

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

APPLE INC.,
Petitioner,

v.

SMITH INTERFACE TECHNOLOGIES, LLC,
Patent Owner

IPR2024-01087
Patent 10,656,755

**PETITIONER'S REPLY
TO PATENT OWNER'S RESPONSE**

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LIST OF EXHIBITS

APPLE-1001	U.S. Patent No. 10,656,755 (“the ’755 Patent”)
APPLE-1002	U.S. Patent No. 10,656,755 File History
APPLE-1003	Declaration of Dr. Andrew Cockburn
APPLE-1004	U.S. Patent Publication No. 2011/0119610 to Hackborn et al. (“Hackborn”)
APPLE-1005	U.S. Patent Publication No. 2008/0316183 to Westerman et al. (“Westerman”)
APPLE-1006	U.S. Patent Publication No. 2010/0103118 to Townsend et al. (“Townsend”)
APPLE-1007	U.S. Patent Publication No. 2012/0319959 to Saponas et al. (“Saponas”)
APPLE-1008	U.S. Patent No. 6,920,606 to Jablonski et al. (“Jablonski”)
APPLE-1009	U.S. Patent Publication No. 2008/0122796 to Jobs et al. (“Jobs”)
APPLE-1010	U.S. Patent Publication No. 2007/0150842 to Chaudhri et al. (“Chaudhri”)
APPLE-1011	U.S. Patent No. 6,061,695 to Slivka et al. (“Slivka”)
APPLE-1012	U.S. Patent No. 6,202,083 to Chrabaszcz (“Chrabaszcz”)
APPLE-1013	U.S. Patent Publication No. 2005/0209923 to Jablonski et al. (“Jablonski II”)

APPLE-1014	“Facebook Completes Rollout Of Haystack To Stem Losses From Massive Photo Uploads,” <i>TechCrunch</i> , April 6, 2009, https://techcrunch.com/2009/04/06/facebook-completes-rollout-of-haystack-to-stem-losses-from-massive-photo-uploads/
APPLE-1015	U.S. Patent Publication No. 2006/0048059A1 to Etkin
APPLE-1016	U.S. Patent Publication No. 2012/0246184A1 to Rothschild
APPLE-1017	U.S. Patent Publication No. 2008/0168404A1 to Ording
APPLE-1018	U.S. Patent Publication No. 2008/0062141A1 to Chandhri
APPLE-1019	U.S. Patent Publication No. 2011/0074699A1 to Marr
APPLE-1020	U.S. Patent Publication No. 2014/0232671A1 to Chandhri
APPLE-1021	U.S. Patent No. 6,323,846 to Westerman et al. (“Westerman2”)
APPLE-1022	Hargrave’s Communications Dictionary, 1 st Edition (2001)
APPLE-1023	Dictionary of Computer and Internet Terms, Tenth Edition (2009)
APPLE-1024	Van Nostrand’s Scientific Encyclopedia, Tenth Edition, Volume 2 (2008)
APPLE-1025	Microsoft Computer Dictionary, 5 th Edition (2002)
APPLE-1026	U.S. Patent No. 6,061,532 to Bell
APPLE-1027	U.S. Patent Publication No. 2008/0122796A1 to Jobs et al.
APPLE-1028	United States District Courts — National Judicial Caseload Profile (Dec. 31, 2023) United States Courts (uscourts.gov), https://www.uscourts.gov/sites/default/files/fcms_na_distprofile_1231.2023_0.pdf (last visited June 25, 2024)

- APPLE-1029 Memorandum, Interim Procedure for Discretionary Denials in AIA Post-Grant Proceedings with Parallel District Court Litigation (USPTO June 21, 2022) (“Guidance”)
- APPLE-1030 Case Management Order, *Smith Interface Technologies, LLC v. Apple Inc.*, 3-23-cv-01187, S.D. Cal. (June 20, 2024)
- APPLE-1031 Supplemental Declaration of Dr. Andrew Cockburn
- APPLE-1032 Deposition of Dr. Mark P. Mahon¹
- APPLE-1033 (Excerpts) The American Heritage Dictionary of the English Language, Fifth Edition, 2011.
- APPLE-1034 (Excerpts) A Dictionary of Physics, Sixth Edition, 2009.

¹ Petitioner understands that Patent Owner intends for Dr. Mahon to perform a read-and-sign of this deposition transcript (APPLE-1032), per 37 C.F.R. § 42.53(f)(5). At the time of this filing, Petitioner has not received any communications from Patent Owner regarding the progress of Dr. Mahon’s read-and-sign. Petitioner assumes Patent Owner is facilitating Dr. Mahon’s review, that the review is ongoing, and that Patent Owner will raise any alleged errata. Should Patent Owner propose entry into the record of any alleged errata that does not seek to change the substance of Dr. Mahon’s testimony, Petitioner does not expect to object.

APPLE-1035 Android Developer ScrollView Class Documentation, February 16, 2011, downloaded from the Wayback machine at <https://web.archive.org/web/20110216142003/http://developer.android.com/reference/android/widget/ScrollView.html> on July 30, 2025

CONVENTIONS OF THIS REPLY BRIEF

- All emphasis is added unless noted otherwise;
- Quotations are generally reserved for exhibits; and
- The phrase “as discussed” and equivalent phrases incorporate fully the analysis of the cross-cited portion of the Reply Brief.
- References to “wallpaper” in Hackborn refer to Hackborn’s “live wallpaper” (e.g., “grass wallpaper” refers to Hackborn’s live wallpaper that shows grass).
- Hyphenated prior art references refer to the respective combinations presented in the Petition (e.g., “Hackborn-Westerman” refers to the Hackborn-Westerman combination).
- The acronyms HWD, HWJD, HWTD, and H2WJD refer to Hackborn-Westerman device, Hackborn-Westerman-Jobs device, Hackborn-Westerman-Townsend device, and Hackborn2-Westerman-Jobs device respectively, consistent with their usage in the Petition.

I. INTRODUCTION

The Petition provided compelling prior art combinations demonstrating invalidity of the Challenged Claims. Smith's counterarguments are a mere distraction from the strength of the prior art. Its lead argument is based on a faulty premise—mischaracterization of Hackborn as not needing to distinguish between taps and swipes. Further, Smith's arguments pertaining to Westerman are both inaccurate regarding Petitioner's reliance on Westerman and Westerman's teaching. Finally, Smith offers no independent argument regarding dependent claims 2-3, 7, 10-11, 13, 15, 17, 20, 24-25, 32-33, 35, 37-38, and 41-42 (Ground 1A); 4-5, 8-9, 21, 26-27, 30-31, and 43 (Ground 1B); and 4-8, 10-12, 15, 17-20, 26-30, 32, 34 and 37-42 (Ground 2). Because the independent claims are obvious (§§II.B, VI.B), these dependent claims are also obvious. APPLE-1031, ¶¶47, 63, 89.

II. Hackborn-Westerman Renders Claims 1-3, 7, 10-11, 13, 15, 17, 20, 23-25, 29, 32-33, 35, 37-38, and 41-42 Obvious (Ground 1A)

Smith's arguments—as to the motivation to combine and the individual claim elements—are premised on a misunderstanding and/or mischaracterization of the art. APPLE-1031, ¶16.

