US011106352B2

(12) **United States Patent**
Tyler

(10) **Patent No.: US 11,106,352 B2**
(45) **Date of Patent: Aug. 31, 2021**

(54) **DEVICES, METHODS, AND GRAPHICAL USER INTERFACES FOR ACCESSING NOTIFICATIONS**

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(73) Assignee: **APPLE INC.**, Cupertino, CA (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **16/915,971**

(22) Filed: **Jun. 29, 2020**

(65) **Prior Publication Data**

US 2020/0333935 A1 Oct. 22, 2020

Related U.S. Application Data

(63) Continuation of application No. 16/354,012, filed on Mar. 14, 2019, which is a continuation of application
(Continued)

(51) **Int. Cl.**
G06F 3/0488 (2013.01)
G06F 1/3234 (2019.01)
(Continued)

(52) **U.S. Cl.**
CPC ***G06F 3/0488*** (2013.01); ***G06F 1/1694*** (2013.01); ***G06F 1/3262*** (2013.01);
(Continued)

(58) **Field of Classification Search**
None
See application file for complete search history.

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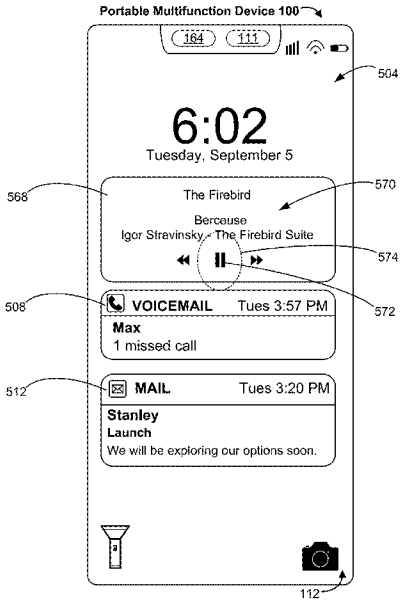
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(Continued)

Primary Examiner — Toan H Vu
(74) *Attorney, Agent, or Firm* — Morgan, Lewis & Bockius LLP

(57) **ABSTRACT**

While displaying the wake screen user interface, in response to detecting a first input that is directed to a portion of the wake screen user interface: if the first input includes first movement in a first direction, the computer system displays of a home screen user interface; and the first movement is in a second direction, the computer system displays a widget screen user interface that is different from the wake screen user interface and the home screen user interface, wherein the widget screen user interface includes a plurality of user interface objects corresponding to different applications, wherein a respective user interface object of the plurality of user interface objects contains application content from an application corresponding to the respective user interface object, and when selected, causes display of an application corresponding to the respective user interface object.

24 Claims, 253 Drawing Sheets



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Related U.S. Application Data

No. 15/715,005, filed on Sep. 25, 2017, now Pat. No. 10,466,889.

(60) Provisional application No. 62/507,181, filed on May 16, 2017.

(51) **Int. Cl.**

H04M 1/673	(2006.01)
H04L 12/58	(2006.01)
G06F 21/36	(2013.01)
G06F 3/0481	(2013.01)
G06F 1/16	(2006.01)
G06F 3/01	(2006.01)
G06F 3/0485	(2013.01)
G06F 21/62	(2013.01)
H04M 1/724	(2021.01)
H04M 1/72436	(2021.01)

(52) **U.S. Cl.**

CPC ***G06F 1/3265*** (2013.01); ***G06F 3/016*** (2013.01); ***G06F 3/0485*** (2013.01); ***G06F 3/04817*** (2013.01); ***G06F 3/04883*** (2013.01); ***G06F 21/36*** (2013.01); ***G06F 21/629*** (2013.01); ***H04L 51/24*** (2013.01); ***H04M 1/673*** (2013.01); ***H04M 1/724*** (2021.01); *H04L 51/32* (2013.01); *H04M 1/72436* (2021.01); *H04M 2250/22* (2013.01)

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Invitation to Pay Additional Fees, dated Aug. 28, 2018, received in International Patent Application No. PCT/US2018/032395, which corresponds with U.S. Appl. No. 15/715,005, 17 pages.

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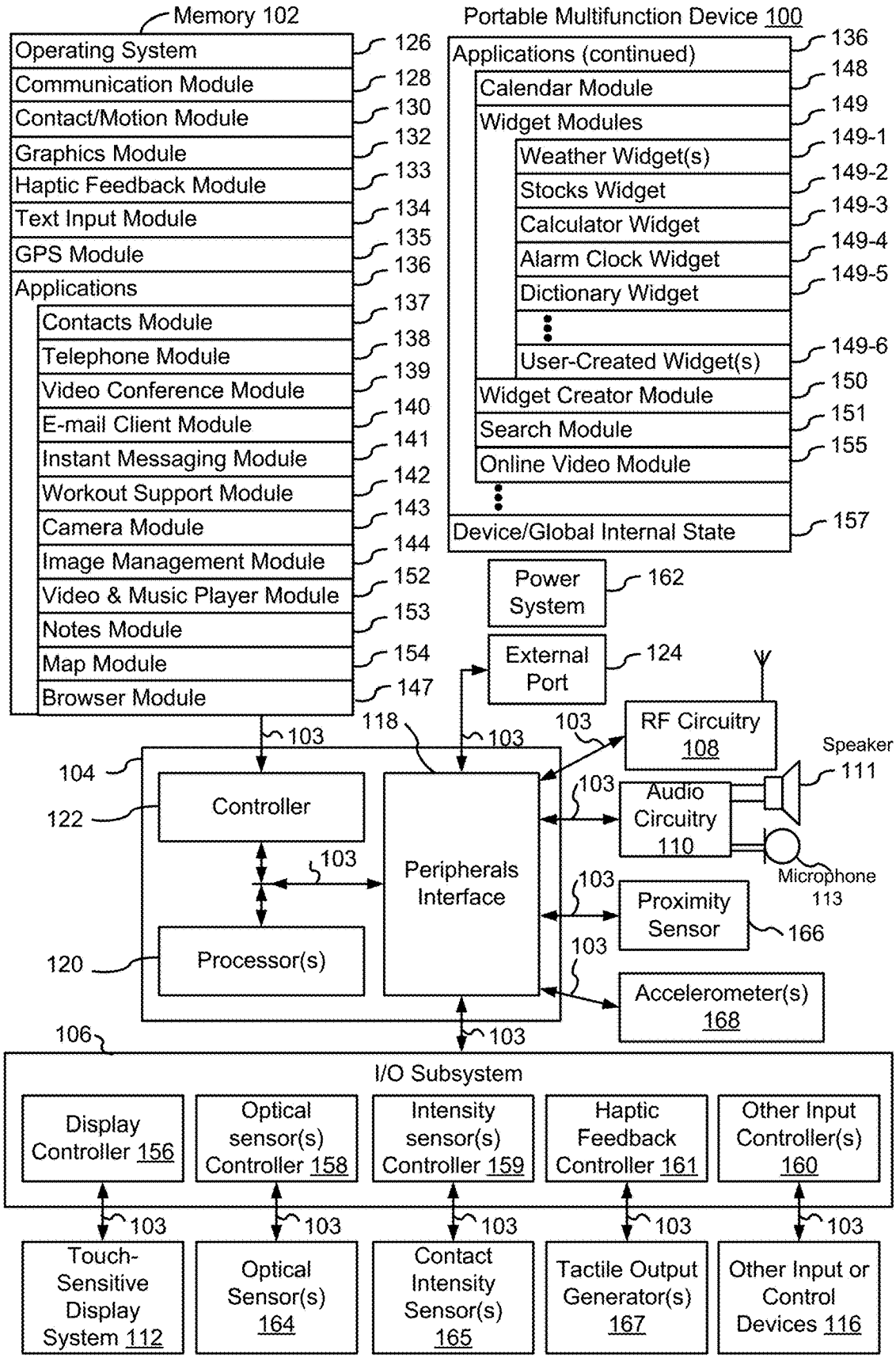


Figure 1A

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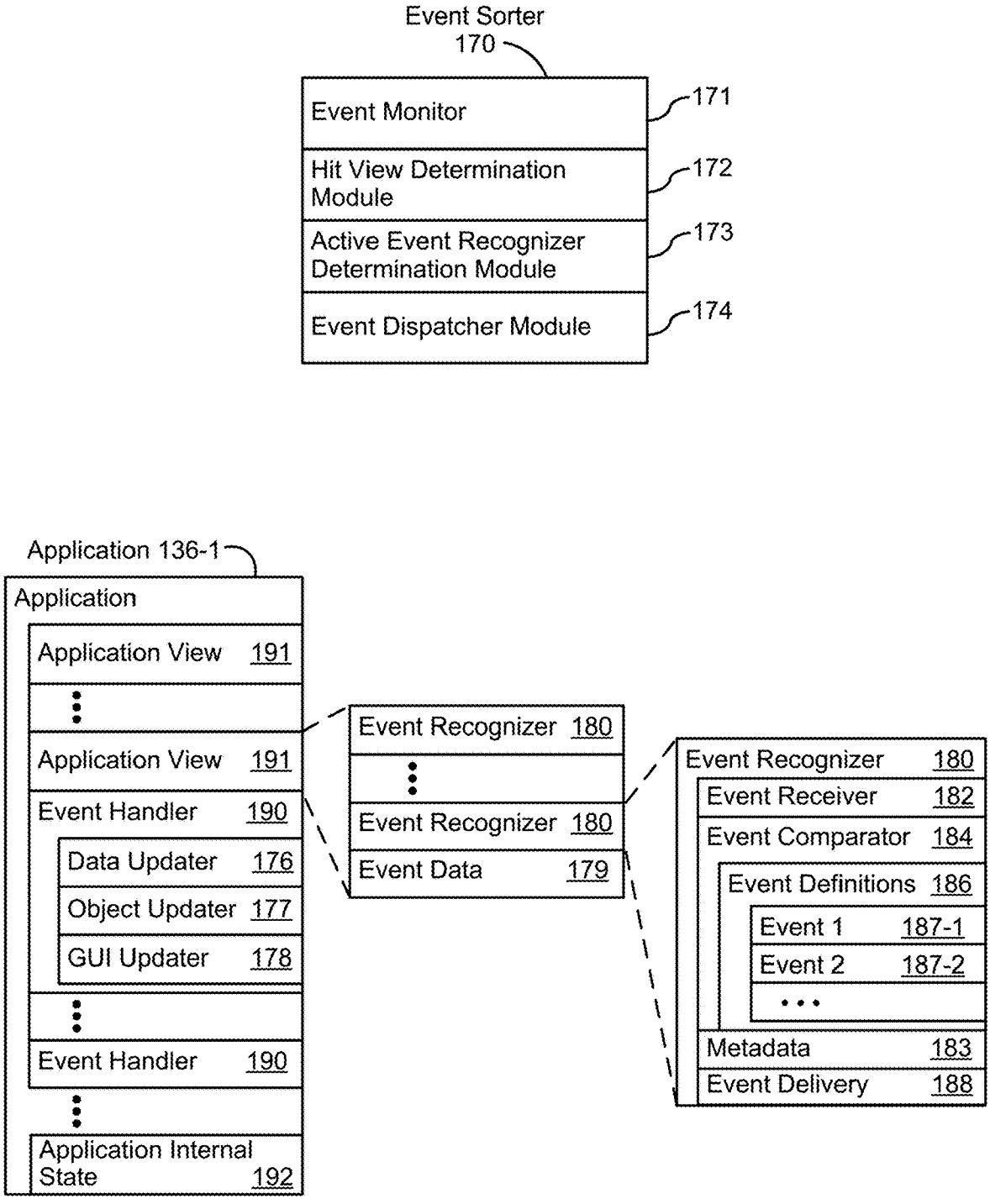

Event Sorter
170
Event Monitor
171
Hit View Determination Module
172
Active Event Recognizer Determination Module
173
Event Dispatcher Module
174
Application 136-1
Application
Application View 191
Application View 191
Event Handler 190
Data Updater 176
Object Updater 177
GUI Updater 178
Event Handler 190
Application Internal State 192
Event Recognizer 180
Event Recognizer 180
Event Data 179
Event Recognizer 180
Event Receiver 182
Event Comparator 184
Event Definitions 186
Event 1 187-1
Event 2 187-2
Metadata 183
Event Delivery 188

Figure 1B

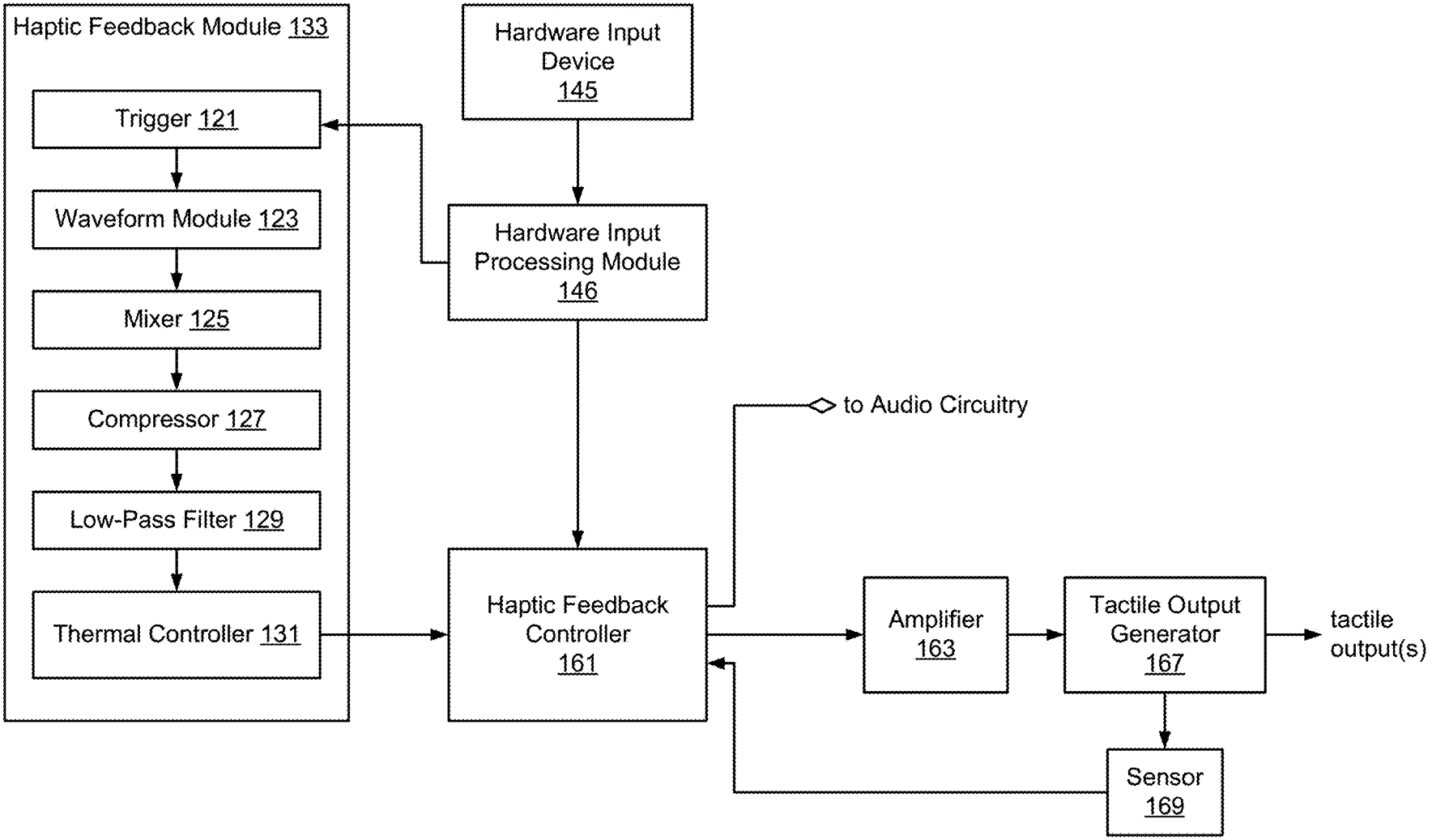

Haptic Feedback Module 133
Trigger 121
Waveform Module 123
Mixer 125
Compressor 127
Low-Pass Filter 129
Thermal Controller 131
Hardware Input Device 145
Hardware Input Processing Module 146
Haptic Feedback Controller 161
to Audio Circuitry
Amplifier 163
Tactile Output Generator 167
tactile output(s)
Sensor 169

Figure 1C

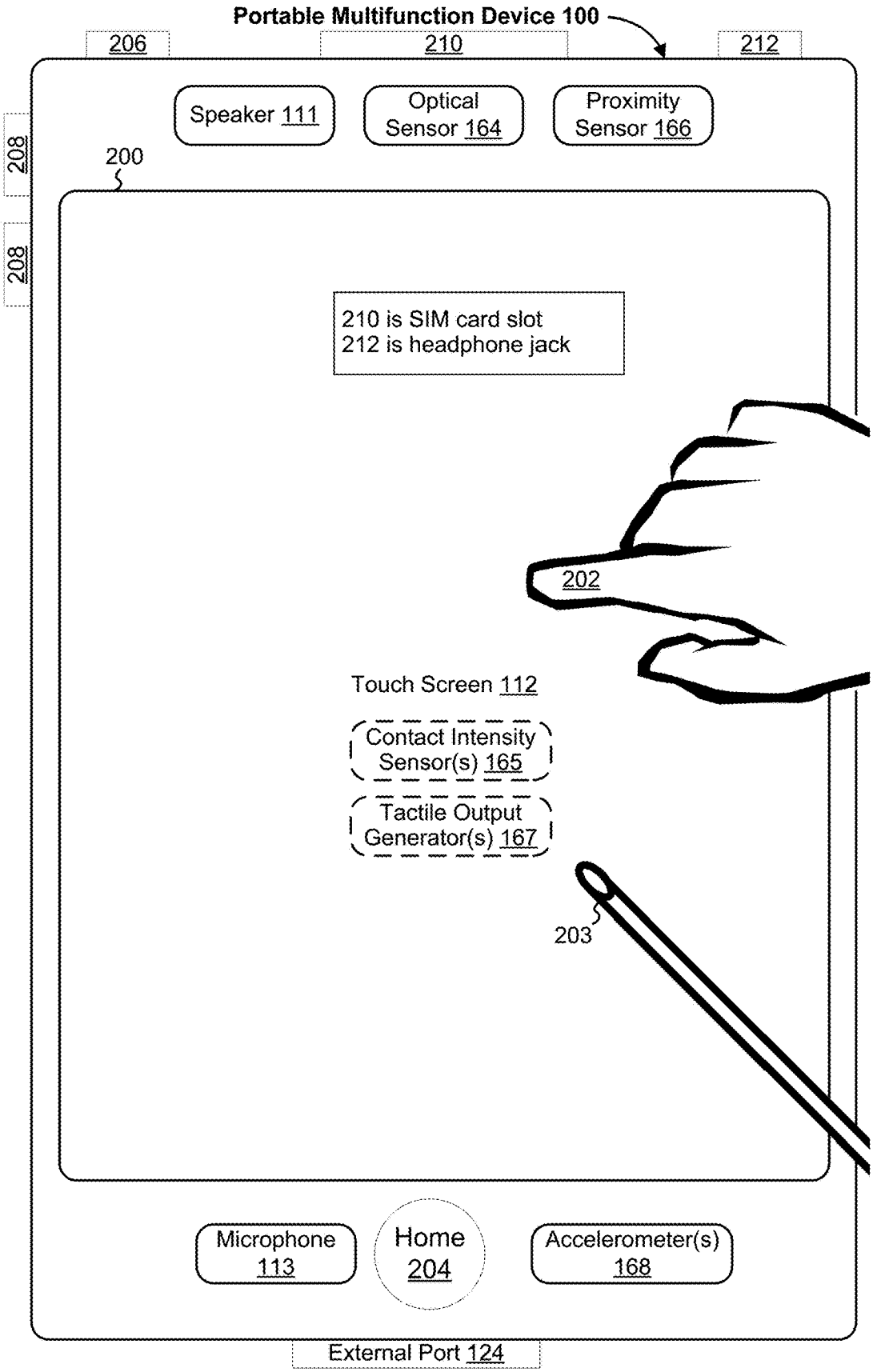


Figure 2

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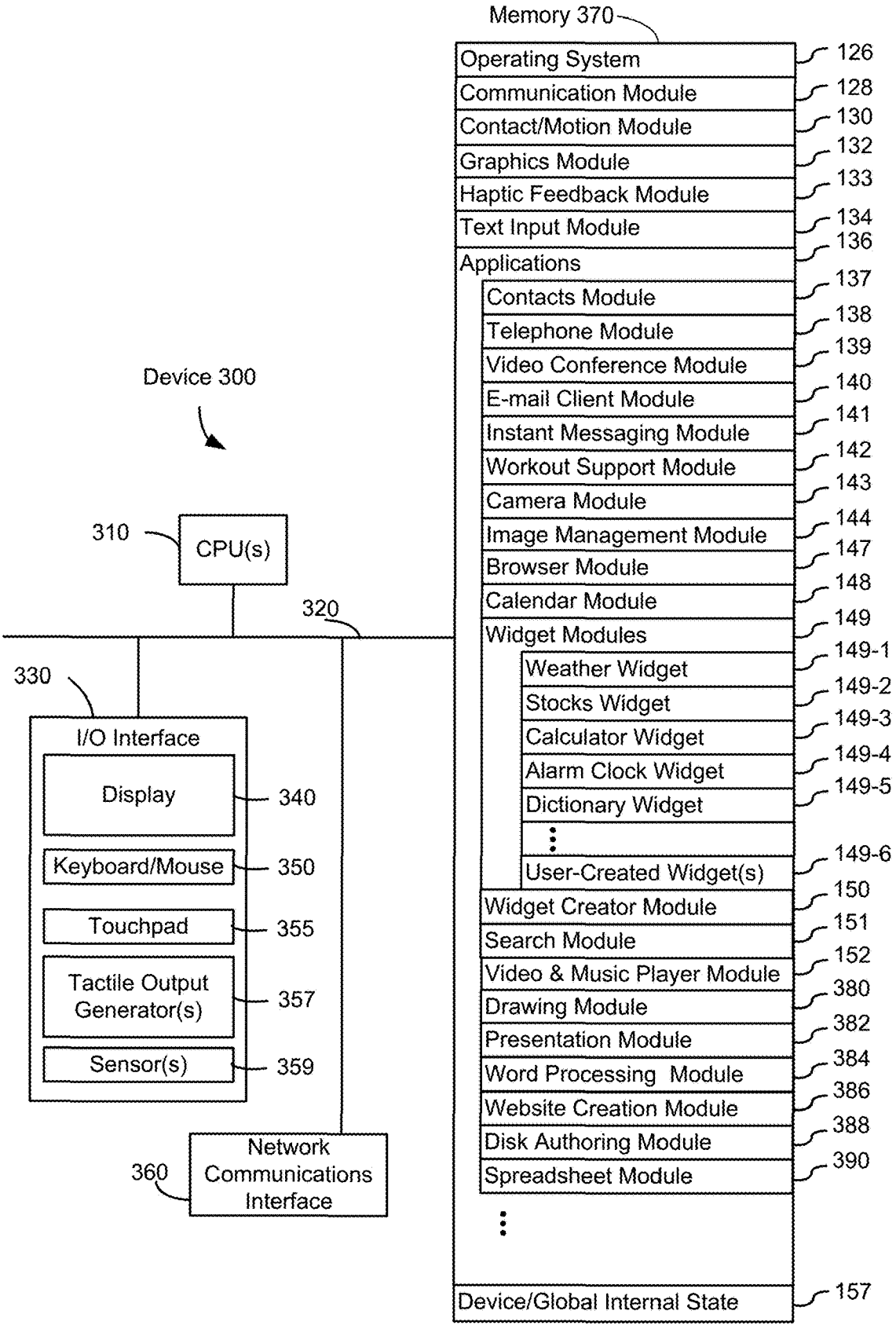


