

Apple Inc. (Petitioner)
v.
Smith Interface Technologies, LLC (Patent
Owner)
Petitioner Demonstratives

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Overview of the Instituted Grounds

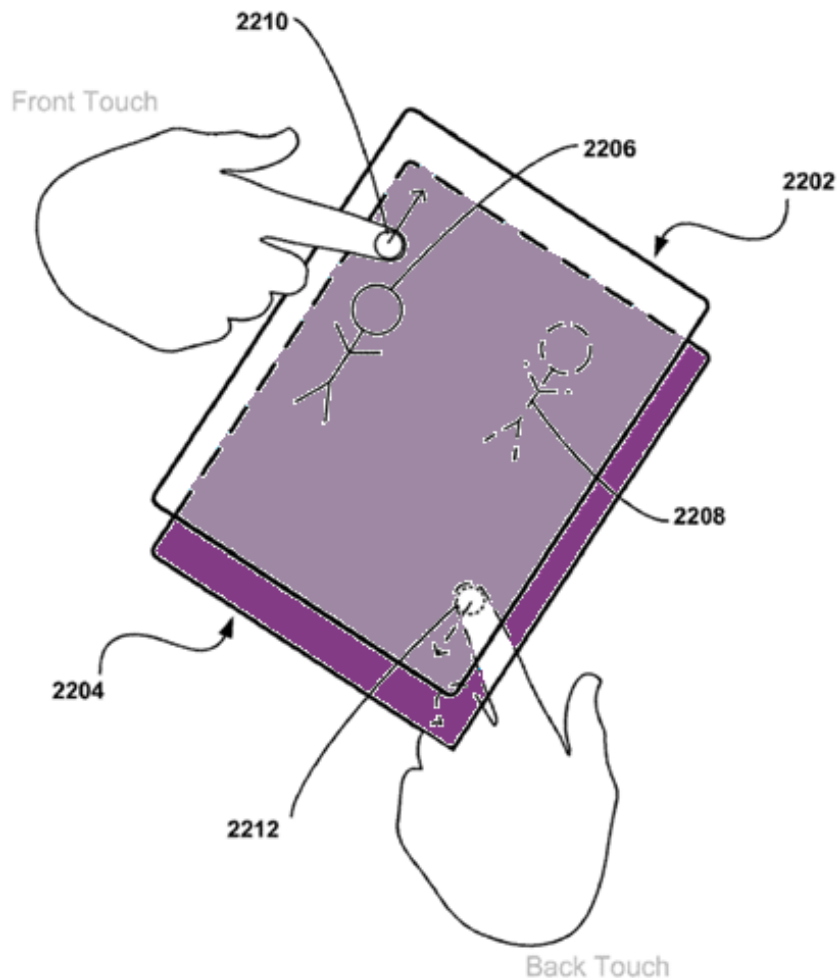
Overview of the Instituted Grounds

Ground	'580 Patent Claims	Basis for Rejection
1A	1 -4, 6-10, 17, 19, 22 -26, 28-30, 32-33, 36, 41, 58 -62, 64-65, 67, 69-70, 73, 77, 82-83	103: Ramos Paper, Ramos Video, Ording
1B	48	103: Ramos Paper, Ramos Video, Ording, Hayward

Pet., 2; see Inst. Dec., 7, 40

Background Info: The '580 Patent and Prior Art

The '580 Patent



As shown, user interface **2200** is comprised of two layers, a front layer **2202** and a back layer **2204**. These layers are depicted in a staggered arrangement, to illustrate the depth; it should be noted that in various embodiments, the layers would be aligned. Object **2206** exists in the front layer, while object **2208** exists in the back layer. In various embodiments, a user may interact with the layers separately.

In various embodiments, virtual display layers may be given the appearance of depth through the use of **3D depth cues**. In the context of the present description, a 3D depth cue refers to an effect, manipulation, transformation, animation, or operation which gives a visual indication of simulated depth. For example, in one embodiment, a 3D depth cue may be a blur operation, such that layers located at successively greater depths may appear blurrier than those closer to the user. In various embodiments, one or more 3D depth cues may be used to give the appearance of depth to one or more virtual display layers. In one embodiment, different 3D depth cues may be used for different virtual display layers. In another embodiment, 3D depth cues may be used in conjunction with a 3D layered user interface implemented in a layered display device, to enhance the layered appearance.

Inst. Dec., 3; APPLE-1001, 67:45-51,
68:25-40, FIG. 22 (annotated)

6

The '580 Patent: Touch States

In various embodiments, the contact pressure level may be represented by a touch state. In the context of the present description, a touch state refers to a predefined subset of the range of measurable contact pressures. For example, in one embodiment, contact pressure levels may be represented as one of four predefined touch states: no touch, light touch, medium touch, and heavy touch. As an option, the lowest touch state may require some form of proximity. In some embodiments, the user may be able to specify how the measurable range of contact pressures is partitioned across a predefined number of touch states. In one embodiment, the

APPLE-1001, 17:22-32

In the context of the present description, touch event attributes refer to one or more measurable aspects of the user interaction which resulted in a touch event. The measurable aspects may include, but are not limited to, touch state, contact area, contact point, contact pressure level, pressure uncertainty, touch uncertainty, and/or any other measurable aspect of user interaction.

APPLE-1001, 52:57-63

Four “touch states” (from lowest to highest pressure level)

1. No touch
2. Light touch
3. Medium touch
4. Heavy touch

that the conductive lines are perpendicular. When an implement of interaction is placed over the conducting lines, there is a change in capacitance. A high frequency signal may be applied to pairs of conducting lines; the resulting current that passes between the conducting lines is proportional to the capacitance between the conducting lines. This current may be used to sense the touch or proximity of an implement of interaction. A capacitive touch sensor may be capable of

APPLE-1001, 36:31-38

Exemplary Claim of the '580 Patent

1. An apparatus, comprising:
 - at least one non-transitory memory; a touch screen; a camera; and
 - one or more processors in communication with the at least one non-transitory memory, the touch screen, and the camera, wherein the one or more processors execute instructions stored in the non-transitory memory to cause the apparatus to:
 - display, via the touch screen, a first virtual display layer including contents;
 - display, via the touch screen, at least one user interface element;
 - detect, via the touch screen, at least a portion of touch on the least one user interface element;
 - when an aspect of the touch is detected to surpass a threshold, display, via the touch screen, a plurality of markings in a second virtual display layer that appears to have a lesser depth than the first virtual display layer, where at least a portion of the second virtual display layer is at least partially translucent so that at least a portion of the contents of the first virtual display layer is visible through the at least portion of the second virtual display layer;
 - detect, via the touch screen, a touch movement on at least one of the plurality of marking; and
 - during detection of the touch movement on the at least one of the plurality of marking in the second virtual display layer that appears to have the lesser depth than the first virtual display layer, display, via the touch screen, a movement of the markings in the second virtual display layer as a function of the touch movement; and
 - perform a zoom operation on the at least portion of the contents of the first virtual display layer without performing the zoom operation on the plurality of markings in the second virtual display layer, where the zoom operation correlates with the movement of the markings in the second virtual display layer, and the at least portion of the second virtual display layer is at least partially translucent so that a result of the zoom operation on the at least portion of the contents of the first virtual display layer is visible through the at least portion of the second virtual display layer.

Key limitations of Claim 1

[1g] detect, via the touch screen, at least a portion of touch on the [at] least one user interface element;

[1h] when an aspect of the touch is detected to surpass a threshold, display, via the touch screen, a plurality of markings in a second virtual display layer that appears to have a lesser depth than the first virtual display layer,

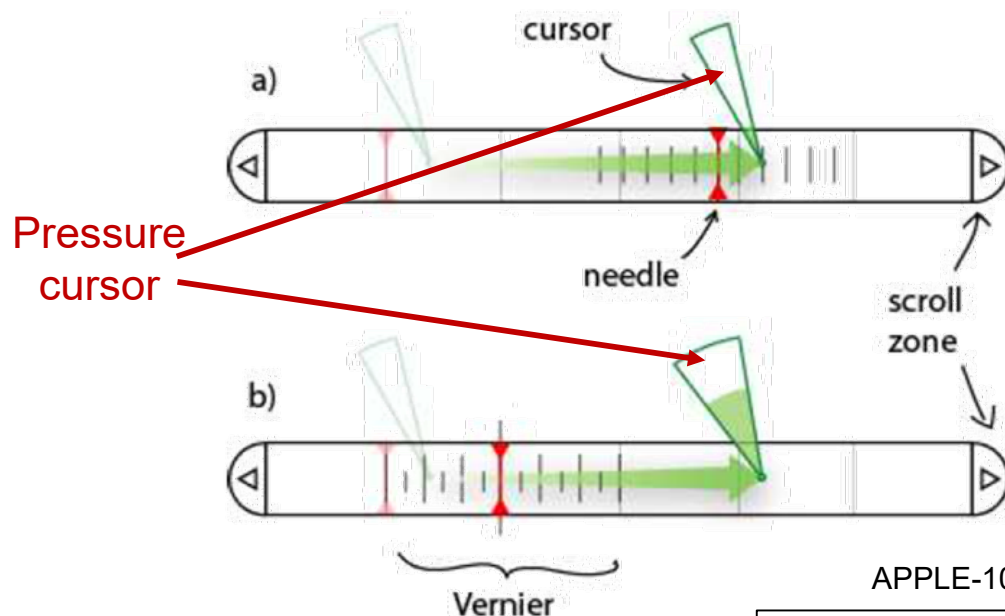
[1i] where at least a portion of the second virtual display layer is at least partially translucent so that at least a portion of the contents of the first virtual display layer is visible through the at least portion of the second virtual display layer;

[1j] detect, via the touch screen, a touch movement on at least one of the plurality of marking; and

[1k] during detection of the touch movement on the at least one of the plurality of marking in the second virtual display layer that appears to have the lesser depth than the first virtual display layer, display, via the touch screen, a movement of the markings in the second virtual display layer as a function of the touch movement; and

[1l(i)] perform a zoom operation on the at least portion of the contents of the first virtual display layer without performing the zoom operation on the plurality of markings in the second virtual display layer, [1l(ii)] where the zoom operation correlates with the movement of the markings in the second virtual display layer, and [1l(i)] the at least portion of the second virtual display layer is at least partially translucent so that a result of the zoom operation on the at least portion of the contents of the first virtual display layer is visible through the at least portion of the second virtual display layer.

Primary Reference: Ramos Paper



APPLE-1004, 3, FIG. 1 (annotated; cropped), Pet., 7

THE ZLIDER

The Zlider widget (Figure 1) consists of a rectangular working area that the user can scrub in order to adjust a parameter $v \in [low, high]$, where *low* and *high* are arbitrary limit values. There is no particular handle the user needs to grab to use the widget. To operate the Zlider the user taps and drags its pointer across the working area until the desired value is reached or effect is achieved. At all times a red needle indicates the position of the value being adjusted relative to the possible minimum and maximum values at the extremes of the widget. The Zlider's *scale* or

working area's length. The Zlider also displays a Vernier as suggested by Ayatsuka et al. [5]; however, the Vernier in our Zlider adapts its grid spacing depending on the widget's current scale factor.

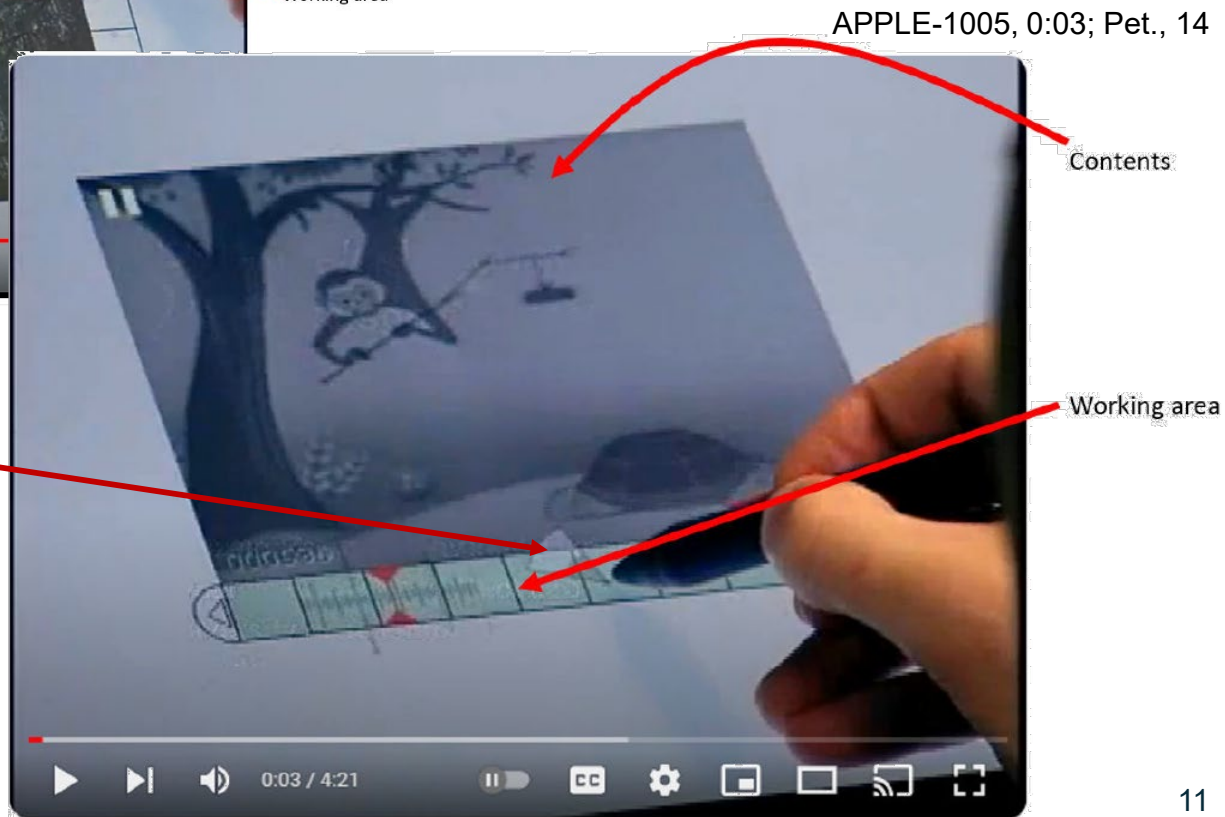
default cursor found in most GUIs. Our pressure cursor provides users with a real-time indicator of the pressure they are applying with the input transducer. The pressure cursor has a wedge-like shape that changes its aperture with the amount of pressure applied. The wedge's area fills as the pressure increases, until completely filled when the pressure reaches the maximum level the device can sense.