A. Smith Fails to Undermine the Combination

Smith's arguments concerning motivation to combine are largely based on Smith's faulty premise that Hackborn's device need not distinguish swipes from taps

because it animates grass wallpaper responsive to both taps (it doesn't) and swipes (it does). APPLE-1031, ¶17.

1. Hackborn Must Distinguish Between Swipes and Taps

Contrary to Smith's assertion, Hackborn's device must distinguish between swipes and taps because the device responds differently to each. APPLE-1031, ¶27. Hackborn teaches animating grass wallpaper responsive to *swipes*, and in other examples, teaches switching the device's mode responsive to "*tapping* on the display screen a predetermined number of times within a predetermined time period." APPLE-1004, [0028]. A POSITA would have understood that icons are selected via *taps*, which Dr. Mahon confirmed. APPLE-1032, 113:11-14; APPLE-1031, ¶28; *see* APPLE-1004, [0004]-[0005]. Therefore, because Hackborn teaches its device reacts differently depending on the gesture (e.g., tap, swipe), Hackborn must distinguish them, refuting Smith's argument that the Petition fails to show Hackborn must "distinguish[] between taps and swipes on its wallpaper." APPLE-1031, ¶28. POR, 21, 24.

Thus, while silent regarding details on *how* distinguishing gestures would be implemented, Hackborn's device necessarily distinguishes them. APPLE-1032, 112:7-9 ("Hackborn discloses ... taps and swipes"), 113:10-15, 118:18-19:7,

121:21-122:8 (“*It doesn’t go beyond that teaching, as far as I know.*”); APPLE-1031, ¶29.

2. A POSITA Would Have Been Motivated to Incorporate Westerman’s Specific Teachings

Westerman provides “implementation details,” including “how to discern between different types of user inputs—namely, a tap or a swipe,” where Hackborn offers no such details despite having a need to distinguish between taps and swipes. Pet., §IV.A.3; APPLE-1003, ¶¶52-53; §II.A.1; APPLE-1031, ¶38. Smith ignores Hackborn’s silence on implementation details when alleging that the Petition lacks “any identification of an actual problem in Hackborn[.]” POR, 21-22. Smith’s allegation of “no need to distinguish between swipes and taps in the context of animating its grass” ignores the fact that Hackborn’s wallpaper reacts to swipes and not to taps, thus necessitating distinguishing between the gestures. APPLE-1004, [0028]; §§II.A.3-4; POR, 21-22. Moreover, assuming, *arguendo*, that Hackborn’s device could process a tap and display an appropriate response on its grass wallpaper (it cannot), as Smith alleges, Hackborn’s device would then necessarily need to distinguish between taps and swipes because these inputs would display differing animations on the wallpaper. APPLE-1031, ¶38.

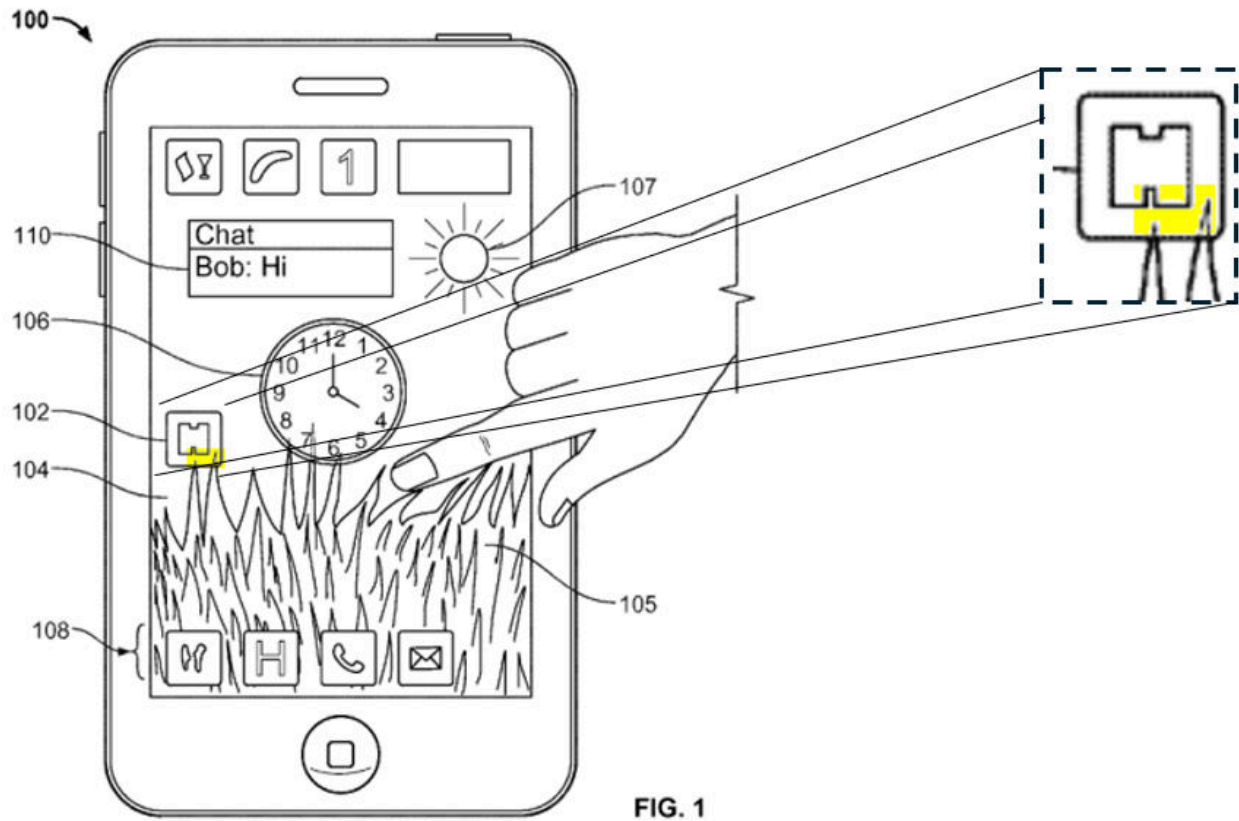
More, Smith alleges that Hackborn does not “suggest any need to perform additional, different functions based on directional swipes” without explaining how grass can be displayed to “sway as if contacted by the user’s finger during the swipe” (APPLE-1004, [0028]) unless the direction of the swipe is considered. POR, 22. Hackborn is clear that the “animating motion may include bending one or more graphical elements *in a direction of the dragging input.*” APPLE-1004, [0008]; APPLE-1031, ¶40. Thus, Hackborn-Westerman requires Westerman’s techniques.

Finally, Smith’s argument that Westerman’s use of a threshold determination is a “binary determination with a binary result,” incompatible with Hackborn, is irrelevant to Hackborn-Westerman. POR, 26; APPLE-1031, ¶41. In Hackborn-Westerman, Hackborn teaches how to determine the duration magnitude of an input (e.g., using a vector of position, direction, and speed), while Westerman teaches how to use duration to determine whether an input is a tap or swipe. APPLE-1004, [0033]; APPLE-1005, [0019]; APPLE-1003, ¶48; Pet., 11-12. If the input on the wallpaper is a swipe, the grass is animated responsive to the swipe; if the input is a tap, the wallpaper does not animate. Pet., 20-23; APPLE-1004, [0028]. Smith’s characterization of the supposed “goal of Westerman” (POR, 26) is unrelated to the combination’s straightforward reliance on Westerman—distinguishing taps and swipes. APPLE-1031, ¶41.

