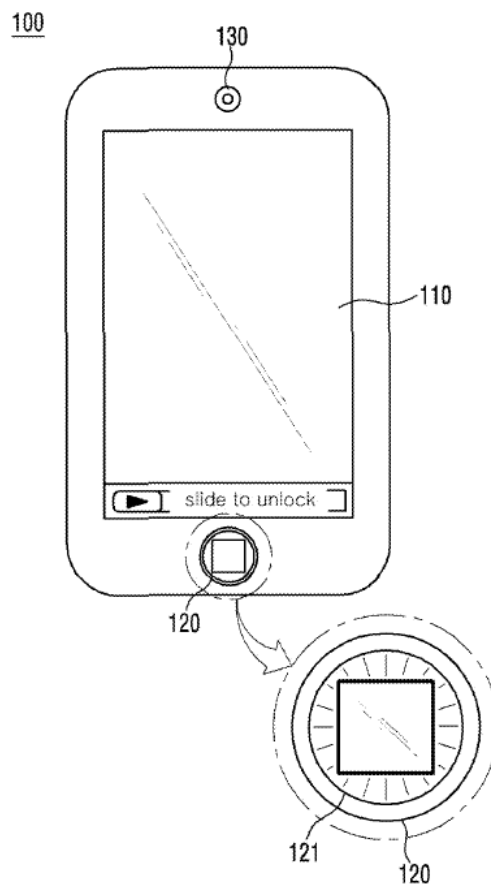
[2] Although we granted Petitioner's motions to seal certain exhibits filed with the Petitions, we do not refer to any sealed material in this Decision. *See* Paper 9; -1012 Paper 8.

Figure 1 illustrates the 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. When the user presses the activation button, the terminal switches from the inactive state (in which the terminal is communicable but the display screen is turned off) to the active state (in which the display screen is turned on). *Id.* at 3:21–34; 4:22–27.

If the user presses activation button 120 when mobile communication terminal 100 is in the inactive state, mobile communication terminal 100 may perform a predetermined operation in addition to switching to the active state. *Id.* at 4:36–40. The terminal may also perform different operations according to the number of presses or the press time of the activation button. *Id.* at 4:58–61. For example, the terminal may perform a first operation if activation button 120 is pressed once for a short time, and a second operation if activation button 120 is pressed once for a longer time. *Id.* at 4:65–5:2.

The '419 patent describes a number of operations that can be performed when the activation button is pressed. *Id.* at 5:51–57. One of those functions is a user identification function, which performs a security authentication process. *Id.* at 7:14–17. According to this process, when mobile communication terminal 100 is in the inactive state, it senses that the user has pressed the activation button, and then operates the user identification function. *Id.* at 7:22–28. The '419 patent describes an example user identification unit 420 that uses camera activation element 421, iris detection element 422, and user identification element 423 for sensing and recognizing the iris of a user's eye. *Id.* at 7:28–8:6. The patent

explains that "other authentication methods, for example, an authentication key matching method, a password matching method, a face recognition method, a fingerprint recognition method, and the like can be used" instead of the iris recognition method. *Id.* at 8:13–20. Mobile communication terminal 100 may also be switched to a hands-free function by pressing activation button 120. *Id.* at 9:22–24.

B. *Illustrative Claims*

Claims 1 and 10 are independent claims, and are illustrative of the subject matter at issue:[3]

1. A mobile communication terminal comprising:

a touch screen display;

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,

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 a fingerprint authentication function 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 being turned off,

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[3] Claims 1, 3, 4, 7, 10, 12, 13, and 17 were corrected in a certificate of correction dated March 20, 2018. Ex. 1001.

in addition to turning on the touch screen display and displaying the lock screen, the one-time pressing while the touch screen display being turned off initiates the fingerprint authentication function,

the lock screen is displayed on the touch screen display when the fingerprint authentication function initiated by the one-time pressing is being performed,

a lock state of the terminal continues when the fingerprint authentication function fails to authenticate a user, and

the lock state is released for enabling other functions of the terminal when the fingerprint authentication function authenticates a user in response to the one-time pressing of the activation button while the touch screen display being turned off, wherein the terminal is further configured to perform at least one function other than the fingerprint authentication function in addition to turning on the touch screen display for displaying the lock screen in response to the one-time pressing of the activation button when the one-time pressing is for a long time, longer than a reference time period, wherein the at least one function to perform in addition to turning on the touch screen display for displaying the lock screen in response to the one-time pressing for the long time is associated with initiating a hands-free operation of the terminal.

10. A method of operating a mobile computing terminal, the method comprising:

providing a mobile computing terminal which comprises a touch screen display, a camera, a power button for pressing to tum on/off the terminal, and an activation button for pressing to turn on the touch screen

display, the activation button located outside the touch screen display;

detecting one-time pressing of the activation button while the terminal is in an inactive state in which the touch screen display is turned off;

in response to the one-time pressing, changing the terminal from the inactive state to an active state in which the touch screen display is turned on; and

in addition to changing to the active state, further performing a fingerprint authentication function using fingerprint recognition without additional user input,

wherein in changing to the active state and performing the fingerprint authentication function, the terminal operates such that:

a lock screen is displayed on the touch screen display upon changing the terminal from the inactive state to the active state in response to the one-time pressing of the activation button while the terminal being in the inactive state,

in addition to changing the terminal to the active state, the one-time pressing while the terminal being in the inactive state initiates the fingerprint authentication function,

the lock screen is displayed on the touch screen display when the fingerprint authentication function initiated by the one-time pressing is being performed,

a lock state of the terminal continues when the fingerprint authentication function fails to authenticate a user, and

the lock state is released for enabling other functions of the terminal when the fingerprint authentication function authenticates a user in

response to the one-time pressing of the activation button while the terminal being in the inactive state, wherein the method further comprises performing at least one function other than the fingerprint authentication function in addition to changing to the active state in response to the one-time pressing during the terminal's inactive state when the one-time pressing is for a long time longer than a reference time period, wherein the at least one function to perform in addition to turning on the touch screen display for displaying the lock screen in response to the onetime pressing for the long time is associated with initiating a hands-free operation of the terminal.

Ex. 1001, 12:53–13:30, 14:15–65.

C. The Prior Art

Petitioner relies on the following prior art:

1. Apple iPhone OS 3.1 User Guide (Sept. 2009) ("iOS") (Ex. 1007).
2. U.S. Patent Application Pub. No. 2010/0017872 A1, published Jan. 21, 2010 ("Goertz") (Ex. 1013).
3. U.S. Patent Application Pub. No. 2010/0138914 A1, published June 3, 2010 ("Davis") (Ex. 1015).
4. U.S. Patent Application Pub. No. 2012/0133484 A1, published May 31, 2012 ("Griffin") (Ex. 1027).

Petitioner further relies on testimony of its declarant, Benjamin B. Bederson, Ph.D. (Ex. 1003, -1012 Ex. 1003).