Primary Reference: Ramos Video



APPLE-1005, 3:22; Pet., 13

Pressure
cursor



Primary Reference: Ramos Video

Translucent and Overlaying



APPLE-1005, 3:16 (cropped); Pet., 19

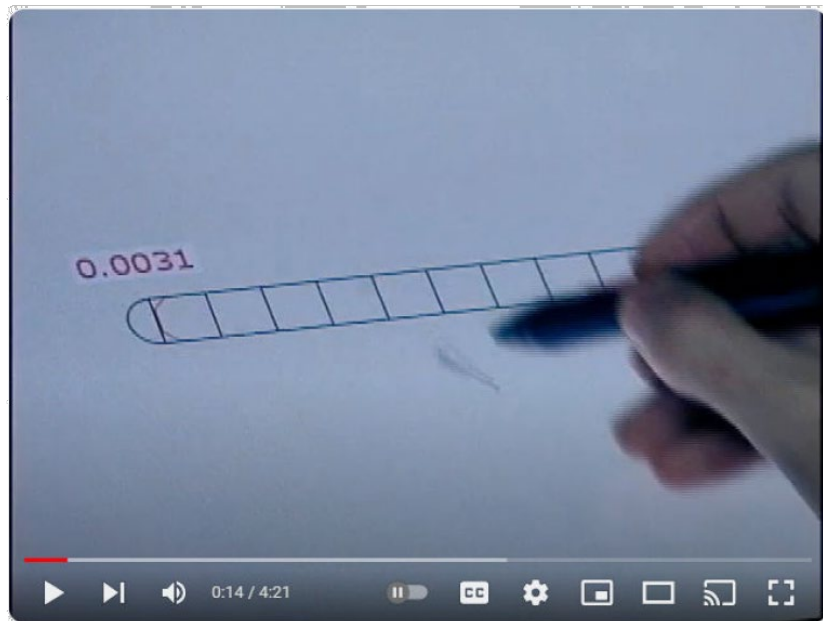


APPLE-1005, 0:03 (cropped); Pet., 14

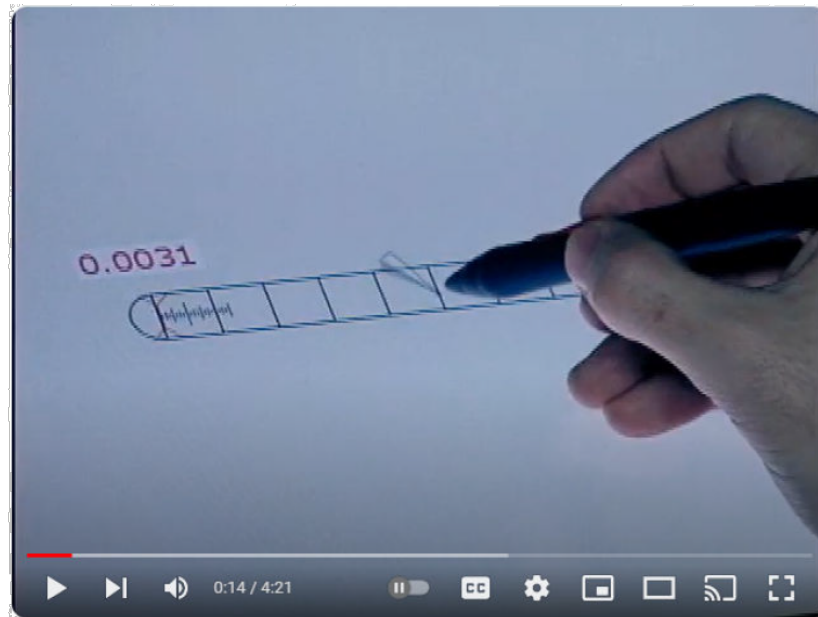
Pressure
cursor

Primary Reference: Ramos Video

**Detecting at least a portion of touch on the UI element
Displaying plurality of markings responsive to an aspect of
the touch detected to surpass a threshold**



APPLE-1005, 0:14 (displaying the touch screen before a touch is detected on the working area)



APPLE-1005, 0:14 (displaying the touch screen after a touch is detected on the working area, as evidenced by the appearance of the Vernier on the working area)

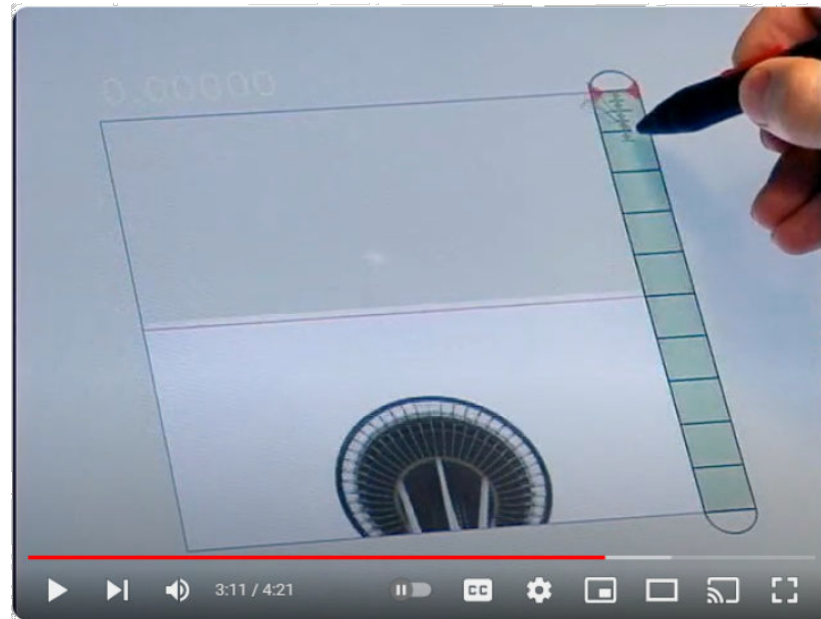
APPLE-1005, 0:14; Pet., 15-16; APPLE-1003, ¶¶ 79-89

Primary Reference: Ramos Video

**Detecting at least a portion of touch on the UI element
Displaying plurality of markings responsive to an aspect of
the touch detected to surpass a threshold**



APPLE-1005, 3:10 (displaying the touch screen before a touch on the working area is detected)



APPLE-1005, 3:11 (displaying the touch screen after a touch on the working area is detected (i.e., surpassing the hover threshold), as evidenced by the appearance of the Vernier on the working area)

APPLE-1005, 3:10; Pet., 46-47; APPLE-1003, ¶¶ 79-89

Primary Reference: Ramos Video

Perform a zoom operation on the at least portion of the contents of the first virtual display layer



APPLE-1005, 3:16 (showing the contents before the user increases pressure on the touchscreen)

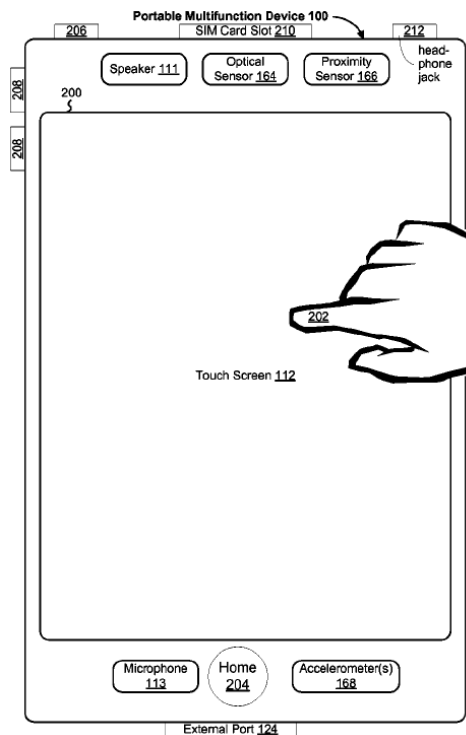


APPLE-1005, 3:19 (showing the enlarged size of the content (image) after the user increases pressure on the touchscreen, as indicated by the pressure cursor, and the plurality of markings of the Vernier moving closer together)

APPLE-1005, 3:16, 3:19; Pet., 69-72; APPLE-1003, ¶ 104

Secondary Reference: Ording

A portable device with a touch screen display detects a contact area of a finger with the touch screen display and then determines a first position associated with the contact area. The cursor position of the finger contact is determined, at least in part, based on: the first position, one or more distances between the first position and one or more of the user interface objects; and one or more activation susceptibility numbers, each associated with a respective user interface object in the plurality of user interface objects. If the



[0045] In some embodiments, the device 100 may include a physical or virtual click wheel as an input control device 116. A user may navigate among and interact with one or more graphical objects (henceforth referred to as icons) displayed in the touch screen 112 by rotating the click wheel or by moving a point of contact with the click wheel (e.g., where the amount of movement of the point of contact is measured by its angular displacement with respect to a center point of the click wheel). The click wheel may also be used to select one or more of the displayed icons. For example, the user may press down on at least a portion of the click wheel or an associated button. User commands and navigation commands provided by the user via the click wheel may be processed by an input controller 160 as well as one or more of the modules and/or sets of instructions in memory 102. For a virtual click wheel, the click wheel and click wheel controller may be part of the touch screen 112 and the display controller 156, respectively. For a virtual click wheel, the click wheel may be either an opaque or semitransparent object that appears and disappears on the touch screen display in response to user interaction with the device. In some embodiments, a virtual click wheel is displayed on the touch screen of a portable multifunction device and operated by user contact with the touch screen.

APPLE-1006, Abstract, [0045], FIG. 1; Pet., 22-25

Secondary Reference: Hayward

Figure 10A

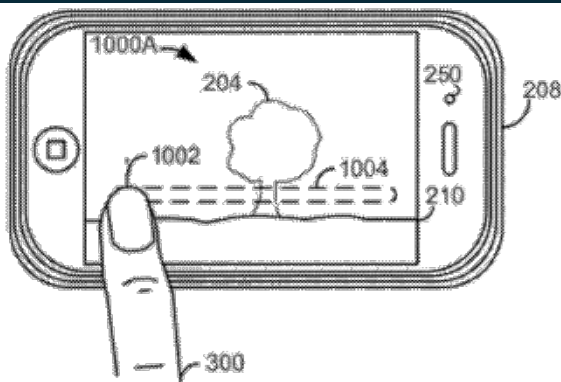


Figure 10B

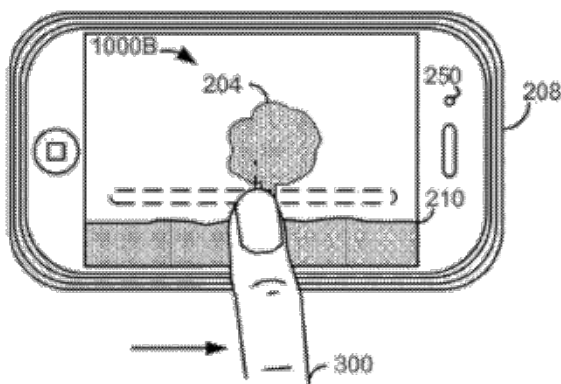
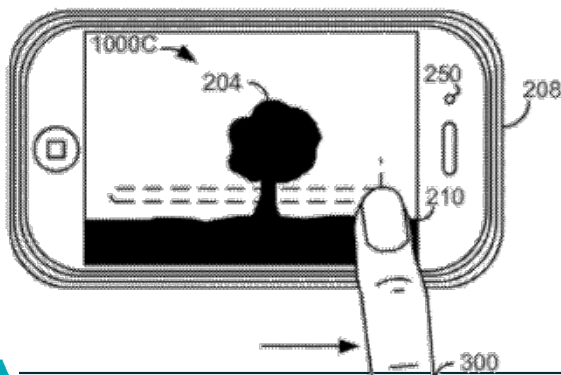


Figure 10C



embodiment. As illustrated in FIGS. 10A-10C, relative gestures input by user 300 may drive the input parameter to an image filter that simply adjusts image contrast to be higher or lower than its current setting. As shown in FIG. 10A, scene 1000A comprising tree 204 has low levels of contrast between the tree 201 and the background sky. In FIG. 10A, the finger of user 300 initiates a touch gesture with the left hand side of touch screen 210. As FIGS. 10A-10C are meant to illustrate a relative gesture, the location that the user 300 selects for his or her initial contact with the touch screen is not important to the determination of the value that will ultimately be sent to the input parameter of the selected image contrast image filter. As such, logical slider 1004 is shown in dashed lines on device 208 with logical handle 1002 also shown in dashed lines on device 208 and representing the current location of the user 300's finger with respect to where the gesture was initiated. As shown in FIG. 10B, the user 300's finger has moved roughly halfway across the width of touch screen 210, and, accordingly, scene 1000B comprising tree 204 shows a higher

level of contrast between the tree 204 and the background sky than scene 1000A. As shown in FIG. 10C, the user 300's finger has moved all the way to the right hand side of touch screen 210, indicating that the user wishes the image filter to apply the maximum allowable amount of contrast to the captured image data, and, accordingly, scene 1000C comprising tree 204 shows the highest level of contrast between the tree 204 and the background sky, when compared to scenes 1000A and 1000B.

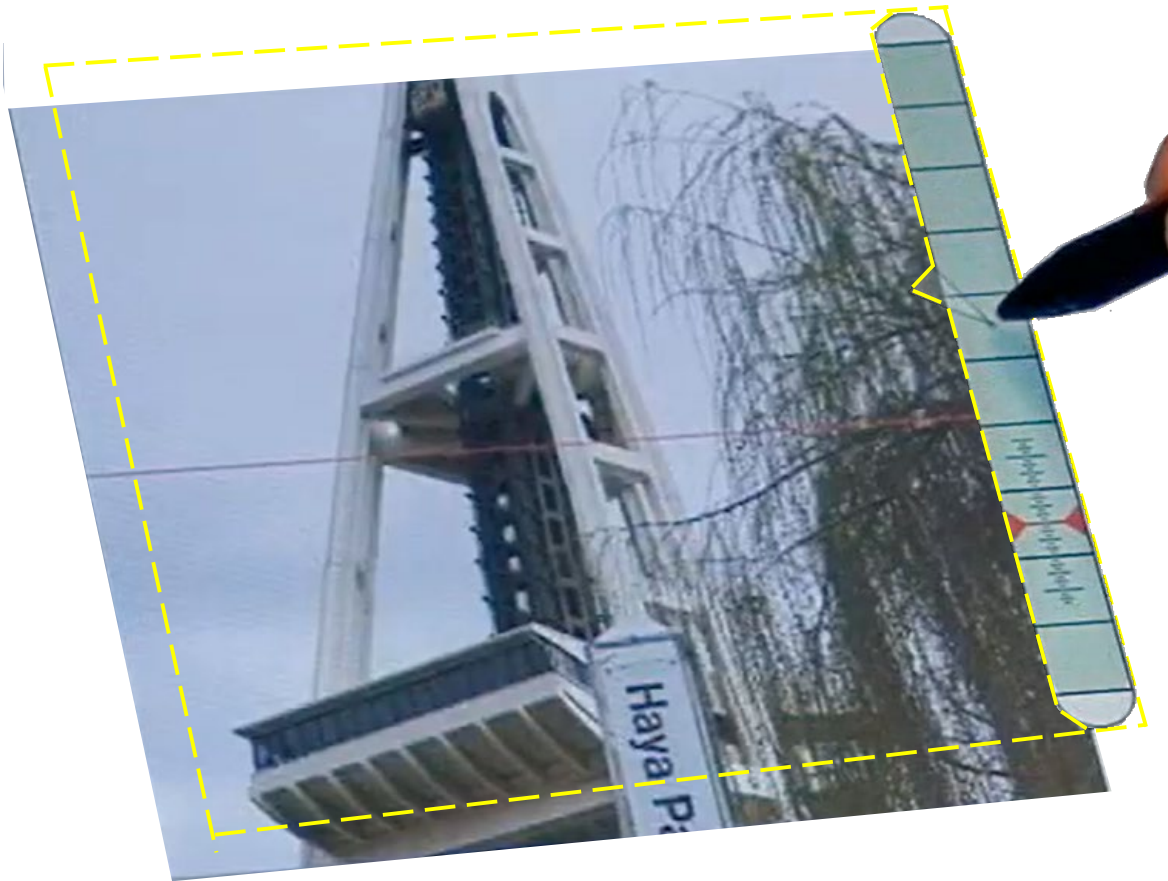
Issue 1

The RROD renders obvious a Zlider widget that is at least partially translucent over underlying image content

The RROD includes a Vernier in a second virtual display layer that is at least partially translucent above the first virtual display layer

**Rebuttal
to:**

"The RROD Lacks a 'Plurality of Markings in a Second Virtual Display Layer' That is 'Partially Translucent' and 'Appears to Have a Lesser Depth Than The First Virtual Display Layer.'"
Sur-reply, 10



FISH.

Reply, 13-19; APPLE-1005, 3:22 (modified); compare with APPLE-1001, FIG. 22

19

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Key limitations of Claim 1

'580 Patent, Claim 1 (excerpted)

[1h] when an aspect of the touch is detected to surpass a threshold, display, via the touch screen, a plurality of markings in a second virtual display layer that appears to have a lesser depth than the first virtual display layer,

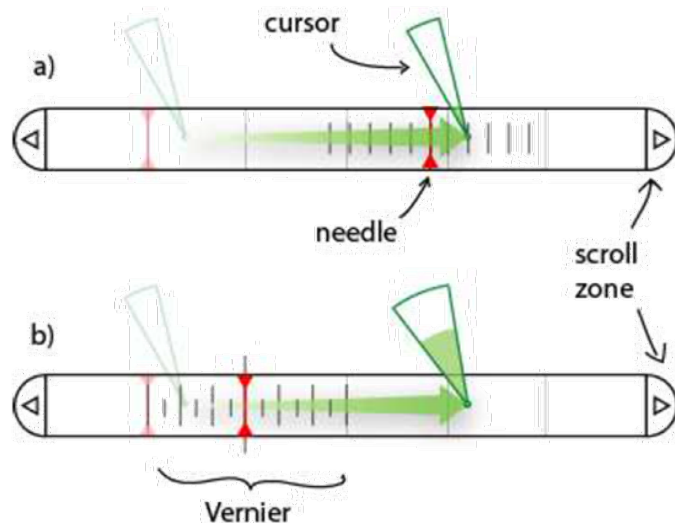
[1i] where at least a portion of the second virtual display layer is at least partially translucent so that at least a portion of the contents of the first virtual display layer is visible through the at least portion of the second virtual display layer;

APPLE-1001, 102:27-35

Issue 1A

The Zlider includes a plurality of markings
and is at least partially translucent

The Zlider includes a pressure cursor and a Vernier



APPLE-1004, 3, FIG. 1 (cropped); Pet., 7

working area's length. The Zlider also displays a Vernier as suggested by Ayatsuka et al. [5]; however, the Vernier in our Zlider adapts its grid spacing depending on the widget's current scale factor.