3. Hackborn Only Explicitly Teaches Animating Grass Wallpaper Responsive to Swipes

First, as Smith's expert Dr. Mahon acknowledged, while Hackborn discloses animating grass responsive to a *swipe*, Hackborn provides no other explicit gestures that cause grass movement. APPLE-1032, 72:3-11, 119:15-21. Rather, Hackborn's discussion of the grass wallpaper is limited to responding to *swipes*. APPLE-1004, [0028]; APPLE-1031, ¶19.

Second, animating grass based on taps introduces technical challenges Hackborn does not address. APPLE-1031, ¶20. Per FIG. 1 (below), grass can overlap icons. Hackborn states, "when an element of the wallpaper 104 overlaps ... with an icon 102 or gadget 106, the icon or gadget will receive priority for display so that it looks to the user like it is positioned closer to the user than is the wallpaper." APPLE-1004, [0029]-[0030], [0025]; APPLE-1031, ¶20.



APPLE-1004, FIG. 1 (annotated; zoomed-in).

Hypothetically, a tap on the overlapping content could either animate the grass or activate the icon. APPLE-1031, ¶21. However, because Hackborn does not teach a tap animates grass, it need not address a potential conflict caused by overlap. *Id.* This issue does not arise in Hackborn: a POSITA would have understood that a tap on an icon activates it (even if the background overlaps), as Dr. Mahon confirmed, and a swipe animates the background (even when the swipe passes over an icon). APPLE-1032, 113:11-14; APPLE-1004, [0028]; APPLE-1031, ¶21. Moreover, Hackborn does not contemplate this conflict despite showing grass overlapping an

icon (FIG. 1), suggesting that such a conflict does not occur in Hackborn's device. *Id.* That is, Hackborn has no need to discuss resolving the question as to whether a tap on the overlapping area would animate the grass or activate the icon because Hackborn not describe actions taken in response to taps on its grass wallpaper. APPLE-1004, [0028]; APPLE-1031, ¶21.

Smith's reliance on Hackborn's disclosure of "tapping on the display screen a predetermined number of times within a predetermined time period" to argue that Hackborn's grass is responsive to taps is misleading. POR, 24-25; APPLE-1031, ¶22. Hackborn mentions "tapping on the display screen ..." in "*[o]ther examples of live wallpaper*" and *other "[e]xamples of predetermined user inputs.*" APPLE-1004, [0028].

Smith's suggestion that multiple taps are required to switch modes in Hackborn does not address the shortcomings of Hackborn's device that prevent translating a tap into a response in the grass wallpaper. §II.A.4. That Hackborn offers multiple taps as an example input causing a mode switch instead further supports the position that Hackborn's wallpaper is *not* responsive to taps—singular or "a predetermined number of times"—and these tap inputs—are otherwise unsupported by Hackborn's device to correlate to a responsive change in the grass wallpaper (§II.A.4)—are reserved to perform other actions. APPLE-1031, ¶22.

4. Hackborn's System is Not Equipped to Animate Grass Responsive to Taps

Hackborn teaches that “blades of grass 105 displayed in the area of the screen swiped by the user are caused to bend or sway as *if contacted* by the user's finger during the *swipe*.” APPLE-1004, [0028]; *see* APPLE-1032, 78:7-8, 99:4-6. Contrasted to a swipe, with side-to-side motion that directly translates to side-to-side motion of grass (e.g., based on the speed and length of the swipe), a tap on Hackborn's device offers inadequate data from which to generate responsive movement on the grass wallpaper—e.g., lacking pressure associated with a tap that might offer otherwise data regarding how much the tapped grass should move, a corollary to a swipe's speed and/or length. APPLE-1031, ¶¶23-25. On typical touchscreen devices, determining pressure requires a pressure sensor, which Hackborn lacks, as Dr. Mahon confirms. APPLE-1004, [0060]-[0078]; APPLE-1032, 102:13-17; *see* APPLE-1005, [0070]-[0071]. Dr. Mahon further confirms that Hackborn uses a vector of three values (position, direction, speed) to animate the grass. APPLE-1032, 89:20-90:4; APPLE-1004, [0033]. Since Hackborn does not disclose a vector for storing pressure or a pressure sensor for obtaining pressure, Hackborn's device has no mechanism for determining how to animate grass responsive to a tap so a POSITA would have not understood it to do so. APPLE-1031, ¶¶25-26.

Further, offering no support from Hackborn, Smith argues that Hackborn “distinguishes between the intended result of different inputs by determining whether a given input contacts the wallpaper or an icon displayed above the wallpaper.” POR, 21-22. However, Smith’s position ignores the real possibility of a user input contacting a portion of the display where an icon overlaps with the wallpaper, described in §II.A.3 APPLE-1004, [0025], [0029]-[0030], FIG. 1; APPLE-1031, ¶39. In that scenario, if both the wallpaper and icon could be responsive to a tap, Hackborn would need a mechanism to resolve the potential conflict. APPLE-1031, ¶39. However, as discussed in §II.A.3, such a mechanism is not needed because no conflict exists. *Id.*

5. Both Gesture and Location are Needed to Determine a User’s Selection

Contrary to Smith’s arguments regarding using location alone (POR, 10), a POSITA would have understood that both the *gesture* and *location* determine the “target of a user’s selection or touch.” APPLE-1031, ¶30. For example, swiping across an icon would not activate the icon, so location alone does not determine the target. *Id.*

Relatedly, Smith also incorrectly asserts that “Hackborn does not disclose two different functions being initiated by two different inputs in the same place.” POR, 10; APPLE-1031, ¶31. Dr. Mahon admits that “a tap in certain cases would be

consistent with the disclosures in Hackborn for launching applications,” and “the user contacting the grass during that swipe [] would cause the grass to be animated in a realistic manner consistent with that swipe.” APPLE-1032, 99:4-6; 113:11-14. Additionally, Hackborn discloses that icons and gadgets can be moved on the display by moving gesture inputs. APPLE-1004, [0034]; *see* APPLE-1031, ¶31. Therefore, a POSITA would have understood that a tap at a location launches a corresponding application while a swipe over that same location animates the wallpaper. *Id.*

6. Smith Incorrectly Characterizes Westerman and Hackborn-Westerman

(a) Westerman’s Teachings are Broad

Contrary to Smith’s characterization of Westerman as limited to virtual keyboards (POR, 11), Westerman broadly describes a multi-touch interface “adapted and/or programmed to detect and process swipe gesture input.” APPLE-1005, [0025]. For example, Westerman explains “detecting a swipe gesture if [a] displacement exceeds a predetermined threshold,” and “[i]f the displacement does not exceed the threshold, the input can be interpreted as a conventional tap.” APPLE-1005, [0019]. Therefore, Westerman applies to multi-touch interfaces and is not limited to virtual keyboards. APPLE-1031, ¶32. Indeed, the Petitioner offered a combination of a device with live wallpaper, per Hackborn, with Westerman’s broad disclosure of distinguishing between tap and swipe gestures. Pet, 10; APPLE-

1003, ¶52. Westerman’s summary confirms its broad applicability. APPLE-1005, [0019]; APPLE-1031, ¶¶33-34.