Figure 3

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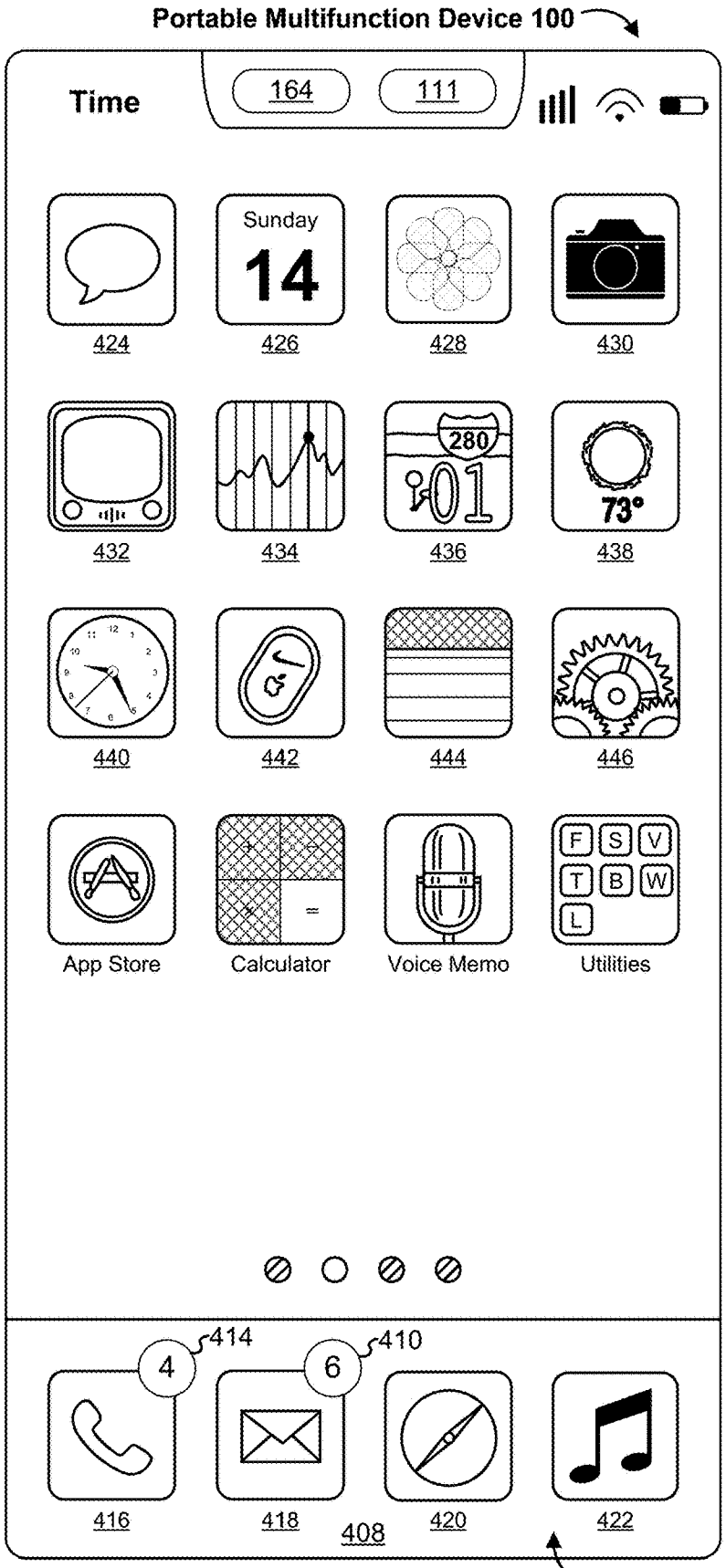
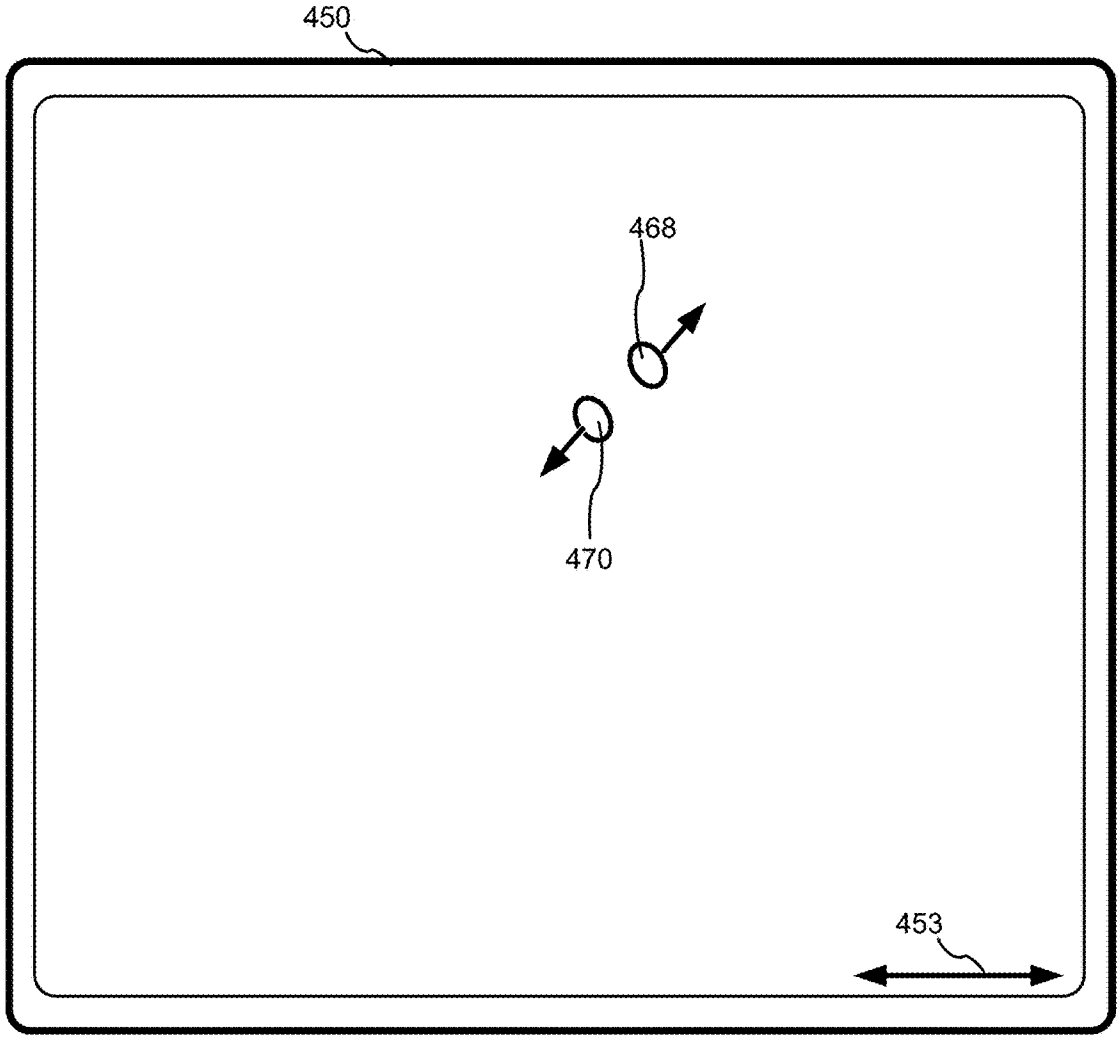


Figure 4A

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450
468
470
453

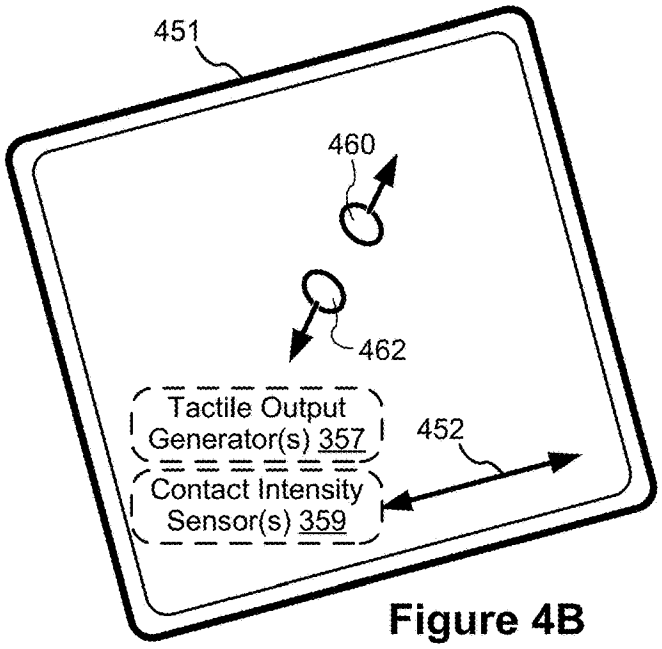

451
460
462
Tactile Output Generator(s) 357
452
Contact Intensity Sensor(s) 359

Figure 4B

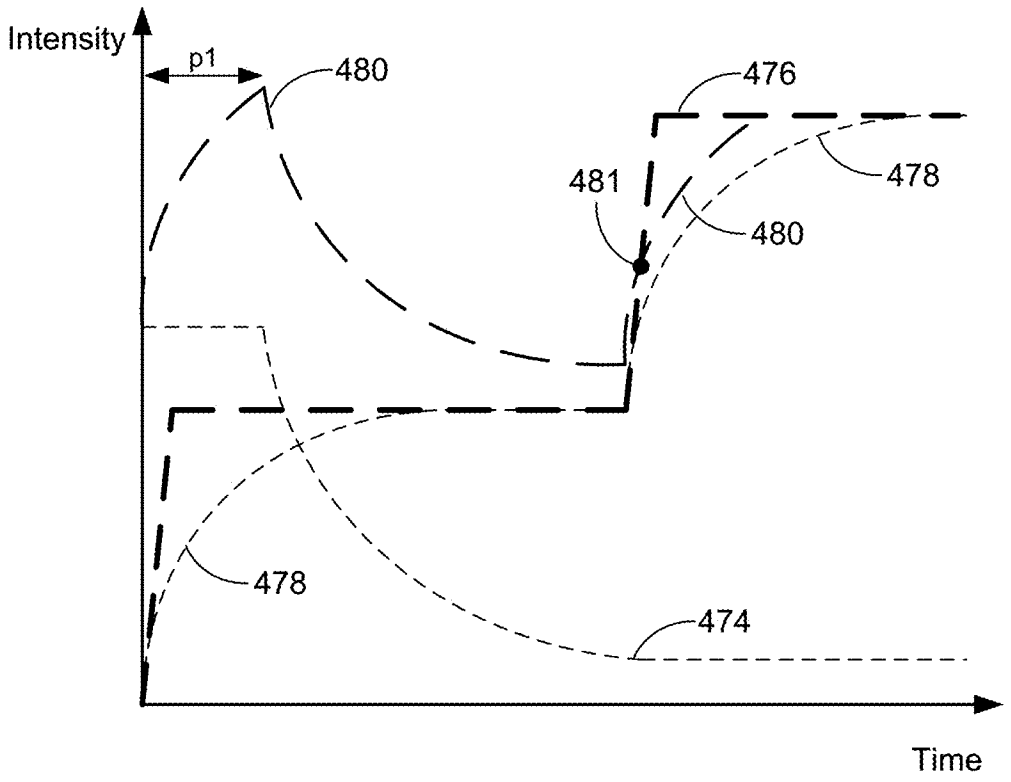


Figure 4C

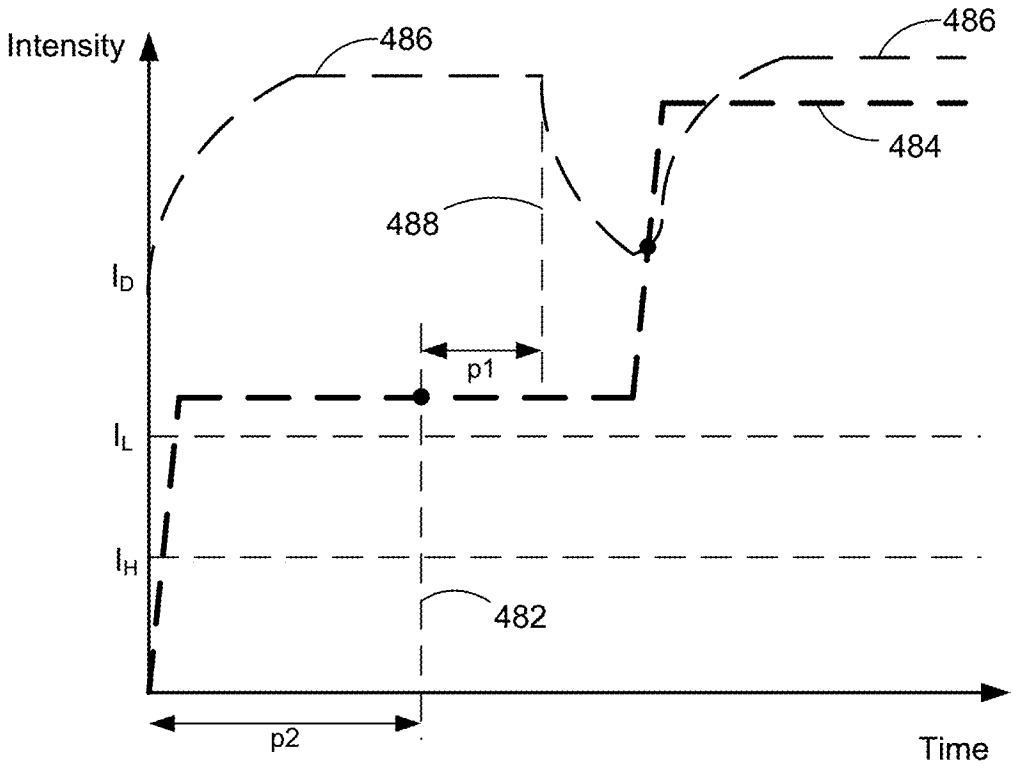


Figure 4D

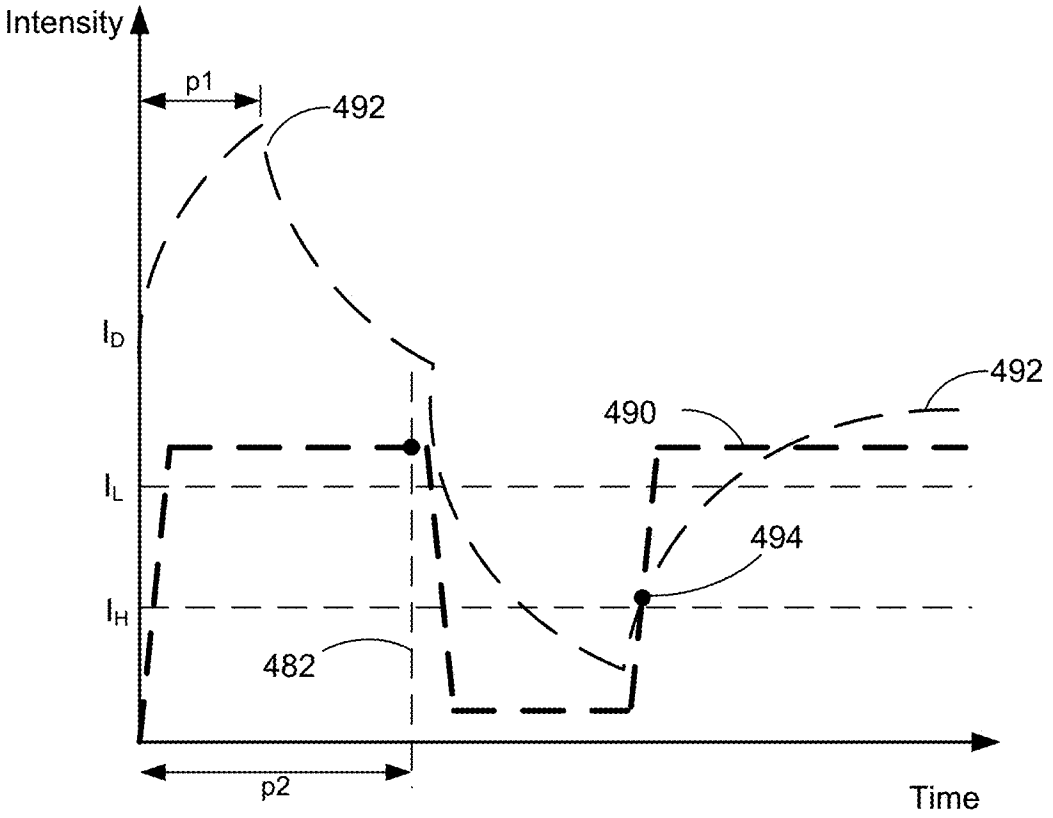


Figure 4E

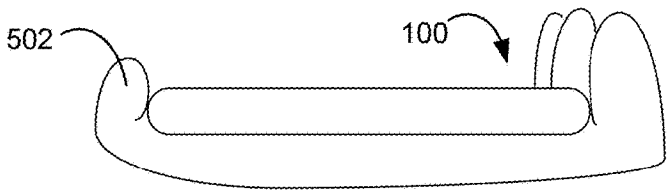


Figure 5A1

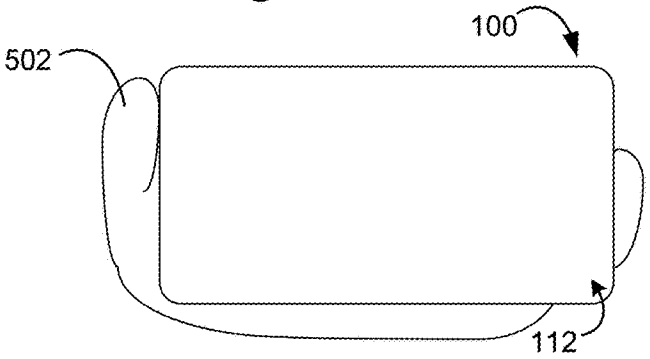


Figure 5A2

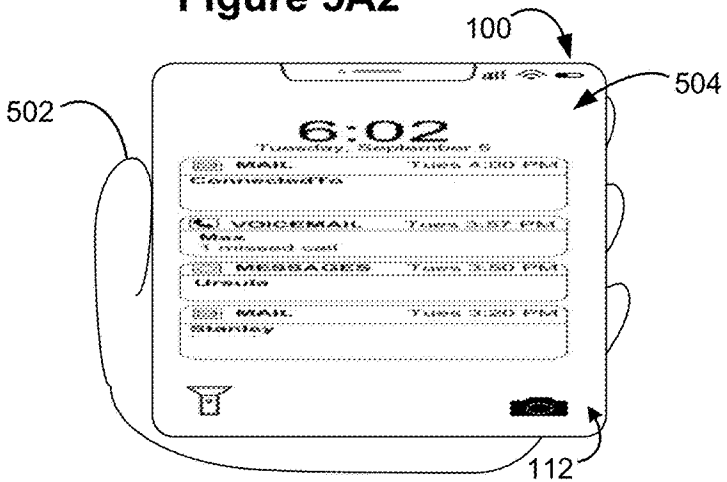


Figure 5A3

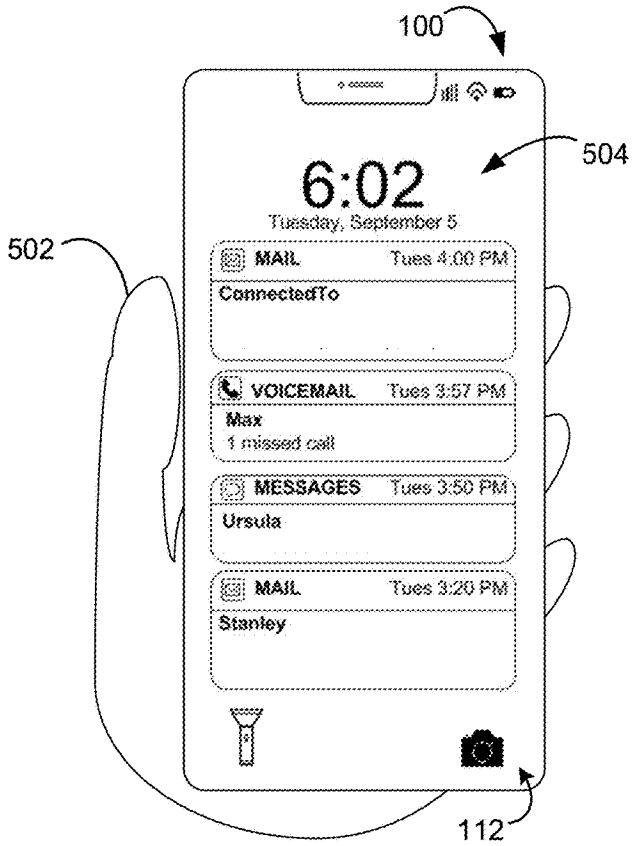


Figure 5A4

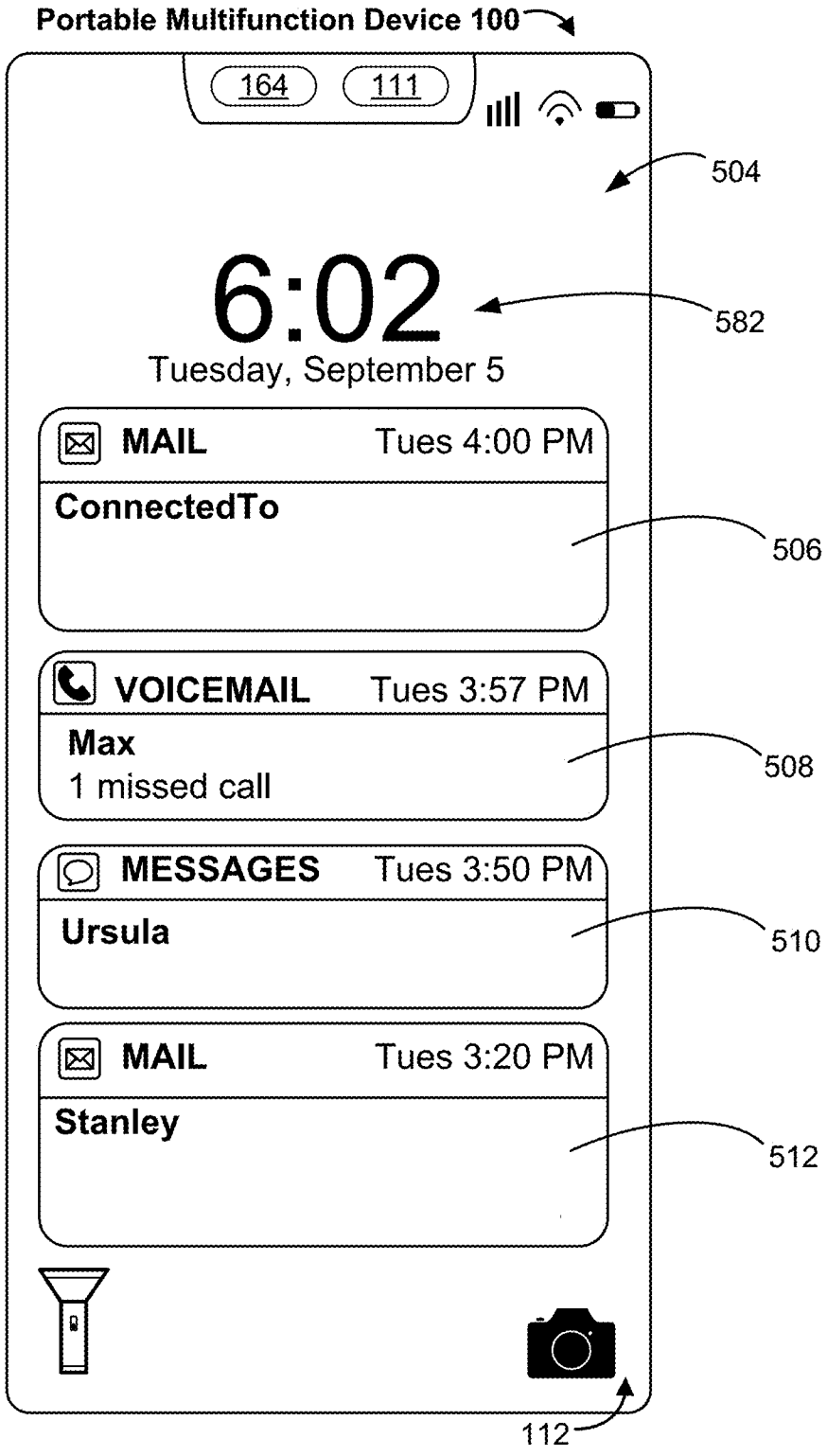


Figure 5B

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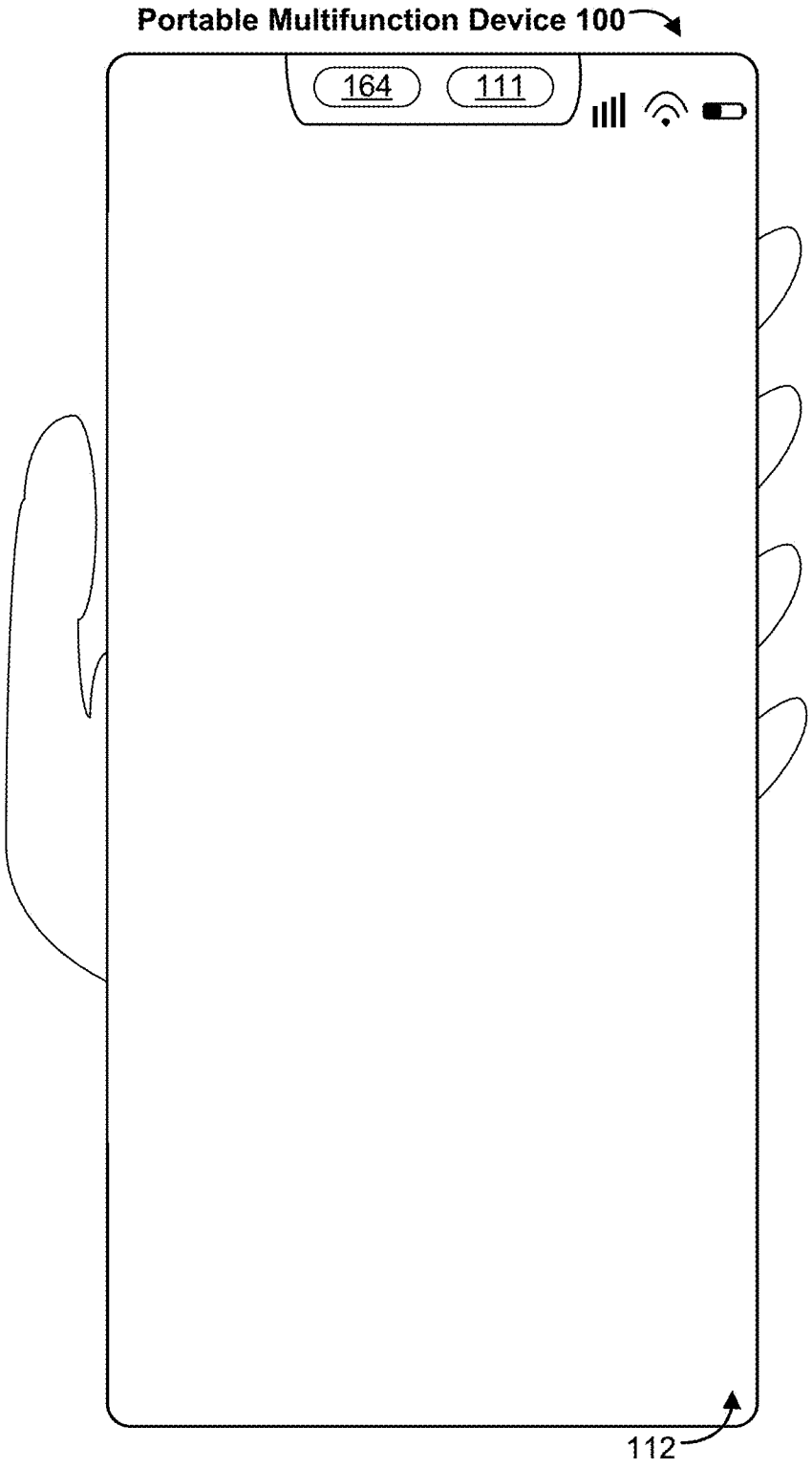