D. The Asserted Grounds

Petitioner challenges the patentability of claims 1–4, 6, 7, 9–13, and 15–17 of the '419 patent on the following grounds:

Claims Challenged	35 U.S.C. §	Reference(s)/Basis
1–4, 6, 7, 9–13, 15–17	103(a)[4]	Griffin, Davis, iOS
1–4, 6, 7, 9–13, 15–17	103(a)	Goertz, Davis, iOS

Pet. 7; -1012 Pet. 6.

E. Related Proceeding

Petitioner and Patent Owner identify the following district court litigation involving the '419 patent: *Firstface Co. v. Apple Inc.*, Case No. 3-18-cv-02245 (N.D. Cal.). Pet. 2; Paper 3, 2.

II. ANALYSIS

A. Claim Construction

In an *inter partes* review for a petition filed on or after November 13, 2018,

> [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.

See Changes to the Claim Construction Standard for Interpreting Claims in Trial Proceedings Before the Patent Trial and Appeal Board, 83 Fed. Reg. 51,340 (Oct. 11, 2018) (amending 37 C.F.R. § 42.100(b) effective November 13, 2018) (now codified at 37 C.F.R. § 42.100(b) (2019)); *see also Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–14 (Fed. Cir. 2005).

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[4] The Leahy-Smith America Invents Act, Pub. L. No. 112-29, 125 Stat. 284 (2011) ("AIA"), amended 35 U.S.C. § 103. Because the challenged claims of the '419 patent have an effective filing date before the effective date of the applicable AIA amendment, we refer to the pre-AIA version of 35 U.S.C. § 103.

Neither Petitioner nor Patent Owner proposes constructions for any of the claim terms. Pet. 11; PO Resp. 6. We do not find it necessary to expressly construe any terms for purposes of this Decision. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) ("we need only construe terms 'that are in controversy, and only to the extent necessary to resolve the controversy'" (citations omitted)).

B. Principles of Law

A claim is unpatentable for obviousness if, to one of ordinary skill in the pertinent art, "the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made." *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007) (quoting 35 U.S.C. § 103(a)). The question of obviousness is resolved on the basis of underlying factual determinations, including "the scope and content of the prior art"; "differences between the prior art and the claims at issue"; and "the level of ordinary skill in the pertinent art."[5] *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

A patent claim "is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art." *KSR*, 550 U.S. at 418. An obviousness determination requires finding "both 'that a skilled artisan would have been motivated to combine the teachings of the prior art references to achieve the claimed invention, and that the skilled

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[5] Additionally, secondary considerations, such as "commercial success, long felt but unsolved needs, failure of others, etc., might be utilized to give light to the circumstances surrounding the origin of the subject matter sought to be patented. As indicia of obviousness or nonobviousness, these inquiries may have relevancy." *Graham*, 383 U.S. at 17–18. Patent Owner, however, did not present any such evidence during trial.

artisan would have had a reasonable expectation of success in doing so.'"
Intelligent Bio-Sys., Inc. v. Illumina Cambridge Ltd., 821 F.3d 1359,
1367–68 (Fed. Cir. 2016) (citation omitted); *see KSR*, 550 U.S. at 418
(for an obviousness analysis, "it can be important to identify a reason that
would have prompted a person of ordinary skill in the relevant field to
combine the elements in the way the claimed new invention does"). Further,
an assertion of obviousness "cannot be sustained by mere conclusory
statements; instead, there must be some articulated reasoning with some
rational underpinning to support the legal conclusion of obviousness." *KSR*,
550 U.S. at 418 (quoting *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)); *In
re NuVasive, Inc.*, 842 F.3d 1376, 1383 (Fed. Cir. 2016) (a finding of a
motivation to combine "must be supported by a 'reasoned explanation'"
(citation omitted)).

C. Level of Ordinary Skill in the Art

Section 103(a) forbids issuance of a patent when

> the differences between the subject matter sought to be patented
> and the prior art are such that the subject matter as a whole
> would have been obvious at the time the invention was made to
> a person having ordinary skill in the art to which said subject
> matter pertains.

KSR, 550 U.S. at 406 (quoting 35 U.S.C. § 103(a)).

Petitioner argues that a person of ordinary skill in the art at the time of
the '419 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 (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 the full record developed during trial, including our review of the '419 patent and the types of problems and solutions described in the '419 patent and cited prior art, we agree with Petitioner's assessment of the level of ordinary skill in the art and apply it for purposes of this Decision.

D. Obviousness over Griffin, Davis, and iOS

Petitioner contends that claims 1–4, 6, 7, 9–13, and 15–17 are unpatentable as obvious under 35 U.S.C. § 103(a) over Griffin, Davis, and iOS. Pet. 12–54; -1012 Pet. 25–41. For the reasons that follow, Petitioner has demonstrated by a preponderance of the evidence that claims 1–4, 6, 7, and 9 are unpatentable on this ground, but has not demonstrated by a preponderance of the evidence that claims 10–13 and 15–17 are unpatentable on this ground.

1. Overview of Griffin

Griffin describes an electronic device configured to transition between a locked and unlocked state in response to a detected action that is interpreted as a continuous or single action. Ex. 1027, code (57). This continuous action can consist of two inputs, "a first input [that] is detected at a first input mechanism of the device when the device is locked," and a "second input [that] is detected at the second input." *Id.* If "the inputs are determined to be continuous, for example if the second input is detected within a predetermined period after the completion of the first input, the device is unlocked." *Id.* As to the second input, Griffin states that the device may include an "auxiliary input/output (I/O) subsystem" which "can include devices such as: a touchscreen, mouse, track ball, infrared fingerprint detector, or a roller wheel with dynamic button pressing capability." *Id.* ¶¶ 62, 77.

A locked state in Griffin includes a "sleep" mode in which certain functions of the device (such as a display) are halted, and a secure or "screen lock" mode where a user interface for a user to enter credentials is displayed to allow the user to transition to an unlocked state. *Id.* ¶¶ 25–27. After the device is unlocked, it enters an awake mode in which the user interfaces, as well as the stored data and other functionality of the device, are generally all available. *Id.* ¶ 27.