(b) Westerman Determines Swipes Using Thresholds

Smith improperly limits Westerman’s teachings as applying only to taps and swipes in the same area. POR, 12; APPLE-1031, ¶35. However, nothing in Westerman’s disclosure limits its gesture-differentiating methods to a particular screen area. APPLE-1005, *generally*; APPLE-1031, ¶35 (citing APPLE-1005, [0019]).

Smith further mischaracterizes Westerman as “not suggest[ing] distinguishing between taps and swipes where gestures are instead distinguished spatially—i.e., where Westerman’s approach is unnecessary to determine a user’s intended input.” POR, 13; APPLE-1031, ¶36. Westerman provides no example where its approach is “unnecessary,” instead describing detecting swipes using thresholds, as explained in §II.A.6(b). *Id.*; APPLE-1005, [0019].

(c) Petitioner Does Not Bodily Incorporate Westerman

Smith’s arguments about alleged lacking motivation to combine due to Westerman’s discussion of virtual keyboards are a mere distraction to the combination’s strength. The Petition argues that, “[t]o the extent Hackborn lacks details on how to distinguish taps from swipe inputs,” a POSITA would have

naturally looked to Westerman. Pet., 12. Because “Hackborn explains that its device can register both swipes and taps (APPLE-1004, [0028]), a POSITA would have found it obvious to implement Hackborn with methods such as those disclosed or rendered obvious by Westerman for distinguishing between tap and swipe gestures (e.g., using ‘predetermined thresholds’).” Pet., 13. Smith’s characterization of Westerman as “focuse[d] on differentiating ‘tap’ versus ‘swipe’ inputs solely on a virtual keyboard” (POR, 23) suggests bodily incorporation of Westerman—and, specifically, virtual keyboards—into Hackborn, which the Petition did not do. The Petition relies on a combination of *specific teachings* of references. *E.g.*, Pet., 12-14; APPLE-1031, ¶37.

B. Claims 1 and 23

“Hackborn explains that touch input received by its device may be used to provide ‘*a vector representing the position, direction, and speed of the user’s dragging motion,*’ which ‘may then be used by the process executing the wallpaper 104’” (Pet., 11 (quoting APPLE-1004, [0033]) “to generate an animation that makes the grass blades look as if the finger is actually contacting them as it drags across the screen.” APPLE-1004, [0028]. Thus, Hackborn contradicts Smith’s assertion that “Hackborn’s only disclosed criteria for causing a change to the grass is contact with a finger, not path length or velocity.” *See* POR, 27-28; APPLE-1031, ¶42.

Similarly, Hackborn’s explicit disclosure of composite wallpaper—including the grass and images from social media websites—directly contradicts Smith’s assertion that “Petitioner manufactures these composites,” without explanation. APPLE-1004, [0050]; APPLE-1003, ¶¶70-73; POR, 29-30. Hackborn teaches “live wallpaper can include a *combination* of the described wallpaper examples,” including images from social networking sites. APPLE-1004, [0050]; APPLE-1031, ¶43.

C. Claims 7 and 29

As discussed in §§II.A.3-4, Hackborn’s device animates grass responsive to swipes, not taps. APPLE-1004, [0028]; §§II.A.3-4. Therefore, when a first input is a tap, the appearance of the background is maintained (i.e., remains unchanged). APPLE-1003, ¶¶77-78; APPLE-1031, ¶44.

D. Claims 17, 37, and 38

As discussed in §II.B, Hackborn describes wallpaper that includes combined components (including animations and social media feeds). APPLE-1004, [0050]; §II.B; APPLE-1031, ¶45. Hackborn offers reasons for creating a composite wallpaper, explaining that “change[s] in appearance may provide updated information, altered aesthetics, a change of theme, environment or pace, or a diversion from the status quo.” APPLE-1004, [0026]; *see* POR, 33-34.

The change of the background's appearance includes grass swaying and "any number of other images (e.g., photographs from the camera; social media images)." Pet., §IV.A.4[1.1]. Smith's contention that "the scrolling images in the social media feed" cannot meet the claim limitations fails to acknowledge that "the at least some of a plurality of images" includes both the swaying grass (which moves in response to dragging/swiping contact) and the social media feed (which scrolls automatically as new entries arrive). POR, 34; APPLE-1003, ¶¶86-87; APPLE-1031, ¶46.

III. Hackborn-Westerman-Townsend Renders Claims 4-5, 8-9, 21-22, 26-27, 30-31, and 43 Obvious (Ground 1B)

A. Smith Misunderstands or Mischaracterizes Townsend in Hackborn-Westerman-Townsend

Smith ignores Townsend's disclosure of "simulat[ing] real-world behavior of application objects," attempting to limit Townsend's teaching.

First, Smith selectively quotes Townsend while omitting significant teachings. For instance, Smith limits "Townsend's inertia system" as "receiv[ing] manipulations that only describe the movement of an object based on the movement of contacts with the multi-touch hardware" (POR, 36 (quoting APPLE-1006, [0016])), omitting Townsend's broader explanation of its inertia system: "to move naturally, objects should also exhibit physical characteristics such as elasticity and deceleration," and "the inertia system actually generates the events based on a simulation of the behavior of the objects." APPLE-1006, [0016]. Thus, Townsend's

goal is clear: simulating the natural movement of objects, including elasticity and deceleration. APPLE-1006, [0016]; APPLE-1031, ¶¶48-49. A POSITA would have understood such deceleration can occur because of simulated friction between the object and air, and thus describes friction in its simulation of real-world behavior. APPLE-1031, ¶49.

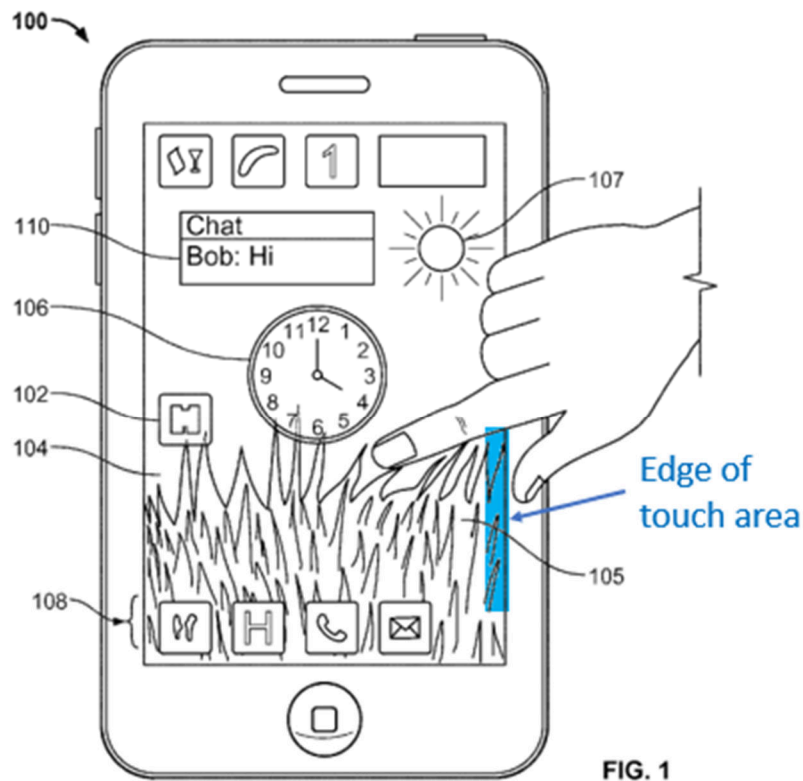
Second, Smith mischaracterizes Townsend as limited to “movement of objects across a screen and colliding into each other,” thus incorrectly concluding that Townsend’s teaching is inapplicable to the “swaying, anchored grass of Hackborn.” POR, 16, 36; APPLE-1031, ¶50. Rather, Townsend teaches that “initialization information may also specify a *pivot point* of the object.” APPLE-1006, [0022]. A POSITA would have understood that a pivot point is relevant to fixed objects (e.g., grass). APPLE-1031, ¶50. Thus, a POSITA would have understood Townsend’s broader applicability. *Id.*