Figure 5C

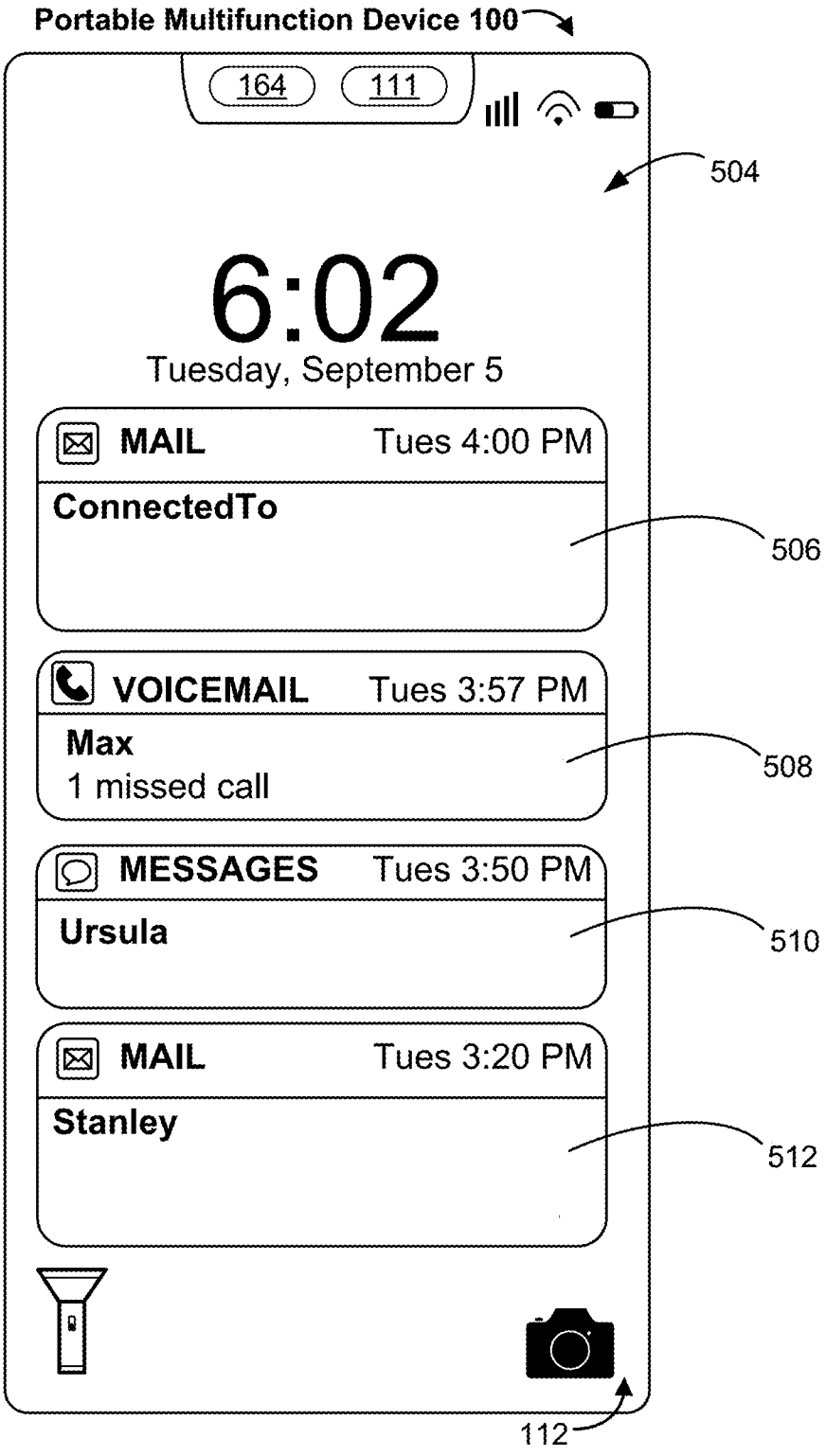


Figure 5D

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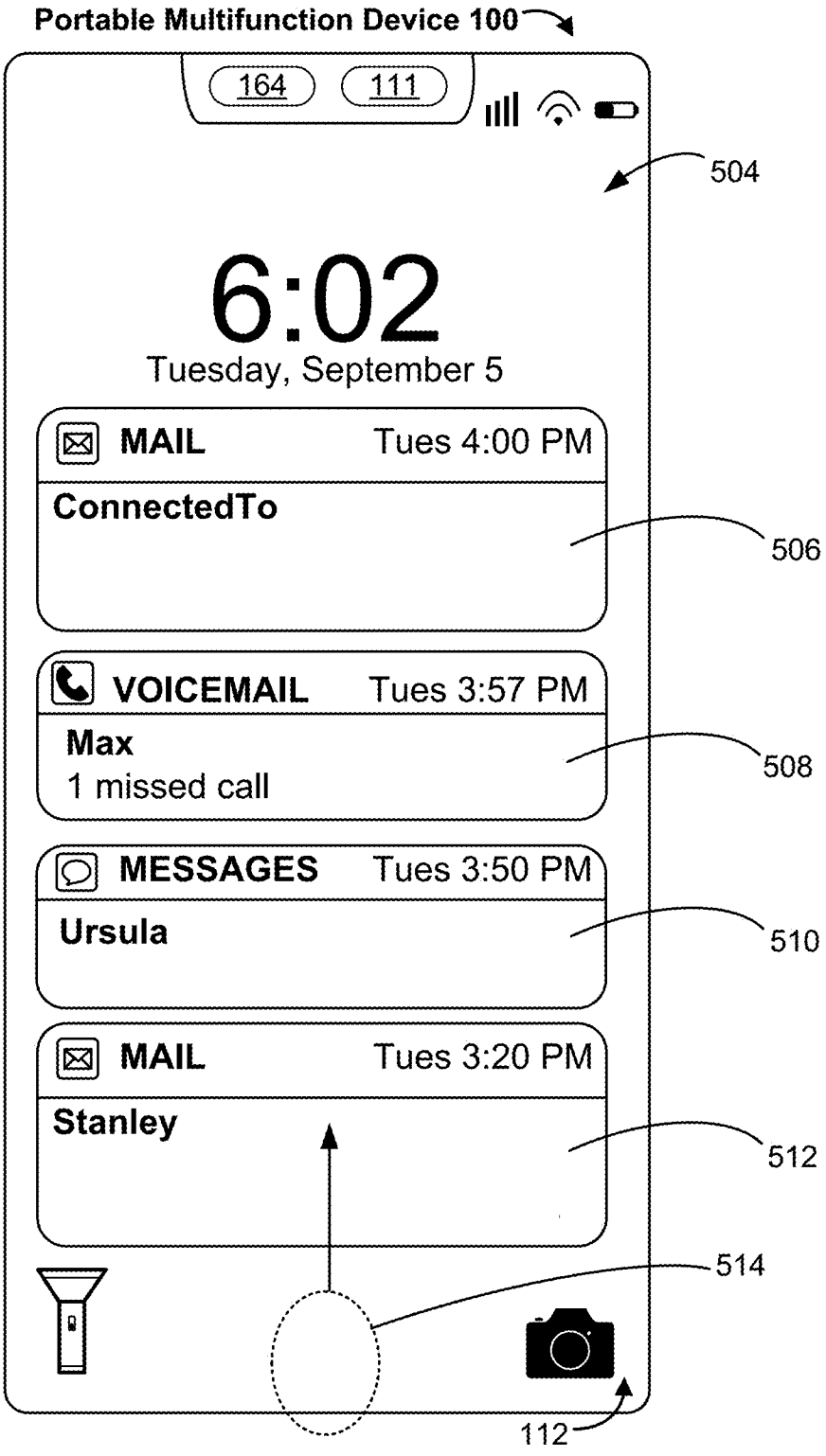


Figure 5E

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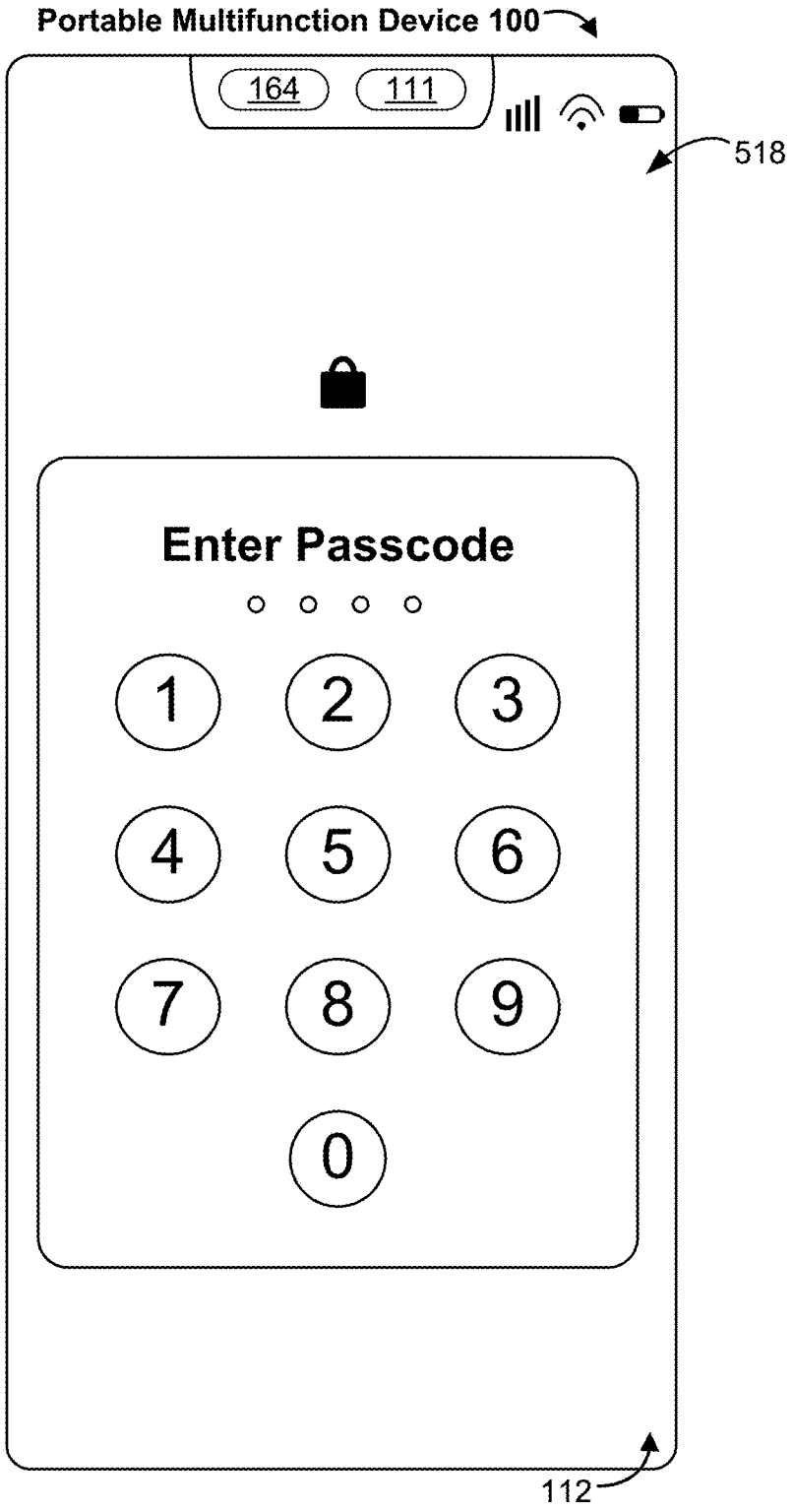

Portable Multifunction Device 100
164
111
518
Enter Passcode
1
2
3
4
5
6
7
8
9
0
112

Figure 5F

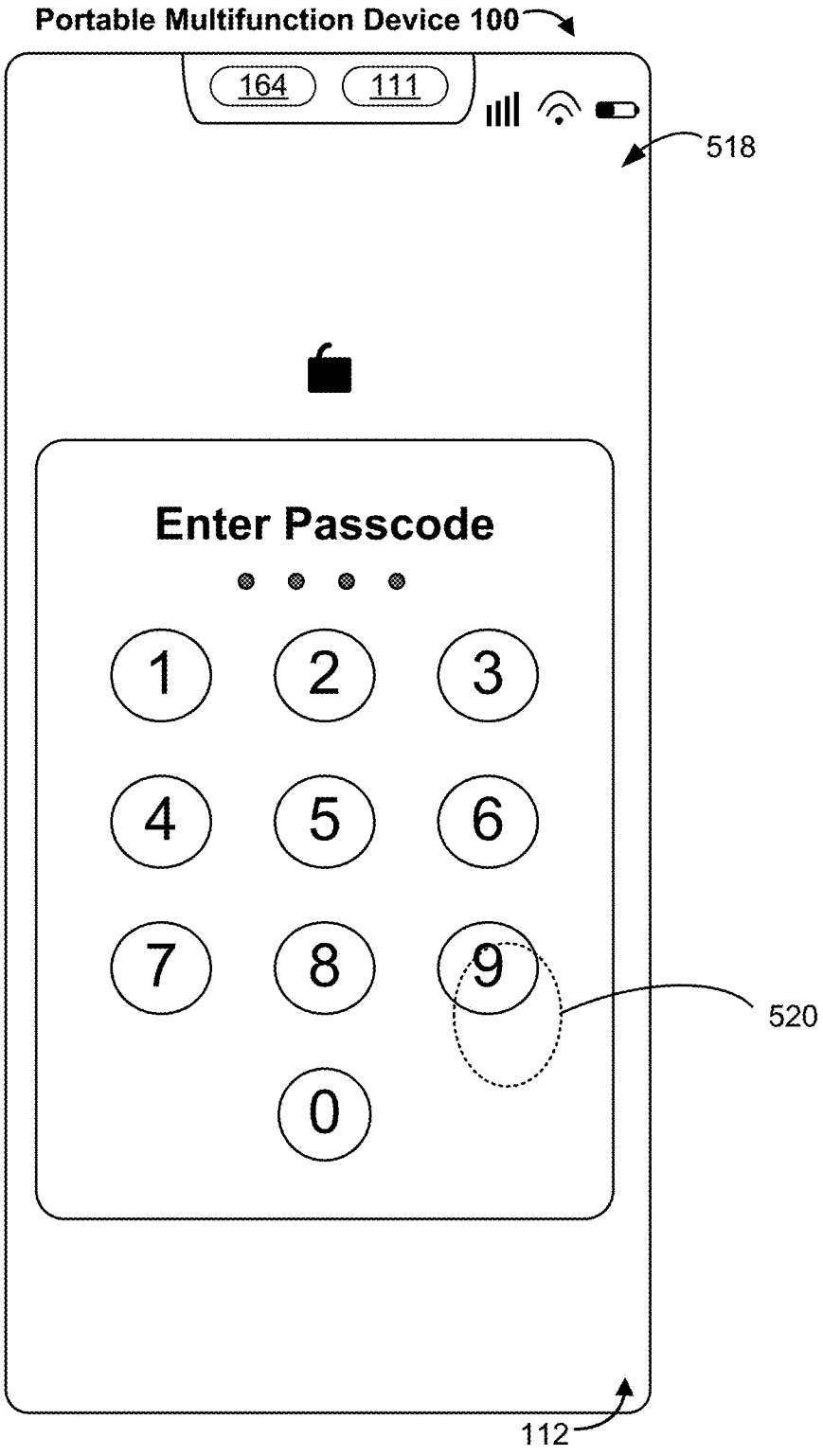

Portable Multifunction Device 100
164
111
518
Enter Passcode
1
2
3
4
5
6
7
8
9
0
520
112

Figure 5G

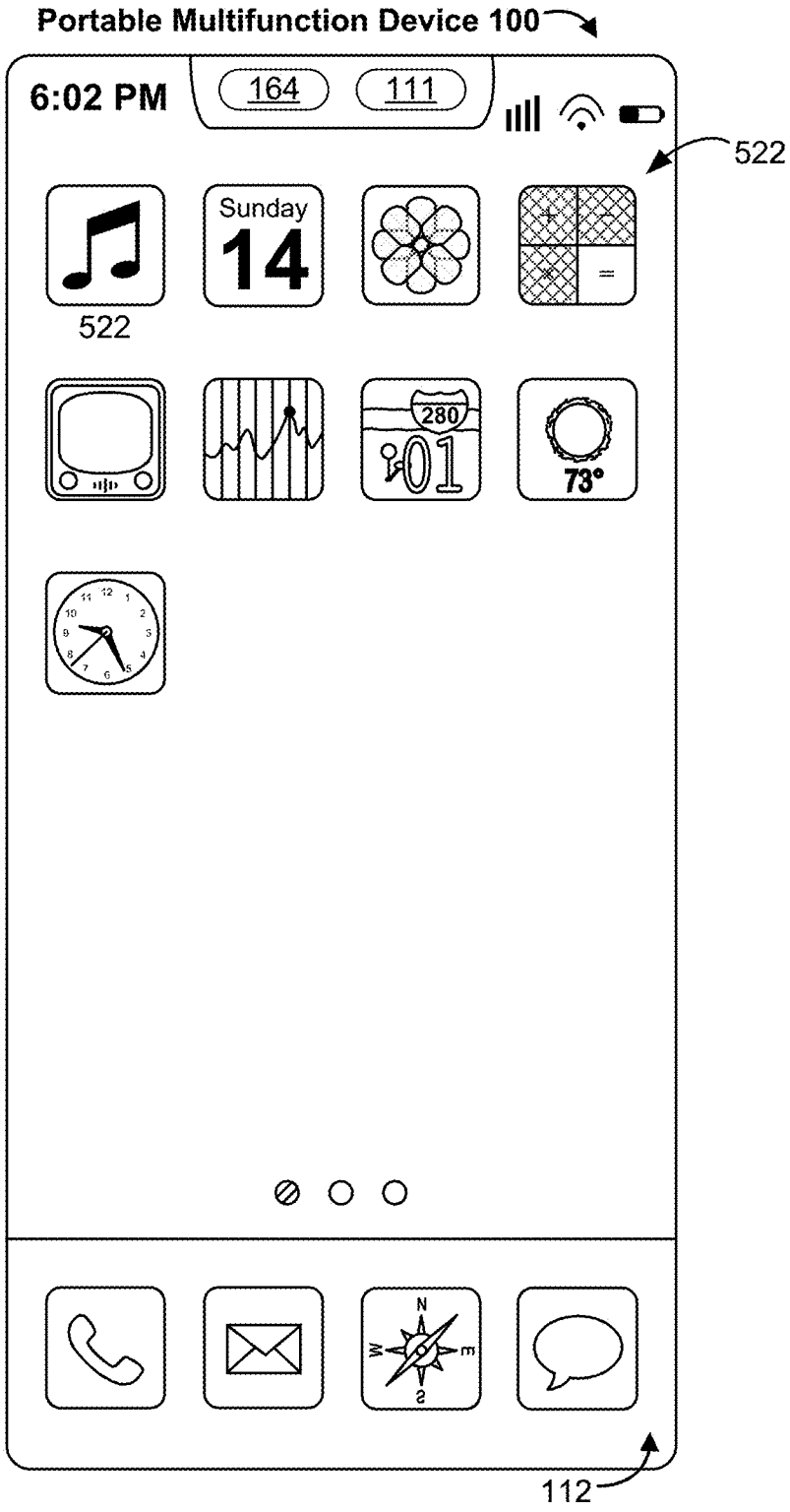

Portable Multifunction Device 100
6:02 PM
164
111
522
Sunday
14
522
280
73°
112

Figure 5H

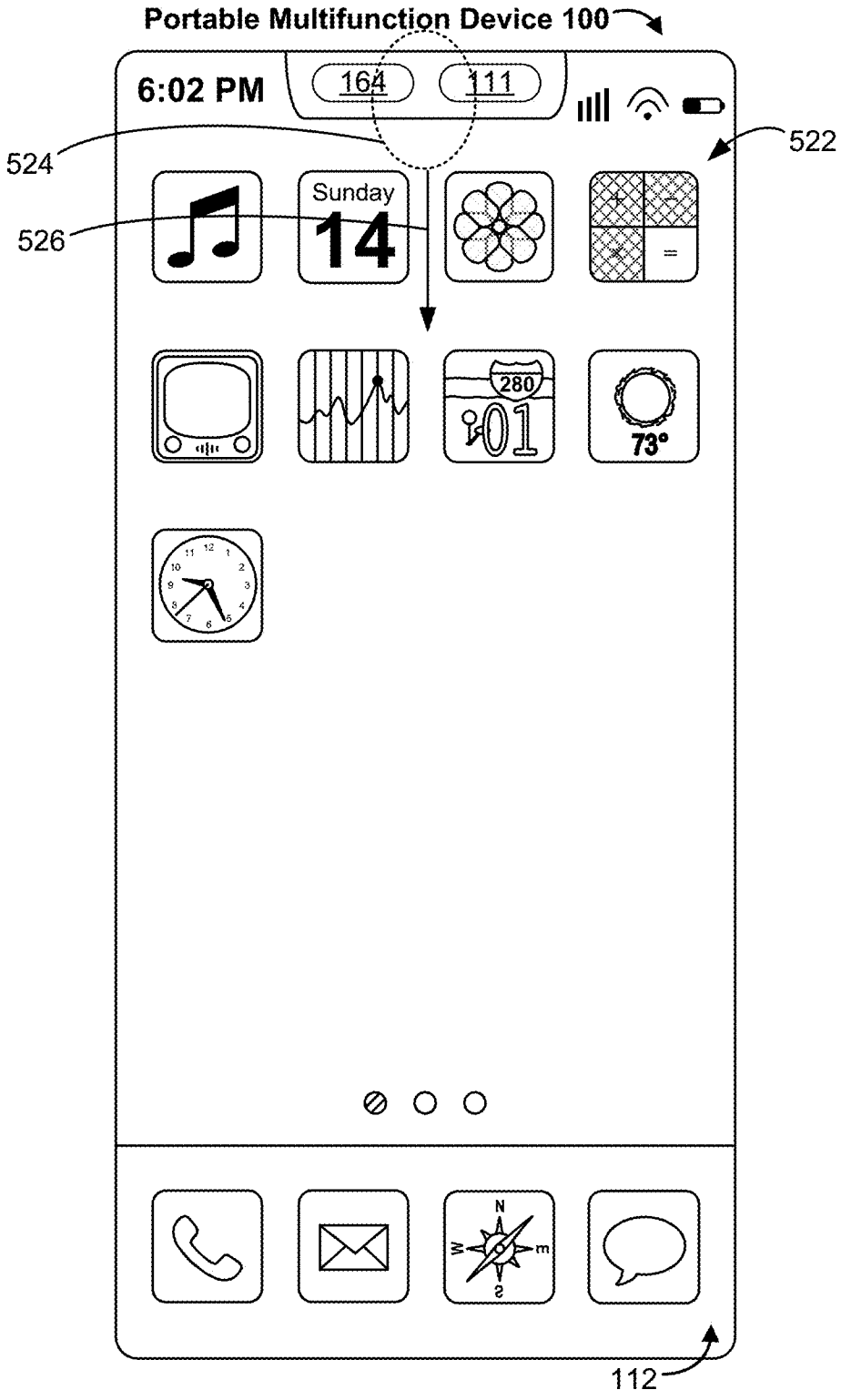

Portable Multifunction Device 100
6:02 PM
164
111
524
522
526
Sunday
14
280
73°
112