THE ZLIDER

The Zlider widget (Figure 1) consists of a rectangular working area that the user can scrub in order to adjust a parameter $v \in [low, high]$, where *low* and *high* are arbitrary limit values. There is no particular handle the user needs to grab to use the widget. To operate the Zlider the user taps and drags its pointer across the working area until the desired value is reached or effect is achieved. At all times a red needle indicates the position of the value being adjusted relative to the possible minimum and maximum values at the extremes of the widget. The Zlider's *scale* or

Pressure Cursor

Though not integral to the Zlider design, we use a pressure cursor (Figure 2) across our implementations, instead of the default cursor found in most GUIs. Our pressure cursor provides users with a real-time indicator of the pressure they are applying with the input transducer. The pressure cursor has a wedge-like shape that changes its aperture with the amount of pressure applied. The wedge's area fills as

The experts agree that the Zlider includes multiple components, including a Vernier and pressure cursor

Dr. Mahon's Deposition

10 **Q. In Figure 1 of the Ramos paper, do**
11 **you see different components of the Zlider?**

12 A. As shown, the Zlider has several
13 components that are displayed and cited by
14 Dr. Cockburn.

15 **Q. And what are those components?**

16 A. They are referred to as the working
17 area. There is a designation of a Vernier, a
18 needle, and a pressure cursor.

Dr. Cockburn's First Declaration

91. As shown in Figure 6, the Zlider's "pressure cursor" is displayed in a second layer (i.e., it is always above, for example, the image being displayed and manipulated by the Zlider) along with the other components of the Zlider (e.g., working area and Vernier). APPLE-1004, FIG. 6. Additionally, the Ramos Video

Reply, 14; APPLE-1033, 52:10-18; APPLE-1003, ¶91

23

Ramos Paper teaches that the pressure cursor is part of the Zlider

Patent Owner's Sur-reply

As a threshold matter, Petitioner's mappings fail because they mischaracterize Ramos. The Ramos Paper expressly states that the pressure cursor is "not integral to the Zlider design" and is used "instead of the default cursor found in most GUIs." EX1004, 3. This disclosure confirms the pressure cursor is an interface-wide pointer, not an exclusive component of the Zlider widget, and thus not part of the same "virtual display layer" as the elements of the Zlider widget.

Dr. Mahon's Deposition

10 **Q. In Figure 1 of the Ramos paper, do**
11 **you see different components of the Zlider?**

12 **A. As shown, the Zlider has several**
13 **components that are displayed and cited by**
14 **Dr. Cockburn.**

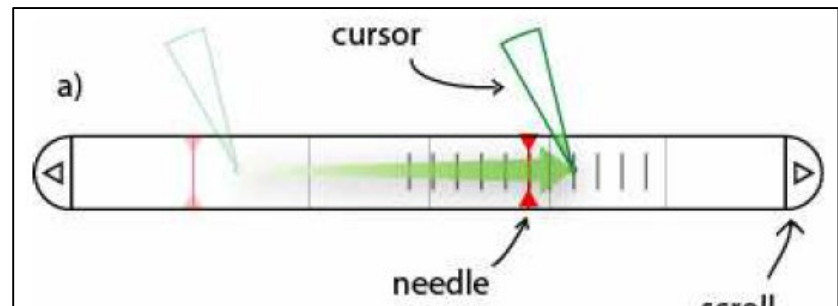
15 **Q. And what are those components?**

16 **A. They are referred to as the working**
17 **area. There is a designation of a Vernier, a**
18 **needle, and a pressure cursor.**

Ramos Paper

Pressure Cursor

Though not integral to the Zlider design, we use a pressure cursor (Figure 2) across our implementations, instead of the default cursor found in most GUIs. Our pressure cursor provides users with a real-time indicator of the pressure they are applying with the input transducer. The pressure



Ramos Video shows the translucency of the Zlider's pressure cursor



APPLE-1005, 3:16 (cropped); Pet., 19



APPLE-1005, 0:03 (cropped); Pet., 14

Smith's expert agrees that the Zlider's pressure cursor is at least partially translucent

Dr. Mahon's Deposition

Reply, 13-14;
APPLE-1033, 65:11-66:5

11 **Q.** Is the portion of the pressure
12 cursor that extends within the image region of
13 the freeze frame at least partially translucent?

14 **A.** The change in appearance of the
15 pressure cursor, as I said, does give the
16 appearance that it is -- the image is underlying
17 content of the pressure cursor, based upon this
18 freeze frame and to someone viewing this freeze
19 frame.

20 **Q.** So, to clarify, does the pressure
21 cursor appear at least partially translucent over
22 the underlying content that is the image?

2 **THE WITNESS:** Well, the pressure
3 cursor is certainly changing the appearance
4 of what is underneath it, and that does
5 include the image.

The dependent claims permit the second virtual display layer to include more than one layer

'580 Patent, Claim 21 (excerpted)

21. The apparatus of claim 20, wherein the apparatus is configured such that at least one of:

the touch screen includes a display and a touch-sensitive surface;

the at least portion of the contents include a view detected by the camera;

only a portion of the touch is detected, via the touch screen, on the least one user interface element;

an entirety of the touch is detected, via the touch screen, on the least one user interface element;

the touch is detected, via the touch screen, on the least one user interface element when the aspect of the touch is detected to surpass the threshold;

the second virtual display layer includes at least one of: an operation layer, an emphasis layer, or a clipboard layer;

an entirety of the second virtual display layer appears to have the lesser depth than the first virtual display layer;

only a portion of the second virtual display layer appears to have the lesser depth than the first virtual display layer;

Reply, 18-19; APPLE-1001, 104:42-43, 106:47-48

Smith's expert did not consider dependent claim 21

Dr. Mahon's Deposition

20 **Q. Did you consider Claim 21 when**
21 **forming an understanding of the independent**
22 **claims?**

1 A. My declaration contains my
2 responses.

3 And my understanding of my role
4 which was to analyze Dr. Cockburn's positions and
5 analyze the claim term and the disclosures in the
6 specification based on those assertions.

7 And that is what I did in my
8 declaration.

9 **Q. But you didn't cite to Claim 21 in**
10 **your declaration, did you?**

11 A. I don't recall citing to Claim 21.
12 I could take a look, but I don't recall doing
13 that.

Reply, 1; APPLE-1033, 43:20-44:13

A POSITA would have considered all of the components of the Zlider to be in the same virtual display layer

Dr. Cockburn's Declaration

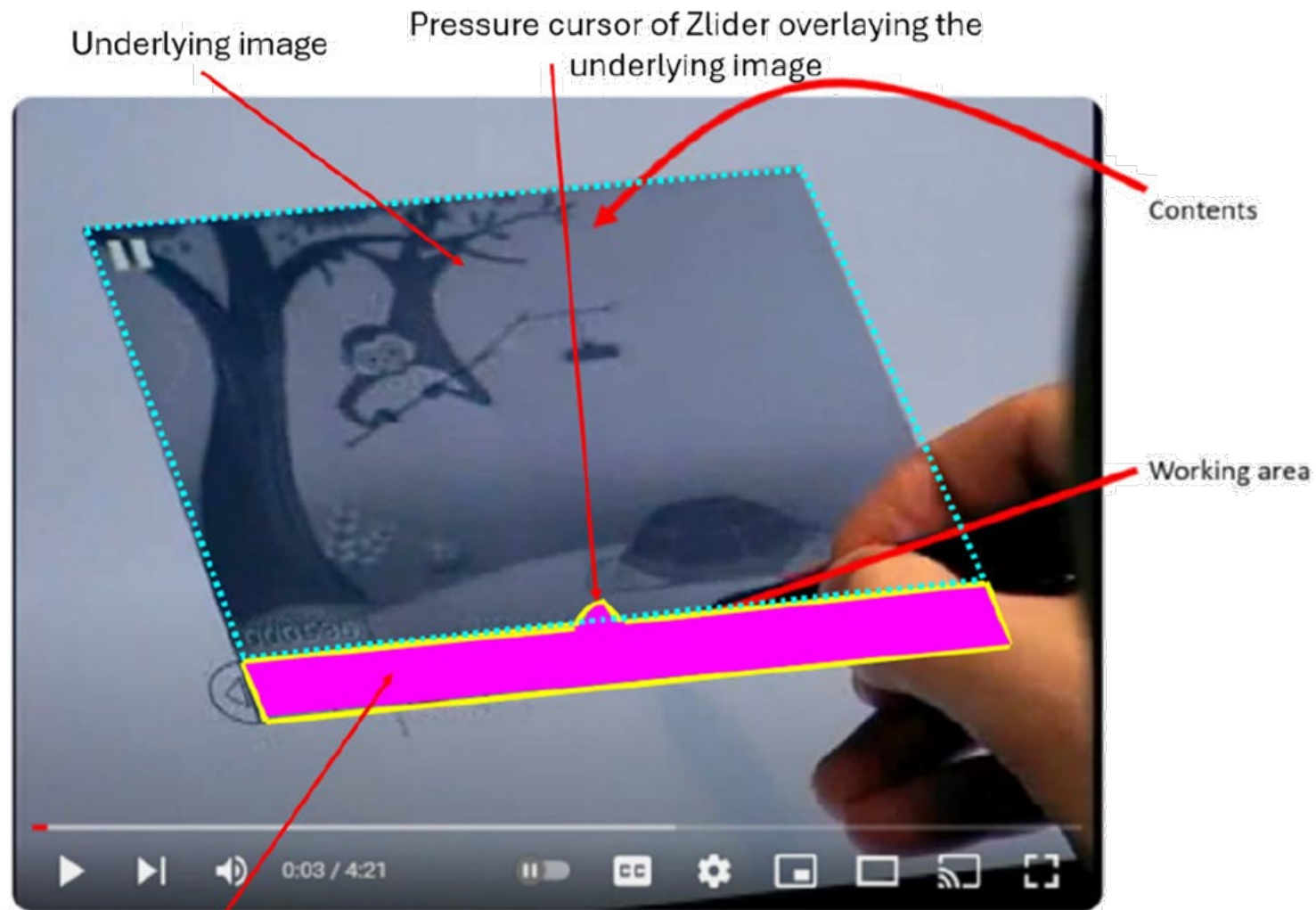
on top of others. For example, scrollbar widgets have been well-known since at least the early 1980s, and scrollbars are well-known to be comprised of multiple sub-components, including a scroll-trough, a scroll-knob (or thumb), and scroll up/down or left/right arrows. While it would be clear to a POSITA that a scrollbar widget would require that the scroll-knob appear above the scroll-trough (the user would not be able to see (absent transparency effects) or directly operate the scroll-knob if that were not the case), a POSITA would also have understood that when inserting a scrollbar widget into a user interface, it would be inserted into a single layer of that interface. As another example, the 2010 Android "DatePicker"¹ widget consisted of multiple components (shown below) supporting the display and input of data relating to month, day, and year. This single widget consisted of many layered sub-components, including a background, a darkened panel, buttons, text display regions, etc. Regardless of the many components within a DatePicker widget, when a DatePicker widget was inserted into a user interface, it would appear in a single layer of that interface.

2010 Android "DatePicker"



Reply, 14-15; APPLE-1032, ¶29; APPLE-1036

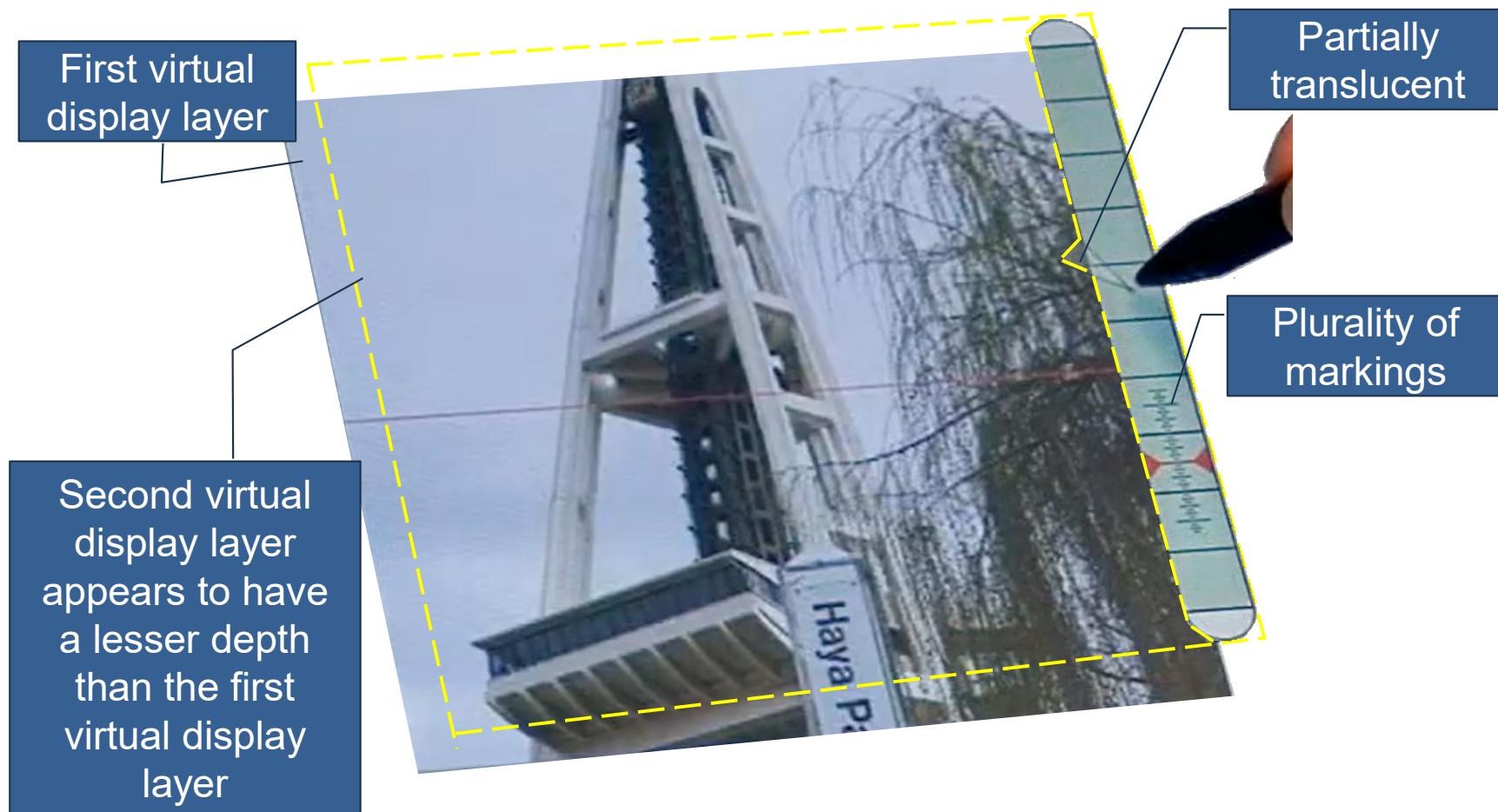
The Zlider (and all of its components) overlay the underlying image



The Zlider (and its components) overlay the underlying image

Rebuttal to:

"The RROD Lacks a 'Plurality of Markings in a Second Virtual Display Layer' That is 'Partially Translucent' and 'Appears to Have a Lesser Depth Than The First Virtual Display Layer.'"
Sur-reply, 10



Multiple sub-layers within a layer is not inconsistent with the '580 Patent

Rebuttal to:

"Petitioner's attempt to treat the pressure cursor as integral with the Zlider's virtual display layer also conflicts with the '580 Patent." Sur-reply, 11-12

Patent Owner's Sur-reply

Petitioner's attempt to treat the pressure cursor as integral with the Zlider's virtual display layer also conflicts with the '580 Patent, which explains that "a virtual display layer refers to a collection of display elements which have all been assigned the same *apparent depth* within the 3D layered user interface," and describes depth cues (e.g., blur, shadow, fog) as the mechanisms by which apparent depth is conveyed.¹ EX1001, 68:7–11, 68:25–52. Ramos' pressure cursor is translucent over

both the image content region and the Zlider's working area and Vernier markings, and even casts a shadow over those elements in the Ramos Video. POR, 28–32. This directly and unambiguously shows the pressure cursor at a different depth (and layer) from both the image contents and the Zlider widget. POR, 28–32.