Further, Smith’s argument that a “POSITA would see little relevance of Townsend to Hackborn’s grass animation” due to Townsend’s alleged shortcomings relating to flexible objects and Hackborn’s lack of “freely moving objects” is again based on mischaracterization of Townsend as limited to freely moving objects. POR, 37; APPLE-1031, ¶51.

B. Claims 5, 8, 27, and 30

Smith's challenge of these claims is limited to when decay occurs. POR, 39-40.

In Hackborn-Westerman-Townsend, when grass is at the outer edge of the touch screen (as illustrated below) and the user is swiping left-to-right, decay begins after detection of a cessation of the first contact. APPLE-1003, ¶121; APPLE-1031, ¶¶52-53.

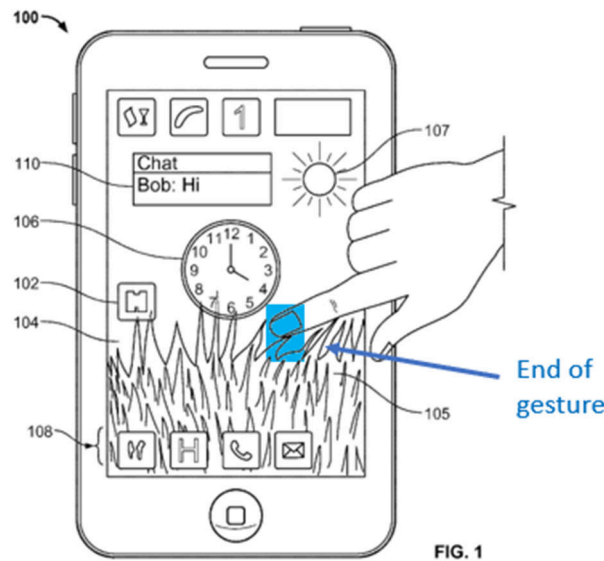


APPLE-1004, FIG. 1 (annotated)

Similarly, since the end of contact with the screen and with the blade of grass occurs at the same time, when the touch ends as the user's finger is removed from a

blade of grass, decay will occur upon removal of the finger, as illustrated below.

APPLE-1031, ¶54.



APPLE-1004, FIG. 1 (annotated).

Further, Hackborn states that “the blades of grass 105 displayed in the area of the screen swiped by the user are caused to bend or *sway* as if contacted by the user's finger during the swipe.” APPLE-1004, [0028]. A POSITA would have understood that swaying means moving “back and forth.” APPLE-1031, ¶55 (citing APPLE-1033, 3). Smith ignores such swaying, asserting that “Hackborn does not discuss the animation motion that occurs after the dragging finger is no longer touching the grass,” which would continue after the finger is no longer touching the grass. APPLE-1004, [0028]; POR, 39; APPLE-1031, ¶55.

Additionally, as discussed in §III.A, Townsend is not limited to movement of

whole objects, so Smith's arguments that rest on this flawed assumption are incorrect. APPLE-1031, ¶¶56-57; POR, 38-41.

More, claims 5 and 27 require that the decay occur "following detection of a cessation of the first contact," while claim 8 and 30 require that decay occurs "in response to detecting a cessation of the first input." A POSITA would have understood that, even for blades of grass not at the edge of the touch, in some instances, swaying with decay would continue following contact cessation, even when the decay does not immediately follow cessation, thus rendering obvious "decays following detection of a cessation of the first contact." APPLE-1031, ¶58.

C. Claims 9, 21, 31, and 43

As discussed in §III.A, Townsend simulates friction. For example, Townsend explains, "to move naturally, objects should also exhibit physical characteristics such as elasticity and deceleration" and "slow[] down over time as the object decelerates." APPLE-1006, [0016]. To "define the elasticity of an object," Townsend describes a "friction coefficient" that "determine[s] how an object decelerates." APPLE-1006, [0041]. A POSITA would have understood a decelerating object (e.g., due to friction) will come to rest. APPLE-1031, ¶59. Therefore, Townsend's disclosures of deceleration and friction contradict Smith's assertion that "Townsend's primary function is to continue moving an object." *Id.*; POR, 42.

Hackborn describes swaying grass. APPLE-1004, [0028]. A POSITA would have understood that application of an inertial system with elasticity and friction (e.g., Townsend’s “inertia system [that] provides more realistic movement for application objects” and frictional deceleration) to Hackborn’s swaying grass would, in some instances, result in the grass returning (reverting) to its original position once swaying completes. Pet., §IV.B.2; APPLE-1004, [0028]; APPLE-1006, Abstract, [0016], [0041]; APPLE-1031, ¶60.

Further, a POSITA would have understood or found obvious that finite options exist for the grass’s final position: the grass ending at its starting position, a previously encountered position, or a new position. APPLE-1031, ¶61. Therefore, sometimes the grass would not end at its starting position but rather at a previously encountered location. *Id.* Thus, the system reverts to an image other than its original image. *Id.*

D. Claim 22

Claim 22 was inadvertently listed in Ground 1A instead of 1B, which included claim 21 from which it depends. *Corephotonics, Ltd. v. Apple Inc.*, 2023, 84 F.4th 990, 1010 (Fed. Cir. 2023) (finding it appropriate for petitioner to correct a mistake from the petition). APPLE-1031, ¶62.

**IV. Hackborn-Westerman-Jablonski renders obvious claim 16
(Ground 1C)**

A POSITA would have been motivated and found obvious combining Hackborn-Westerman with Jablonski since it was well-known that “[w]allpaper images are usually included as part of the computer’s operating system.” APPLE-1008, 1:34-40; POR, 46; Pet., §§IV.C.1-3; APPLE-1003, ¶¶131-134; APPLE-1031, ¶64.

V. Hackborn-Westerman-Jobs renders obvious claims 18-19 and 39-40 (Ground 1D)

A. Smith’s argument concerning motivation to combine mischaracterizes Jobs

HWJD includes a lock screen with a live wallpaper, “provid[ing] updated information, altered aesthetics, a change of theme, environment or pace, or a diversion from the status quo,” per Hackborn. Pet., 59 (citing APPLE-1004, [0026]); APPLE-1003, ¶140; APPLE-1031, ¶¶64-65. Thus, as Smith acknowledges, “the device maintains the user-interface lock state if the detected contact does not correspond to the predefined gesture,” “sav[ing] battery power by ensuring that the device is not accidentally awakened.” APPLE-1009, [0177]; POR, 47.