Griffin discloses one embodiment of an unlock procedure in Figures 5A, 5B, and 5C, which are depicted below.
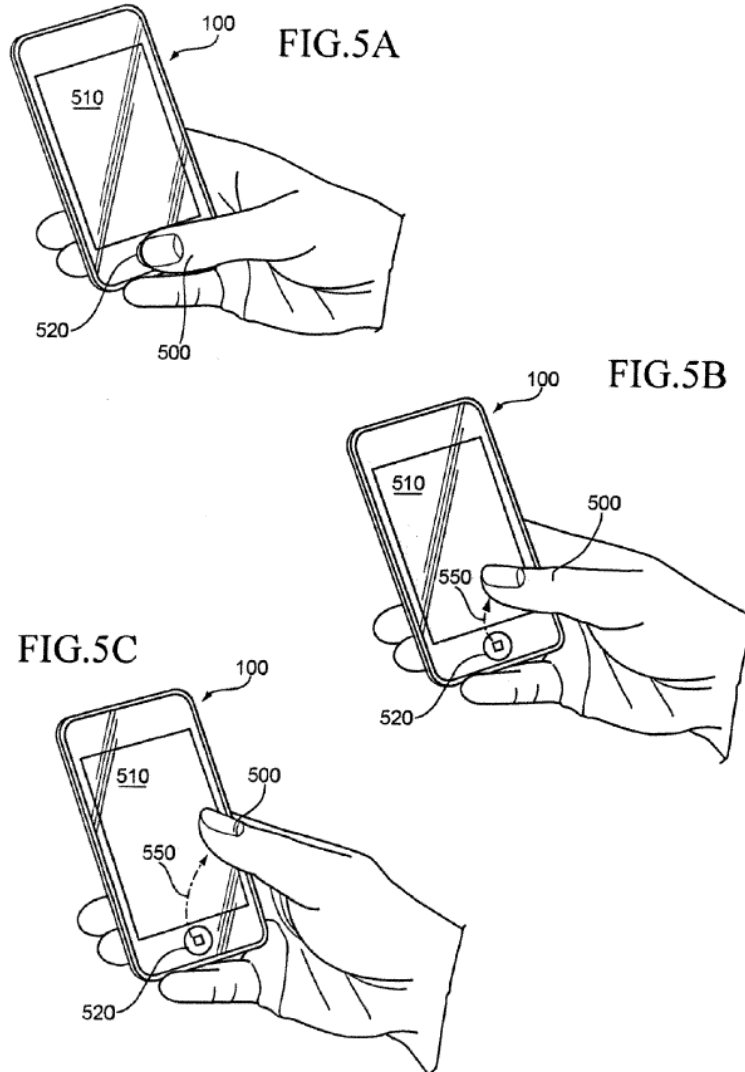
Figures 5A, 5B, and 5C of Griffin illustrate a single-gesture or continuous-action input as it is implemented on a handheld mobile device, such as a smartphone equipped with touchscreen display 510. *Id.* ¶ 86. Device 100 has a single "home" button or convenience button 520, positioned at the center 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.* After detecting the press of the convenience button, the device then activates the second input mechanism, in this case touchscreen display 100, so that the display is capable of detecting further input from the user. *Id.* ¶ 87. Figures 5B and 5C illustrate this second input by showing user's thumb 500 travelling in an upward and rightward arcuate path 550 along touchscreen display 510 towards the right edge of the display 510. *Id.* Arc 550 traced along touchscreen display 510 completes the unlock action, after which device 100 enters the unlocked state. *Id.*

2. *Overview of Davis*

Davis describes a system and method of launching applications on a mobile 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 after the user selects a menu item to lock the device. *Id.* ¶ 45. Davis describes various security measures that can be used to unlock the mobile device, such as passwords, a smart card, or biometric authentication, which may be required to gain access to the mobile device. *Id.* ¶¶ 46–47.

One of the security measures disclosed by Davis is authentication using biometric information, such as a fingerprint. *Id.*, Abstract, ¶¶ 13–14. Davis explains that "[b]y providing a biometric candidate to a biometric input device, a user may cause a computing device to be unlocked and cause

a specific application to be launched on the computing device." *Id.* ¶ 13.

The biometric input device may be located on the device itself. *Id.* Davis

teaches that the use of biometric information for authentication provides

advantages over passwords and smart cards because it relies on "something

that is unique to the user," so that "even 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." *Id.*

¶ 4.

In Figure 4, Davis discloses an example method of securely unlocking

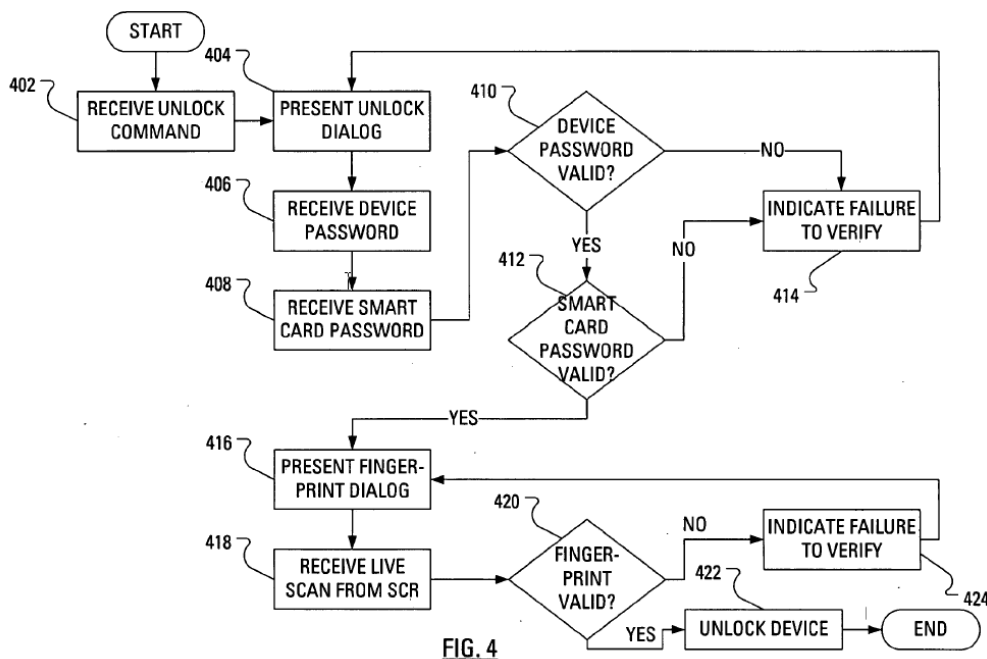a device and launching an application. *Id.* ¶ 9. Figure 4 is depicted below.

FIG. 4

Figure 4 illustrates steps in a method of maintaining secure access to

Davis's mobile communication device. The mobile device first receives an

"unlock" command (step 402). *Id.* ¶ 48. The mobile device then 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, after which the

device receives and verifies the password(s) (steps 404–412). *Id.* ¶¶ 48–50. The mobile device then presents a dialog on the display to prompt the user to provide a fingerprint candidate or other type of biometric data (step 416). *Id.* ¶ 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 device dialog and returns to step 416 to present the prompt to the user to provide a fingerprint (steps 422–424). *Id.*

Davis explains that "there may be security configurations for which smart card-based authentication is unnecessary and wherein a fingerprint sensor . . . is integral to the mobile device." *Id.* ¶ 52. Davis further teaches that "the order in which various authentication factors are provided by the user" are not limited to the order in the example embodiments, and that "many embodiments will only require a subset of the authentication factors discussed." *Id.* ¶ 71.

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 on page 20, which is reproduced below.

iPhone at a Glance

The iOS diagram reproduced above depicts an iPhone. *Id.* at 20. As shown in the diagram, the iPhone includes a "Home button" that, when pressed, causes the device to display a home screen that includes applications that can be launched. *Id.* at 23. The iPhone also includes a "Sleep/Wake button" that allows the user to lock the device or turn it off. *Id.* at 26–27. When the iPhone is locked, nothing happens if the user touches the screen. *Id.* at 26.

A user may activate the iPhone's voice control feature by pressing the home button and holding it for a period of time until a screen for voice control appears and the device beeps. *Id.* at 38, 48, 77. The user can then use voice control to make calls. *Id.* at 48. A user also can configure the iPhone to prevent voice dialing when the iPhone is locked by changing the settings. *Id.* at 39, 48.