Figure 5I

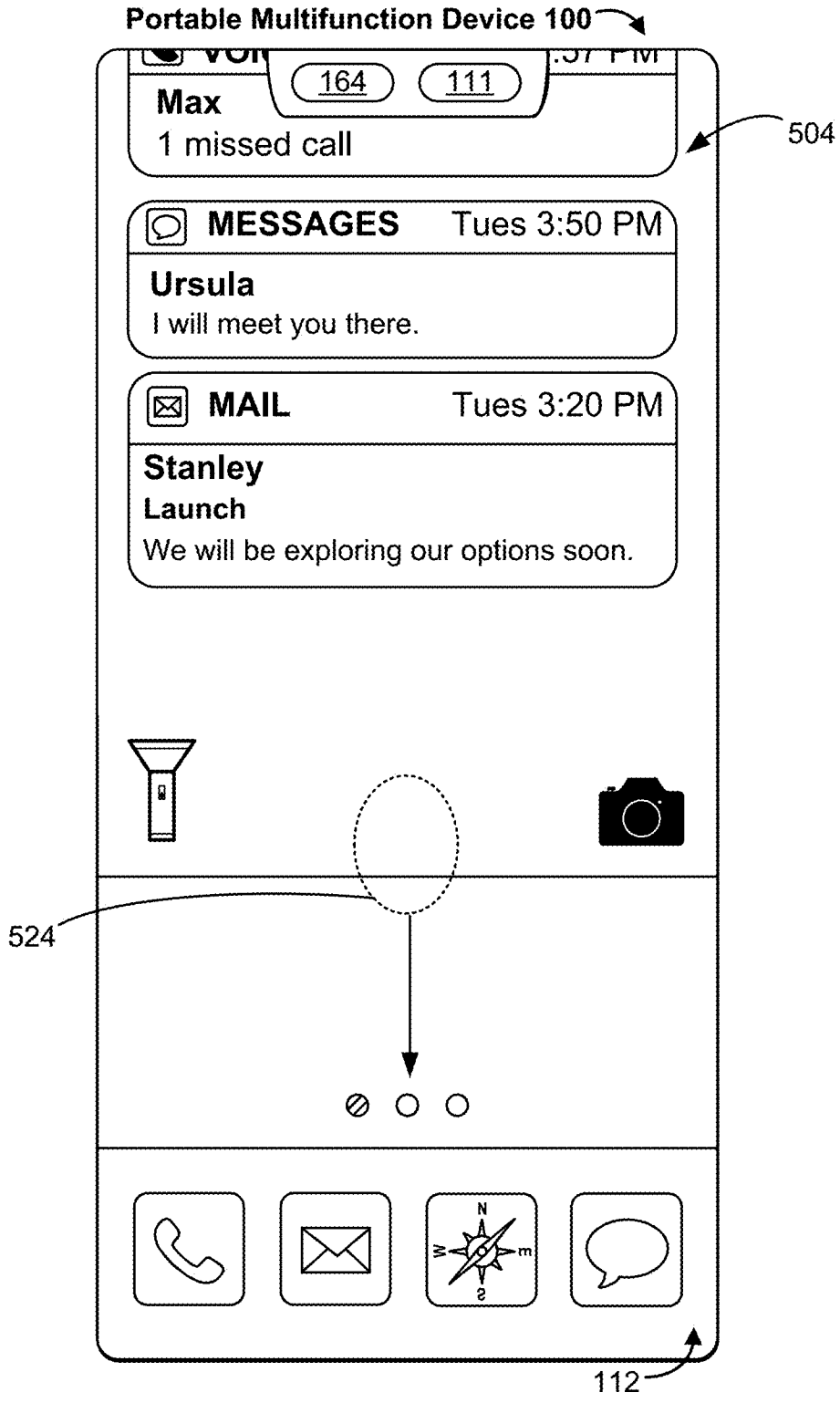

Portable Multifunction Device 100
164
111
Max
1 missed call
504
MESSAGES Tues 3:50 PM
Ursula
I will meet you there.
MAIL Tues 3:20 PM
Stanley
Launch
We will be exploring our options soon.
524
112

Figure 5J

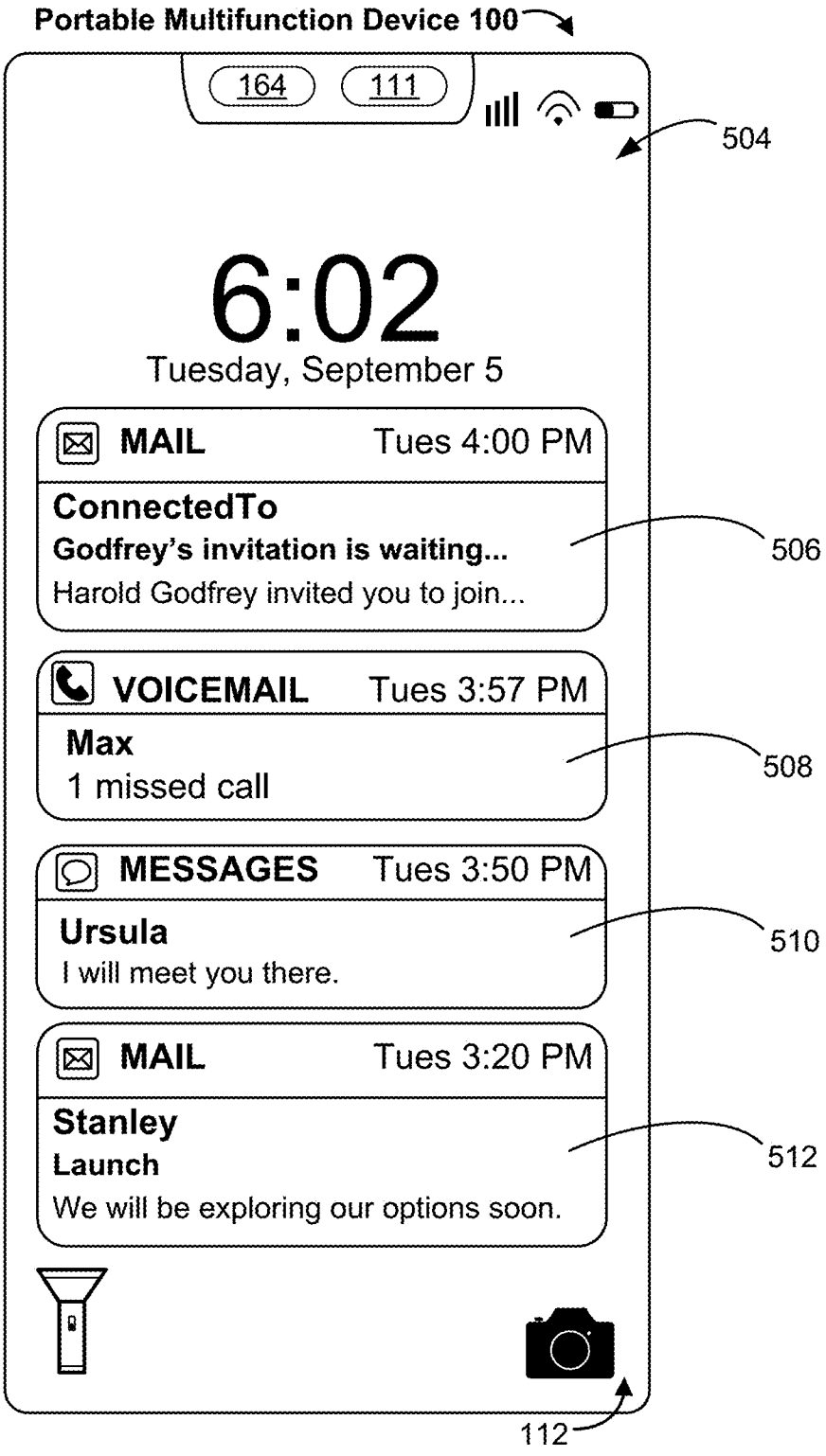


Figure 5K

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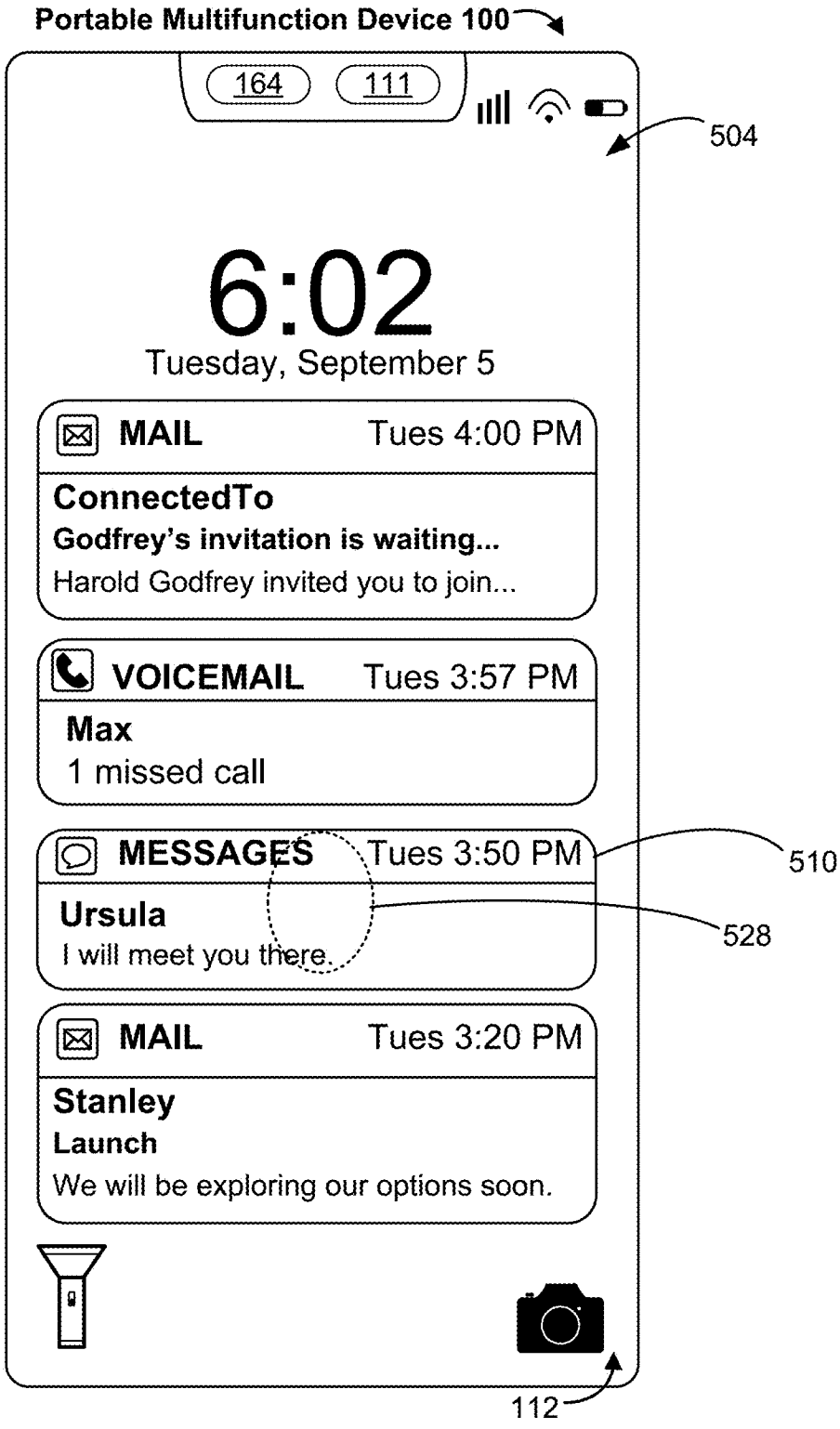


Figure 5L

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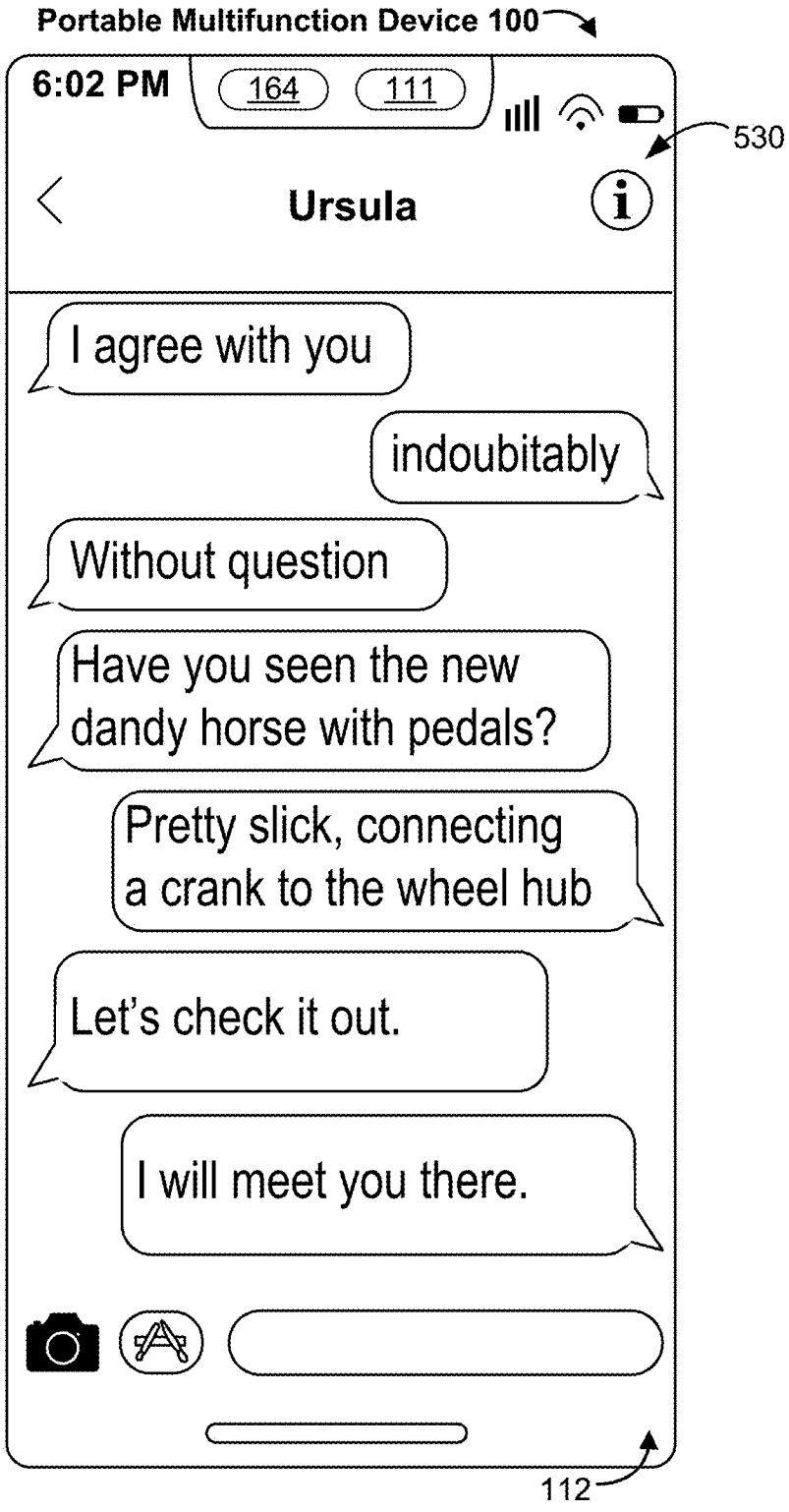


Figure 5M

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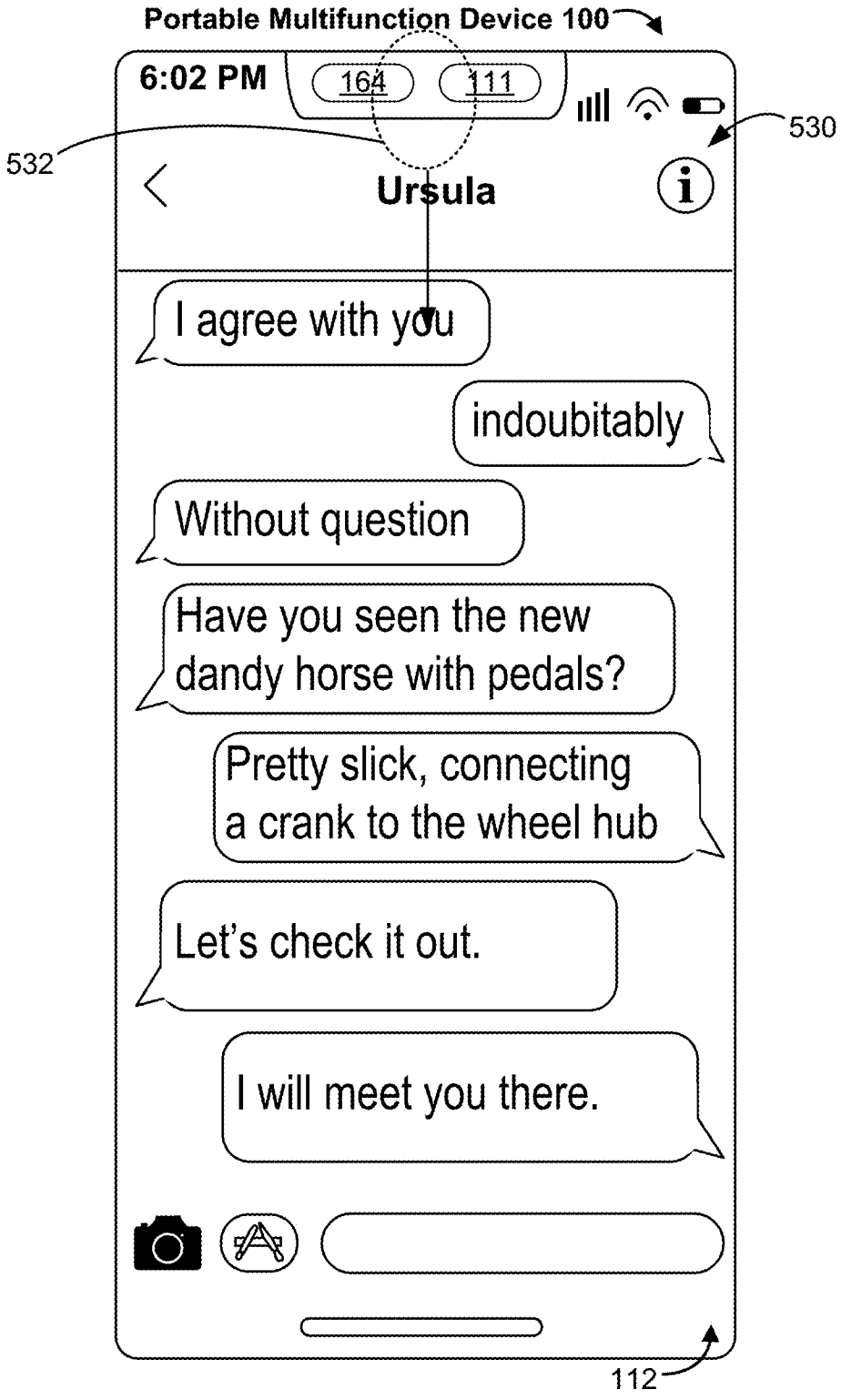


Figure 5N

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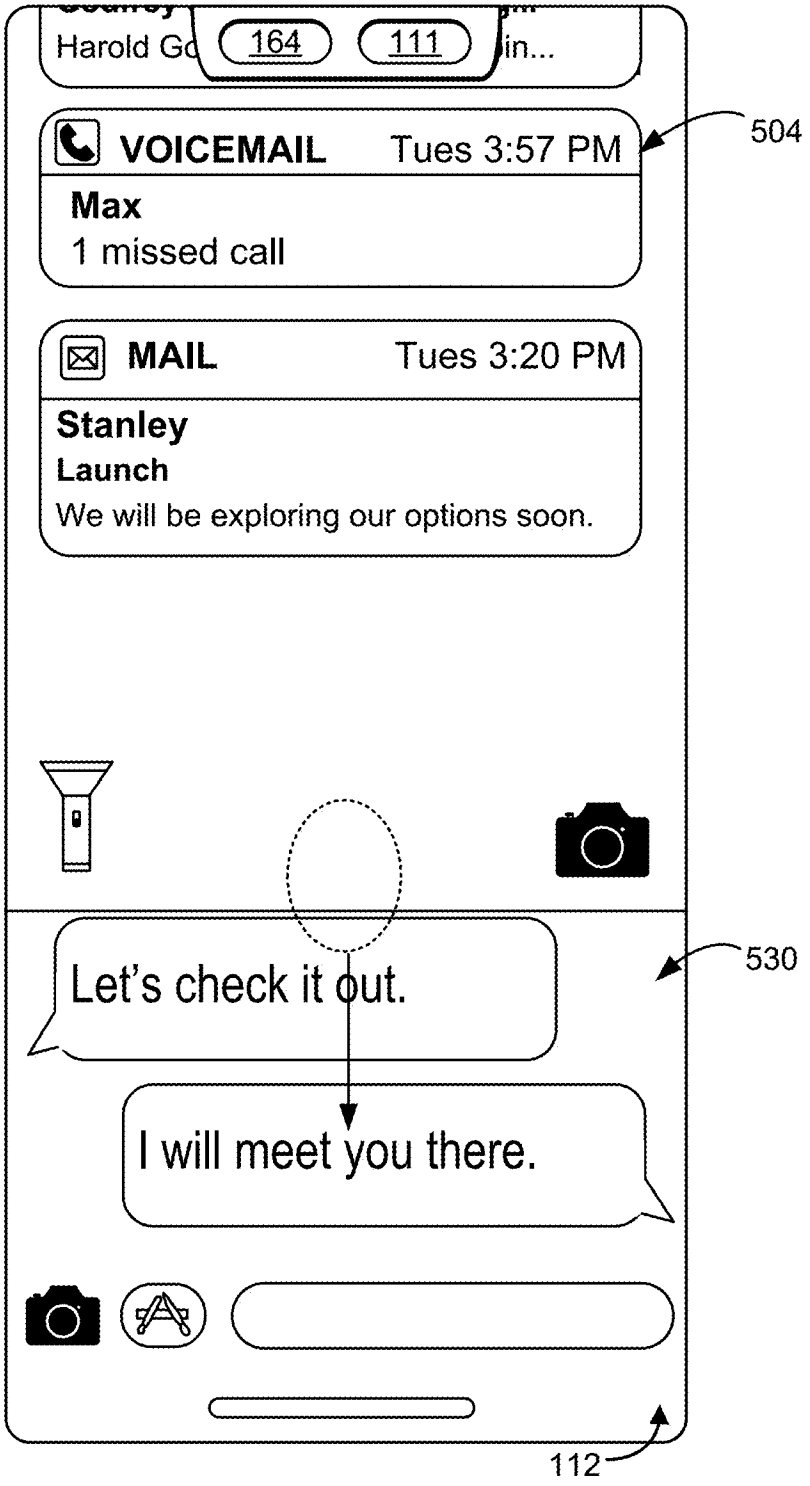

Harold Gc
164
111
in...
VOICEMAIL Tues 3:57 PM
Max
1 missed call
504
MAIL Tues 3:20 PM
Stanley
Launch
We will be exploring our options soon.
Let's check it out.
530
I will meet you there.
112