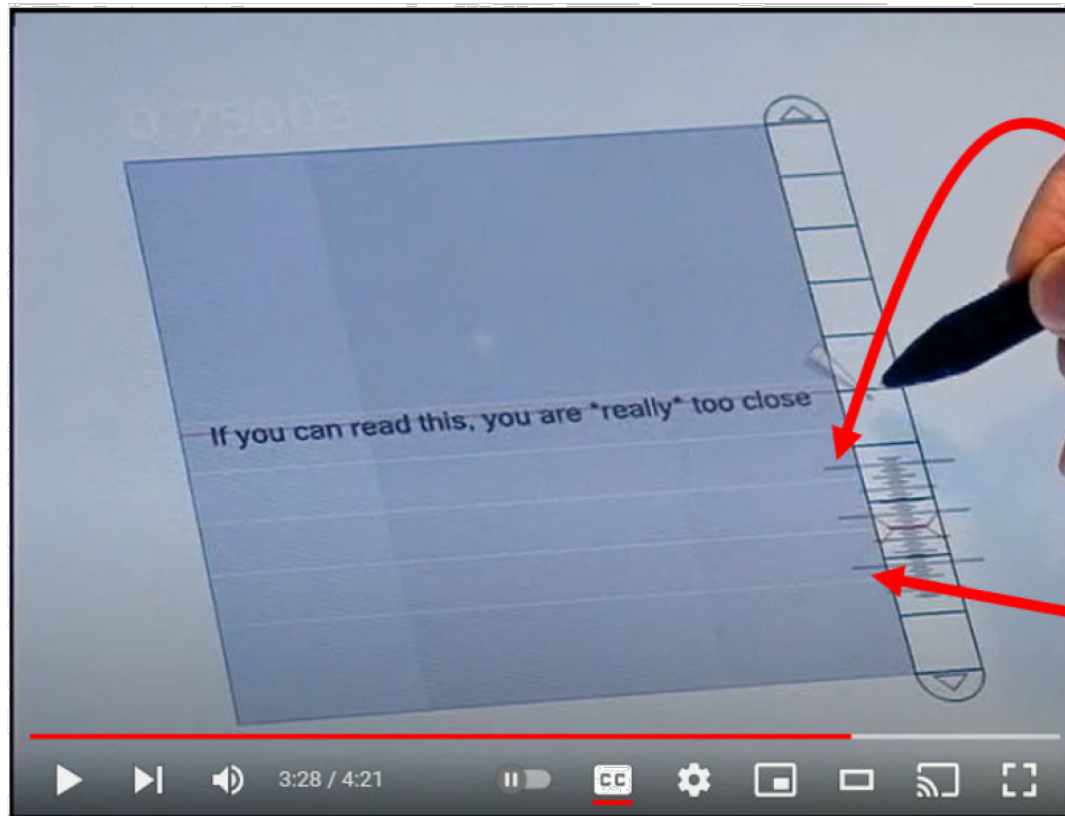
'580 Patent

In various embodiments, a 3D layered user interface may be implemented in a device having single layer displays through the use of virtual display layers. In the context of the present description, a virtual display layer refers to a collection of display elements which have all been assigned the same apparent depth within the 3D layered user interface. In



The Zlider's Vernier is also shown to overlay the underlying image

Further evidence that the Zlider exists in a layer that appears at a less depth than the underlying image content



Extended element
shown above the image
content

Extended element
shown above the image
content

APPLE-1005, 3:28 (annotated)

Pet., 54-55; APPLE-1005, 3:28

33

Issue 1B

It would have been obvious to make the entire Zlider translucent

Ramos Video and Ording both teach widget translucency

Rebuttal to:

"Petitioner Has Not Identified Any Credible Motivation to Combine Ording's Semitransparent Overlay." Sur-reply, 2

Ramos Video



APPLE-1005, 3:16 (cropped); Pet., 19; Reply, 20

Ording

[0045] In some embodiments, the device 100 may include a physical or virtual click wheel as an input control device 116. A user may navigate among and interact with one or more graphical objects (henceforth referred to as icons) displayed in the touch screen 112 by rotating the click wheel or by moving a point of contact with the click wheel (e.g., where the amount of movement of the point of contact is measured by its angular displacement with respect to a center point of the click wheel). The click wheel may also be used to select one or more of the displayed icons. For example, the user may press down on at least a portion of the click wheel or an associated button. User commands and navigation commands provided by the user via the click wheel may be processed by an input controller 160 as well as one or more of the modules and/or sets of instructions in memory 102. For a virtual click wheel, the click wheel and click wheel controller may be part of the touch screen 112 and the display controller 156, respectively. For a virtual click wheel, the click wheel may be either an opaque or semitransparent object that appears and disappears on the touch screen display in response to user interaction with the device. In some embodiments, a virtual click wheel is displayed on the touch screen of a portable multifunction device and operated by user contact with the touch screen.

APPLE-1006, Abstract, [0045], FIG. 1; Pet., 22-25; Reply, 19³⁵

The benefits of widget and user interface translucency were well-known

Brandis

[0077] In still other implementations of the cover-flow interface, the imagery from the camera may be displayed full-screen, but dimmed, or with reduced contrast. The depicted cover-flow arrangement may then be superimposed on this background—with a degree of transparency providing a sense of visual context with the underlying camera imagery.

[0094] The Magic Lens arrangement is a two-handed UI. With one hand, the user operates a first pointing device (e.g., a mouse). This device moves a gridded palette of tools, commonly presented as a transparent overlay, on the user's desktop. One tool may be Copy. Another may be Paste. Another may be Email. Another may be Print. Etc.

[0101] FIG. 9 shows an example. In this mode of operation (which can be invoked by the user in conventional ways), associated software presents a gridded palette of tools as an overlay (optionally, transparent) on top of imagery captured by the smartphone camera. Each tile in the grid has a function associated therewith, identified by a label or other indicia. For example, tool tile 302 is labeled with the function PRINT. Each tile may also include some indicia by which the user can precisely aim the function to indicate with a particular point in the imagery, although such feature is not strictly necessary. In the illustrative embodiment a "+" (crosshair) is used.

APPLE-1003, ¶166; APPLE-1025, [0077], [0094], [0101];

APPLE-1026, [0153], [0162]; Pet., 32-33

Hotelling

[0153] The GUI element may be displayed in a variety of ways. For example, it can be positioned over the currently displayed graphical images, or it can displace the currently displayed graphical images (e.g., minimize, shift, etc.). In some cases, the GUI element is made semi transparent so that the current graphical image disposed below the GUI element can be seen (thereby eliminating minimizing and shifting). This may be helpful when using a scroll wheel to traverse through a list disposed below the scroll wheel.

[0162] Once a touch is detected, the user interface method 900 proceeds to block 906 where a virtual scroll wheel is activated. That is, a virtual scroll wheel is displayed in addition to the list of songs and its functionality is enabled. In essence, because the song list was touched, a scroll wheel that allows a user to traverse through the songs in the list of songs is provided. In some cases, the virtual scroll wheel displaces the media items, i.e., the media items are minimized or shifted to make room for the virtual scroll wheel. In other cases, the virtual scroll wheel is positioned or laid over the media items (the media items keep their current size, shape and position). The virtual scroll wheel can be made semi-transparent so that the media items can be viewed through the virtual scroll wheel. FIGS. 34C and 35C show a transparent virtual scroll 936 wheel laid over the window 930 including the list of songs 932. Alternatively, a virtual slider bar may be displayed.

36

Smith's arguments regarding inoperability ignore the level of ordinary skill of a POSITA

Patent Owner's Response



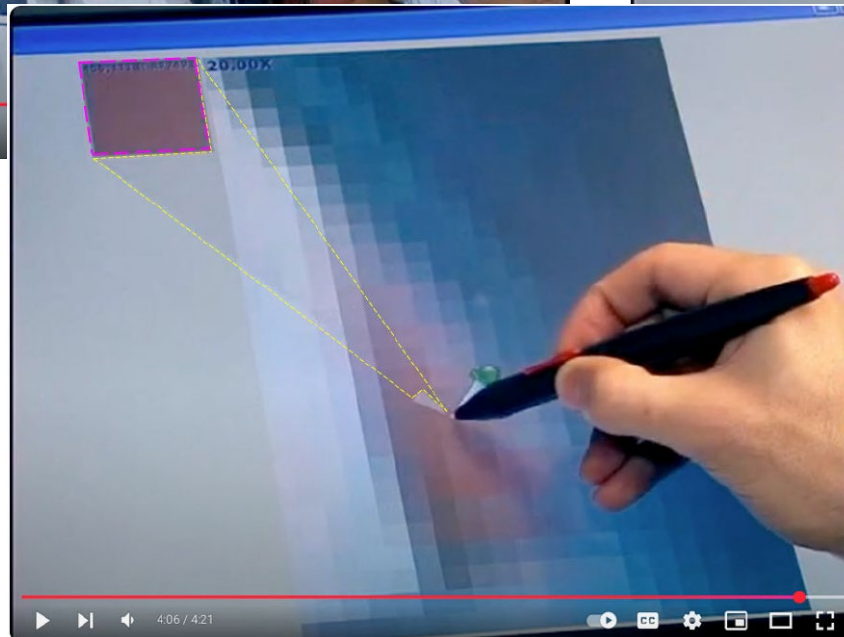
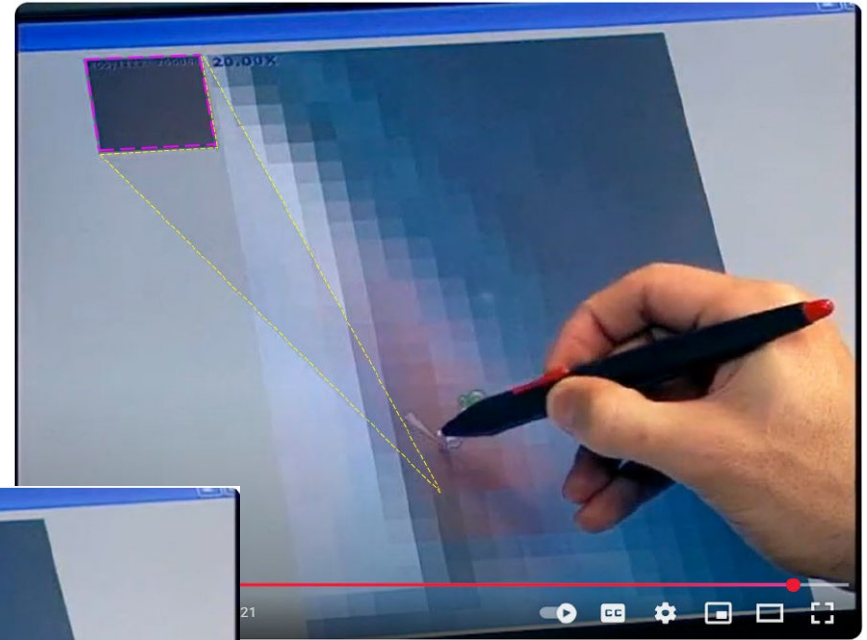
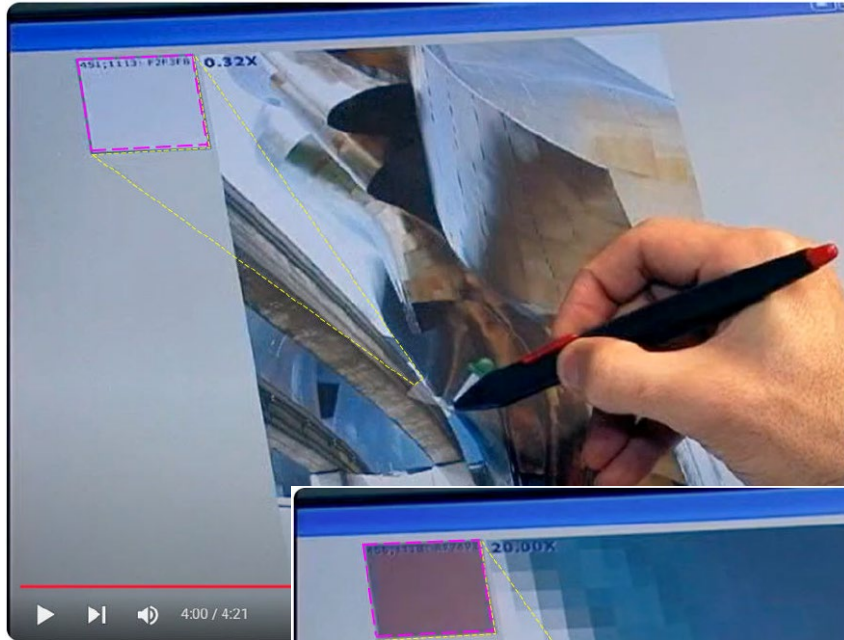
POR, 19

Dr. Cockburn's Supplemental Declaration



Reply, 5-6; APPLE-1032, ¶¶20-24

Ramos Video shows modification of the transparency effects



Reply, 7-11; APPLE-1005,
4:00, 4:03, 4:06

Issue 2

The “zoom operation” performed on the image content is not performed on the plurality of markings

Claim 1 recites performing “a zoom operation” on the first virtual display without performing “the zoom operation” on the markings

’580 Patent, Claim 1 (excerpted)

[11(i)] perform a zoom operation on the at least portion of the contents of the first virtual display layer without performing the zoom operation on the plurality of markings in the second virtual display layer, [11(ii)] where the zoom operation correlates with the movement of the markings in the second virtual display layer, and [11(i)] the at least portion of the second virtual display layer is at least partially translucent so that a result of the zoom operation on the at least portion of the contents of the first virtual display layer is visible through the at least portion of the second virtual display layer.

APPLE-1001, 102:44-47

The independent claims recite “the zoom operation,” not “any zoom operation”

'580 Patent, claim 22 (excerpted)

performing a zoom operation on the at least portion of the contents of the first virtual display layer without performing the zoom operation on the plurality of markings in the second virtual display layer, where the zoom

'580 Patent, claim 47

47. The method of claim 23, wherein the zoom operation is performed on the at least portion of the contents of the first virtual display layer without performing any zoom operation on the plurality of markings in the second virtual display layer, so that at least some of the plurality of markings in the second virtual display layer remain displayed regardless of the zoom operation being performed.

'580 Patent, claim 48

46. The method of claim 23, wherein the zoom operation is performed on the at least portion of the contents of the first virtual display layer without performing any zoom operation on the plurality of markings in the second virtual display layer, so that the plurality of markings in the second virtual display layer remain displayed regardless of the zoom operation being performed.