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4. Claim 1

Petitioner asserts that the combination of Griffin, Davis, and iOS teaches the limitations recited in claim 1. Pet. 12–54. A detailed analysis of Petitioner's assertions, and Patent Owner's responses, is set forth below for each limitation of claim 1.

a. "A mobile communication terminal comprising:"

Petitioner argues that Griffin discloses "a mobile communication terminal," as recited in the preamble of claim 1, in the form of user device 100, which "may be a mobile device with two-way communication and advanced data communication capabilities." Pet. 26 (citing Ex. 1027 ¶ 59). Patent Owner does not address this claim language; 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] Based on the entirety of the record, we find that Petitioner has shown that Griffin teaches the language in the preamble of claim 1.[7]

b. "a touch screen display"

For this limitation, Petitioner points to Griffin's statement 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. 28 (citing Ex. 1027 ¶¶ 77, 86). Patent Owner does not specifically address this claim language. Based on the entirety of the record,

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[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.

[7] Because Petitioner has sufficiently demonstrated that Griffin discloses the preamble, we need not and do not decide whether the preamble is limiting for purposes of this Decision.

we find that Petitioner has shown, by a preponderance of the evidence, that
Griffin teaches this limitation.

> 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"*

Petitioner argues 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. 28 (citing Ex.
1007, 20, 27). Petitioner submits an annotated figure of an iPhone from iOS,
which is depicted below:

Pet. 28 (citing Ex. 1007, 20). The annotated iPhone diagram above shows a
"Sleep/Wake button" located on the bottom 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). Pet. 29. To illustrate, Petitioner provides an annotated version of Griffin's Figure 5B, reproduced below:
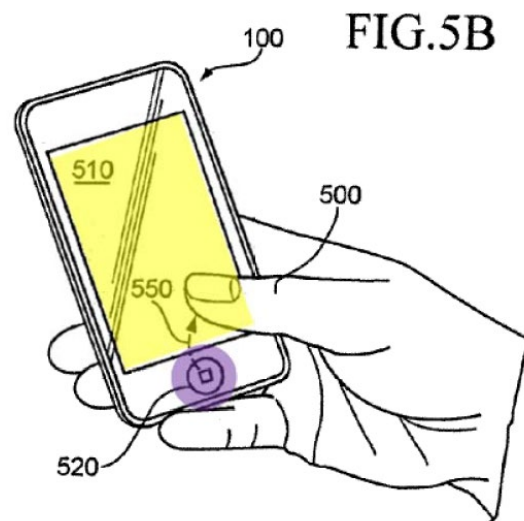
Pet. 29 (citing Ex. 1027, Fig. 5B). As shown in Petitioner's annotated Figure 5B above,

> 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. (citing Ex. 1027 ¶ 86).

Petitioner points to the following disclosure of Griffin for claim 1's requirement that the activation button is "configured for pressing to turn on the touch screen display" from a sleep mode:

> [W]ith reference to FIG. 2, . . . to conserve the battery the device may be configured to enter a sleep mode 210 in which the screen is blanked . . . from an initial active state 200. The 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 the keypad or a convenience key.

Pet. 30 (citing Ex. 1027 ¶ 25).

Patent Owner argues that neither Griffin nor iOS discloses this limitation. PO Resp. 15. Patent Owner argues that Griffin fails to disclose a power button, and thus cannot teach an activation button separate from the power button. *Id.* 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. *Id.*

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. Patent Owner's arguments that Griffin

alone does not teach an activation button separate from the power button, and that iOS alone does not teach an activation button that can be pressed to turn on the touch screen display, improperly attack the references 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").

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

> d. *"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 a fingerprint authentication function 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 being turned off"*
>
> *"in addition to turning on the touch screen display and displaying the lock screen, the one-time pressing*

> *while the touch screen display being turned off initiates the fingerprint authentication function,"*
>
> *"the lock screen is displayed on the touch screen display when the fingerprint authentication function initiated by the one-time pressing is being performed,"*
>
> *"a lock state of the terminal continues when the fingerprint authentication function fails to authenticate a user, and the lock state is released for enabling other functions of the terminal when the fingerprint authentication function authenticates a user in response to the one-time pressing of the activation button while the touch screen display being turned off"*

For these limitations of claim 1, Petitioner relies on a combination of Griffin and Davis. Pet. 12–18, 30–37. Petitioner argues that Griffin discloses configuring unlock procedures to use two or more input mechanisms. *Id.* at 13. 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. 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 30–31 (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 31–32 (citing Ex. 1027 ¶¶ 121–22).

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 (citing Ex. 1027 ¶¶ 85–

88, 103). 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.* (citing Ex. 1027 ¶ 77).

Petitioner relies on Davis to teach performing a "fingerprint authentication" function in response to an unlock command to provide greater security. *Id.* at 33–34 (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. *Id.* at 34–36 (citing Ex. 1015, Fig. 4, ¶¶ 52–53). Petitioner asserts that Davis discloses receiving "the fingerprint candidate from a fingerprint sensor . . . on the mobile device." *Id.* at 34 (quoting Ex. 1015 ¶¶ 52–53). Petitioner further argues that Davis discloses that the "lock state of the terminal continues when the fingerprint unlock fails," and that other functions are available (such as the launching of an application) "when the fingerprint unlock is successful." *Id.* at 37 (citing Ex. 1015 ¶¶ 13, 53). According to Petitioner, Davis teaches customizing authentication factors by changing their order, or using only a subset of factors. *Id.* at 35 (citing Ex. 1015 ¶ 71).

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. Pet. 16–17. 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 17–18 (emphases omitted). Petitioner additionally argues that Davis teaches continuing the lock state of the terminal when the fingerprint authentication function fails to authenticate a user, and releasing the lock state to enable other functions when a fingerprint is authenticated. *Id.* at 37 (citing Ex. 1015 ¶¶ 13, 53).

Patent Owner argues that "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." PO Resp. 17. 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. Thus, Patent Owner contends, "Griffin requires at least *two* user actions to turn on the display, perform fingerprint authentication, and, if the user is authenticated, release the lock state, not the single user action (one-time pressing of the activation button) as required by the challenged claims." *Id.* Patent Owner relies on

the testimony of Alfred C. Weaver, Ph.D., in support of its arguments. *See
id.* (citing Ex. 2001 ¶ 94). 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 fingerprint authentication function." *Id.* at 20. Instead, according to Patent
Owner, Davis "discloses a multi-stage authentication system requiring
multiple user actions." *Id.* (citing Ex. 2001 ¶ 95).

With respect to our Institution Decision, Patent Owner further argues
that:

> In its Institution Decision, the Board credited Petitioner's
> argument that the combination of Griffin and Davis renders the
> challenged claims obvious despite that they both disclose multi-
> step processes because "the user's pressing of the activation
> button and the user's fingerprint in the challenged claims can be
> considered multiple user inputs." . . . This reasoning, however,
> misunderstands the claims, which require turning on the display
> and performing fingerprint authentication in response to a
> single user action—a one-time pressing of the activation button.