Figure 5O

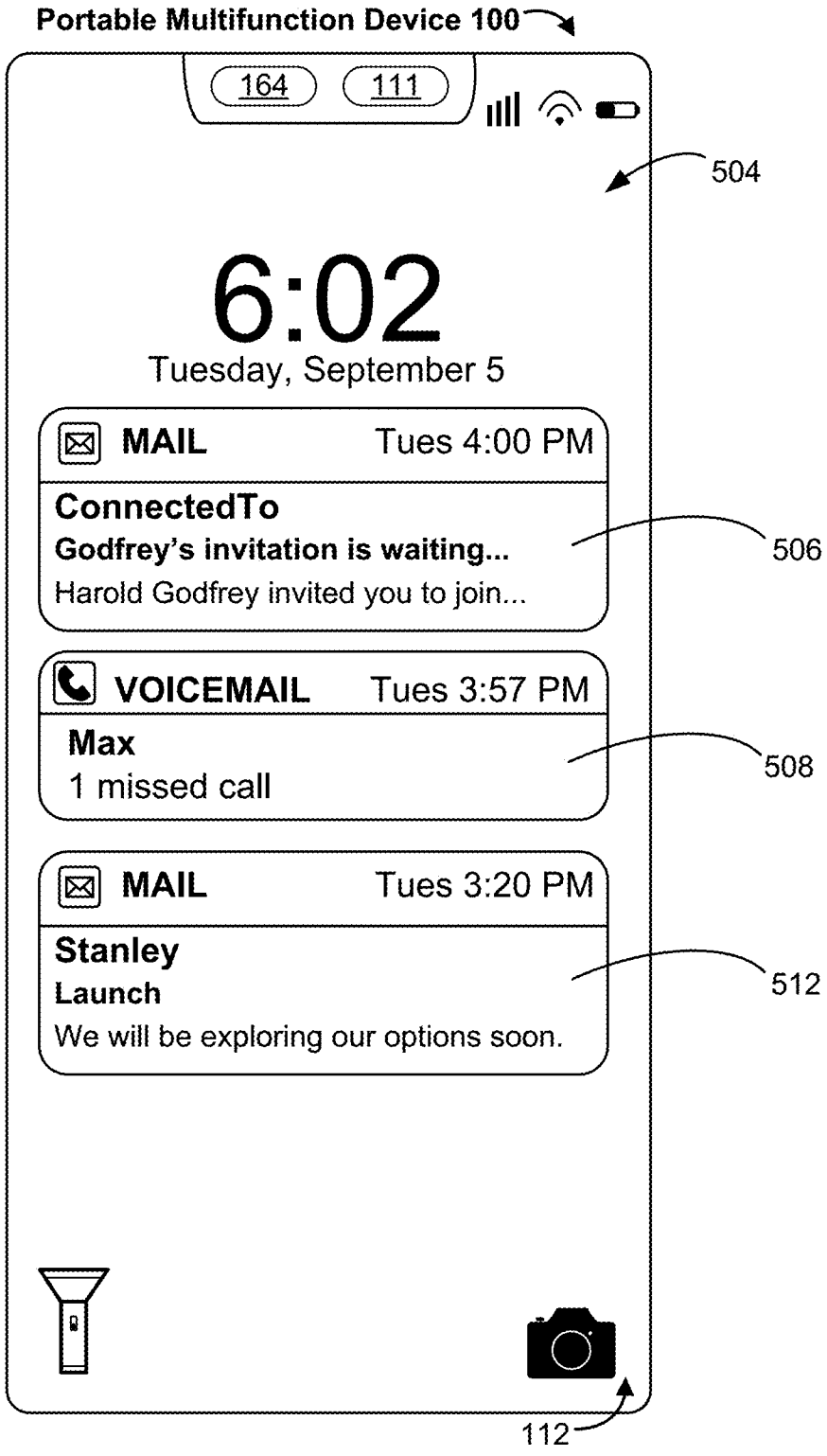


Figure 5P

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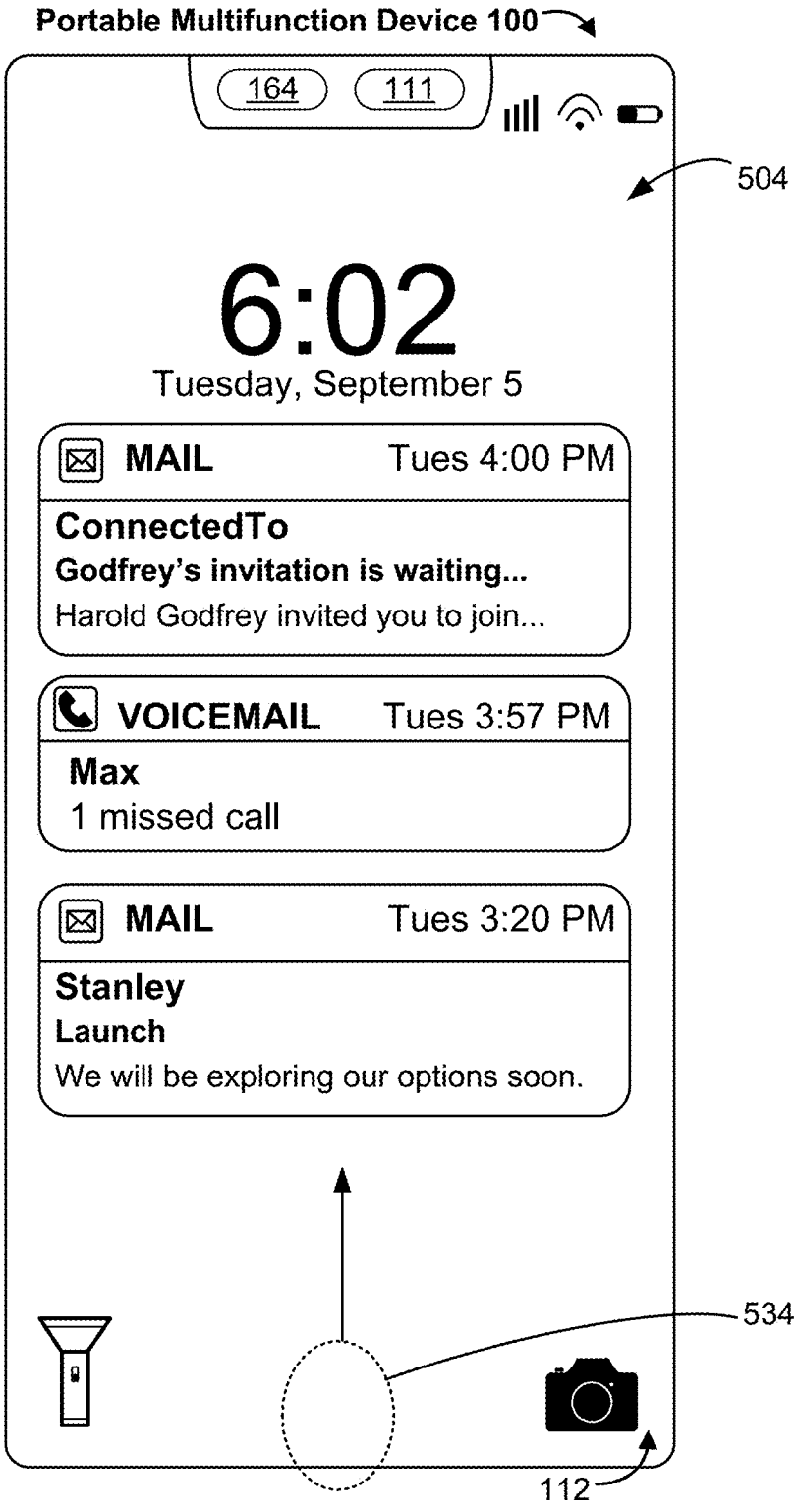

Portable Multifunction Device 100
164
111
504
6:02
Tuesday, September 5
MAIL
Tues 4:00 PM
ConnectedTo
Godfrey's invitation is waiting...
Harold Godfrey invited you to join...
VOICEMAIL
Tues 3:57 PM
Max
1 missed call
MAIL
Tues 3:20 PM
Stanley
Launch
We will be exploring our options soon.
534
112

Figure 5Q

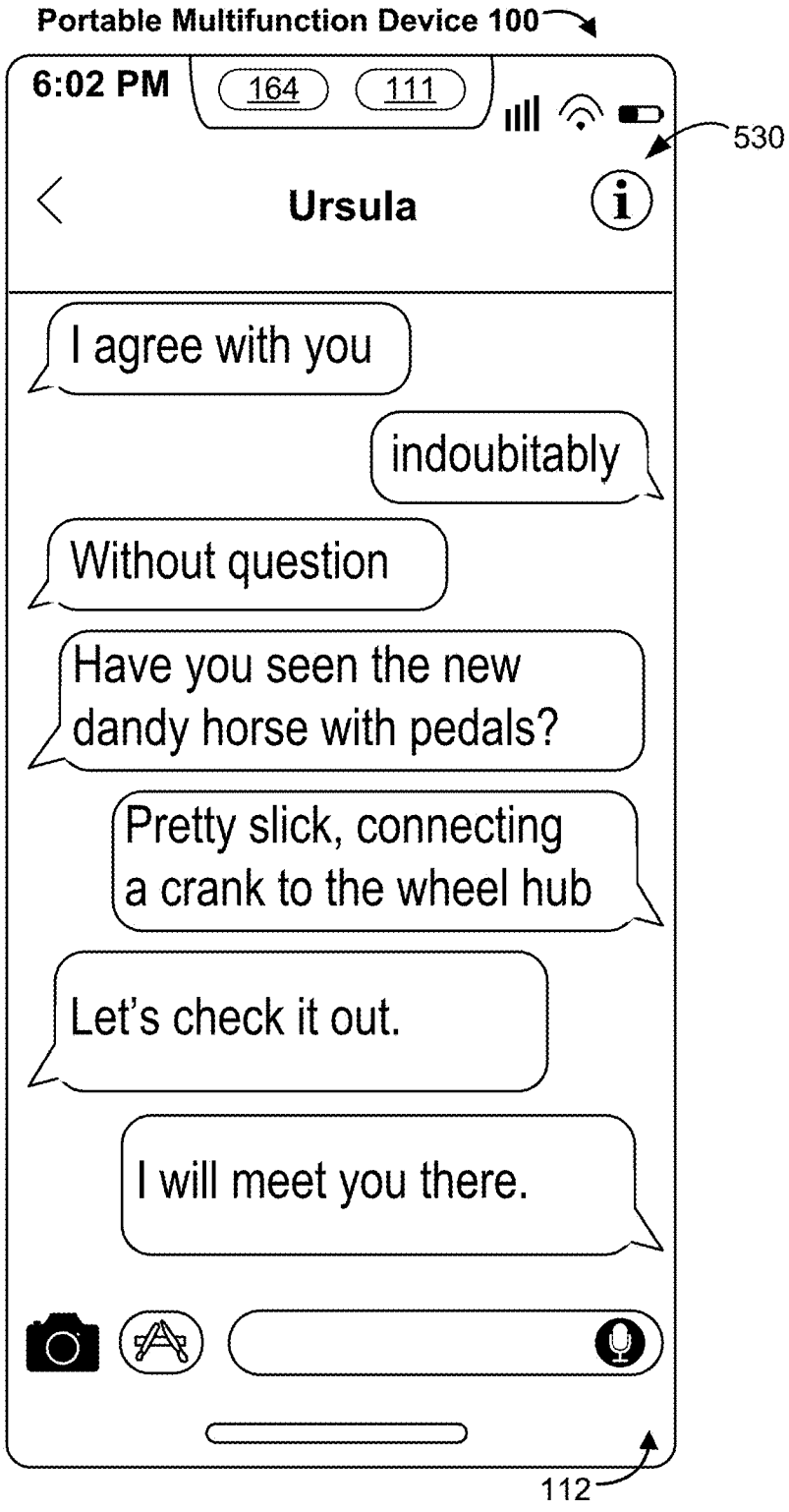


Figure 5R

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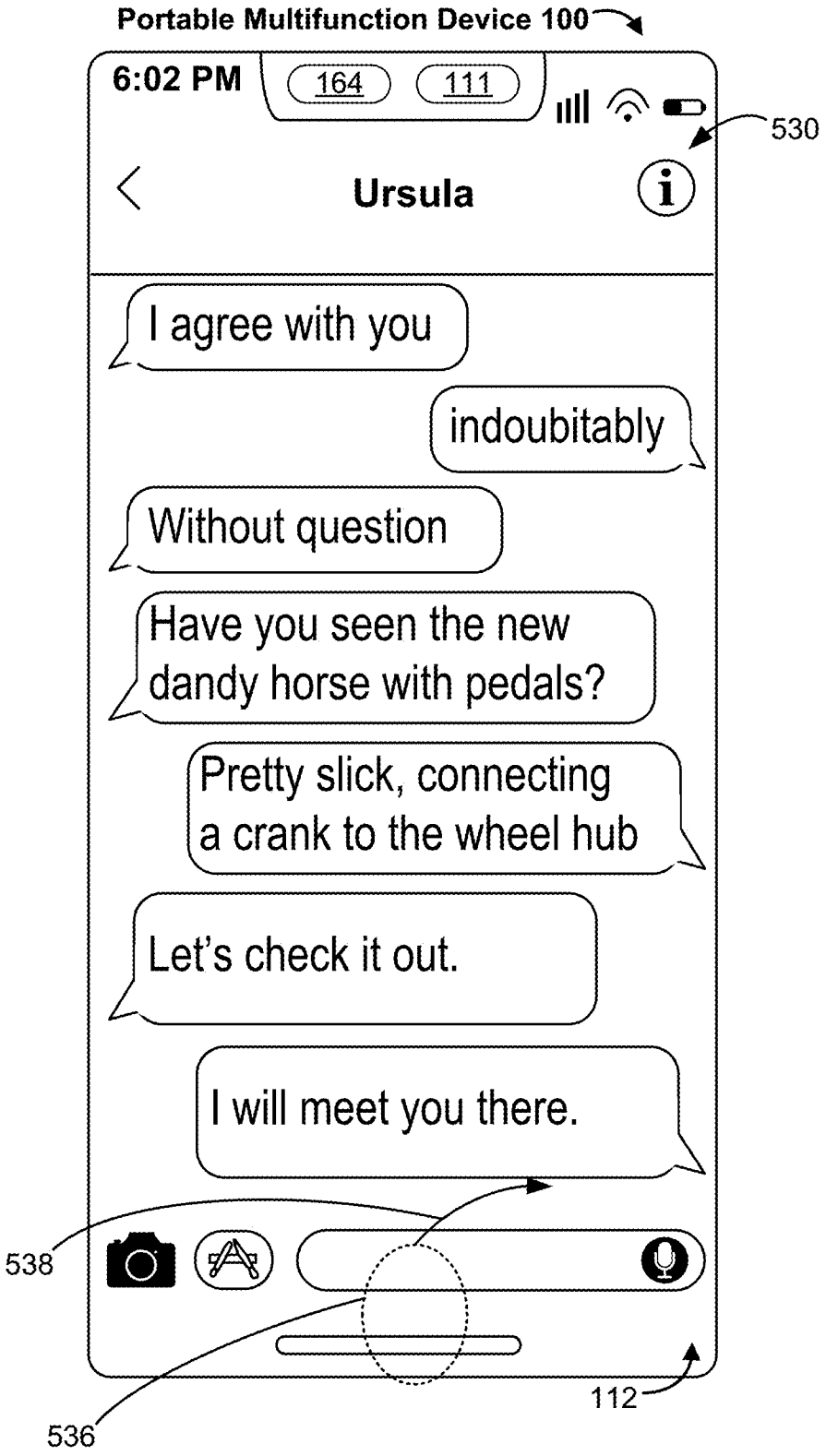


Figure 5S

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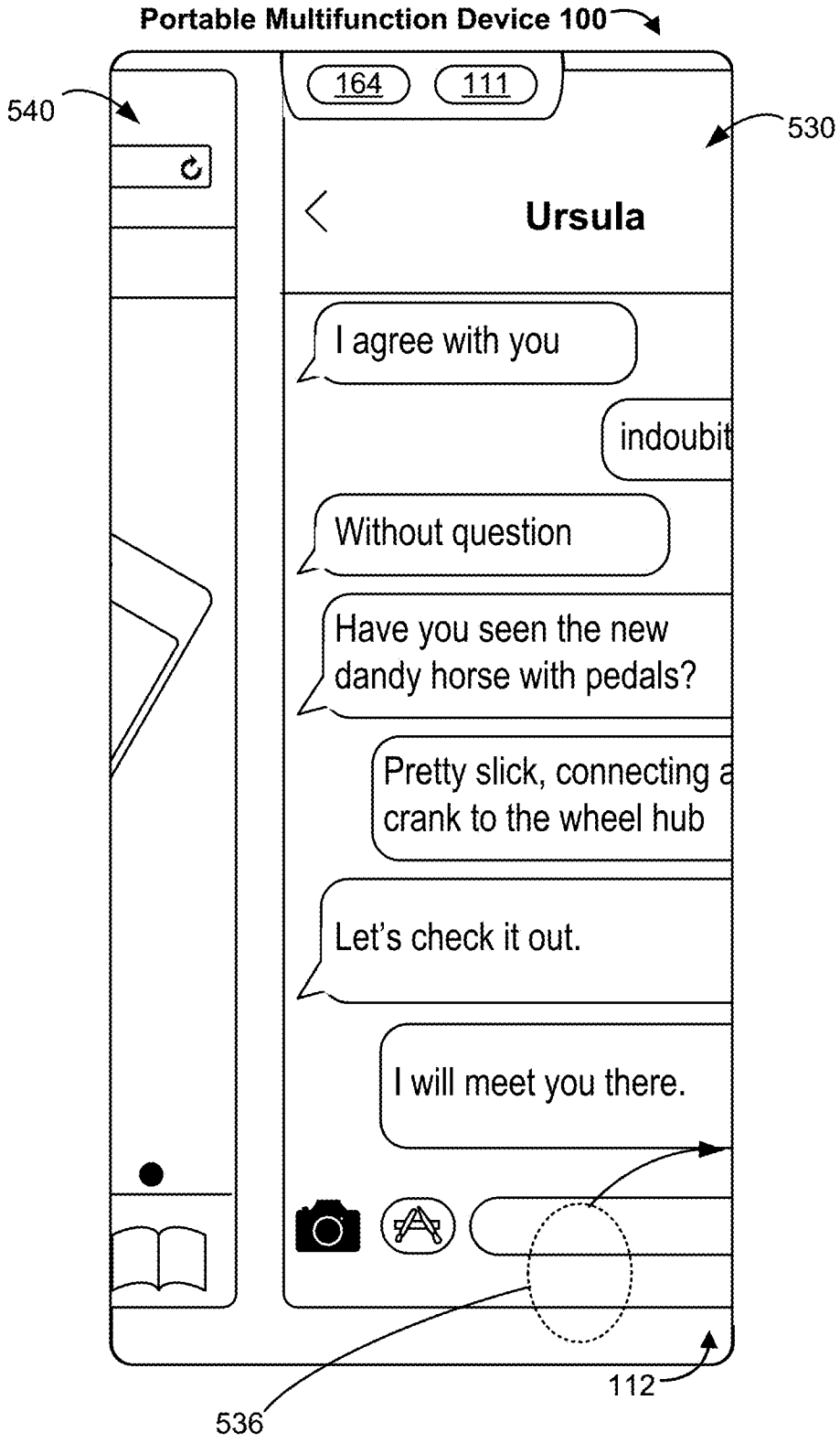


Figure 5T

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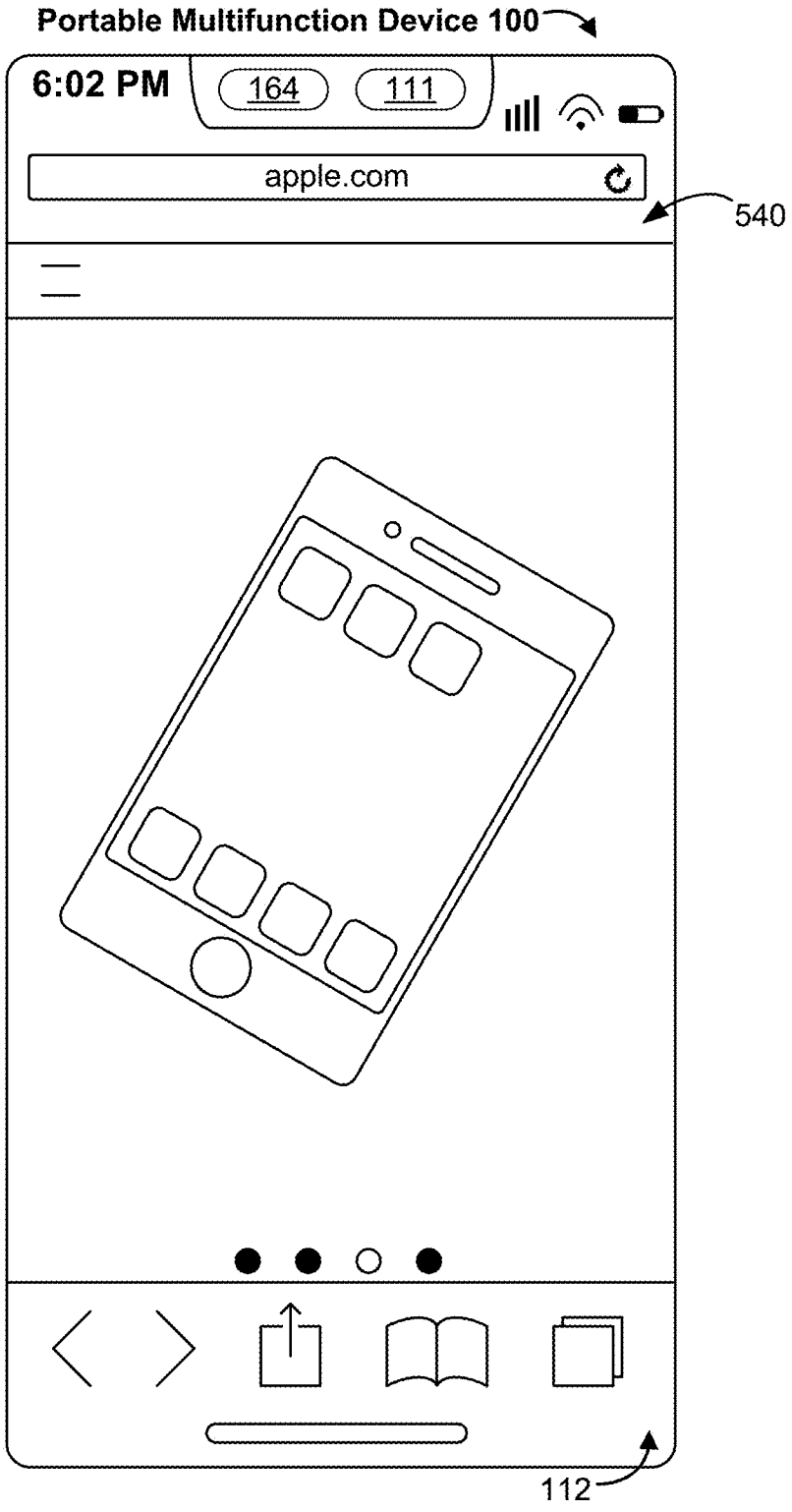