Reply, 23-24; APPLE-1001, 107:41-44, 109:15-28; see also *id.*, 113:60-114:2, 116:24-34

41

Ramos teaches “zooming” of image content and “adapt[ing] grid spacing” of Vernier

Ramos Paper

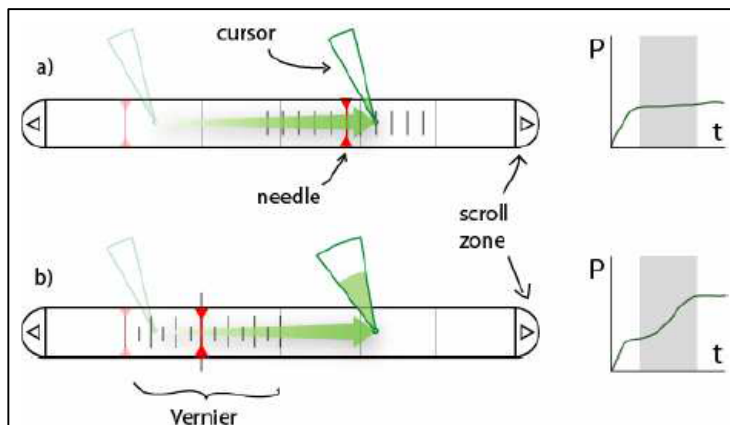


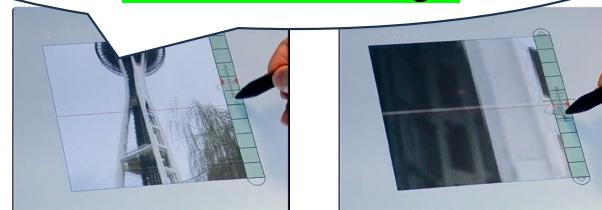
Figure 1: Sliding on the Zlider widget. a) A user manipulates a parameter at coarse granularity by sliding through the control while applying low pressure with the pressure transducer. b) The same x-y sliding action while pressing harder **increases the granularity of the parameter space**, allowing for more precise parameter manipulation when desired. The graphs on the right plot pressure over time, with the interval when the sliding occurs highlighted.

working area's length. The Zlider also displays a Vernier as suggested by Ayatsuka et al. [5]; however, the **Vernier in our Zlider adapts its grid spacing** depending on the widget's current scale factor.

APPLE-1004, 1, 3

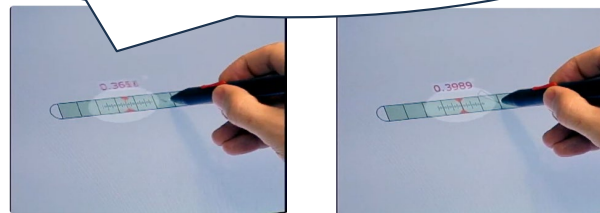
Ramos Video

“Here we see how a Zlider can be used to fluidly pan and **zoom across an image.**”



APPLE-1005, 3:06-3:20

“The Zlider also displays a Vernier, which **adapts its grid spacing** depending on the widget's current precision.”



APPLE-1005, 0:55-1:00

Adapting grid spacing of the Vernier is not a “zooming” function

Petition

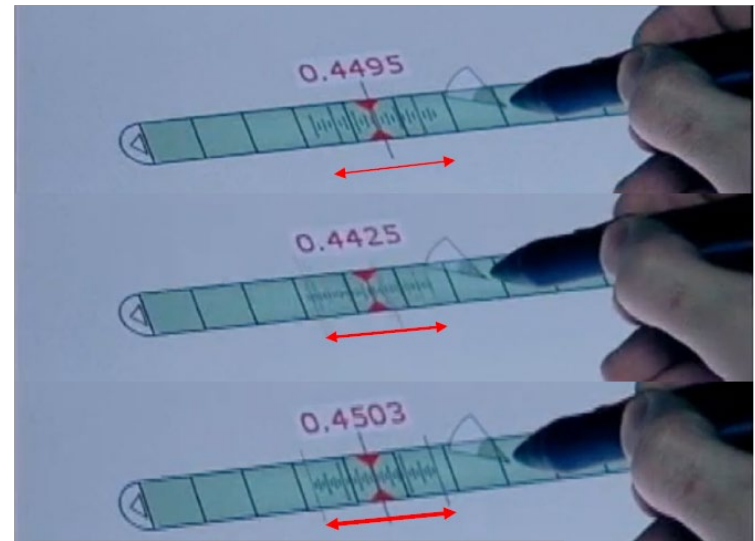
First, the Vernier in the Ramos Video is a widget that is composed of a grid of lines, where the grid spacing is adapted according to the current precision level: “the Vernier adapts its grid spacing depending on the widget’s current precision.” APPLE-1005, 0:55-1:00. Thus, as the pressure is varied, the grid spacing is varied, but the grid lines comprising the Vernier are not magnified – they remain the same thickness throughout. APPLE-1003, ¶103. The two-dimensional image magnification function applied to the image in the Ramos Video is not applied to the Vernier. *Id.*; see, generally, APPLE-1005. The Ramos Paper also confirms that “the Vernier in our Zlider adapts its grid spacing depending on the widget’s current scale factor.” APPLE-1004, 3.

Adapt grid spacing ≠ the zoom operation

Patent Owner’s Response

0:27; EX1005, 0:20–23 (Ramos Video) (Annotated), *infra*; EX2012, ¶115. This much is apparent in the portion of the Ramos Video from which screen shots are annotated above, in which, as the zoom operation is performed on the image, the spacing between Vernier markings increases (the markings get larger), until another set of intermediate markings appears, and the spacing between the markings continue to increase. EX1005, 0:20–0:23 (Ramos Video) (Annotated), *infra*. Thus,

The markings progressive expand as the user zooms in.



EX1005, 0:20-0:23 (Ramos Video) (annotated)

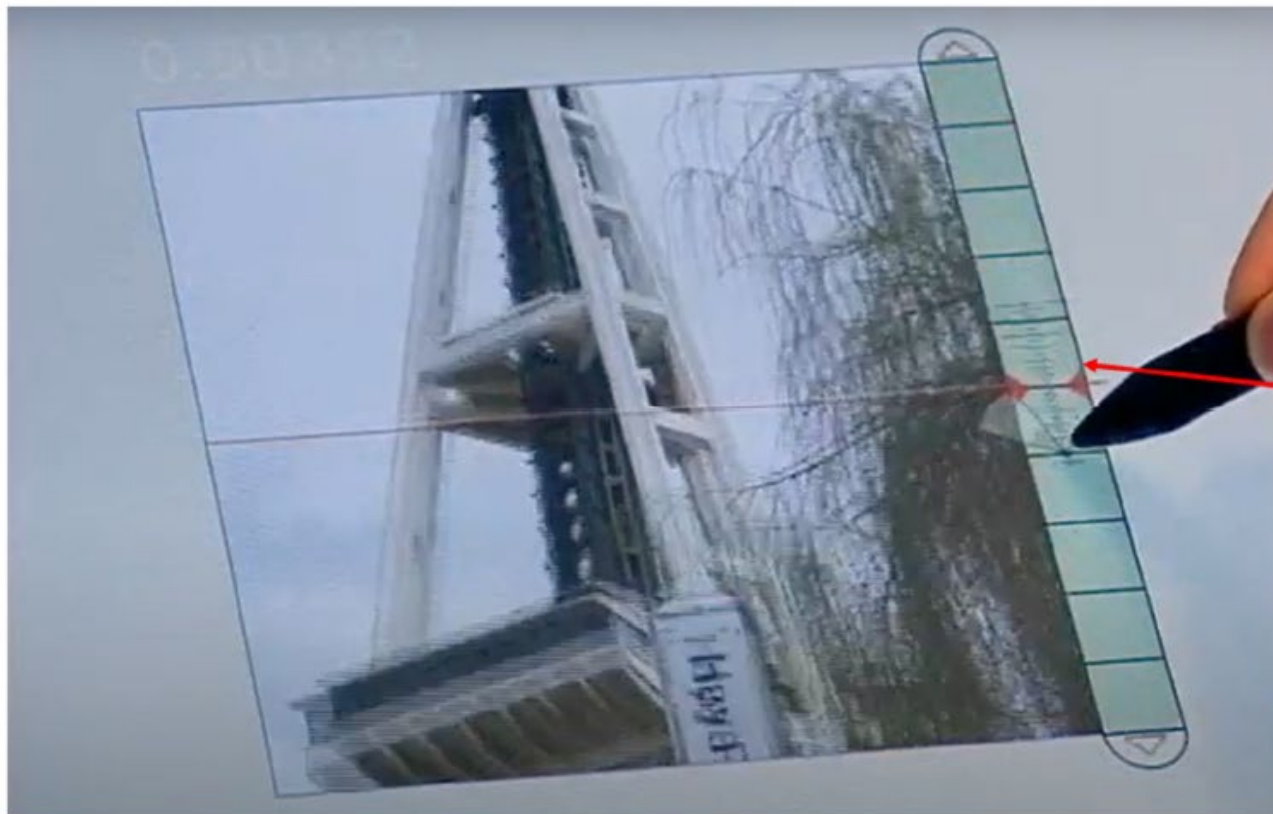
Pet., 69; POR, 37-38; Reply, 23; APPLE-1032, ¶¶ 40-41

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

The Zlider causes a consistent x-y zoom on the underlying image content

Ramos Video

Reply, 21-24; APPLE-1005, 3:17-3:20



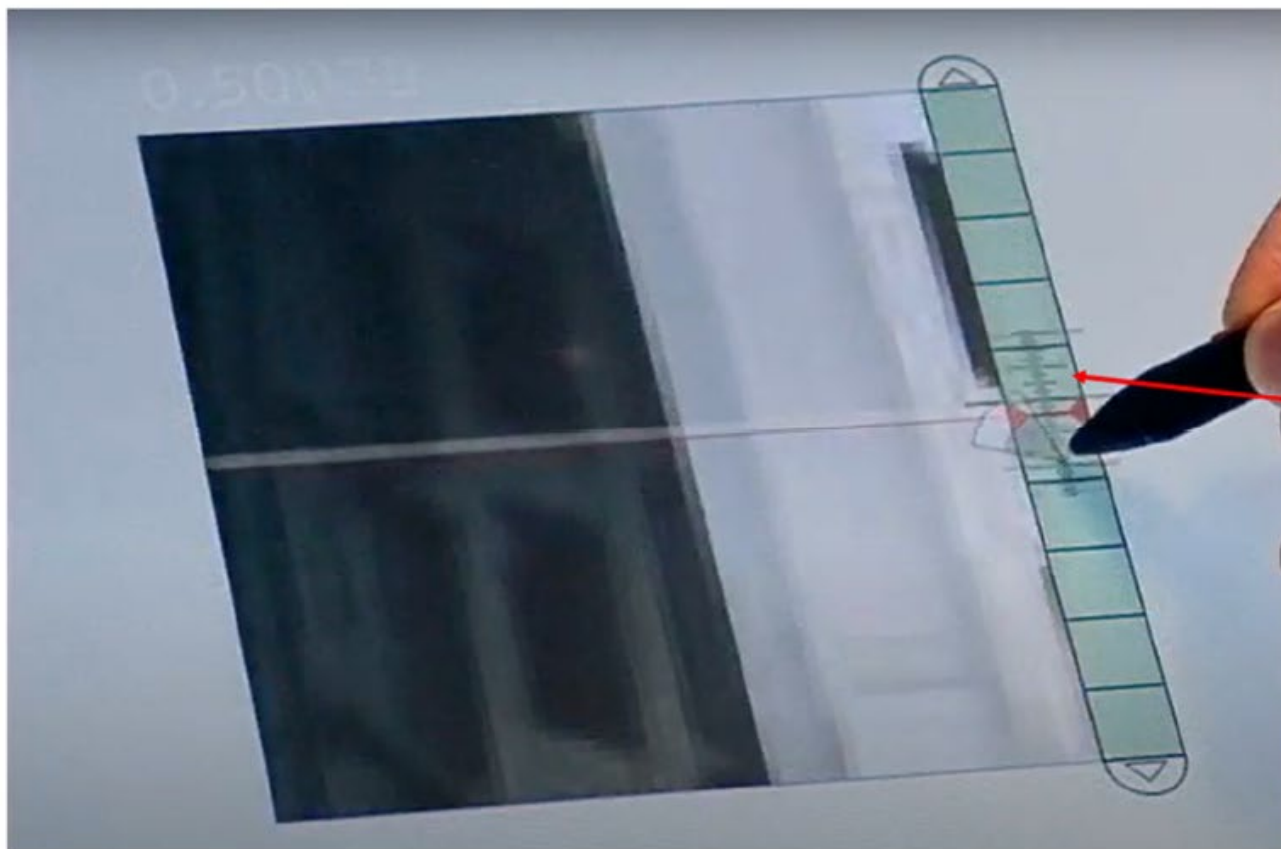
Spacing of Vernier
pre-zoom

APPLE-1005, 3:17 (annotated)

The Zlider causes a consistent x-y zoom on the underlying image content

Ramos Video

Reply, 21-24; APPLE-1005, 3:17-3:20



Spacing of Vernier
post-zoom

APPLE-1005, 3:18 (annotated)

The changing of the spacing of the Vernier is not “the zoom operation” performed on the image content

Ramos Video

Reply, 21-24; APPLE-1005, 3:17-3:20



Spacing of Vernier
post-zoom

APPLE-1005, 3:17
(zoomed in 27.2x)

APPLE-1005, 3:18 (annotated)

The changing of the spacing of the Vernier is not “the zoom operation” performed on the image content

Ramos Video

Adapting of
grid lines
from 3:17 to
3:18 in
Ramos Video

Spacing of Vernier
post-zoom

APPLE-1005, 3:18;
Reply, 21-24

Zoom in on
grid lines
from 3:17 of
Ramos Video

APPLE-1005, 3:17
(zoomed in 27.2x; cropped)

FISH.

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Ramos Video does not show that “the zoom operation” is also performed on the Vernier

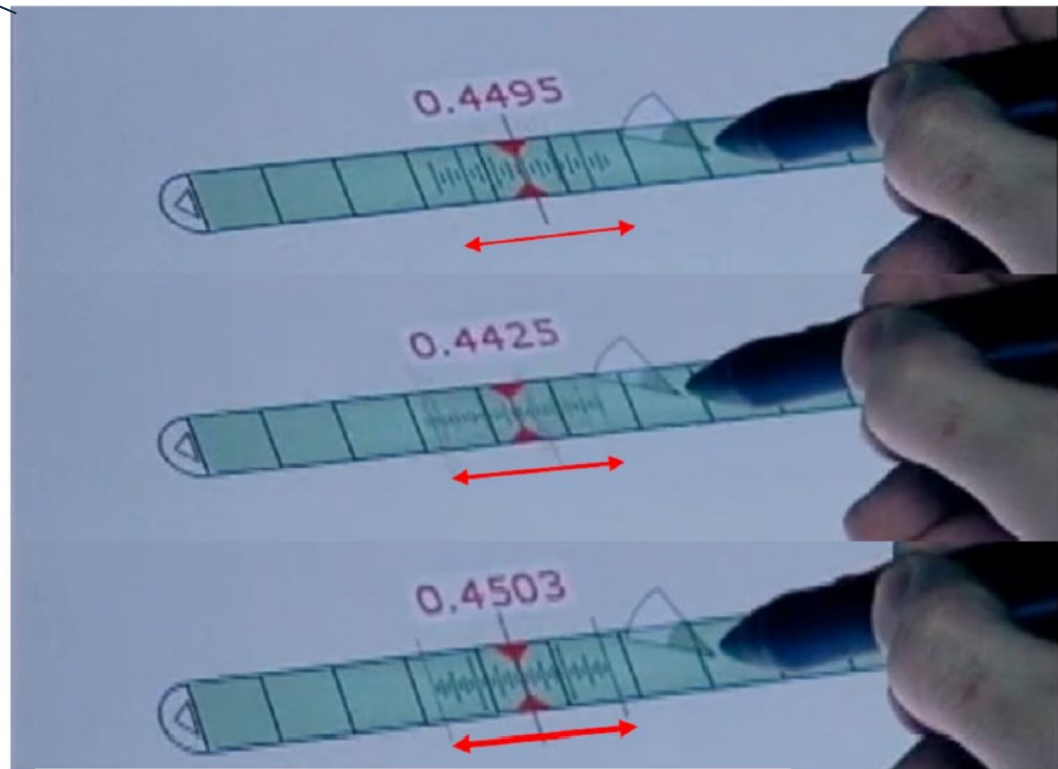
**Rebuttal
to:**

“When Image Content Is Zoomed, the ‘Zoom Operation Is Also Performed on the Zlider Markings.’ Sur-reply, 14

No zooming
is performed
on the Zlider
markings

The markings progressive expand as the user zooms in.