Id. at 25–26.

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." Pet. 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*' a fingerprint authentication function." *Id.* at 4. Patent
Owner's interpretation, Petitioner argues, "incorrectly reads the word
'*initiates*' out of the claims 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 6.

In its Sur-reply, Patent Owner responds that claim 1 requires "performance, not just initiation, of a fingerprint authentication function in response to a one-time pressing of the activation button." PO Sur-reply 5. 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 fingerprint authentication function," but argues that this limitation also "requires that the lock screen be displayed for the duration of the performance of the fingerprint authentication function ('when the fingerprint authentication function . . . is being performed')." *Id.* According to Patent Owner, Petitioner "further ignores that the claim states '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 a fingerprint authentication function* in addition to turning on the touch screen display.'" *Id.* at 5–6.

We find that Petitioner has shown sufficiently that the combination of Griffin and Davis 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 "perform[ing] a 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 fingerprint authentication function 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 one time pressing . . . *initiates* the fingerprint authentication."

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 10, which closely tracks claim 1 but additionally requires that upon one-time pressing of the activation button, the fingerprint authentication function is performed "*without additional user input*." The '419 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 in claim 1, as well as

its inclusion in claim 10, 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 10 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 fingerprint authentication function, but does not preclude additional user input (such as a fingerprint scan) during the performance of the fingerprint authentication 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 show a lock screen and performing a fingerprint authentication function . . . both in response to a one-time pressing of the 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., 923 F.3d at 1050. Additionally, we are not persuaded by Patent Owner's argument that Griffin discloses a "multi-action process" including multiple user inputs 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 fingerprint authentication. Similarly, Patent Owner's argument that Davis "discloses a multi-stage authentication system requiring multiple user actions" (*id.* at 20–23) fails because it is based on a misreading of claim 1 that improperly adds a requirement that the fingerprint authentication function be performed without additional user input following the unlock command, as discussed above.

Finally, we agree with Petitioner that Davis discloses releasing the lock state of the terminal to enable other functions when a fingerprint is authenticated. *See* Pet. 37; Ex. 1015 ¶ 53 ("[I]f 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."). Davis further discloses continuing a lock state of the terminal when the fingerprint authentication fails to authenticate a user. *See id.* ("However, if the fingerprint candidate does not match the stored fingerprint template associated with unlocking the mobile device 102, the microprocessor 228 presents (step 424) a fingerprint verification failure dialog and returns to step 416 to present the prompt to the user to provide a fingerprint.")

For the above reasons, we find that Petitioner has established that the combination of Griffin and Davis teaches these limitations of claim 1.

e. *"wherein the terminal is further configured to perform at least one function other than the fingerprint authentication function in addition to turning on the touch screen display for displaying the lock screen in response to the one-time pressing of the activation button when the one-time pressing is for a long time, longer than a reference time period, wherein the at least one function to perform in addition to turning on the touch screen display for displaying the lock screen in response to the one-time pressing for the long time is associated with initiating a hands-free operation of the terminal."*

Petitioner relies on iOS for this limitation, arguing that iOS discloses detecting a long-press of the home button (i.e., the activation button) to initiate a hands-free function of the terminal (Voice Control of the device). Patent Owner does not specifically address this limitation.

We agree with Petitioner that iOS teaches this limitation. 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 iOS diagram 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.
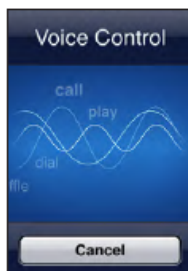
Use **Voice Control:** Press and hold the Home button until the Voice Control screen appears and you hear a beep. You can also press and hold the center button on the iPhone headset (or the equivalent button on your Bluetooth headset).

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.*

Consequently, Petitioner has shown, by a preponderance of the evidence, that this limitation of claim 1 is met by the combination of Griffin, Davis, and iOS.

f. Motivation 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. 18 (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 18–19. 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 '419 patent. *Id.* (citing Ex. 1003 ¶¶ 63, 36–41).

Petitioner further argues that a person of ordinary skill would have been motivated to add a power button, as taught by iOS, to Griffin's analogous device to provide power-switching capabilities to the device. Pet. 21. Such a combination, according to Petitioner, would have been the application of known techniques 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.* 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.

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. 27. 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.

PO Resp. 27–28 (citations omitted).

Patent Owner further argues that Petitioner's proposed combination
"is riddled with hindsight bias, using the '419 patent as a roadmap to weave
together various elements from the prior art." PO Resp. 28. 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. *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 to choose this particular element where the activation
button is separate from the power button." *Id.* at 29.

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

find 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 '419 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. 27.

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* PO Resp. 27. 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, in order to enhance security. 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. 27–28.

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 power button separate from 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 separate power button 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, Griffin's home button and iOS's separate power button are familiar smartphone elements, and combining them yields the predictable result of separating the function of the power button from that of the home button. *See id.* ("The combination of familiar elements," such as Griffin's home button and iOS's power button "according to known methods is likely to be obvious when it does no more than yield predictable results."). There is no evidence of record that combining Griffin's home button and iOS's separate power button would have had unpredictable results, or would not have been straightforward for a person of ordinary skill.

Consequently, 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 as to Claim 1

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

5. Claims 2–4, 6, 7 and 9

Claim 2–4, 6, 7, and 9 are dependent on claim 1, and will be discussed below.

a. Claim 2

Claim 2 recites that the terminal of claim 1 "is configured to perform at least one additional function in addition to the fingerprint authentication function after turning on the touch screen display for displaying the lock screen when the one-time pressing of the activation button is detected while the touch screen display is turned off." Petitioner points to Davis for this limitation, arguing that "Davis discloses the fingerprint authentication unlocks the device and causes the device to perform an additional function (launch an application)." Pet. 39. Petitioner relies on Davis's disclosure that "[b]y providing a biometric candidate to a biometric input device, a user may cause a computing device to be unlocked and cause a specific application to be launched on the computing device." Ex. 1015 ¶ 13.

Patent Owner does not separately argue claim 2.

Based on the evidence of record, we conclude that Petitioner has established, by a preponderance of the evidence, that claim 2 would have been obvious over the combination of Griffin, Davis, and iOS.

b. *Claims 3 and 7*

Claim 3 recites that the terminal of claim 1

> is further configured to perform at least one function other than
> the fingerprint authentication function in addition to turning on
> the touch screen display for displaying the lock screen in
> response to the one-time pressing of the activation button when
> the one-time pressing is for the long time, longer than the
> reference time period, wherein the at least one function is
> selected from the group consisting of activating a camera, and
> an operation that involves playing a sound.

Claim 7 is similar to claim 3, except that it does not specify alternatives for "the at least one function."

Petitioner relies on iOS for this limitation, arguing that iOS plays a beep sound when the home button is pressed and held. Pet. 40–41 (citing Ex. 1007, 38 ("Use Voice Control: Press and hold the Home button until the Voice Control screen appears and you hear a beep."), 48, 77), 42–43. Patent Owner does not separately argue claims 3 and 7.