Portable Multifunction Device 100
6:02 PM
164
111
apple.com
540
112

Figure 5U

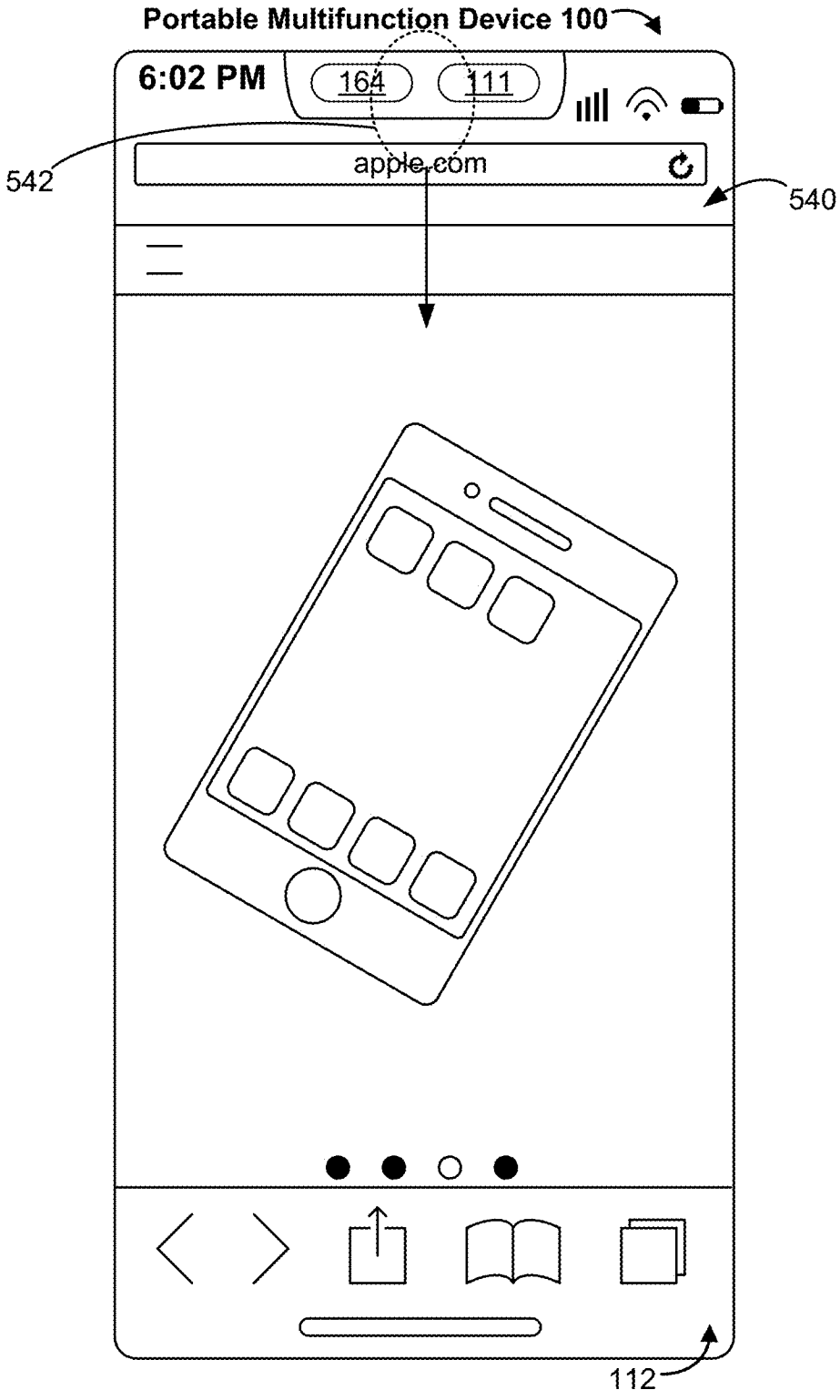

Portable Multifunction Device 100
6:02 PM
164
111
apple.com
542
540
112

Figure 5V

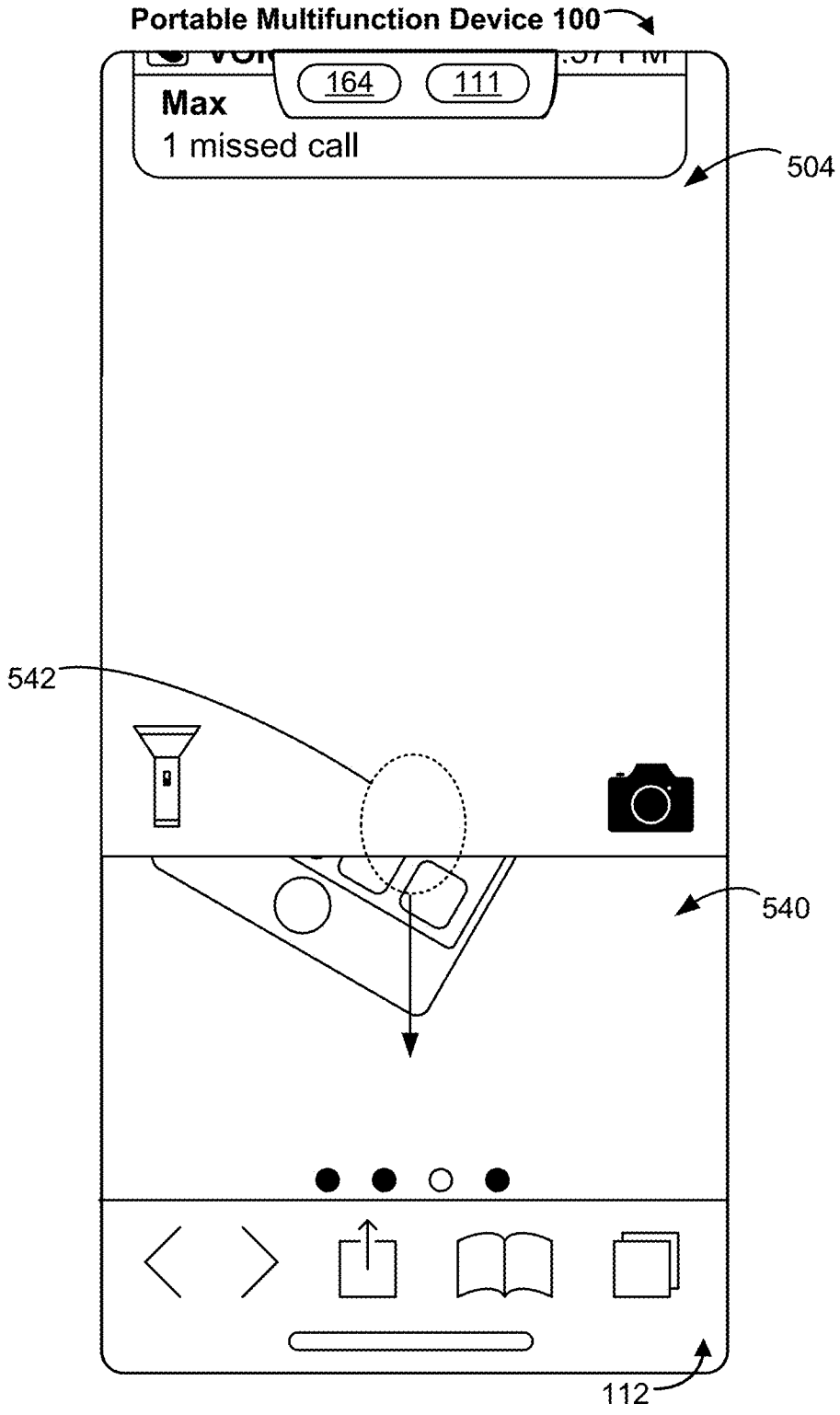

Portable Multifunction Device 100
164
111
Max
1 missed call
504
542
540
112

Figure 5W

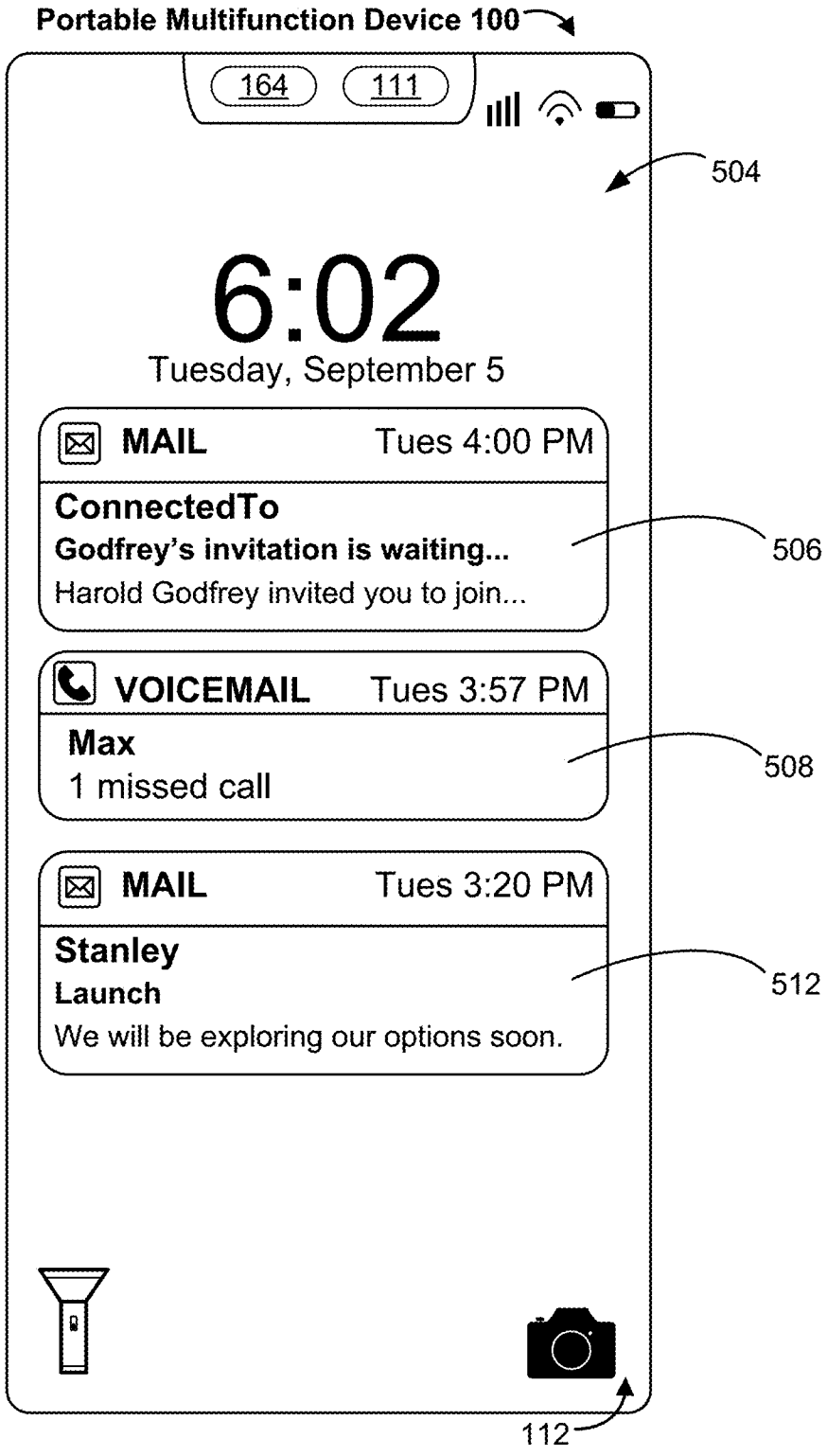

Portable Multifunction Device 100
164
111
504
6:02
Tuesday, September 5
MAIL
Tues 4:00 PM
ConnectedTo
Godfrey's invitation is waiting...
Harold Godfrey invited you to join...
506
VOICEMAIL
Tues 3:57 PM
Max
1 missed call
508
MAIL
Tues 3:20 PM
Stanley
Launch
We will be exploring our options soon.
512
112

Figure 5X

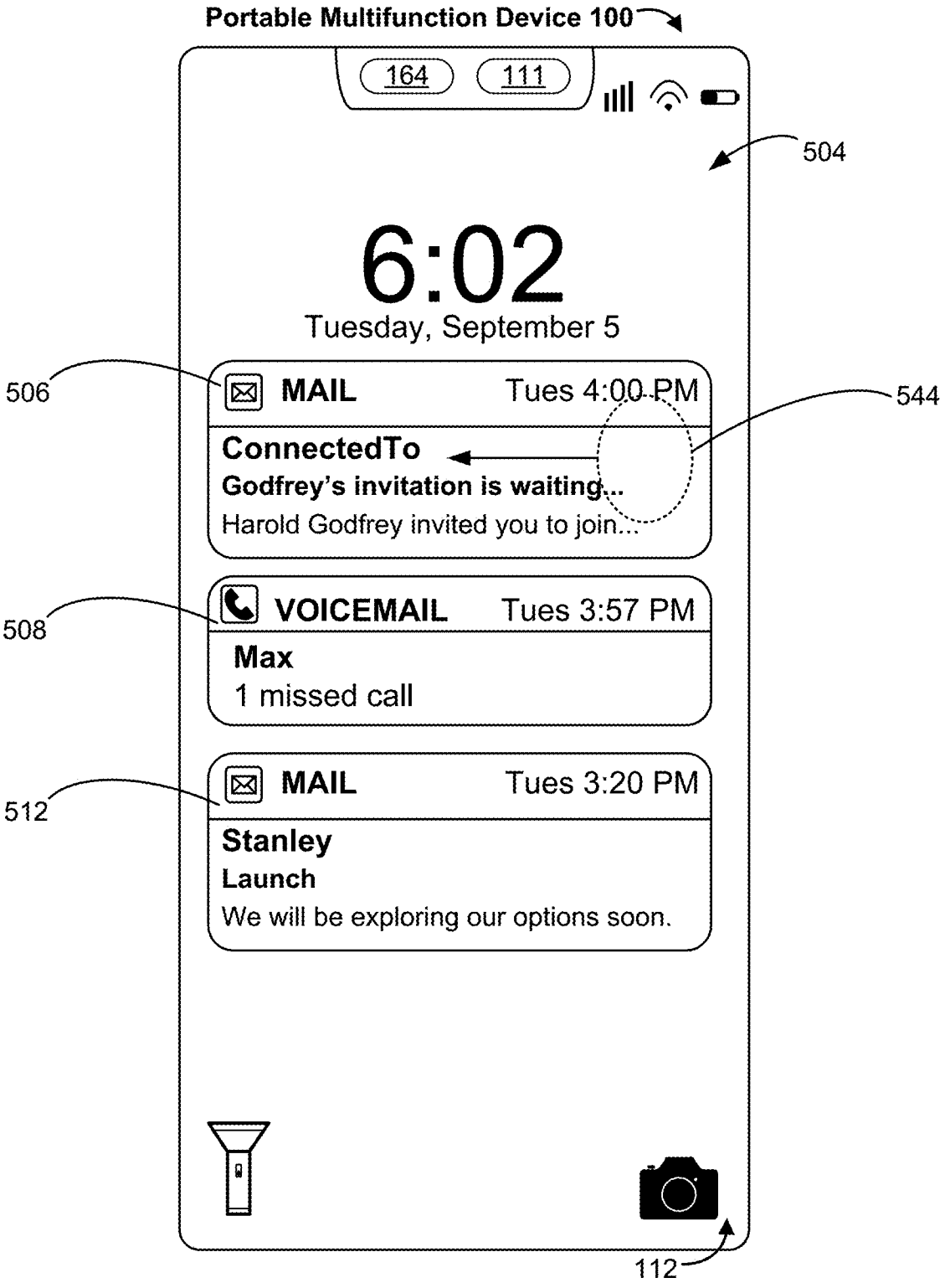


Figure 5Y

Masimo Ex. 1001
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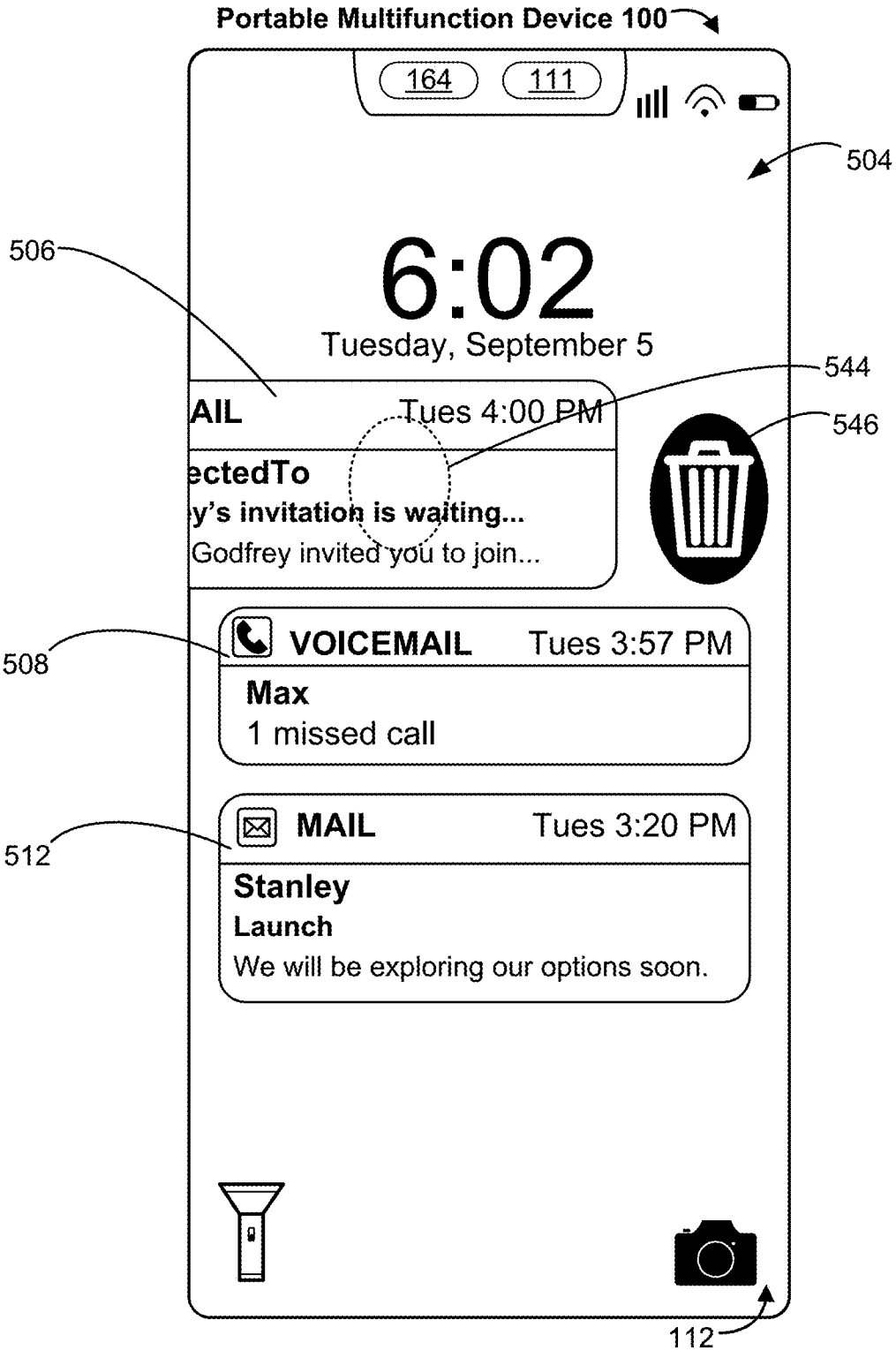

Portable Multifunction Device 100
164
111
504
506
6:02
Tuesday, September 5
544
AIL
Tues 4:00 PM
546
ectedTo
y's invitation is waiting...
Godfrey invited you to join...
508
VOICEMAIL
Tues 3:57 PM
Max
1 missed call
512
MAIL
Tues 3:20 PM
Stanley
Launch
We will be exploring our options soon.
112

Figure 5Z

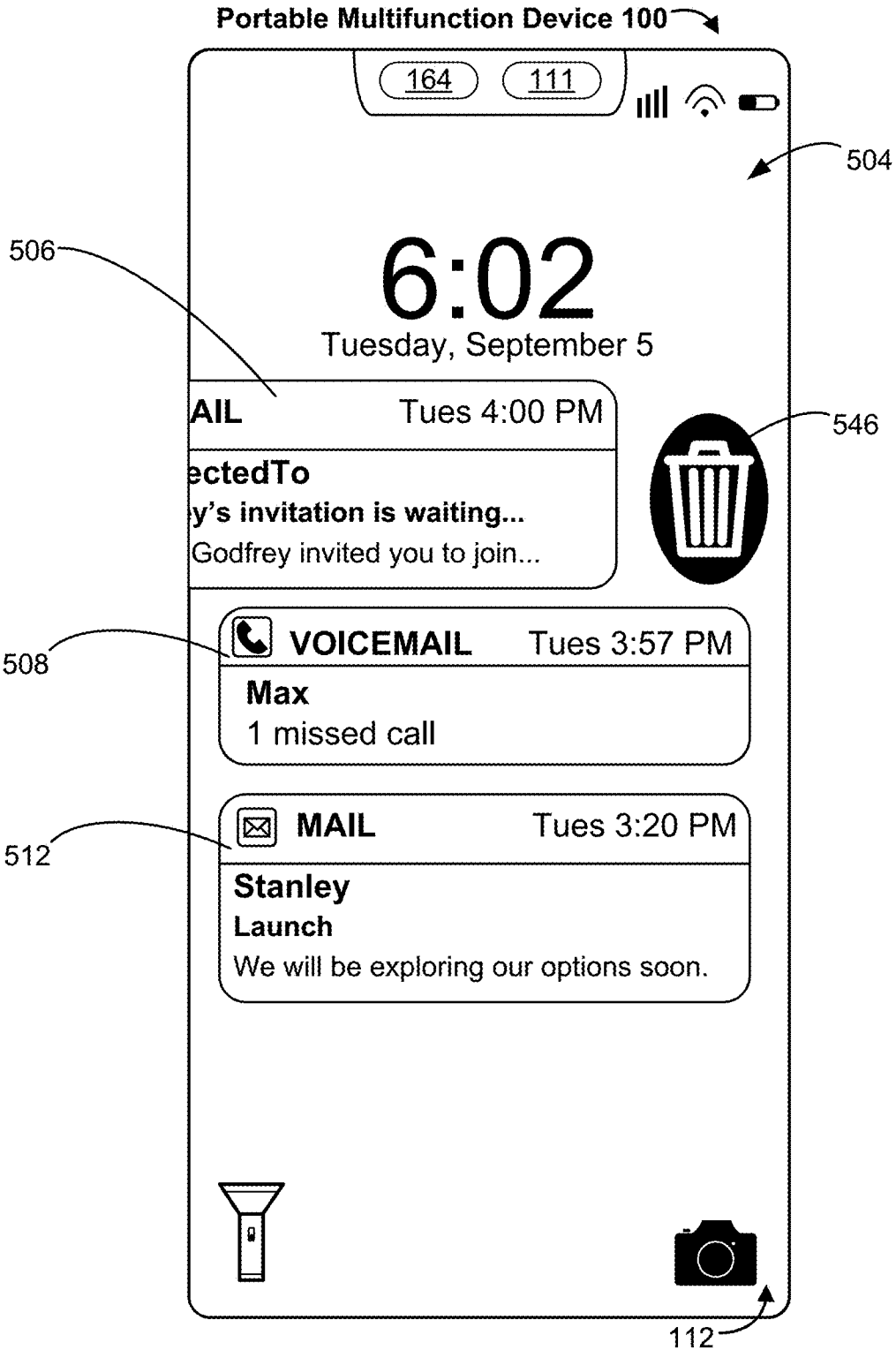

Portable Multifunction Device 100
164
111
504
506
6:02
Tuesday, September 5
AIL
Tues 4:00 PM
ectedTo
y's invitation is waiting...
Godfrey invited you to join...
546
508
VOICEMAIL
Tues 3:57 PM
Max
1 missed call
512
MAIL
Tues 3:20 PM
Stanley
Launch
We will be exploring our options soon.
112

Figure 5AA

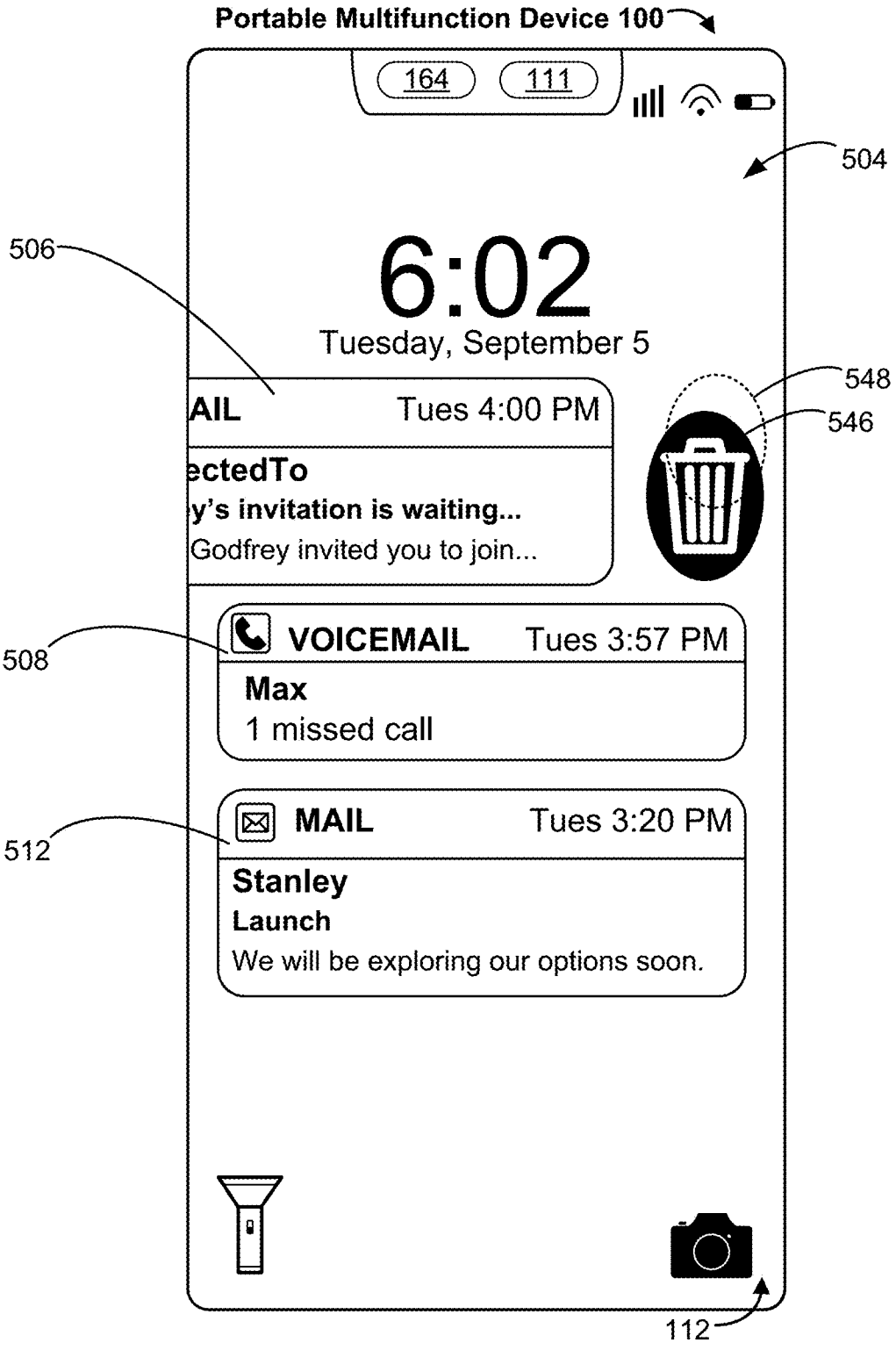

Portable Multifunction Device 100
164
111
504
506
6:02
Tuesday, September 5
AIL
Tues 4:00 PM
ectedTo
y's invitation is waiting...
Godfrey invited you to join...
548
546
508
VOICEMAIL
Tues 3:57 PM
Max
1 missed call
512
MAIL
Tues 3:20 PM
Stanley
Launch
We will be exploring our options soon.
112