Patent Owner’s Sur-reply



EX1005, 0:20-0:23 (Ramos Video) (annotated)

Issue 3

Hovering is an “aspect” and/or
a “portion” of a touch

The '580 Patent: Touch includes proximity and contact

In various embodiments, the contact pressure level may be represented by a touch state. In the context of the present description, a touch state refers to a predefined subset of the range of measurable contact pressures. For example, in one embodiment, contact pressure levels may be represented as one of four predefined touch states: no touch, light touch, medium touch, and heavy touch. As an option, the lowest touch state may require some form of proximity. In some embodiments, the user may be able to specify how the measurable range of contact pressures is partitioned across a predefined number of touch states. In one embodiment, the

APPLE-1001, 17:22-32

Four “touch states” (from lowest to highest pressure level)

1. No touch
2. Light touch
3. Medium touch
4. Heavy touch

Lowest touch state (no touch) requires “some form of *proximity*”

In the context of the present description, touch event attributes refer to one or more measurable aspects of the user interaction which resulted in a touch event. The measurable aspects may include, but are not limited to, touch state, contact area, contact point, contact pressure level, pressure uncertainty, touch uncertainty, and/or any other measurable aspect of user interaction.

APPLE-1001, 52:57-63

that the conductive lines are perpendicular. When an implement of interaction is placed over the conducting lines, there is a change in capacitance. A high frequency signal may be applied to pairs of conducting lines; the resulting current that passes between the conducting lines is proportional to the capacitance between the conducting lines. This current may be used to sense the touch or proximity of an implement of interaction. A capacitive touch sensor may be capable of

APPLE-1001, 36:31-38

Jobs2 further supports Petitioner's position

'580 Patent

Additional description of heuristics can be found in U.S. Provisional Patent Application No. 60/937,991, "Touch Screen Device, Method, and Graphical User Interface for Determining Commands by Applying Heuristics," filed Jun. 29, 2007, and U.S. patent application Ser. No. 11/850,635 (US 2008-0122796 A1), "Touch Screen Device, Method, and Graphical User Interface for Determining Commands by Applying Heuristics," filed Sep. 5, 2007, the content of which is hereby incorporated by reference in its entirety.

Jobs2

[1197] In some embodiments, the in-contact threshold corresponds to a parameter such as capacitance between the finger and the touch screen display. It may or may not correlate with the event that the finger is in physical contact with the touch screen. For example, the finger may be deemed in contact with the screen if the capacitance between the two reaches the in-contact threshold while the finger has not physically touched the screen. Alternatively, the finger may be deemed out of contact with (but still in range from) the screen if the capacitance between the two is below the in-contact threshold while the finger has a slight physical contact the screen.

(19) United States		(10) Pub. No.: US 2008/0122796 A1
(12) Patent Application Publication		(43) Pub. Date: May 29, 2008
(54) TOUCH SCREEN DEVICE, METHOD, AND GRAPHICAL USER INTERFACE FOR DETERMINING COMMANDS BY APPLYING HEURISTICS		Correspondence Address: MORGAN LEWIS & BOCKIUS LLP/ APPLE COMPUTER INC. 2 PALO ALTO SQUARE, 3000 EL CAMINO REAL PALO ALTO, CA 94306
(76) Inventors: Steven P. Jobs, Palo Alto, CA (US); Scott Forstall, Mountain View, CA (US); Greg Christie, San Jose, CA (US); Stephen O. Lemay, San Francisco, CA (US); Scott Herz, Santa Clara, CA (US); Marcel Van Os, San Francisco, CA (US); Bas Ording, San Francisco, CA (US); Gregory Novick, Santa Clara, CA (US); Wayne C. Westerman, San Francisco, CA (US); Inran Chaudhri, San Francisco, CA (US); Patrick Lee Coffman, Menlo Park, CA (US); Kenneth Kofenda, Sunnyvale, CA (US); Nita K. Ganatra, San Jose, CA (US); Freddy Allen Anzures, San Francisco, CA (US); Jeremy A. Wyle, San Jose, CA (US); Jeffrey Bash, San Jose, CA (US); Michael Matas, San Francisco, CA (US); Paul D. Marcos, Los Altos, CA (US); Charles J. Pizala, San Jose, CA (US); Virgil Scott King, Mountain View, CA (US); Chris Blumenberg, San Francisco, CA (US); Francis Ryan Tolmushy, Cupertino, CA (US); Richard Williamson, Los Gatos, CA (US); Andre M.J. Boyle, Sunnyvale, CA (US); Henri C. Lamiereux, San Carlos, CA (US)		(21) Appl. No.: 11/850,635 (22) Filed: Sep. 5, 2007 Related U.S. Application Data (60) Provisional application No. 60/937,991, filed on Jun. 29, 2007; provisional application No. 60/937,993, filed on Jun. 29, 2007; provisional application No. 60/879,469, filed on Jun. 8, 2007; provisional applica- tion No. 60/879,253, filed on Jan. 7, 2007; provisional application No. 60/824,769, filed on Sep. 6, 2006. Publication Classification (51) Int. Cl. G06F 3/041 (2006.01) (52) U.S. Cl. 345/173 (57) ABSTRACT A computer-implemented method for use in conjunction with a computing device with a touch screen display comprises: detecting one or more finger contacts with the touch screen display, applying one or more heuristics to the one or more finger contacts to determine a command for the device, and processing the command. The one or more heuristics com- prise a heuristic for determining that the one or more finger contacts correspond to a one-dimensional vertical screen scrolling command, a heuristic for determining that the one or more finger contacts correspond to a two-dimensional screen translation command, and a heuristic for determining that the one or more finger contacts correspond to a command to transition from displaying a respective item in a set of items to displaying a next item in the set of items.

Reply, 26; APPLE-1001, 100:52-60; APPLE-1034, [1197]

Jobs2 further supports Petitioner's position

Jobs2

[1192] At $t=t_1$ (FIG. 59A), a user's finger moves down to a distance d_1 away from the touch screen display 112 of the device 100. As shown in FIG. 59E, this distance d_1 is beyond the in-range distance threshold. Therefore, no key icon on the touch screen display gets highlighted.

[1193] At $t=t_2$ (FIG. 59B), the finger moves further down to a distance d_2 away from the touch screen display. As shown in FIG. 59E, this distance d_2 is at or slightly below (i.e., within)

the in-range distance threshold. At this distance the user's finger is in-range of the touch screen display. As a result, the key icon "H" that is close to the finger on the touch screen display is highlighted. In some embodiments, an icon is highlighted by altering its color or altering its shape (e.g., magnifying the icon) or both to give an indication to the user of its status change.

[1194] At $t=t_3$ (FIG. 59C), the finger is distance d_3 away from the touch screen display. As shown in FIG. 59E, this distance d_3 is at or slightly below the in-contact distance threshold. At this distance, the user's finger is in-contact with the touch screen display. As a result, the key icon "H" is further highlighted. In some embodiments, an icon is further highlighted by displaying a magnified instance of the icon next to the icon. As shown in FIG. 59C, the magnified instance (which may have an appearance like a balloon) has a visual link with the key icon "H" on the soft keyboard.

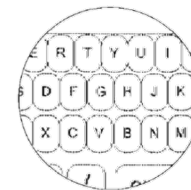
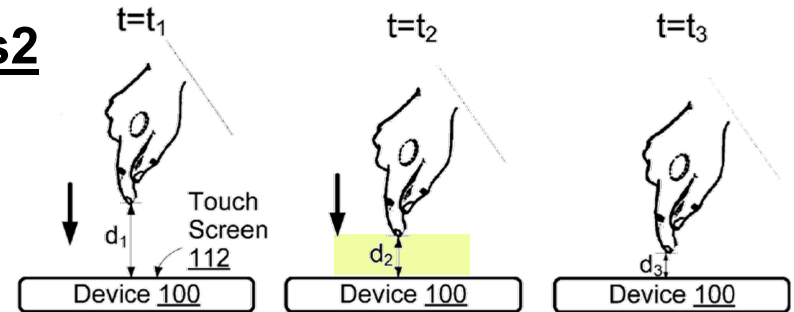


Figure 59A

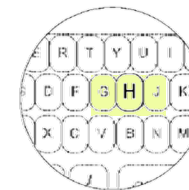


Figure 59B

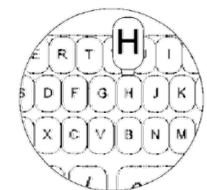


Figure 59C

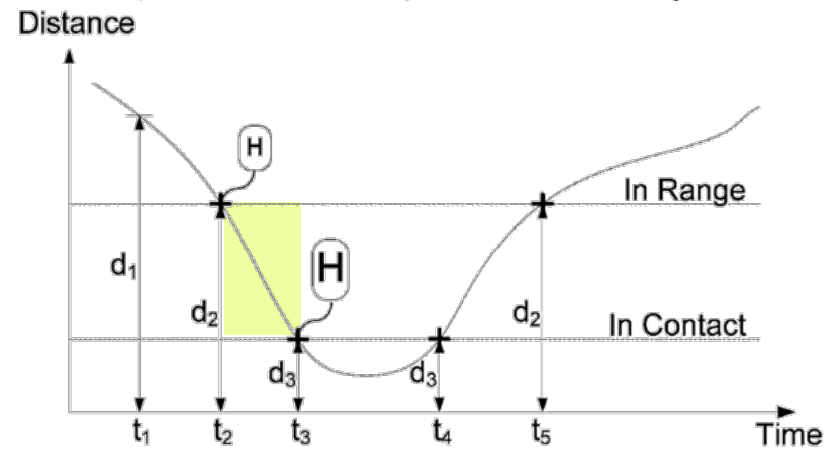


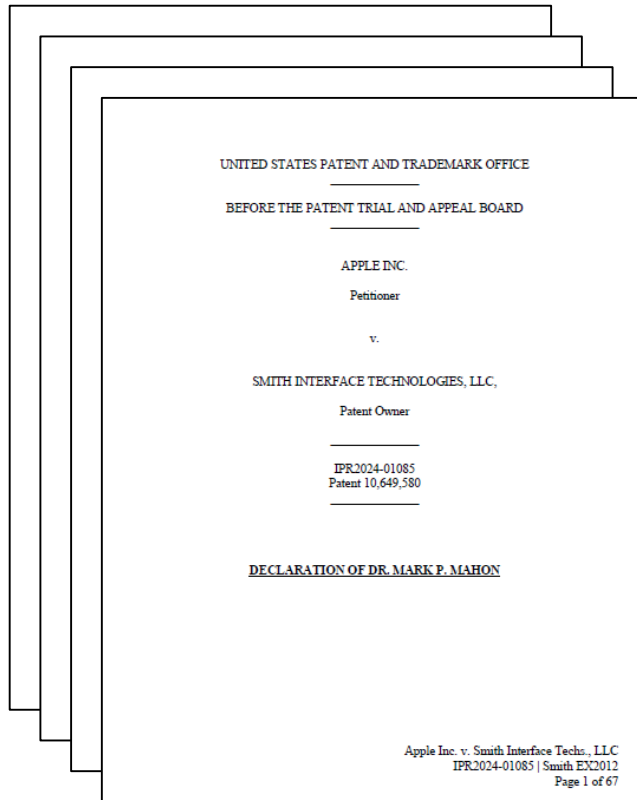
Figure 59E

Reply, 26; APPLE-1034, [1192]-[1194], FIGS. 59A-C, 59E; APPLE-1032, ¶ 45

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Smith's expert did not consider Jobs2 or any other application referenced in the '580 Patent

Dr. Mahon's Declaration



No reference to Jobs2

Reply, 26; APPLE-1033, 20:2-15, 20:17-22; EX2012

Dr. Mahon's Deposition

2 Q. Did you review any of the patents or
3 publications listed in the '580 patent from
4 Column 91, Line 34 to Column 102, Line 3?

5 A. I would again have to
6 cross-reference my materials considered. I do
7 not recall specifically going to a citation in
8 this -- these columns and going on from there to
9 review a particular prior art reference.

10 If I cite it in my declaration, then
11 I did review it. If I did not, I don't recall
12 reviewing it.

13 Q. So, to confirm, would it be fair to
14 say that if these applications do not appear in
15 your declaration, then you did not review them?

17 THE WITNESS: Again, I, I would have
18 to take a look back at all of the materials
19 that I looked at.

20 But, if it is not cited in my
21 declaration, I don't recall going and
22 reviewing a specific citation here.

Dr. Cockburn explained that capacitive touch sensors do not require physical contact

Dr. Cockburn's Supplemental Declaration

APPLE-1001, 52:55-64. Indeed, a POSITA would have understood that a capacitive touch sensor has no knowledge of physical contact (e.g., a touch) or lack thereof. Rather, a capacitive touch sensor measures electrical induction responsive to a measurable user interaction. For example, the '580 Patent describes a device with "a capacitive touch sensor" that includes "two layers of parallel conductive lines, separated by an insulator," where, "when an implement of interaction is *placed over* the conductive lines, there is a change in capacitance." APPLE-1001,

36:27-39 ("This current may be used to sense the touch *or proximity* of an implement of interaction"). That is, a capacitive sensor senses measurable aspects, which include electrical induction from proximity, not just touch. *Id.* As such, it follows that the '580 Patent's recitation of, for example, "four predefined touch states" can include, among those touch states, "no touch," which is also considered to be a part or aspect of a touch because, while physical contact may not have yet occurred, the requisite "proximity," e.g., in the form of a threshold relating to hovering, is met by a measurable aspect of the user interaction.

Reply, 25-28; APPLE-1032, ¶¶ 44-45, 48

54

Claim 1 recites an “aspect” and “portion” of touch

'580 Patent, Claim 1 (excerpted)

APPLE-1001, 102:24-34

[1g] detect, via the touch screen, at least a portion of touch on the [at] least one user interface element;

[1h] when an aspect of the touch is detected to surpass a threshold, display, via the touch screen, a plurality of markings in a second virtual display layer that appears to have a lesser depth than the first virtual display layer,

[1i] where at least a portion of the second virtual display layer is at least partially translucent so that at least a portion of the contents of the first virtual display layer is visible through the at least portion of the second virtual display layer;

Patent Owner's Response

POR, 40

1. A “touch” is a touch; hovering is not a “touch”

For Limitation [1g], Petitioner assumes there is no difference between a stylus not touching, but hovering within a threshold distance of the touch screen and touching (*i.e.* actually contacting) the screen. Petitioner is wrong.