Based on the evidence of record, we conclude that Petitioner has established, by a preponderance of the evidence, that claims 3 and 7 would have been obvious over the combination of Griffin, Davis, and iOS.

c. *Claim 4*

Claim 4 depends on claim 3 and recites that, in the terminal of claim 1, the "touch screen display displays the lock screen thereon as it is turned on in response to the one-time pressing for the long time, wherein the lock screen is displayed on the touch screen display when the at least one function is being initiated."

Petitioner points to its arguments for claim 1, and further states that in the proposed combination "pressing the activation button (home button) would have displayed the lock screen (fingerprint dialog) on the touch

screen display, before further functions are performed (e.g., receiving and verifying the fingerprint scan)." Pet. 41. Therefore, Petitioner argues, "the display would be on, with the lock screen, at the time the long-press function is initiated." *Id.* As with claim 1, Petitioner argues that it would have been obvious for a person of ordinary skill to have the device wake and display the lock screen to provide the user with information regarding the device's status. *Id.* Thus, Petitioner asserts, "with respect to the function initiated after the long time period, the function would have been initiated when the lock screen was displayed (e.g., Voice Control and playing the beep sound initiates after the press and hold)." *Id.* at 41–42.

Patent Owner does not separately argue claim 4.

Based on the evidence of record, we conclude that Petitioner has established, by a preponderance of the evidence, that claim 4 would have been obvious over the combination of Griffin, Davis, and iOS.

d. *Claim 6*

Claim 6 recites that the terminal of claim 1 "is configured to display a message on the touch screen display when the lock state continues due to the failure of fingerprint authentication by the fingerprint authentication function." 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." Pet. 42 (citing Ex. 1015 ¶ 53). Patent Owner does not separately argue claim 6.

Based on the evidence of record, we conclude 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.

e. Claim 9

Claim 9 recites that the terminal of claim 1 "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 user identification function."

Petitioner argues that Griffin discloses a terminal that comprises a smartphone. 1012 Pet. 40 (citing Ex. 1027 ¶ 86). Petitioner also argues that Griffin discloses an activation button ("home button" or "convenience button") to initiate an unlock action and reactivate the device. *Id.* at 25.

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 25–26 (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.* at 26 (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.* Thus, Petitioner argues, a person of ordinary skill would have understood that Griffin discloses both an activation button and an activation sensor. *Id.*

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 27 (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.* at 27–28.

Patent Owner does not separately argue claim 9.

Based on the evidence of record, we conclude that Petitioner has established, by a preponderance of the evidence, that claim 9 would have been obvious over the combination of Griffin, Davis, and iOS.

6. Claim 10

Petitioner asserts that the combination of Griffin, Davis, and iOS teaches the limitations recited in claim 10. Pet. 12–54. Claim 10 is similar to claim 1 in many respects, but it also requires, *inter alia*, turning on the touch screen display and "performing a fingerprint authentication function using fingerprint recognition ***without additional user input.***" The phrase "without additional user input" does not appear in claim 1.

a. The Parties' Arguments Regarding the "Without Additional User Input" Limitation

Patent Owner argues claim 10 requires that a single user action—a one-time pressing of the activation button—both turns on the display and performs fingerprint authentication without further input from the user, such

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as the entry of a fingerprint. PO Resp. 25–26. According to Patent Owner,
this follows from claim 10's language "that in response to a one-time
pressing, the device changes 'to the active state' and further 'perform[s] a
fingerprint authentication function using fingerprint authentication
recognition without additional user input.'" *Id.* at 26.

Petitioner argues that Patent Owner's interpretation of the "without
additional user input" claim language to "require[] a single user input and a
single user action to both press the activation button and scan a fingerprint,
has no support in the intrinsic record." Pet. Reply 9–10 (emphasis omitted).
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 fingerprint authentication function."
Id. To support this interpretation, Petitioner points to the language
elsewhere in claim 10 stating that "wherein . . . the terminal operates such
that . . . the one-time pressing . . . initiates the fingerprint authentication
function." *Id.* (emphasis omitted). "In other words," Petitioner contends,
"'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 fingerprint
authentication function." *Id.*

Petitioner also makes a number of arguments based on the
Specification and other claims. Petitioner argues that the '419 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." Pet. Reply 7–8. 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 8 (citing
Ex. 1001, 8:13–20). Finally, Petitioner argues that Patent Owner's
interpretation would read out of the claims the embodiment in the
Specification and claims 2 and 11 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.

We are not persuaded by Petitioner's arguments. First, we do not
agree that the "without additional user input" language in claim 10 applies
only to the "initiation" of the fingerprint authentication function. Claim 10
requires that, in response to the one-time pressing of the activation button,
the device both turns on the display and "***perform[s]***" a fingerprint
authentication function "without additional user input." The ordinary
meaning of this claim language requires that the device "perform[s]" the
fingerprint authentication function without additional user input, not merely
that it "initiates" the fingerprint authentication function without additional
user input. Additionally, claim 10 makes clear that "performing the
fingerprint authentication function" includes not only "initiating" the
fingerprint authentication function, but also authenticating the user's
fingerprint. In this regard, claim 10 states that "in . . . ***performing*** the
fingerprint authentication function, the terminal operates such that . . . the
one-time pressing . . . initiates the fingerprint authentication function . . .
and the lock state is released . . . ***when the fingerprint authentication
function authenticates a user***." Thus, claim 10 requires that turning on of
the screen ***and authenticating the user's fingerprint*** occur "in response to

the one-time pressing" of the activation button "without additional user input."

We also disagree with Petitioner's arguments that the Specification compels a different reading of claim 10. 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 10 clearly states on its face that turning on the screen and authenticating a fingerprint is done by a single press of the activation button "without additional user input." Interpreting claim 10 to allow additional user input during the performance of the fingerprint authentication 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," specifically those requiring entry of a password. *See* Pet. Reply 8. Petitioner points to claim 2, but claim 2 does not require the entry of a password, it merely requires the performance "of at least one additional function in addition to the fingerprint authentication function." And, although password entry is described in the '419 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).

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, Patent Owner argues that the "without additional user input" language in claim 10 is not taught by Petitioner's combination of Griffin and Davis. PO Resp. 26–27. According to Patent Owner, Griffin does not teach performing the fingerprint authentication "without additional user input" because, "after receiving a first user action at a first input mechanism, [Griffin] discloses activating a second mechanism and awaiting a second user action at the second mechanism." *Id.* at 26. Patent Owner argues that Davis "similarly contemplates at least two user actions—first the user selects an unlock command, after which the user is prompted to authenticate." *Id.* at 26–27 (citing Ex. 2001 ¶ 107).

Petitioner's arguments for claim 10 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. 12–18, 46; Pet. Reply 10–16. As discussed above, we do not agree with this reading of claim 10, and therefore find Petitioner's arguments unpersuasive.