Figure 5AB

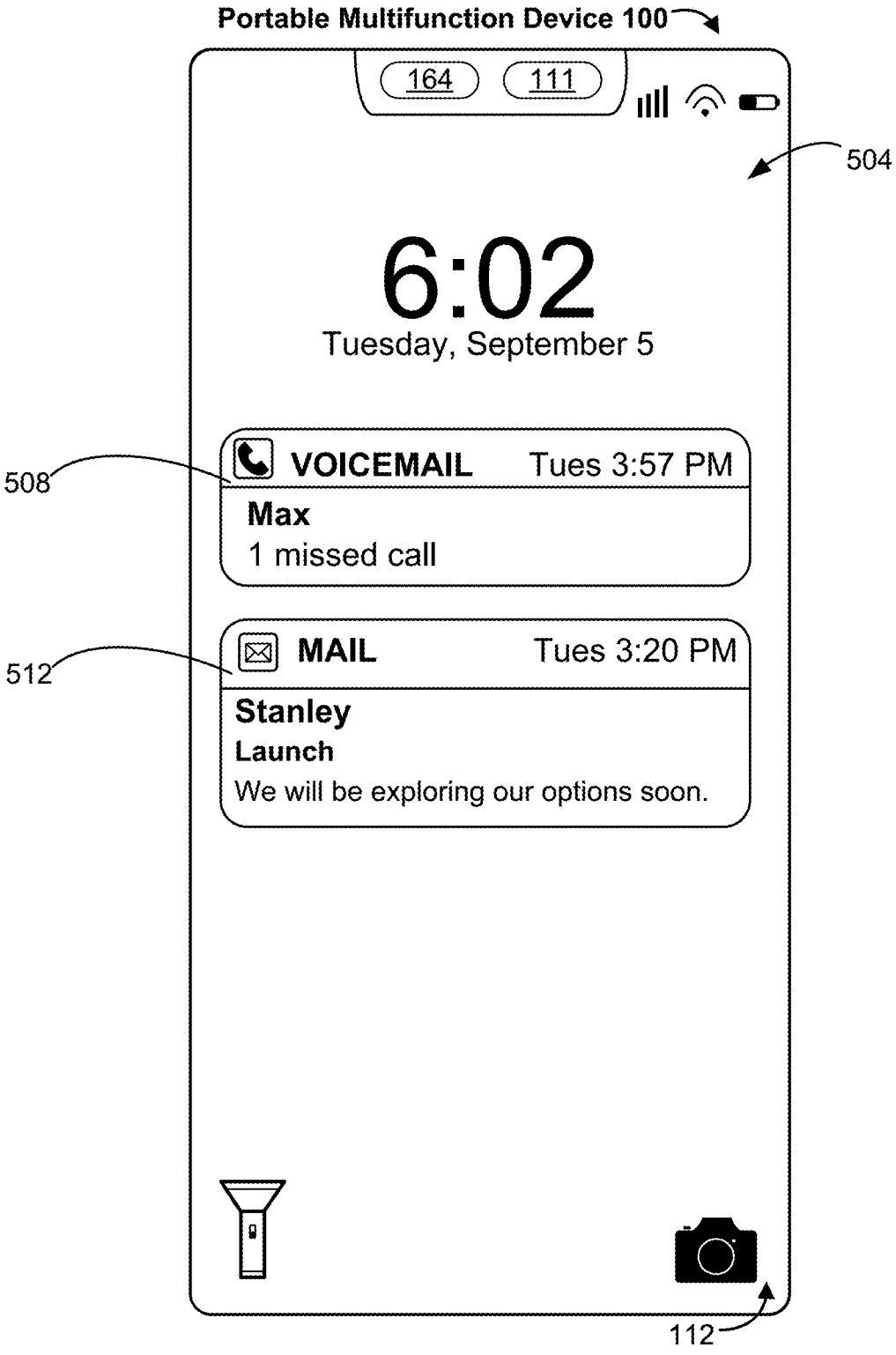

Portable Multifunction Device 100
164
111
504
6:02
Tuesday, September 5
508
VOICEMAIL
Tues 3:57 PM
Max
1 missed call
512
MAIL
Tues 3:20 PM
Stanley
Launch
We will be exploring our options soon.
112

Figure 5AC

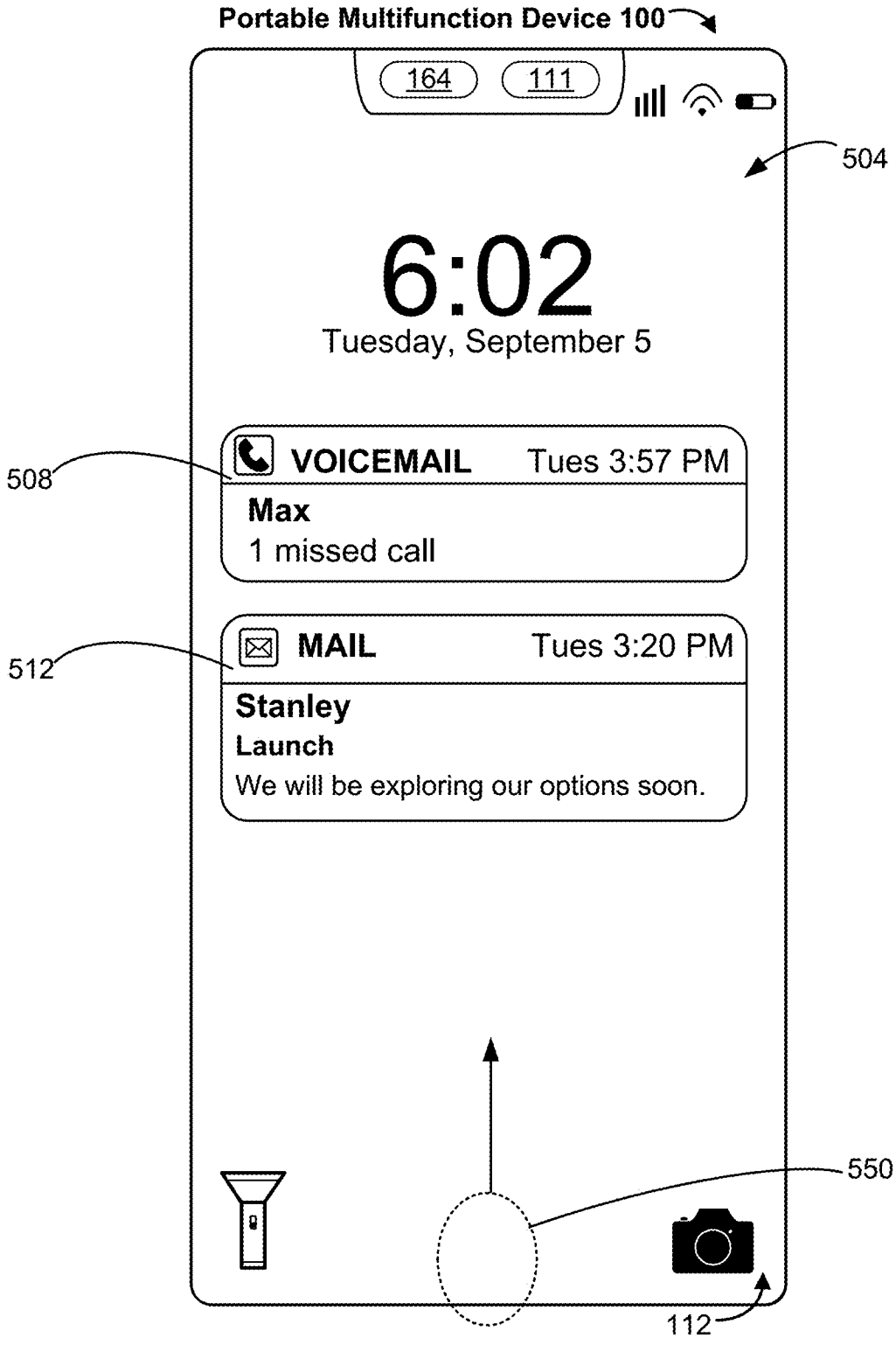

Portable Multifunction Device 100
164
111
504
6:02
Tuesday, September 5
508
VOICEMAIL
Tues 3:57 PM
Max
1 missed call
512
MAIL
Tues 3:20 PM
Stanley
Launch
We will be exploring our options soon.
550
112

Figure 5AD

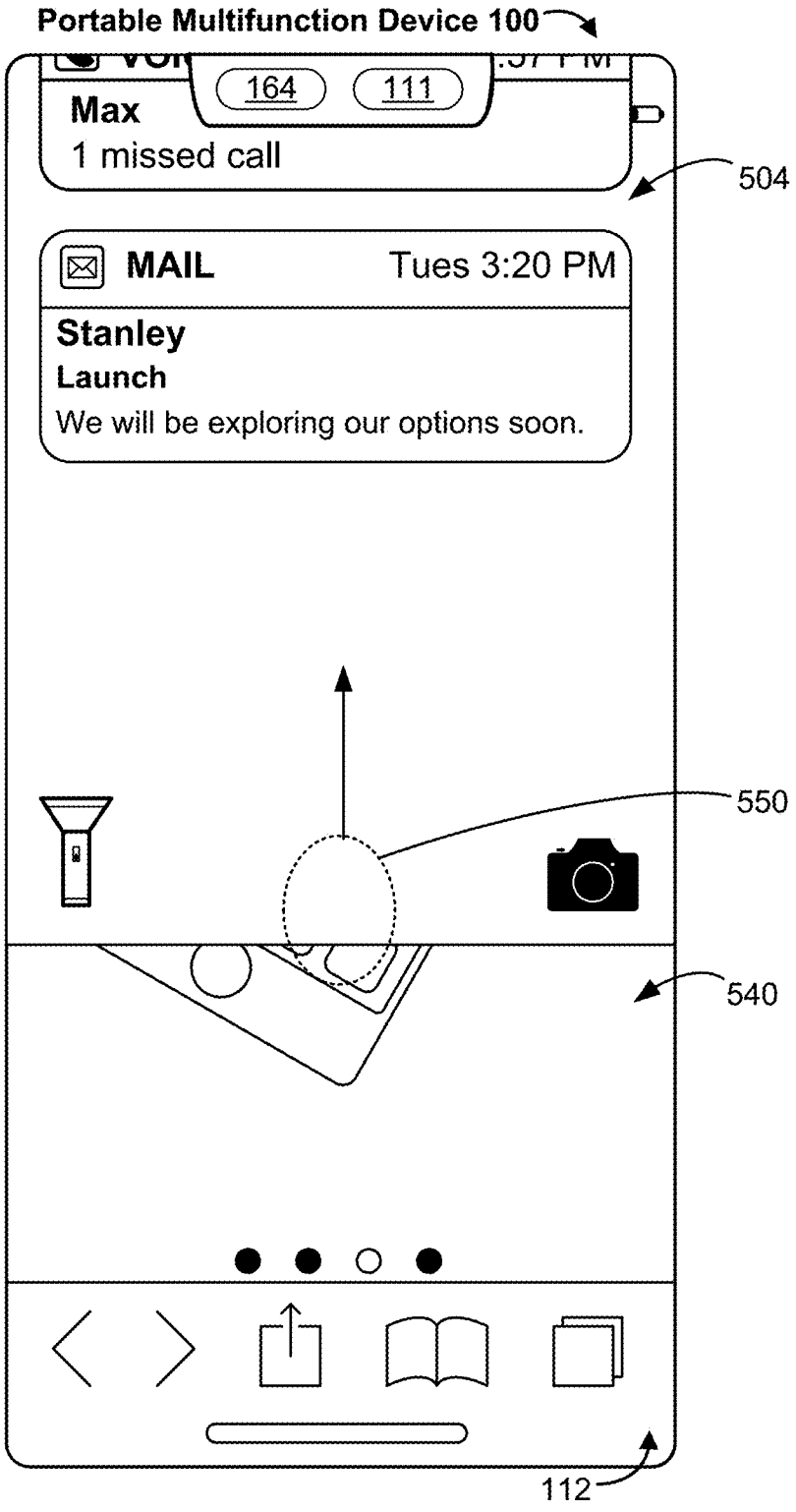

Portable Multifunction Device 100
164
111
Max
1 missed call
504
MAIL
Tues 3:20 PM
Stanley
Launch
We will be exploring our options soon.
550
540
112

Figure 5AE

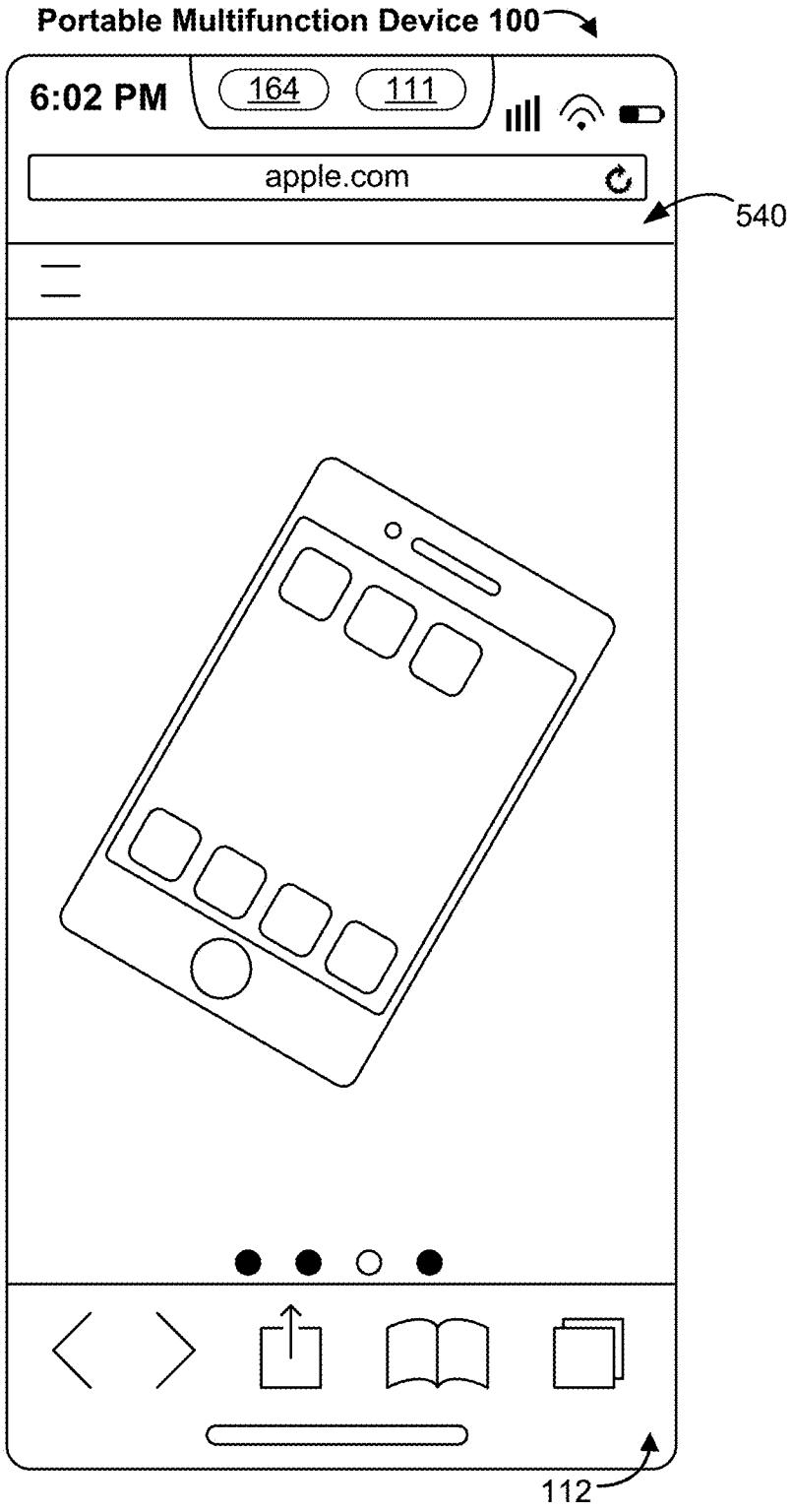

Portable Multifunction Device 100
6:02 PM
164
111
apple.com
540
112

Figure 5AF

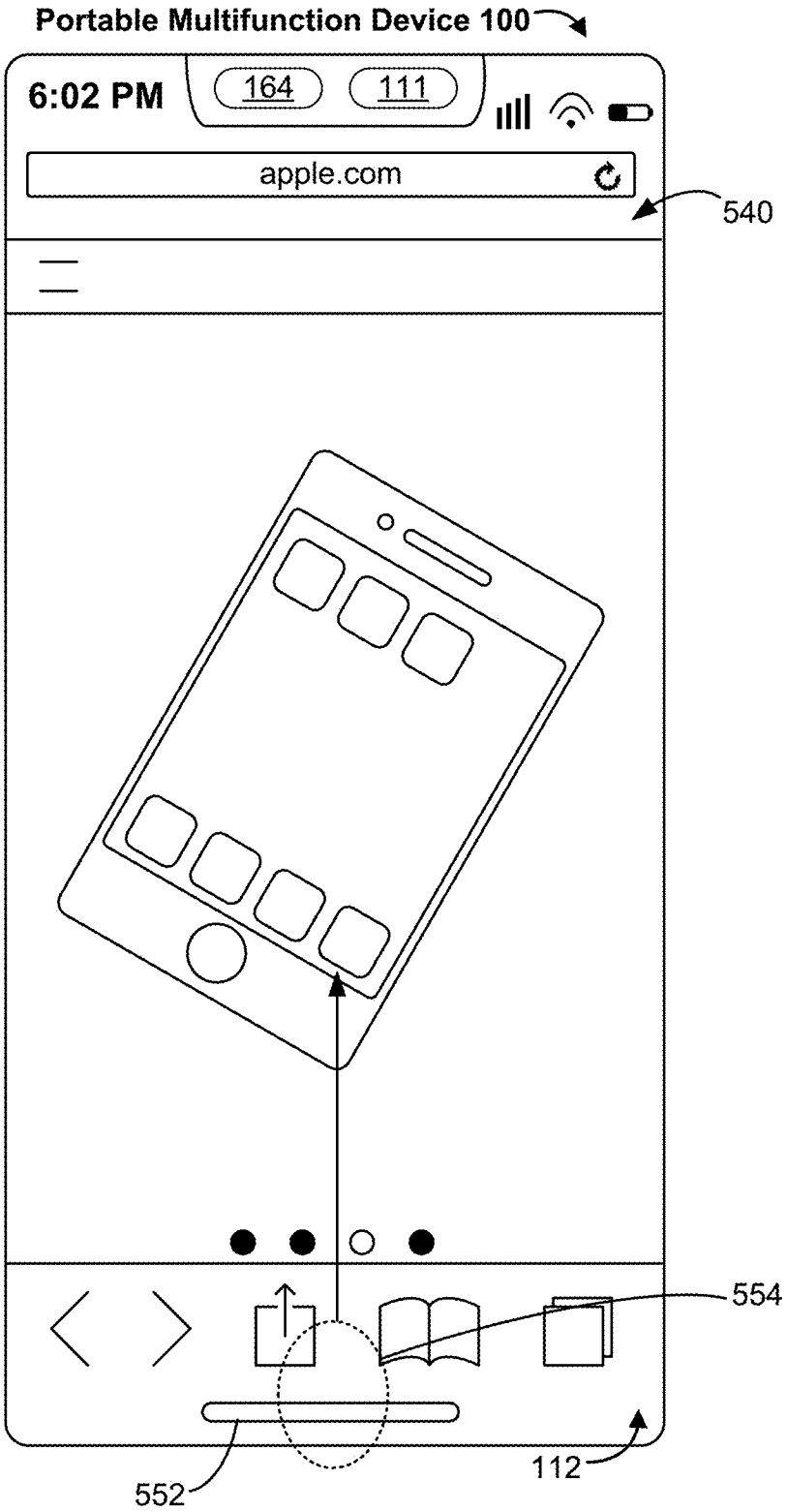

Portable Multifunction Device 100
6:02 PM
164
111
apple.com
540
554
552
112

Figure 5AG

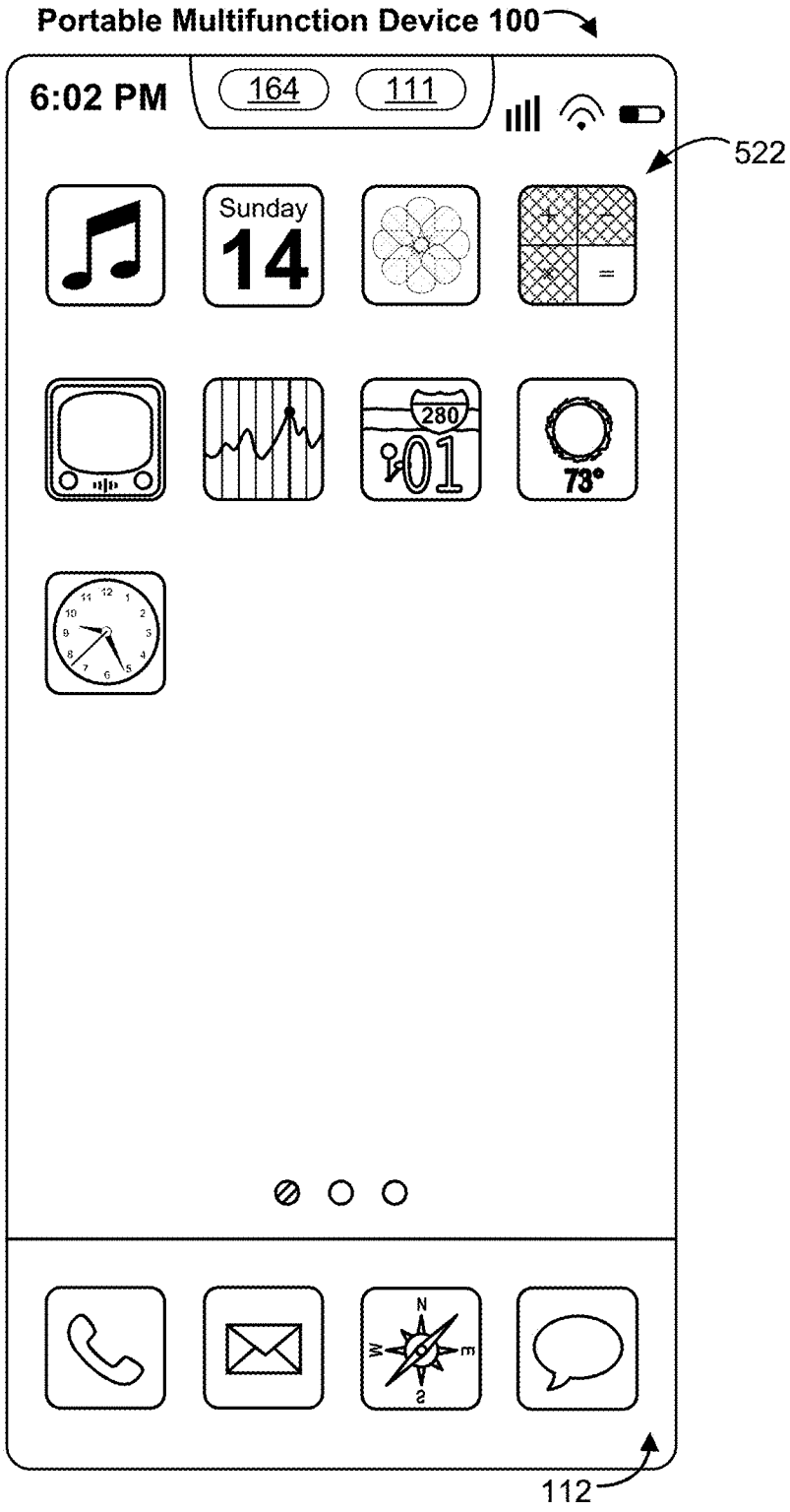

Portable Multifunction Device 100
6:02 PM
164
111
522
Sunday
14
280
73°
112

Figure 5AH

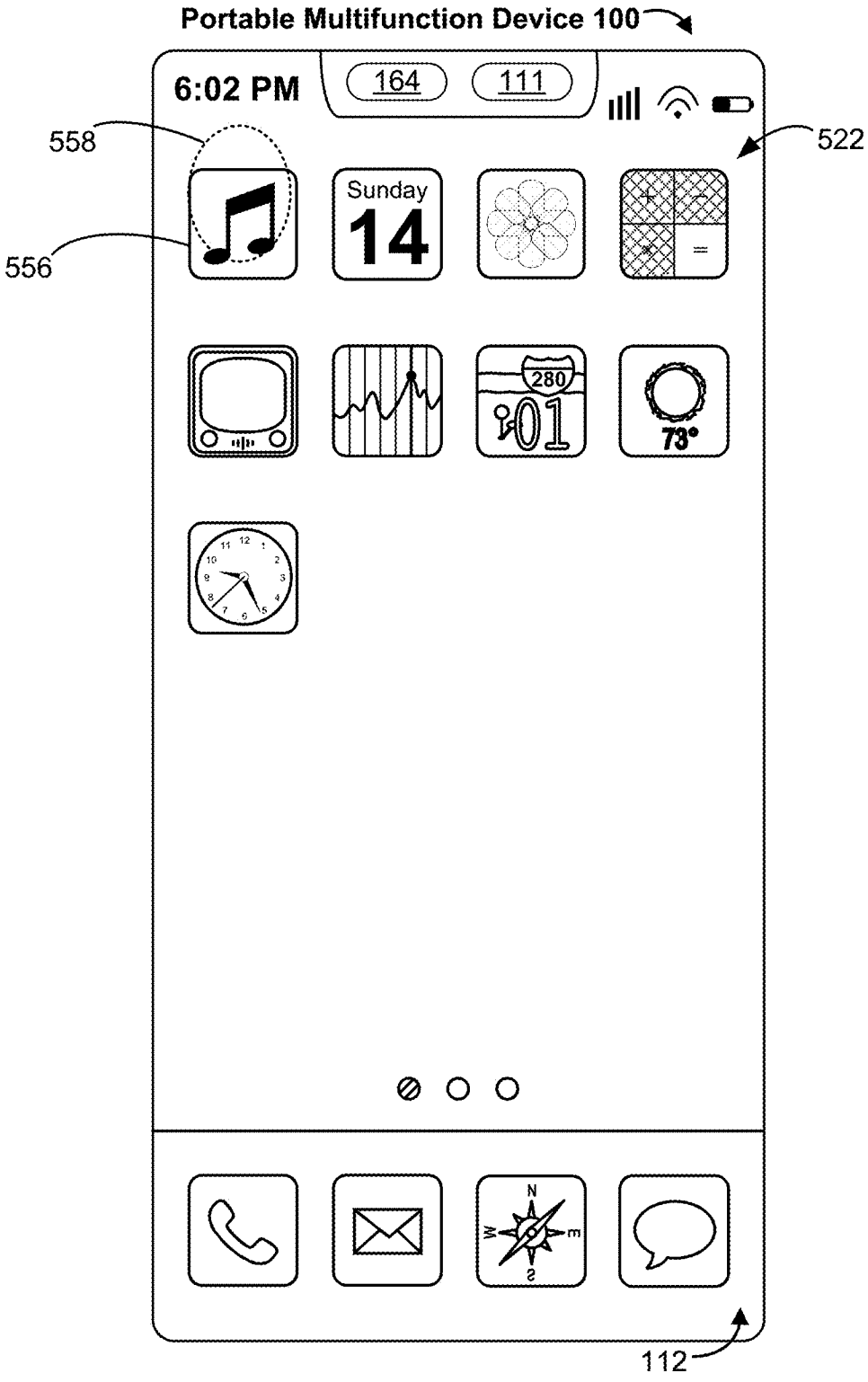

Portable Multifunction Device 100
6:02 PM
164
111
558
522
556
Sunday
14
280
73°
112