Smith alleges Hackborn-Westerman-Jobs is “rooted in hindsight.” POR, 46. However, Hackborn broadly teaches “wallpaper need not be a static image, but can be active and may execute code so as to produce interesting and compelling user interface examples.” APPLE-1004, [0034]. Therefore, Hackborn-Westerman-Jobs

offers a straightforward application of Hackborn’s express teaching, not hindsight. APPLE-1031, ¶66.

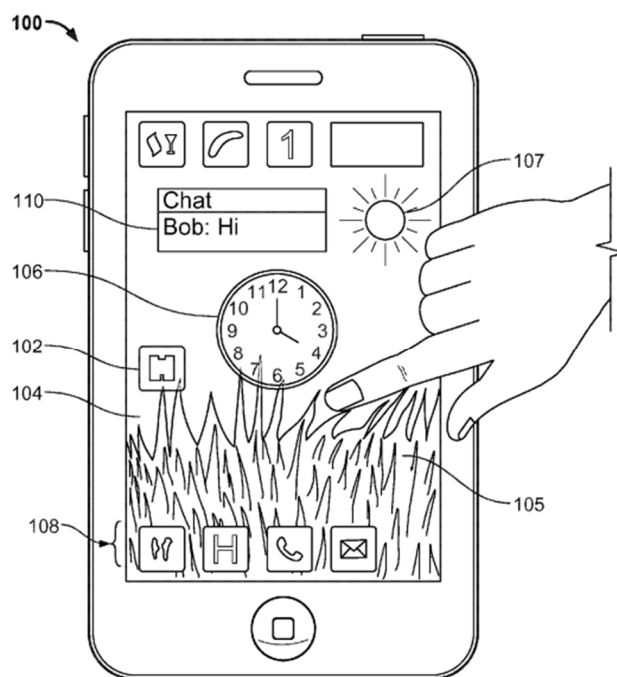
Smith further states that live wallpaper “permits unintended or unauthorized user input and processor activity that can drain battery or trigger unnecessary actions.” POR, 47. However, as Smith also notes, “live wallpaper is implemented in a distinct process.” POR, 58. A POSITA would have understood that executing the live wallpaper “distinct process” consumes battery regardless of the screen type. APPLE-1031, ¶67. A user selecting live wallpaper instead of static wallpaper benefits from “updated information, altered aesthetics, a change of theme, environment or pace, or a diversion from the status quo” in exchange for additional battery use. *Id.*; APPLE-1004, [0026]. The lock screen reduces battery use by performing its primary function: preventing unintentional transition to the home screen. APPLE-1009, [0177]; APPLE-1031, ¶67.

As Smith notes, a lock screen also “prevent[s] ‘unintentional or unauthorized use of the device ... or activation or deactivation of functions.’” POR, 47 (internal citations omitted). Using live wallpaper does not alter this benefit since functions other than interacting with the wallpaper and unlocking the device are unavailable on the lock screen. APPLE-1031, ¶68.

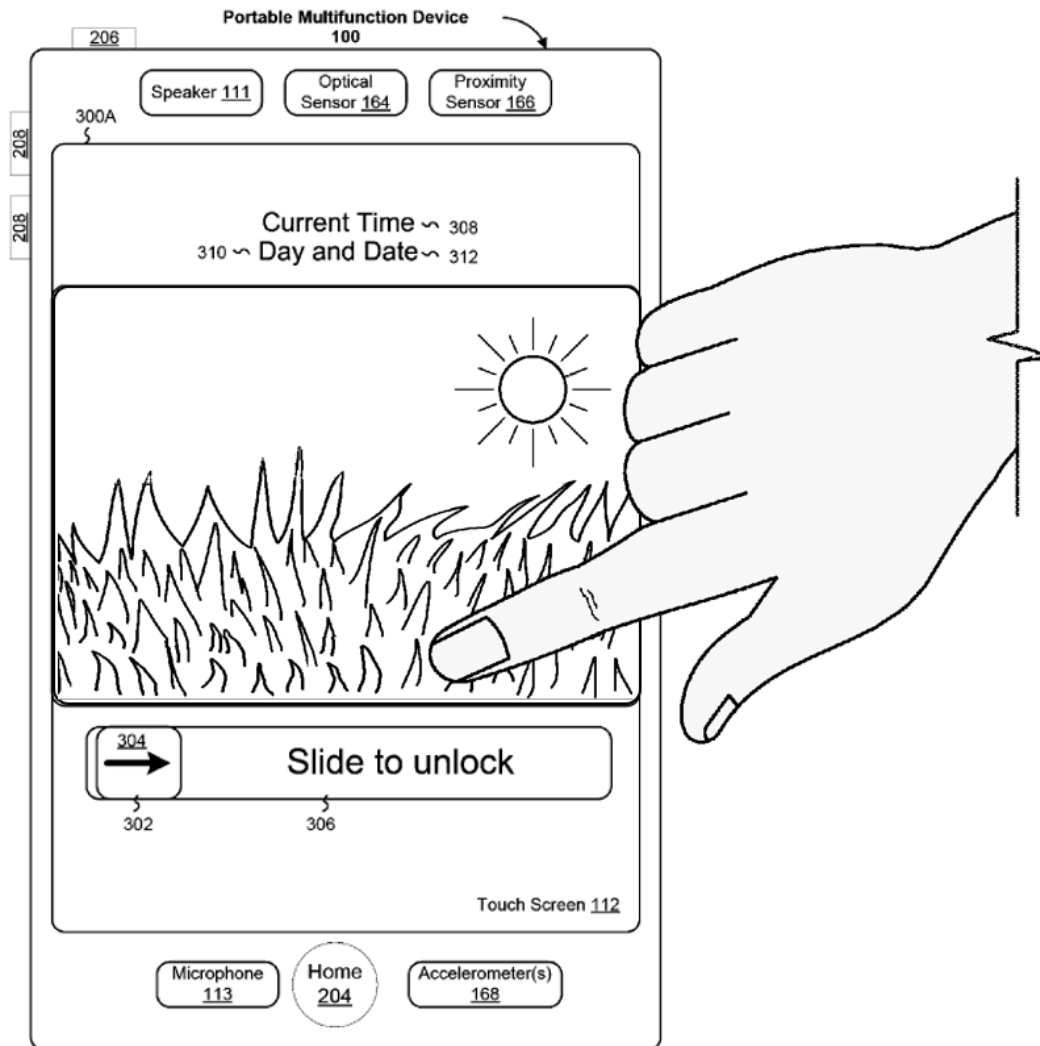
B. Claims 18 and 39

Smith’s arguments concerning claims 18 and 39 are based on an overly strict interpretation of the Petition. Ground 1A’s discussion of the display of foreground objects, as it relates to [1.h], offers non-limiting exemplary foreground objects in HWJD. Pet., 18-19; APPLE-1031, ¶69. Contrary to Smith’s assertion (POR, 48), Petitioner clearly explains that, in HWJD, example foreground objects include the “unlock image.” Pet., 59. APPLE-1031, ¶69.