In its claim chart for claim 10, Petitioner further summarily states that: "No additional user input is input for the fingerprint recognition (fingerprint authentication after initiating unlock: Griffin Fig. 11 step 1105, Davis Fig. 4 (modified) step 416)." Pet. 46. 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 16–17 (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 10. We agree with Patent Owner that Griffin discloses an unlock procedure that uses two user inputs. *See* Ex. 1027 ¶¶ 32–25. We also agree that Davis 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. 16–17, 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 10.

c. Conclusion as to Claim 10

For the foregoing reasons, we conclude that Petitioner has failed to prove, by a preponderance of the evidence, that claim 10 would have been obvious to a person of ordinary skill over the combination of Griffin, Davis, and iOS.

7. Claims 11–13 and 15–17

Claim 11–13 and 15–17 are dependent on claim 10. 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 10, discussed above. *See* Pet. 51– 54. Because we conclude that Petitioner has failed to prove, by a preponderance of the evidence, that claim 10 is unpatentable over this combination, we similarly conclude that Petitioner has failed to prove that dependent claims 11–13 and 15–17 are unpatentable.

E. Obviousness over Goertz, Davis, and iOS

Petitioner contends that claims 1–4, 6, 7, 9–13, and 15–17 are unpatentable as obvious under 35 U.S.C. § 103(a) based on Goertz, Davis, and iOS. Pet. 53–86; -1012 Pet. 51–64. For the reasons that follow,

Petitioner has demonstrated by a preponderance of the evidence that claims 1–4, 6, 7, and 9 are unpatentable on this ground, but has not demonstrated by a preponderance of the evidence that claims 10–13 and 15–17 are unpatentable on this ground.

1. Overview of Goertz

Goertz describes a mobile device having a home button and a touch screen user interface. Ex. 1013 ¶¶ 2, 8, 59. Figures 9, 10, and 11 of Goertz, depicting turning the device on and off, are reproduced below.
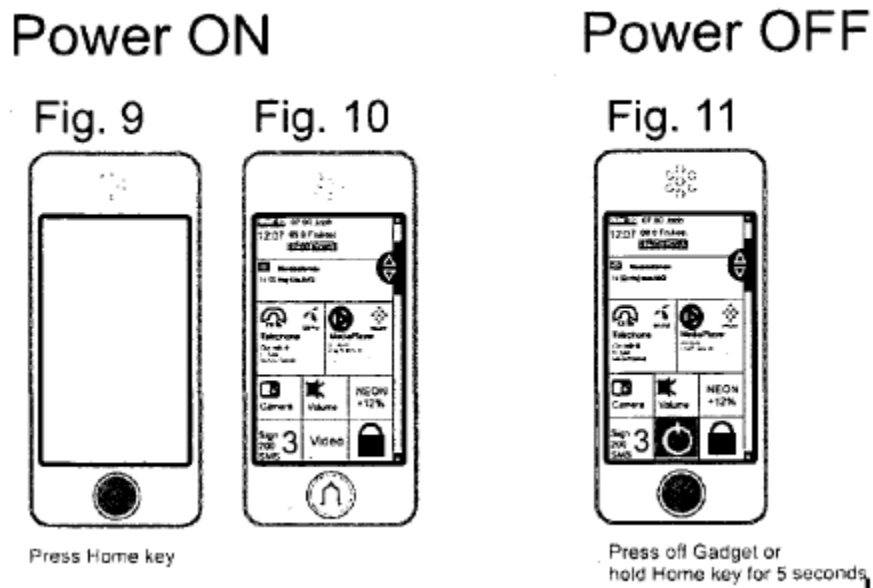

Figure 9 displays a first phone with a blank screen indicating that power is off. *Id.* ¶ 59. Figure 10 displays a second phone with gadgets displayed thereon, indicating that power is on. *Id.* A "home key" is displayed at the bottom of the phones and can be activated, such as by touching the key, in order to turn the power on. *Id.* Figure 11 depicts a phone that is turned on and indicates that touching the home key for an extended period of time (e.g., five seconds) causes the phone to power off. *Id.*

Figures 12, 13, 14, and 15 of Goertz illustrate the locking and unlocking of the device, and are reproduced below.

Figure 12, illustrates a phone displaying a lock gadget in the lower right corner of the screen that, when pressed, locks the phone and restricts its access in some manner. *Id.* ¶ 60. Figure 13 shows a locked phone, in which the user can activate a home key, located at the bottom center of the device, to unlock the phone. *Id.* Figure 14 "shows the phone after it has been unlocked; gadgets are now displayed on screen and can be activated in response to user input." *Id.*

In Figure 15, the phone displays a keypad after the home key is activated that prompts the user to enter a security code to unlock the phone. *Id.* ¶ 61. Goertz discloses that "[o]ptionally, additional security is implemented by use of fingerprint identification, wherein the phone cannot be unlocked unless a fingerprint is authenticated." *Id.*

2. Claim 1

Petitioner asserts the combination of Goertz, Davis, and iOS teaches the limitations recited in claim 1. Pet. 54–88. 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

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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. 66–67. Petitioner further
asserts Goertz discloses the activation button is configured for pressing to
turn on the touch screen display. *Id.* at 68–71 (citing *e.g.,* Ex. 1013 ¶ 59,
Figs. 9, 10, 12–15). 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 66–67 (citing Ex. 1007, 20, 27).

Patent Owner argues that Goertz does not disclose an activation
button, separate from a power button, that turns on a display in response to a
press. PO Resp. 32–35. In particular, Patent Owner asserts that Goertz
never actually states that the display is off in Figure 13, but rather merely
discloses that the device is locked, which means the activation of the phone
is restricted in some manner. *Id.* at 33; *see also* PO Sur-reply 14–15
(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. 33. 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 34. Patent
Owner asserts that if the home key in Figures 9–10 of Goertz is a power

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button used to turn the device on and off, it cannot be an activation button that turns on the display. *Id.* at 34–35. Additionally, Patent Owner argues that the "home button" in iOS is not an "activation button" and iOS does not disclose that the home button is used to turn on the touch screen display. *Id.* at 33–34; PO Sur-reply 15–16.

In reply, Petitioner asserts that 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. Pet. 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 ¶¶ 47–50). 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.* at 21 (citing Ex. 1039 ¶ 51). 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).[8]

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[8] Petitioner additionally asserts that iOS discloses that its home button also turns on the display. Pet. Reply 22. However, as noted by Petitioner, *id.*, 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* Pet. 68. We decline to consider Petitioner's new assertion because it raises a

We determine that 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 that the display is off before the button is pressed. Goertz explicitly states that 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.* ¶ 60. 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 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 ¶ 115. 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

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new issue and exceeds the scope of a proper reply. *See* 37 C.F.R. § 42.23(b).

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. *"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
> a fingerprint authentication function 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 being turned off"*
>
> *"in addition to turning on the touch screen display and
> displaying the lock screen, the one-time pressing while the
> touch screen display being turned off initiates the fingerprint
> authentication function"*

Petitioner asserts that Goertz discloses an activation button configured
to initiate one or more additional functions of the terminal. Pet. 68–70
(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 68 (citing Ex. 1013 ¶¶ 60–61).