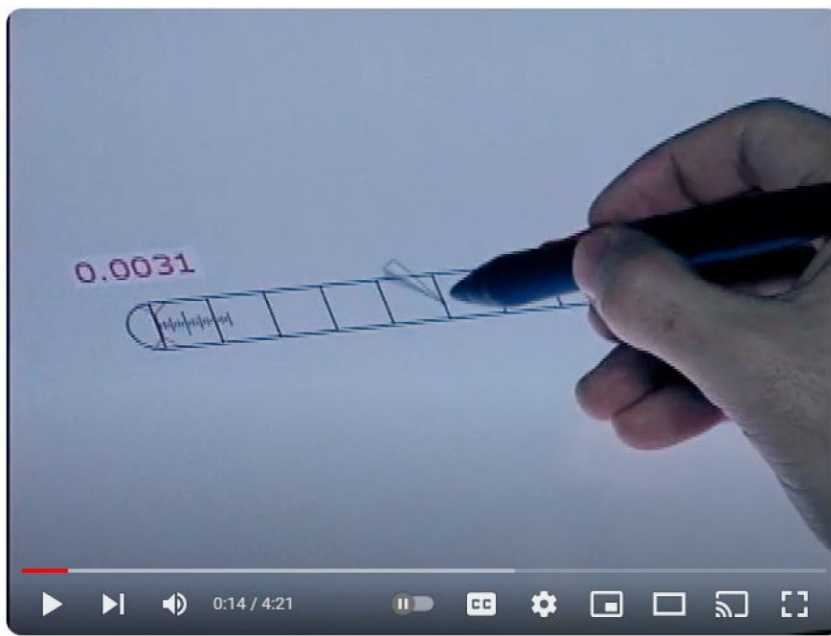
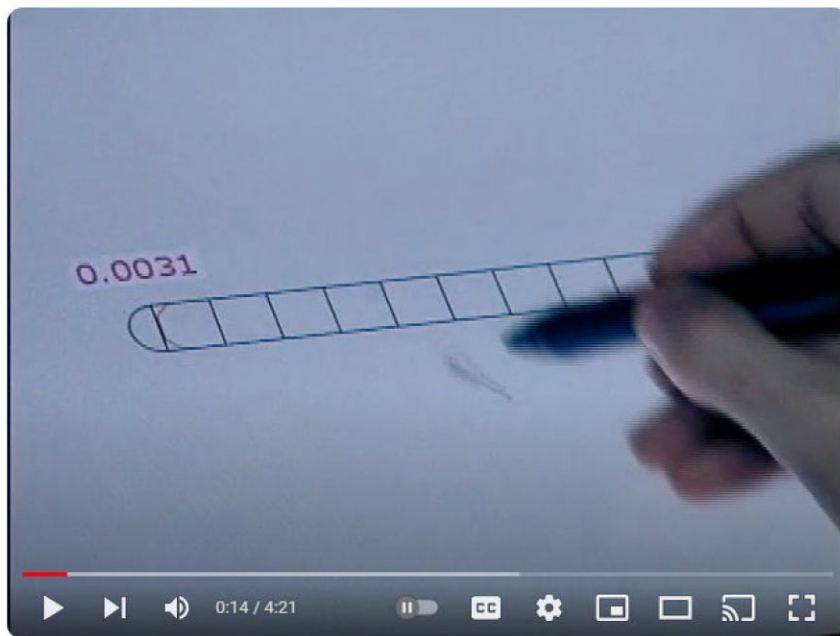
“detect[s] ... at least a portion of touch”

Ramos Paper

THE ZLIDER

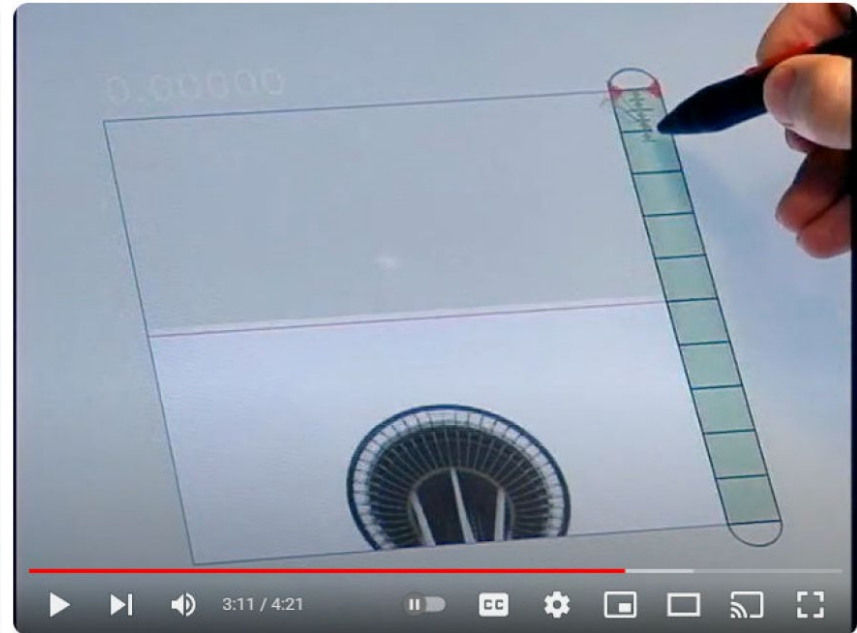
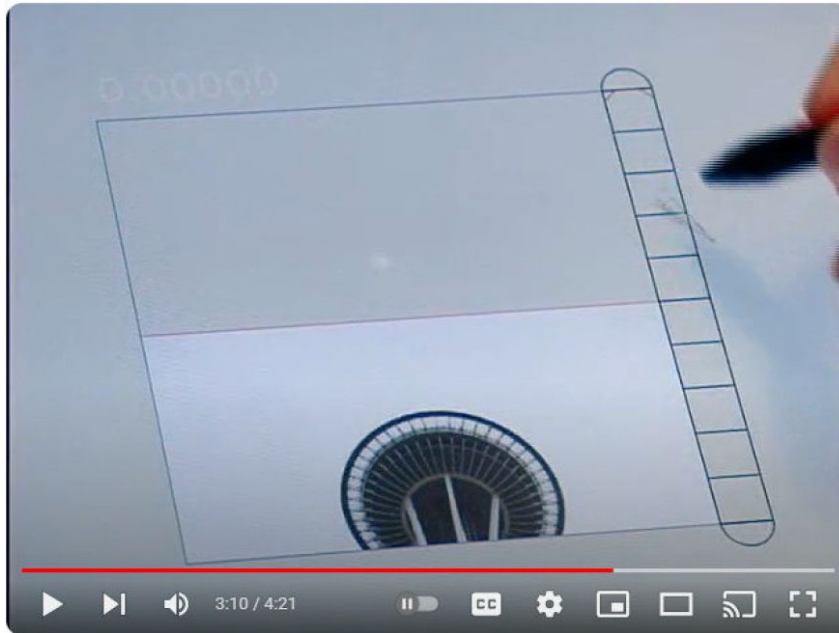
The Zlider widget (Figure 1) consists of a rectangular working area that the user can scrub in order to adjust a parameter $v \in [low, high]$, where *low* and *high* are arbitrary limit values. There is no particular handle the user needs to grab to use the widget. To operate the Zlider the user taps and drags its pointer across the working area until the desired value is reached or effect is achieved. At all

Ramos Video



“when an aspect of the touch is detected to surpass a threshold, display ... a plurality of markings”

Ramos Video



Issue 4

The Dependent Claims Are Obvious

Issue 4A

It would have been obvious to add a duration magnitude threshold per Ording (claims 9, 32, and 69)

Claims 9, 32, and 69

'580 Patent, Claim 9

9. The apparatus of claim 1, wherein the apparatus is configured such that the aspect of the touch includes a duration aspect and the threshold includes a duration magnitude threshold.

Petition

A POSITA would have recognized or at least found obvious, based on *Ording*, that a gesture includes at least a duration and a length that are used to recognize the type of gesture (e.g., a tap or a swipe). APPLE-1003, ¶84. Indeed, use of such thresholds was well-known by the Critical Date and would have at least been obvious to include in *Ording* to distinguish between an intentional touch and an unintentional touch, or various types of intentional gestures. *Id.*; see APPLE-1006, [0141]; APPLE-1020, [0031], [0033] (“ignore or reject any touches that have a duration that is less than a predetermined minimum amount of time, to ignore or reject touches that do not traverse a predetermined minimum portion of the touch element”); APPLE-1023, [0019], [0060]-[0062]; see also APPLE-1003, ¶84 (citing APPLE-1023). That is, when an aspect of the touch (e.g., its duration

Patent Owner’s Response

But the Zlider in the Ramos Paper and Video is not using duration to determine whether a touch is *intentional*. EX2012, ¶144; EX2008, 17:16–23 (agreeing there is no explicit disclosure or mention of the use of time thresholds to ignore inadvertent contacts in the Ramos Paper that describes the Zlider using duration to determine whether the touch from the user is intentional). Instead, the Zlider uses *proximity* to sense whether the stylus is approaching the working area (i.e., moving the stylus past a threshold and closer to the working area “activates” the Zlider, thus signaling that the user has an intention to interact with the Zlider). EX2012, ¶145. Nor does the Zlider look at any “time period” associated with the touch to identify a touch. EX2012, ¶145.

Using a duration threshold would have been obvious

Petitioner's Reply

Reply, 32-33

is not using duration" is misguided. Indeed, one of the reasons a POSITA would have been motivated to modify Ramos Paper and Video to use a well-known characteristic, such as time, to determine whether a touch is intentional is that the Ramos Paper and Video do not mention or otherwise foreclose the use of time/duration when discussing the Zlider. APPLE-1032, ¶54; *see also* APPLE-1003, ¶114 ("Ording recognizes a 'time period' associated with a finger's contact with a touch screen") (citing APPLE-1006³, [0141]; APPLE-1020, [0033]). Dr. Cockburn further testifies as to the obviousness of using "at least a duration and a length," per Ording, "to recognize the type of gesture (e.g., a tap or a swipe)." APPLE-1003, ¶84. "Ording explains that a swipe gesture would not register as a tap, at least suggesting that the gesture was determined to have too long of a distance (as compared to a

distance threshold) and/or *too long of a duration (as compared to a time threshold)* to be identified as a tap," and "use of such thresholds was well-known by the Critical Date." *Id.* (citing APPLE-1006, [0096], [0141]; APPLE-1020, [0031], [0033] ("ignore or reject any touches that have a duration that is less than a predetermined minimum amount of time, to ignore or reject touches that do not traverse a predetermined minimum portion of the touch element"); APPLE-1023, [0019], [0060]-[0062]). Thus, a POSITA would have been amply motivated to incorporate

Ording

APPLE-1006, [0141]

[0141] A finger contact with the touch screen display (e.g., a finger tap) is a process involving multiple actions including the finger approaching the display, the finger being in contact with the display, and the finger leaving the display. During this process, the finger's contact area increases from zero to a maximum contact area and then reduces to zero. In some embodiments, for a stationary finger contact with the display, its finger contact area is defined as the maximum contact area of the finger with the touch screen display during a time period corresponding to the stationary contact.

Saponas

APPLE-1020, [0033]

[0033] In another embodiment, the processor 150 executing the firmware module 146 can cause the controller 130 to ignore or reject any touches that have a duration that is less than a predetermined minimum amount of time, to ignore or reject touches that do not traverse a predetermined minimum portion of the touch element 112, to ignore or reject touches that do not traverse a predetermined target portion of or location upon the touch element 112, to ignore or reject touches that occur across more than a predetermined portion of the touch element 112 (e.g., the object touching the touch element 112 is detected as exceeding an anticipated size of a touching member), or to apply other criteria and parameters to distinguish between valid and invalid touches or noise. In this embodiment, a second sensor, such as an accelerometer or other sensor, may be used to distinguish between valid and invalid touches. More particularly, the processor 150 exec⁶¹

Issue 4B

The “first touch” and “second touch” are part of the same single continuous gesture with constant contact (claims 29 and 65)

Claims 29 and 65

'580 Patent, Claim 22 (excerpted)

detecting, via the touch screen, at least a portion of touch; in response to an aspect of the touch being detected to surpass a threshold, displaying, via the touch screen, a plurality of markings in a second virtual display layer that appears to have a lesser depth than the first virtual display layer, where at least a portion of the second virtual display layer is at least partially translucent so that at least a portion of the contents of the first virtual display layer is visible through the at least portion of the second virtual display layer;

detecting, via the touch screen, another touch on at least one of the plurality of marking; and

in response to detection of the another touch on the at least one of the plurality of marking in the second virtual display layer that appears to have the lesser depth than the first virtual display layer, displaying, via the touch screen, a movement of one or more of the plurality of markings in the second virtual display layer; and

'580 Patent, Claim 29

29. The method of claim 23, wherein the touch and the another touch are detected to be part of a single continuous gesture with constant contact with the electronic device.

RROD teaches a single continuous gesture including meeting a threshold proximity, contact, and touch movement

Petition

A POSITA would have understood that a touch in the Ramos Paper and Ramos Video includes both contact with the touch screen and meeting a threshold proximity between the stylus and the touch screen. APPLE-1003, ¶80. Indeed, the '580 Patent explains that “contact pressure level may be represented by a touch state,” which “refers to a predefined subset of the range of measurable contact pressures,” where the “lowest touch state may require some form of proximity.” APPLE-1001, 17:22-36; *see also* APPLE-1006, [0141] (“A finger contact with the

“a touch”
(first touch)

[1.i]

The RROD renders obvious [1.i]. APPLE-1003, ¶94. The Ramos Paper shows an example of a touch movement that occurs on the markings, as indicated by the cursor on the markings and the green arrow that represents a sliding motion.

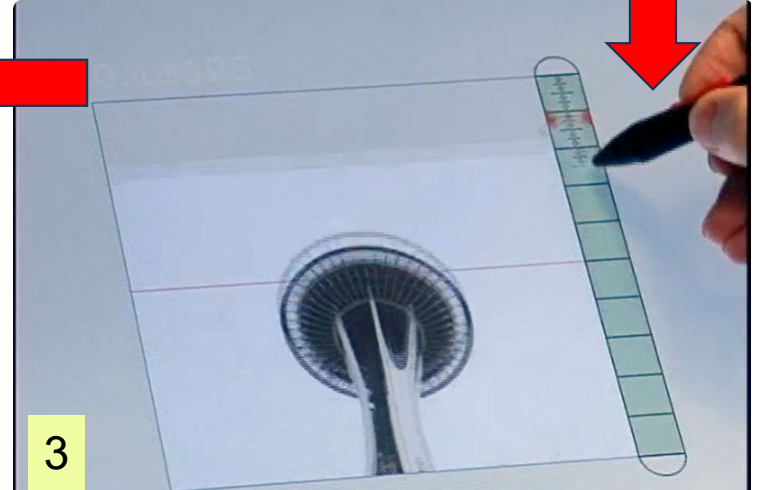
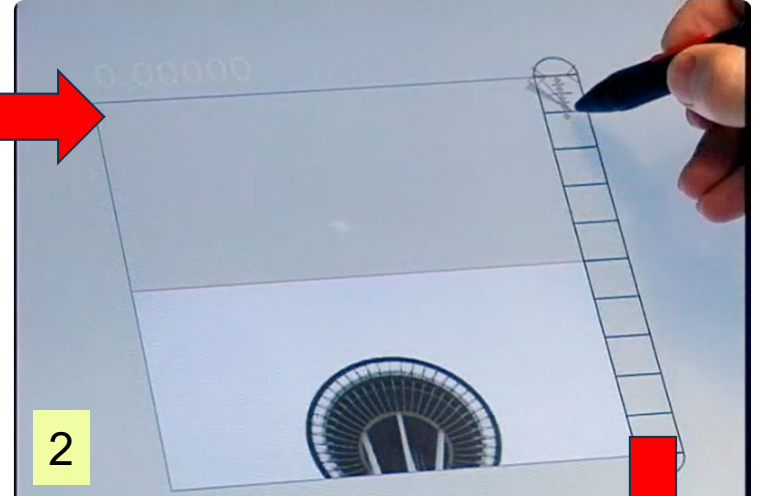
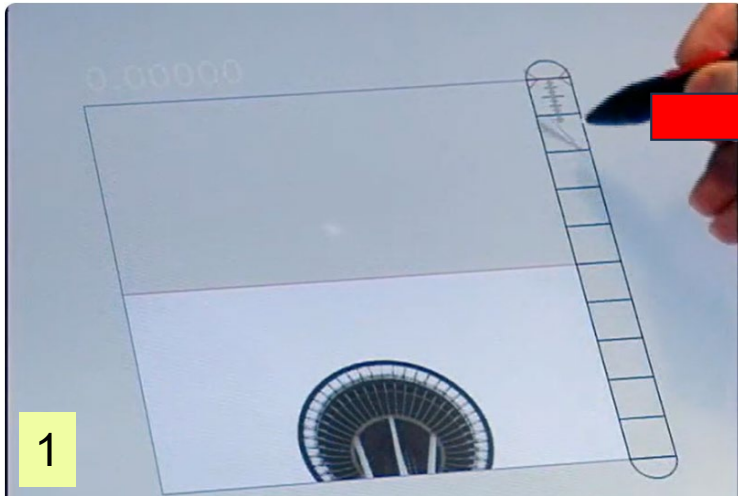
[22.e]

See [1.i]. The “touch movement” of [1.i] corresponds to “another touch.”