Additionally, HWJD’s user interface (UI) includes a home screen and a lock screen. Per Hackborn, HWJD includes “a home screen [that] includes a background, which may ... include an image in the form of wallpaper.” Pet., §IV.A.4[1.g] (citing APPLE-1004, [0025]). “HWJD has a lock screen as a first interface and the lock screen includes a wallpaper, per Jobs, which is ‘live,’ per Hackborn.” Pet., §IV.D.3[18], (internal citations omitted). Since HWJD’s UI (*first user interface*) includes two “screens” (home/lock screens), the Petition’s treatment of claims 1 and 18 is consistent. APPLE-1031, ¶¶69-71. Thus, HWJD’s UI, including both home and lock screens, renders obvious “the first user interface includes a lock screen.” *Id.*



HWJD Home Screen. APPLE-1003, ¶47.



HWJD Lock Screen. APPLE-1003, ¶40.

Moreover, the HWJD includes a lock screen having a wallpaper, per Hackborn. Pet., 59. Since Hackborn teaches that its wallpaper is in the background (see APPLE-1004, FIG. 2), a POSITA would have understood that the wallpaper in HWJD is similarly in the background relative to the other displayed content, per Hackborn. APPLE-1031, ¶72; APPLE-1032, 61:15-64:4.

C. Claims 19 and 40

As discussed in §V.B, Smith’s argument that Hackborn-Westerman-Jobs fails to disclose a “background with an appearance” and “one or more foreground objects” (POR, 50-51) willfully ignores the combination’s background with an appearance (live wallpaper) and the foreground objects of HWJD. Pet., 59; APPLE-1031, ¶73.

VI. Hackborn2-Westerman-Jobs Renders Obvious claims 1, 4-8, 10-12, 15, 17-20, 23, 26-30, 32, 34, and 37-42 (Ground 2)

A. A POSITA would have been motivated to combine Hackborn2-Westerman-Jobs

1. Jobs provides an obvious solution to Hackborn’s obscured messages

Hackborn lists multiple components that can be included in live wallpaper, including animated grass and social media content, explaining it “can include a combination of the described wallpaper examples.” APPLE-1004, [0028], [0045]-[0046], [0050], FIG. 6 Thus, a POSITA would have found obvious composite wallpaper that includes social media feeds and animated grass. APPLE-1003, §IV.D.2; APPLE-1031, ¶74. In Hackborn2-Westerman-Jobs, a swipe input scrolls back to display content (e.g., social media posts) that had automatically scrolled off the display. Pet., 68-71; APPLE-1031, ¶74.

While Smith alleges that “Hackborn already provides a way for a user to view past posts—i.e., by opening a social media application with which posts are

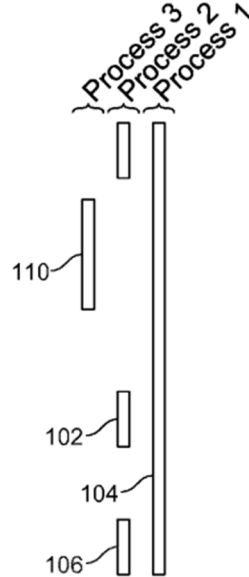
associated” (POR, 54), as Dr. Cockburn explains, requiring that a user open an application to view messages that had scrolled off the display could result in “an infuriating experience,” “[w]hereas a quick glance [in a live feed] might tell them if an important message ... has arrived.” EX2007, 100:1-11. Dr. Cockburn’s testimony clarifies the Petition’s motivation—“to provide a way to view older posts ... [that] were moved downward and less (or not visible)” and to “view[] the images/posts at his/her leisure” through manual scrolling. Pet., 66, 71; EX2007, 101:15-19. Jobs’s manual scrolling techniques were well known by the Critical Date. Pet., 66-67. Since older posts would have been automatically scrolled off the wallpaper’s feed, a POSITA would have found it obvious to use a well-known technique to return those posts into view. Pet., 66-71; APPLE-1003, ¶¶148-155; APPLE-1031, ¶75. Indeed, “Jobs describes precisely the same manual scrolling of messages” that would address the otherwise “infuriating experience,” juxtaposing the general obviousness of manual scrolling with “the specific context of Hackborn’s wallpaper.” Pet., 67; APPLE-1009, [0243], FIG. 6A; *see* POR, 55.

Smith asserts, since a user could open an application to view posts, scrolling would be unnecessary (POR, 54-55), apparently contending that, if one mechanism exists to accomplish a task, a UI should provide no alternate mechanism, regardless of how much effort an alternate mechanism would save. APPLE-1031, ¶76. Smith’s reasoning belies common sense and reality, contradicting long-standing UI

principles. *Id.* (describing examples of methods for achieving the same outcome). Hackborn2-Westerman-Jobs offers a convenient and intuitive solution for quickly viewing a post that has automatically scrolled completely or partially off the display instead of the more cumbersome requirement of opening a dedicated application. APPLE-1031, ¶76.

2. Hackborn’s wallpaper is in the background

Hackborn explains that “a home page generally has a back-most layer ... and acts as a background.” APPLE-1004, [0005]. “[O]pen applications may be shown in a visual layer that is even farther in front of the layer for the icons.” APPLE-1004, [0025], [0047]. Hackborn explicitly teaches that its device can have more than two visual display layers. APPLE-1004, [0029]-[0031], FIG. 2; APPLE-1031, ¶77; APPLE-1032, 64:5-15.



APPLE-1004, FIG. 2.

Smith highlights Hackborn’s disclosure that “display planes may be adjusted based on certain inputs or information received,” arguing that adjusting the display plane of a wallpaper may “cause it to assume a more prominent display position” so that the wallpaper was moved “‘upward’ to a plane above that of the icons.” POR, 56 (quoting APPLE-1004, [0048]). This argument is flawed for several reasons. First, Smith’s argument assumes that Hackborn *requires* this movement of wallpaper, which Hackborn does not. APPLE-1004, [0048] (using the permissive language “may”). The example scenarios where the Hackborn’s wallpaper assumes a more prominent display generally involve the user *actively interacting with its content*, e.g., by typing a response or launching an application. *Id.*; APPLE-1031,

¶78. Second, Smith’s argument assumes that the wallpaper necessarily moves to the forward-most plane (i.e., in front of icons), but Hackborn does not require this. *Id.*, APPLE-1031, ¶78 (describing examples where the wallpaper moves layers but remains in the background relative to foreground objects).

3. Smith’s arguments concerning the alleged technical limitations of Hackborn’s system are flawed

Computing systems typically include many independently executing processes that can communicate with other processes using well-known techniques. APPLE-1031, ¶79. While Smith asserts that “Petitioner fails to address the technical limitations of Hackborn’s system that would have made manual scrolling unworkable for Hackborn’s wallpaper” (POR, 58), no such limitations or “technical complexities” exist. APPLE-1031, ¶79. For example, a POSITA would have understood that, when UI elements needed to communicate, or that multiple UI elements required touch-related data, well-known techniques were available. *Id.* Moreover, Smith offers no concrete support for its allegation that Hackborn’s distinct process for implementing the wallpaper would need significant modification. *See* POR, 58-59.