Petitioner further asserts 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 fingerprint authentication. *Id.* at 71–72 (citing *id.* at 68–70).
Petitioner relies on Goertz to teach an activation button that initiates
performance of fingerprint authentication. *See id.* at 68, 71. Petitioner
asserts that Davis teaches steps for performing Goertz's fingerprint

authentication in response to an unlock command (Goertz's pressing of the home key). *Id.* at 70–71 (citing Ex. 1015, Fig. 4, ¶¶ 47–48, 53). Petitioner also asserts that 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.* (citing Ex. 1015, ¶ 71, Fig. 4, claim 1); *see also id.* at 56–57 (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 fingerprint authentication in response to a one-time pressing of the activation button. PO Resp. 35–39. 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 36–37. 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 37 (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 38–39 (citing Ex. 2001 ¶ 125).

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. Pet. Reply 23. According to Petitioner, Patent Owner's argument that Goertz discloses a multi-step sequential process requiring multiple user inputs is irrelevant because the claims are not limited to a single user action that both presses the activation button and scans 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 fingerprint authentication in response to a one-time pressing of the activation button. PO Sur-reply 16.

We determine that Petitioner shows sufficiently that the combination of Goertz and Davis teaches these limitations of claim 1. Goertz teaches that, 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 that "[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 that 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 fingerprint authentication.

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. *See supra* Section II.D.4.d.

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

c. Remaining Limitations

Petitioner asserts that the combination of Goertz, Davis, and iOS teaches the remaining limitations recited in claim 1. *See* Pet. 65–66, 71–74. Specifically, Petitioner asserts Goertz discloses a mobile communication terminal and a touch screen display. *Id.* at 65–66 (citing Ex. 1013 ¶¶ 59–61, Figs. 9–15, 40–42). Petitioner asserts iOS also discloses the recited "power button" limitation. *Id.* at 66 (citing Ex. 1007, 20, 27). Petitioner also asserts that iOS teaches the "one-time pressing . . . for a long time . . . associated with initiating a hands-free operation" through its description that detecting a long-press of the home button (activation button) causes performance of a hands-free function (voice control of the device). *Id.* at 73 (citing Ex. 1007, 38). And for the "lock screen" and remaining limitations, Petitioner relies on the combination of Goertz and Davis. *See id.* at 71–74 (citing Ex. 1013 ¶¶ 60, 61; Ex. 1015 ¶¶ 13, 53). 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. 57–58; Pet. 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. 58 (citing Ex. 1003 ¶¶ 36–41, 85).

Petitioner further asserts that 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 61. Petitioner asserts that a person of skill would have been motivated to implement voice control by determining that 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. *Id.* at 61–62. According to Petitioner, 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.* Petitioner asserts that 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 63 (citing Ex. 1003 ¶¶ 90–94, 39–41).

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 no indication why one of skill in the art would use anything other than the fingerprint mechanism already disclosed in Goertz. PO Resp. 39–40; PO Sur-reply 18. Patent Owner argues that 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. Patent Owner also argues that Petitioner's analysis is improperly based on hindsight bias because it uses the '419 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. 40–44; PO Sur-reply 18–19.

We determine Petitioner has shown that one of ordinary skill would have had reason to combine Goertz 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 which 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,

teaches the timing of the fingerprint authentication. *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. Pet. Reply 26; Ex. 1039 ¶ 62. 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.d. 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 that 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 hands free function were well-known components of mobile devices and that 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. 62–63. We find the proposed combination is merely the combination of familiar elements according to known methods, which yields predictable results.

Accordingly, we find Petitioner establishes that one of ordinary skill would have had reason to combine Griffin, 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, 7 and 9

Claims 2–4, 6, 7, and 9 depend from claim 1. For claims 2 and 6, Petitioner relies on the same portions of Davis as relied on for its asserted ground based on Griffin. Pet. 74–75, 77. For claims 3 and 7, Petitioner relies on the same portions of iOS as relied on for the ground based on Griffin. *Id.* at 75–78. 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 claim 4. *Id.* at 76–77. For claim 9, Petitioner asserts Goertz discloses the recited smartphone and

activation sensor and asserts Davis discloses the recited user identification module. -1012 Pet 63–64 (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, 7, and 9 would have been obvious over the combination of Griffin, Davis, and iOS.

4. Claim 10

Petitioner asserts that the combination of Goertz, Davis, and iOS teaches the limitations recited in claim 10. Pet. 78–84 (citing to analysis for claim 1); *see also id.* at 65–74 (analysis for claim 1). As we noted previously, claim 10 is similar to claim 1, but also requires, in response to the one-time pressing of the activation button, "performing a fingerprint authentication function using fingerprint recognition ***without additional user input***." 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 fingerprint authentication without additional user input, not merely that it "initiates" the fingerprint authentication 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. 80. Petitioner further asserts that no additional user input occurs for fingerprint authentication after pressing the home key. *Id.*

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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. 35–39; PO Sur-reply 16–17. 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. *Id.* at 36–37 (citing Pet. 56; Ex. 2001 ¶¶ 121–123). 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 38–39 (citing Ex. 2001 ¶¶ 124–125).

As in the challenge based on Griffin, Petitioner's arguments for claim 10 are based on the premise that "without additional user input" only applies to the initiation of the fingerprint authentication function. *See* Pet. 80–81; Pet. Reply 9–10. 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 first unlocks the phone by activating the home key and then performs authentication. *See* Ex. 1013 ¶¶ 60–61. And, for the reasons discussed above in our analysis of the challenge based on Griffin, we agree that Davis and iOS also fail to disclose performing the fingerprint authentication 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 10 would have been obvious over the combination of Goertz, Davis, and iOS.

5. *Claims 11–13 and 15–17*

Claims 11–13 and 15–17 depend from claim 10. 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 10, discussed above. *See* Pet. 84–86; *see also id.* at 74–78 (Petitioner's analysis of dependent claims 2–4 and 6–7 cited in Petitioner's analysis of dependent claims 11–13, 15, and 17). Because we conclude that Petitioner has failed to prove, by a preponderance of the evidence, that claim 10 is unpatentable over this combination, we similarly conclude that Petitioner has failed to prove that dependent claims 11–13 and 15–17 are unpatentable.

III. CONCLUSION

Petitioner has demonstrated by a preponderance of the evidence that claims 1–4, 6, 7, and 9 are unpatentable. Petitioner has not demonstrated by a preponderance of the evidence that claims 10–13 and 15–17 are unpatentable.[9]

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[9] 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).

In summary:

Claims	35 U.S.C. §	Reference(s)/Basis	Claims Shown Unpatentable	Claims Not shown Unpatentable
1–4, 6, 7, 9–13, 15–17	103(a)	Griffin, Davis, iOS	1–4, 6, 7, 9	10–13, 15–17
1–4, 6, 7, 9–13, 15–17	103(a)	Goertz, Davis, iOS	1–4, 6, 7, 9	10–13, 15–17
Overall Outcome			1–4, 6, 7, 9	10–13, 15–17

IV. ORDER

It is

ORDERED that Petitioner has shown by a preponderance of the evidence that claims 1–4, 6, 7, and 9 of the '419 patent are unpatentable;

FURTHER ORDERED that Petitioner has not demonstrated by a preponderance of the evidence that claims 10–13 and 15–17 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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