“another touch”
(second touch)

RROD teaches a single continuous gesture including meeting a threshold proximity, contact, and touch movement

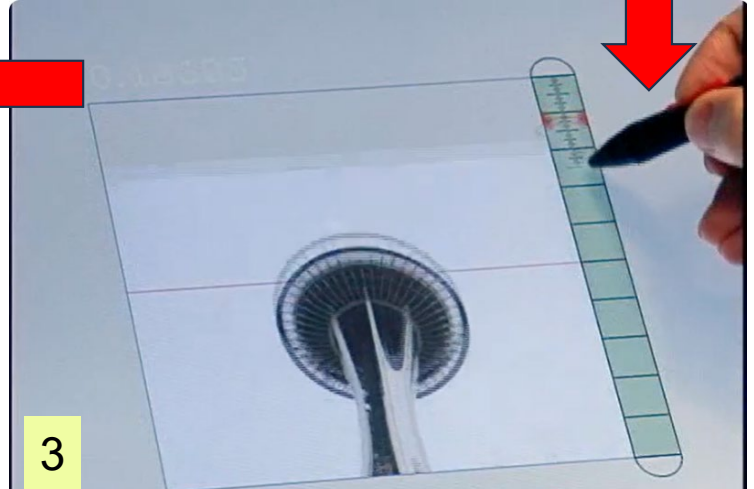
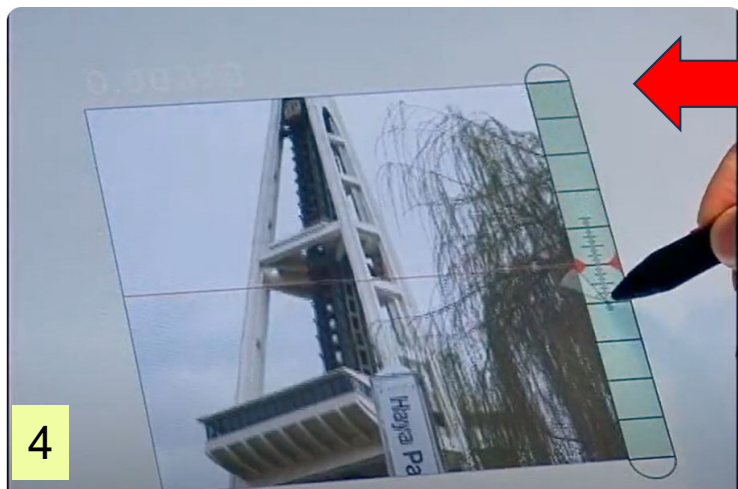
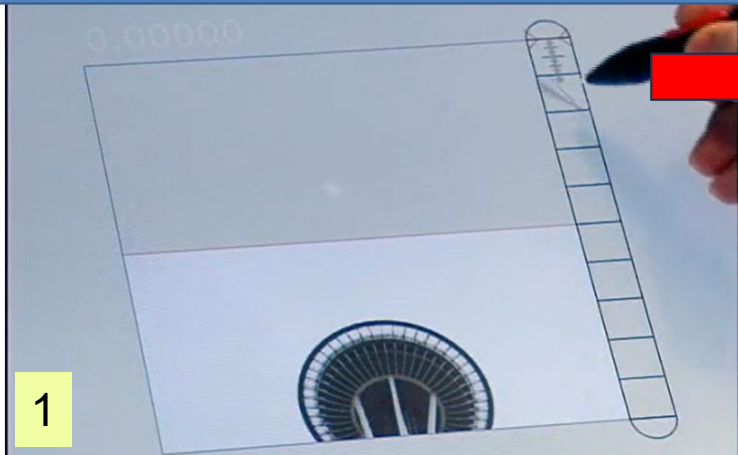
Ramos Video



RROD teaches a single continuous gesture including meeting a threshold proximity, contact, and touch movement

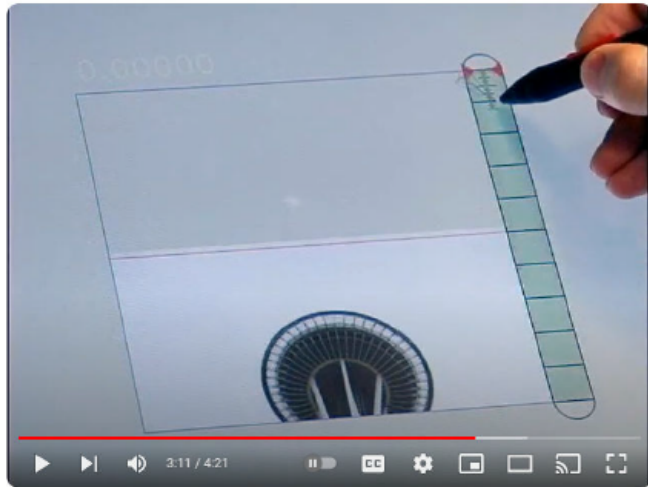
**Rebuttal
to:**

"Ramos neither states nor depicts that the Zlizer is designed to be used in a single unbroken press from Vernier invocation through parameter manipulation" Sur-reply, 21



The Petition clearly maps the “touch” and “another touch”

Petition



APPLE-1005, 3:11 (displaying the touch screen after a touch is detected on the working area, as evidenced by the appearance of the Vernier on the working area)

A POSITA would have understood that a touch in the Ramos Paper and Ramos Video includes both contact with the touch screen and meeting a threshold proximity between the stylus and the touch screen. APPLE-1003, ¶80. Indeed, the '580 Patent explains that “contact pressure level may be represented by a touch state,” which “refers to a predefined subset of the range of measurable contact pressures,” where the “lowest touch state may require some form of proximity.” APPLE-1001, 17:22-36; see also APPLE-1006, [0141] (“A finger contact with the touch screen display (e.g., a finger tap) is a process involving multiple actions

Pet., 47



APPLE-1005, 3:16 (showing the contents before the user increases pressure on the touchscreen)



APPLE-1005, 3:19 (showing the enlarged size of the content (image) after the user increases pressure on the touchscreen, as indicated by the pressure cursor, and the plurality of markings of the Vernier moving closer together)

Pet., 71-72; see *id.*, 61-64

67

Issue 4C

A POSITA would have been motivated to modify the RROD with Hayward (claim 48)

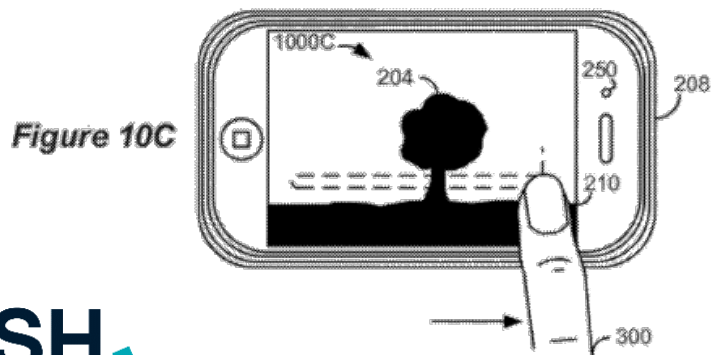
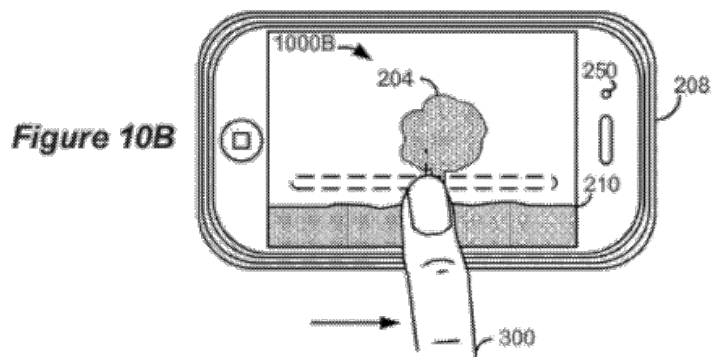
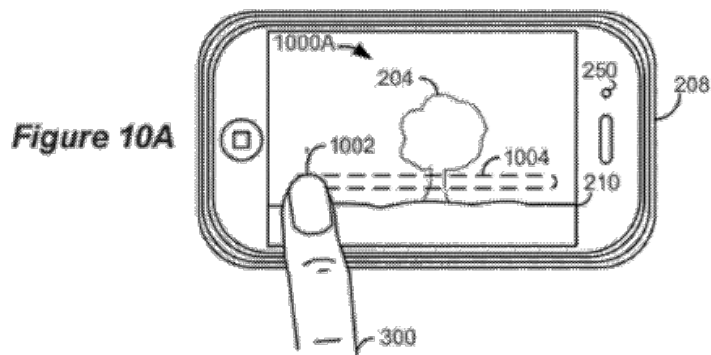
Claim 48

'580 Patent, Claim 48

48. The method of claim **23**, wherein a **lighting operation** is performed on the at least portion of the contents of the first virtual display layer, where the lighting operation is performed based on a movement of one or more of a plurality of different markings in the second virtual display layer, and the at least portion of the second virtual display layer is at least partially translucent so that a result of the lighting operation on the at least portion of the contents of the first virtual display layer is visible through the at least portion of the second virtual display layer.

Hayward teaches the use of a widget for adjusting image contrast

Hayward



lower than its current setting. As shown in FIG. 10A, scene 1000A comprising tree 204 has low levels of contrast between the tree 201 and the background sky. In FIG. 10A, the finger of user 300 initiates a touch gesture with the left hand side of touch screen 210. As FIGS. 10A-10C are meant to illustrate a relative gesture, the location that the user 300 selects for his or her initial contact with the touch screen is not important to the determination of the value that will ultimately be sent to the input parameter of the selected image contrast image filter. As such, logical slider 1004 is shown in dashed lines on device 208 with logical handle 1002 also shown in dashed lines on device 208 and representing the current location of the user 300's finger with respect to where the gesture was initiated. As shown in FIG. 10B, the user 300's finger has moved roughly halfway across the width of touch screen 210, and, accordingly, scene 1000B comprising tree 204 shows a higher

level of contrast between the tree 204 and the background sky than scene 1000A. As shown in FIG. 10C, the user 300's finger has moved all the way to the right hand side of touch screen 210, indicating that the user wishes the image filter to apply the maximum allowable amount of contrast to the captured image data, and, accordingly, scene 1000C comprising tree 204 shows the highest level of contrast between the tree 204 and the background sky, when compared to scenes 1000A and 1000B.

A POSITA would have been motivated to modify RROD with Hayward

Ramos Paper

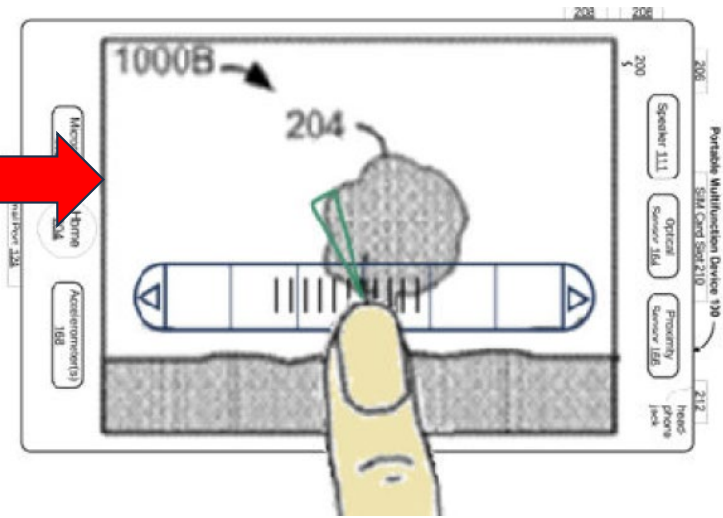
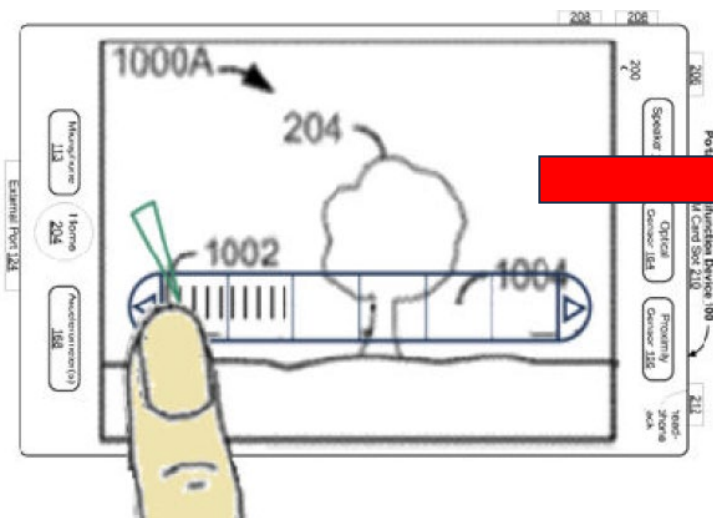
precision adjustments. Example scenarios where users may need to fluidly adjust the scale of the parameter space in order to make precise parameter adjustments include:

- *Graphic applications:* Users may need to quickly select a precise pixel from a large bitmap that cannot be displayed at pixel-visible resolution on a small screen. Also, users may need to precisely adjust a value controlling a visual feature, such as the blending across several images.

Ording

[0027] The device supports a variety of applications, such as one or more of the following: a telephone application, a video conferencing application, an e-mail application, an instant messaging application, a blogging application, a photo management application, a digital camera application, a digital video camera application, a web browsing application, a digital music player application, and/or a digital video player application.

image. In conjunction with an imaging module 143 (also called a camera module), the optical sensor 164 may capture still images or video. In some embodiments, an optical



A POSITA would have been motivated to modify RROD with Hayward

Rebuttal to: *“But Petitioner never identifies a shortcoming in Ramos that Hayward solves.” Sur-reply, 24*

Patent Owner’s Sur-reply

Hayward describes a programmatic layer that maps touch gestures to image processing techniques. POR, 55; EX2012, ¶152. Petitioner alleges that a POSITA would have mined Hayward’s scenarios for generic gesture ideas and grafted them onto the Zlider in RROD. Reply, 34. But Petitioner never identifies a shortcoming in Ramos that Hayward solves. Ramos’ interface already provides continuous, precise manipulation using the Zlider working area and Vernier markings in a widget separate from the image content. Hayward’s gestures operate directly on the image,

Ramos Paper

precision adjustments. Example scenarios where users may need to fluidly adjust the scale of the parameter space in order to make precise parameter adjustments include:

- **Graphic applications:** Users may need to quickly select a precise pixel from a large bitmap that cannot be displayed at pixel-visible resolution on a small screen. Also, users may need to precisely adjust a value controlling a visual feature, such as the blending across several images.

Petitioner’s Reply

The Petition provides precisely this proper reasoning. Pet., 96-99. Indeed, Ramos Paper contemplates scenarios, such as those described in Hayward, where its Zlider could be deployed (e.g., graphic applications), thus providing the motivation for extending use of the Zlider to further graphic applications, such as the image-capturing related parameters disclosed in Hayward. APPLE-1004, 1 (“Interactions such as identifying and then picking a single pixel from a high resolution image...”), 2; APPLE-1032, ¶57.

Sur-reply, 24; Pet., 96-99; APPLE-1004, 2; Reply, 34

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

A POSITA would have been motivated to modify RROD with Hayward

Rebuttal to:

“Substituting a location-independent gesture translation for Zliding would change the very mode of interaction, not optimize it.” Sur-reply, 24

Patent Owner’s Sur-reply

in Ramos that Hayward solves. Ramos’ interface already provides continuous, precise manipulation using the Zlider working area and Vernier markings in a widget separate from the image content. Hayward’s gestures operate directly on the image, without being restricted to operating within the boundaries of a widget:

In FIG. 10A, the finger of user 300 initiates a touch gesture with the left hand side of touch screen 210. As FIGS. 10A-10C are meant to illustrate a relative gesture, *the location that the user 300 selects for his or her initial contact with the touch screen is not important* to the determination of the value that will ultimately be sent to the input parameter of the selected image contrast image filer.

EX1016, [0067] (emphasis added); *see also* Pet., 95 (citing same). Substituting a location-independent gesture translation for Zliding would change the very mode of interaction, not optimize it.

Hayward

the tree 201 and the background sky. In FIG. 10A, the finger of user 300 initiates a touch gesture with the left hand side of touch screen 210. As FIGS. 10A-10C are meant to illustrate a relative gesture, the location that the user 300 selects for his or her initial contact with the touch screen is not important to the determination of the value that will ultimately be sent to the input parameter of the selected image contrast image filer. As such, logical slider 1004 is shown in dashed lines on device 208 with logical handle 1002 also shown in dashed lines on device 208 and representing the current location of the user 300’s finger with respect to where the gesture was initiated. As shown in FIG. 10B, the user 300’s finger has moved roughly halfway across the width of touch screen 210, and, accordingly, scene 1000B comprising tree 204 shows a higher

level of contrast between the tree 204 and the background sky than scene 1000A. As shown in FIG. 10C, the user 300’s finger has moved all the way to the right hand side of touch screen 210, indicating that the user wishes the image filter to apply the maximum allowable amount of contrast to the captured image data, and, accordingly, scene 1000C comprising tree 204 shows the highest level of contrast between the tree 204 and the background sky, when compared to scenes 1000A and 1000B.