**4. Westerman’s teachings are clearly related to
Hackborn and Jobs**

As discussed regarding Ground 1, “a POSITA reviewing Hackborn would have looked to Westerman for implementation details for how to discern between different types of user inputs (e.g., tap or swipe).” Pet., 63. As discussed for Ground 1A, a POSITA would have been motivated to combine the teachings of Hackborn and Westerman. §II.A; APPLE-1031, ¶80. A POSITA would have further found obvious the use of manual scrolling, per Jobs, to permit a user to view content that had automatically scrolled off the display. §VI.A.1; Pet., 66-72; APPLE-1031, ¶80.

Since Hackborn discloses the receipt of both swipes and taps, it must distinguish between them. §II.A.1. More, as Smith acknowledges, Jobs teaches receipt of taps and swipes. POR, 60. Jobs explicitly requires distinguishing taps from swipes since “a swipe gesture that sweeps over an application icon may not select the corresponding application when the gesture corresponding to selection is a tap.” APPLE-1009, [0164]. Jobs contradicts Smith’s contention that “Jobs teaches the receipt of ‘taps’ but distinguishes them spatially rather than via thresholds.” POR, 60. In Jobs, a tap and swipe can occur at the same location (on an application icon) causing different actions, so spatial distinctions are not sufficient. APPLE-1009, [0164]; APPLE-1031; ¶81. Given Hackborn’s silence regarding implementation

details, a POSITA would have looked to Westerman. APPLE-1031, ¶81; APPLE-1003, §§VII.A.3, VII.E.1.

B. Claims 1 and 23

H2WJD determines whether a gesture is a swipe or tap (§II.A.1) and performs a respective action in a particular context. Pet., §§IV.E.1-2; APPLE-1009, [0164], [0243]; APPLE-1031, ¶82. Jobs relies on the distinction between a tap and swipe since, e.g., a swipe scrolls messages and a tap does not. APPLE-1009, [0243]; APPLE-1031, ¶82. Contrary to Smith’s assertion that “Westerman’s binary distinction between a ‘tap’ and a ‘swipe’ has no role in Jobs’ vertical scrolling” because “Jobs does not rely on the distinction between a swipe and a tap to initiate its vertical scroll” (POR, 62-63), gesture determination is required since swipes, not taps, cause scrolling. APPLE-1031, ¶82. Therefore, since swipes are distinguished based on a magnitude exceeding a threshold, the dynamic changes of appearance of the background (feed scrolling) occurs when the threshold is exceeded (i.e., swipe detected). APPLE-1003, ¶¶52-53; APPLE-1031, ¶¶82-83.

C. Claims 7 and 29

As discussed regarding Ground 1A, H2WJD scrolls the feed responsive to a swipe, not a tap. See §§II.A.3-4; Pet., 79-80. Indeed, “Hackborn teaches the use of live wallpapers that can be caused to change their appearance *in response to a user input (e.g., swipe)*.” APPLE-1003, ¶145. However, a tap, differentiated from a swipe

in H2WJD using thresholds, “does not suggest the same scrolling output” on the wallpaper feed. APPLE-1003, ¶176; APPLE-1031, ¶84; *see* POR, 63.

While Hackborn explains that selection of the wallpaper *may* “cause the wallpaper or portion thereof to assume a more prominent display position,” Hackborn’s language is permissive (“may”) and not required. APPLE-1004, [0048]. Moreover, Hackborn does not teach that the wallpaper’s appearance changes, only that it may “assume a more prominent display position or status,” suggesting that it may move to a different display layer. *Id.*; APPLE-1031, ¶85. Smith’s reliance on Westerman’s and Jobs’s teachings about functions responsive to a tap are irrelevant because H2WJD’s response to a tap is based on Hackborn, not on portions of the secondary references not used in the combination. APPLE-1031, ¶85.

D. Claims 18-19 and 39-40

See §V; APPLE-1031, ¶86.

E. Claim 28

In H2WJD, the dynamic change in background appearance is independent of the location corresponding to the background. Pet., §§IV.E.5, IV.E.20; APPLE-1003, ¶¶175, 204. For example, Jobs states that finger movement “on the touch screen display” causes the “list of items displayed on the touch screen display [to] scroll[.]” APPLE-1009, [1137]-[1138]. Thus, a POSITA would have understood that

the scrolling gesture can occur at any location on the wallpaper. APPLE-1009, [1137]-[1138]; APPLE-1003, ¶¶175, 204; APPLE-1031, ¶87.

Smith mischaracterizes Petitioner’s position, stating that “Petitioner admits [the gesture] occurs ‘within the message list’ that represents the dynamic change of the background.” POR, 66. Petitioner made no such admission, stating instead that, while a gesture in the message list is an option, the gesture can occur *at any location* on the wallpaper and is thus independent of the location that corresponds to the background. Pet., §IV.E.5[6]; APPLE-1003, ¶175; APPLE-1031, ¶88.

VII. CONCLUSION

Petitioner respectfully requests that the Board find the Challenged Claims unpatentable.

Respectfully submitted,

Date: August 4, 2025

/Jennifer J. Huang/

W. Karl Renner, Reg. No. 41,265

Jennifer J. Huang, Reg. No. 64,297

David Holt, Reg. No. 65,161

Fish & Richardson P.C.

60 South Sixth Street, Suite 3200

Minneapolis, MN 55402

T: 202-783-5070

F: 877-769-7945

Counsel for Petitioner

CERTIFICATION UNDER 37 C.F.R. § 42.24

Under the provisions of 37 CFR § 42.24(d), the undersigned hereby certifies that the word count for the foregoing Petitioner Reply to Patent Owner Response totals 5,597 words, which is less than the 5,600 allowed under 37 CFR § 42.24(c)(1).

Respectfully submitted,

Date: August 4, 2025

/Jennifer J. Huang/

W. Karl Renner, Reg. No. 41,265
Jennifer J. Huang, Reg. No. 64,297
David Holt, Reg. No. 65,161
Fish & Richardson P.C.
60 South Sixth Street, Suite 3200
Minneapolis, MN 55402
T: 202-783-5070
F: 877-769-7945

Counsel for Petitioner

CERTIFICATE OF SERVICE

Pursuant to 37 CFR § 42.6(e)(4), the undersigned certifies that on August 4, 2025, a complete and entire copy of this Petitioner's Reply to Patent Owner's Response was provided by email to Patent Owner by serving the email correspondence addresses of record as follows:

Eagle H. Robinson, Reg. No. 61,361
Daniel S. Leventhal, Reg. No. 59,576
Chad Wallis, Reg. No. 78,733
John Poulos, Reg. No. 72,551
Jaime Stark, Reg. No. 79,434
NORTON ROSE FULBRIGHT US LLP
98 San Jacinto Blvd., Ste. 1100
Austin, TX 78701

eagle.robinson@nortonrosefulbright.com
daniel.leventhal@nortonrosefulbright.com
chad.wallis@nortonrosefulbright.com
john.poulos@nortonrosefulbright.com
jaime.stark@nortonrosefulbright.com

/Crena Pacheco/
Crena Pacheco
Fish & Richardson P.C.
60 South Sixth Street, Suite 3200
Minneapolis, MN 55402
pacheco@fr.com