Figure 5AI

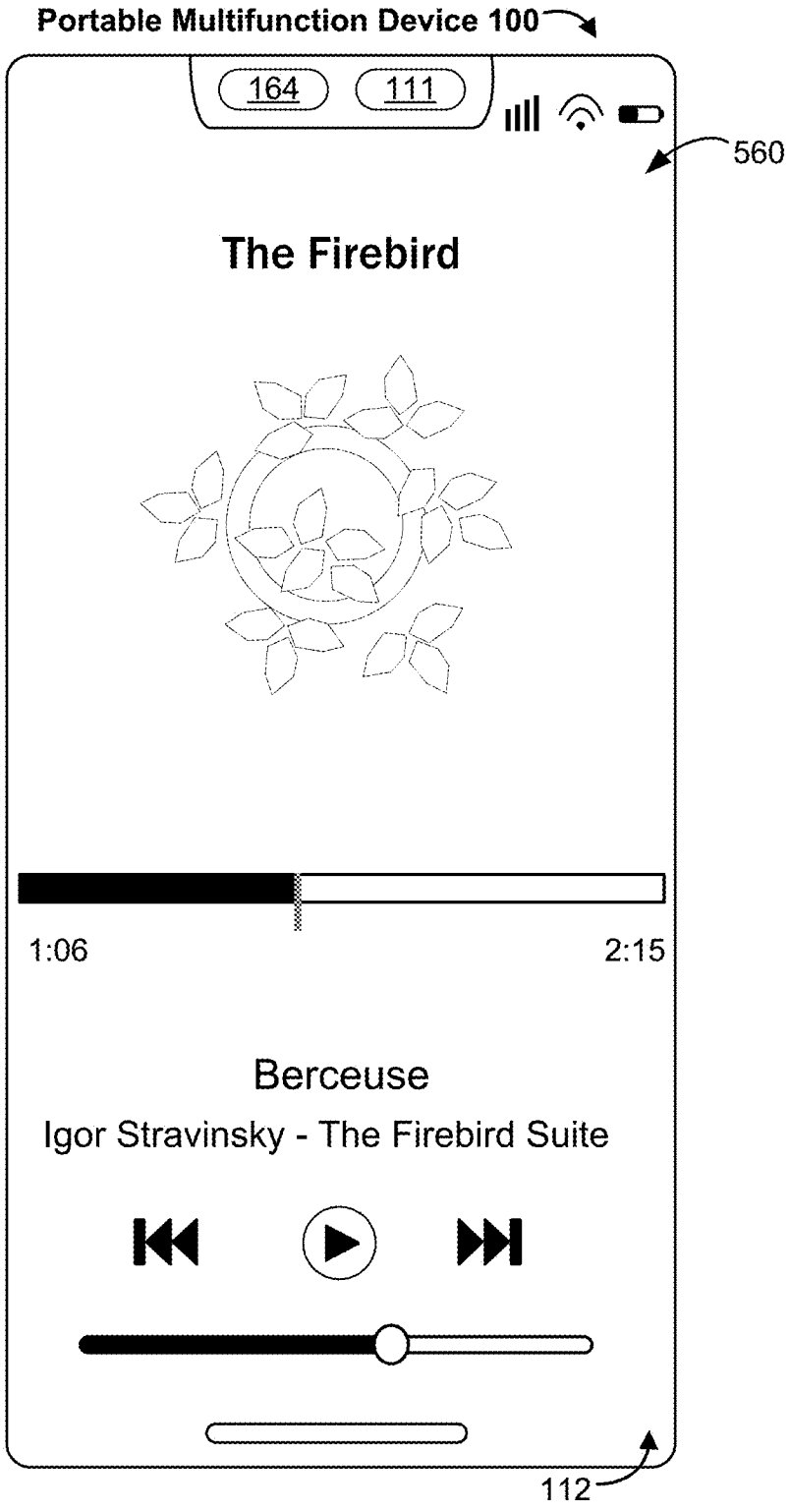

Portable Multifunction Device 100
164
111
560
The Firebird
1:06
2:15
Berceuse
Igor Stravinsky - The Firebird Suite
112

Figure 5AJ

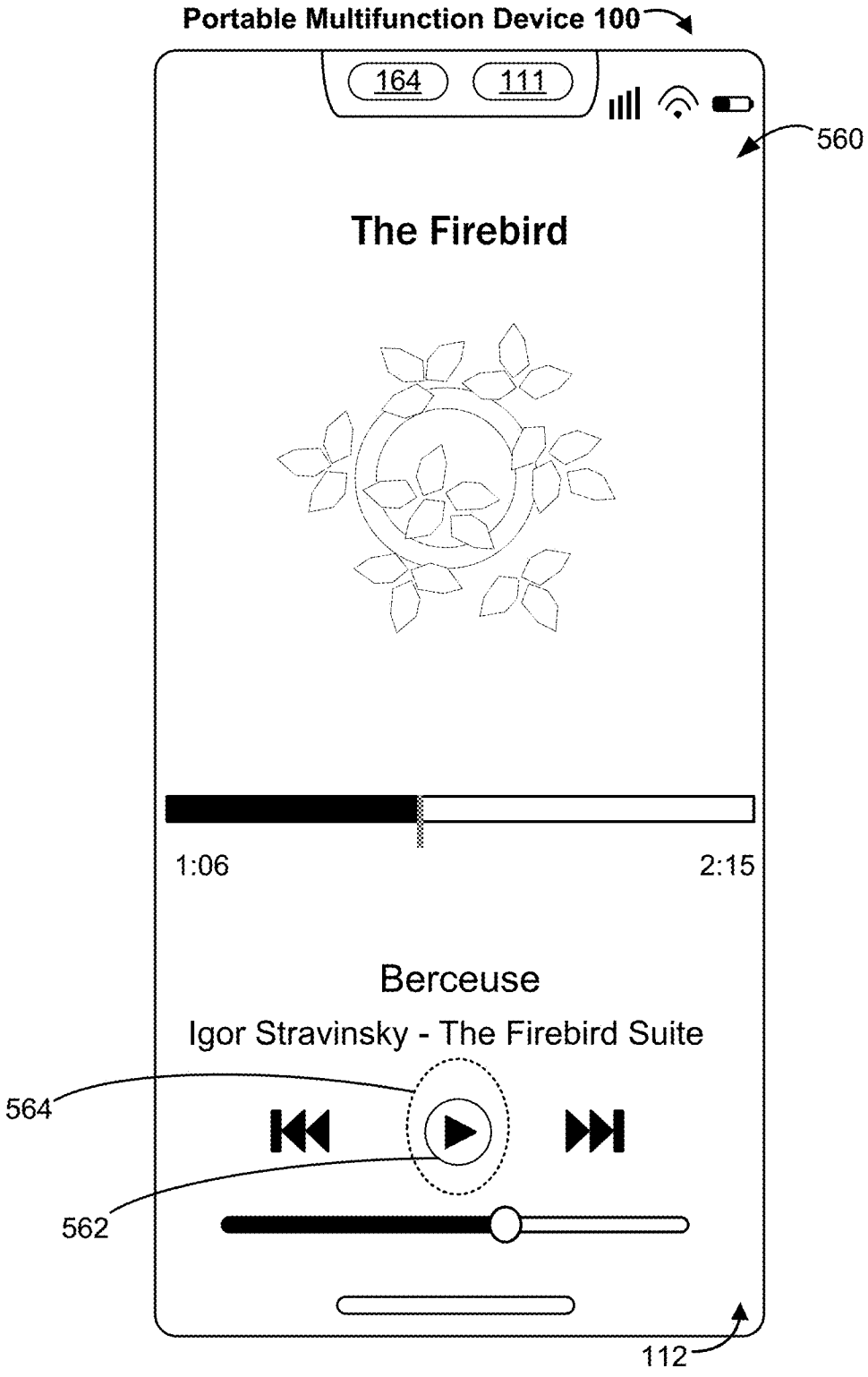


Figure 5AK

Masimo Ex. 1001
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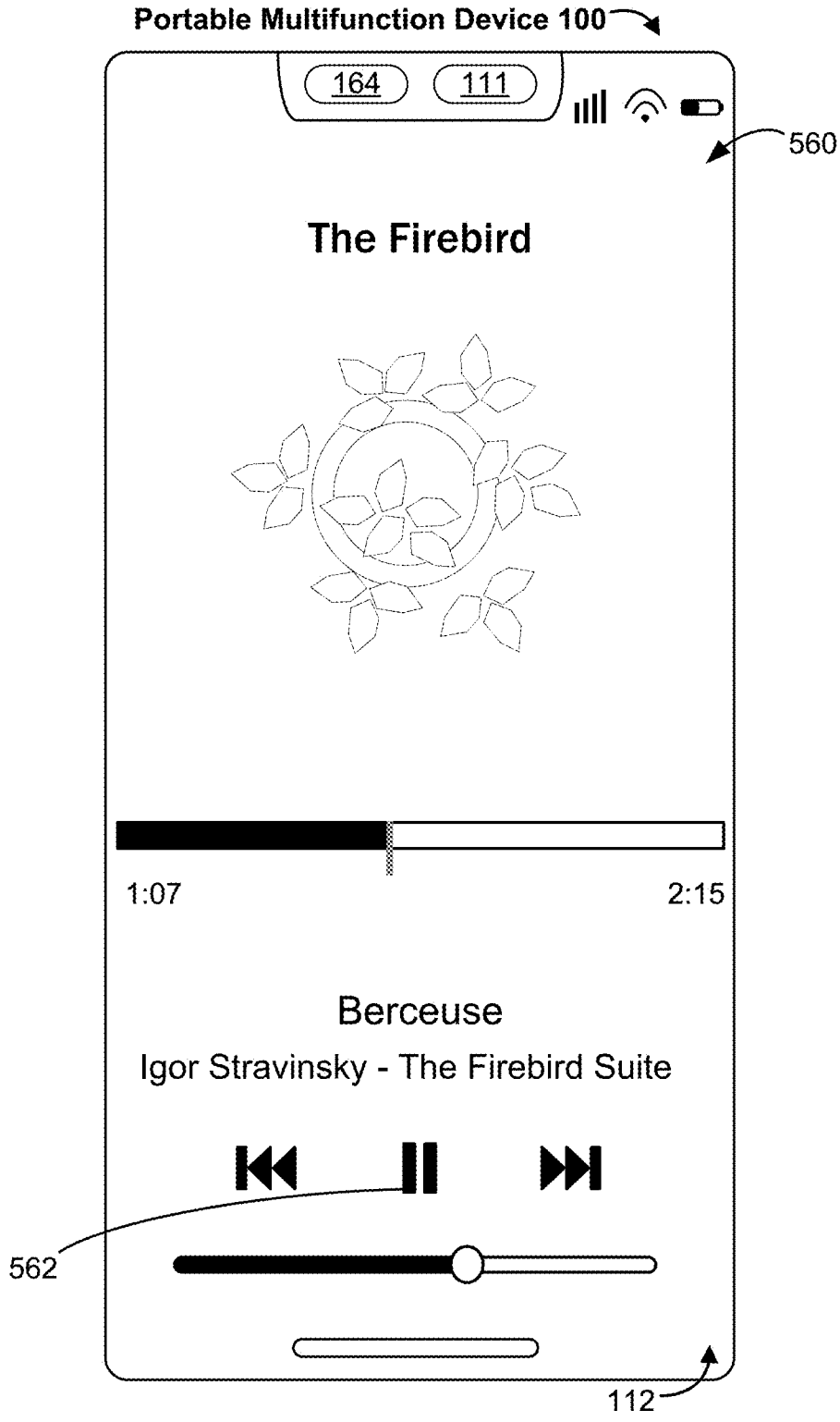


Figure 5AL

Masimo Ex. 1001
IPR Petition - USP 11,106,352

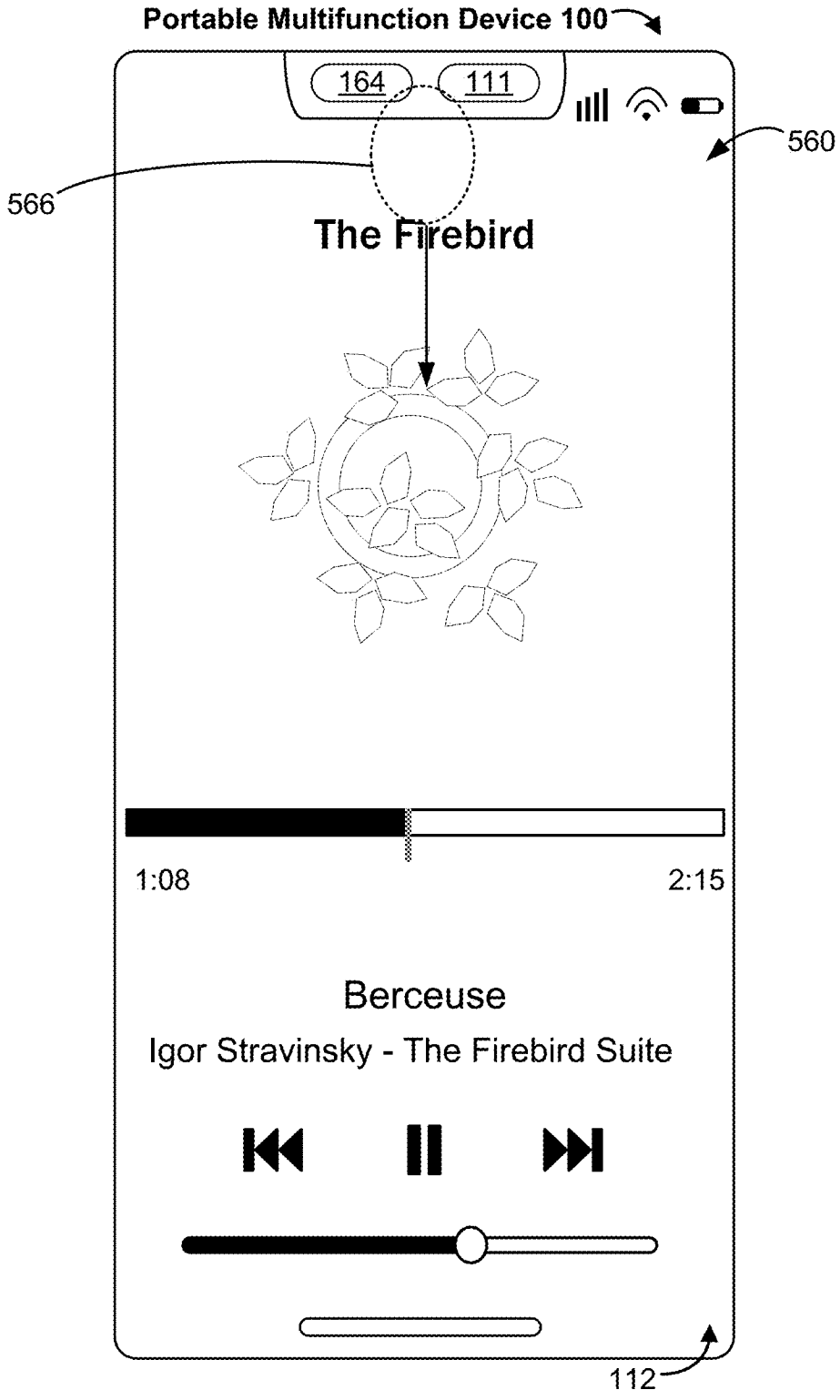


Figure 5AM

Masimo Ex. 1001
IPR Petition - USP 11,106,352

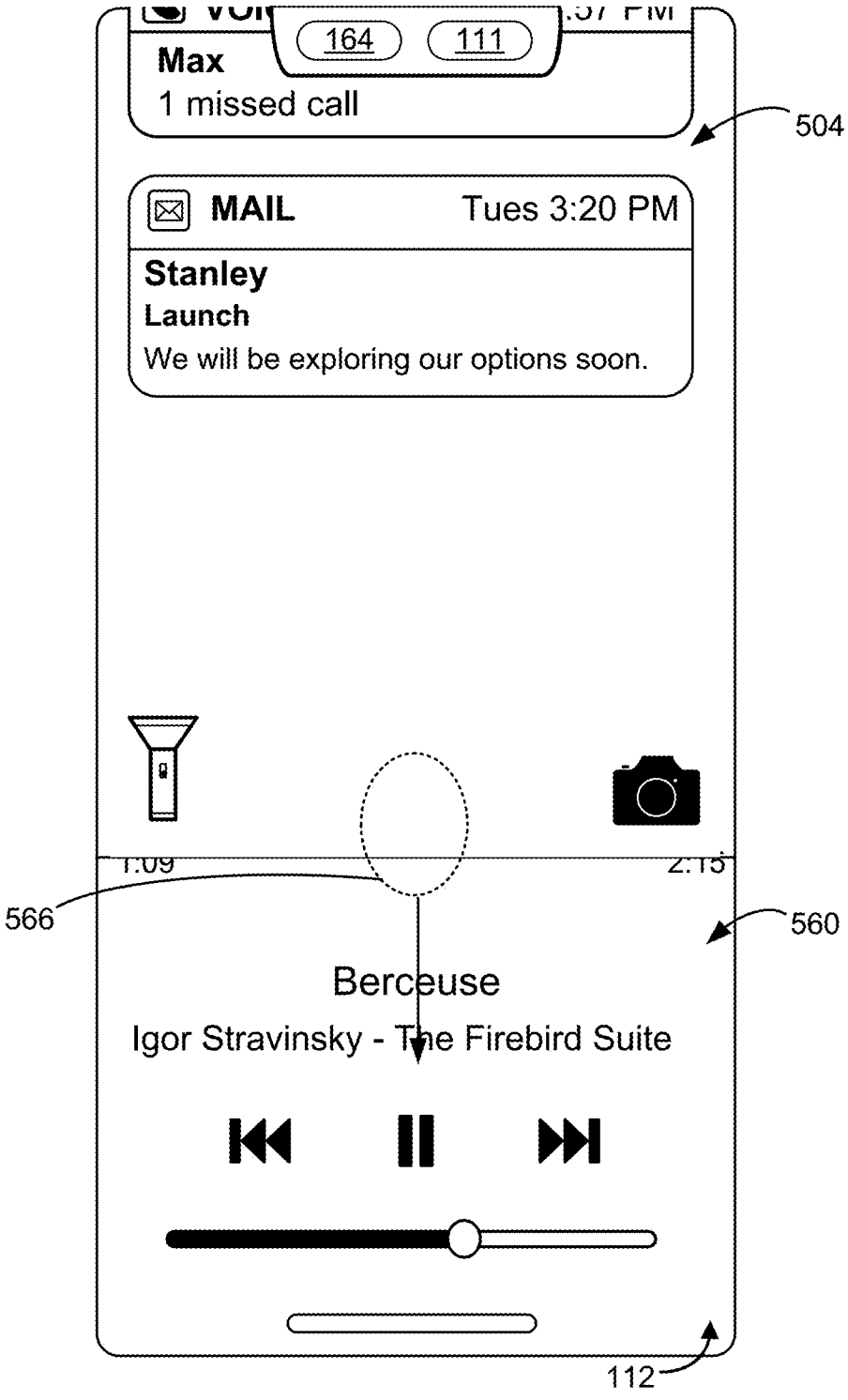

164
111
Max
1 missed call
504
MAIL
Tues 3:20 PM
Stanley
Launch
We will be exploring our options soon.
1:09
2:15
566
560
Berceuse
Igor Stravinsky - The Firebird Suite
112

Figure 5AN

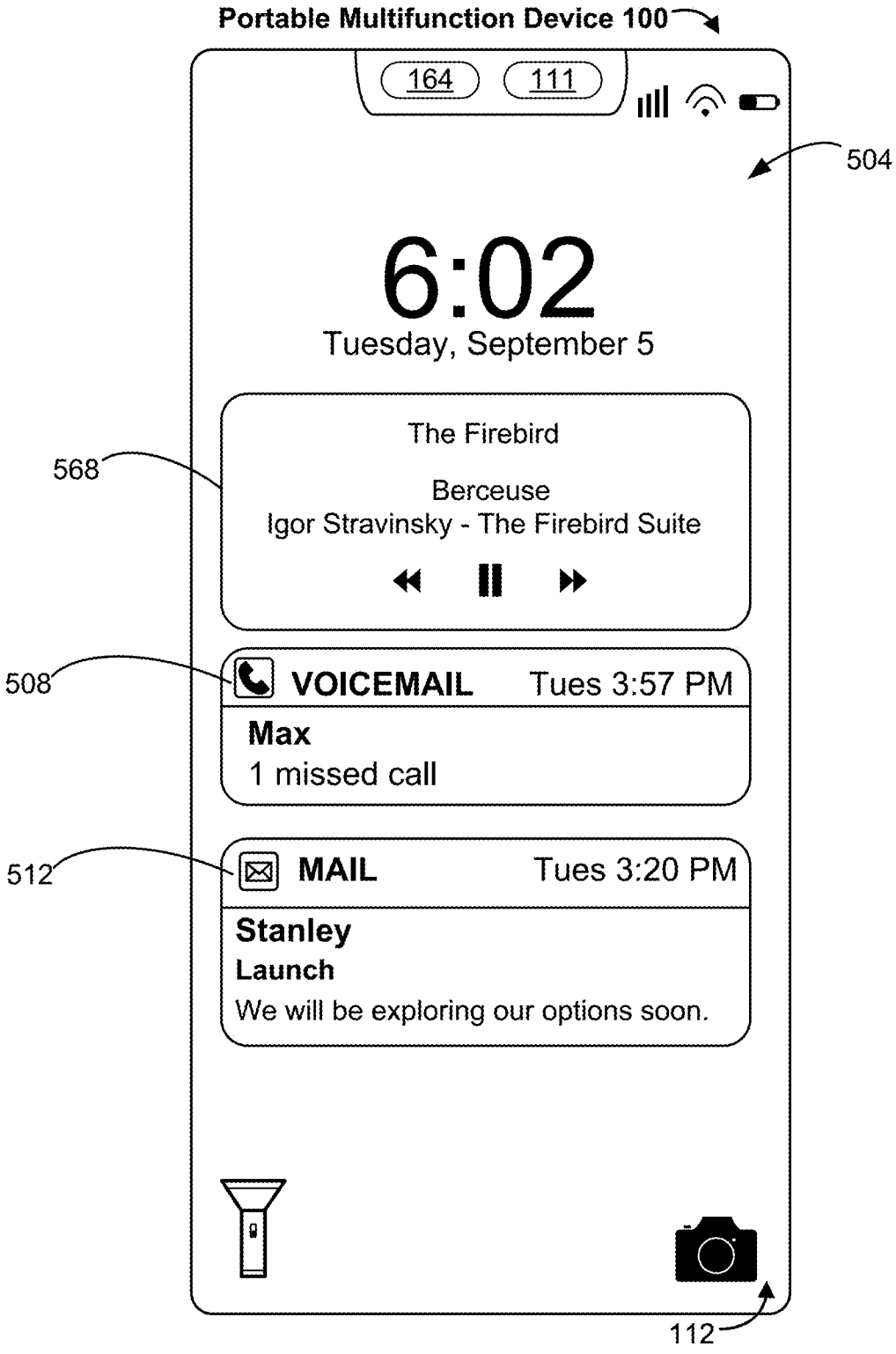

Portable Multifunction Device 100
164
111
504
6:02
Tuesday, September 5
568
The Firebird
Berceuse
Igor Stravinsky - The Firebird Suite
508
VOICEMAIL
Tues 3:57 PM
Max
1 missed call
512
MAIL
Tues 3:20 PM
Stanley
Launch
We will be exploring our options soon.
112

Figure 5AO

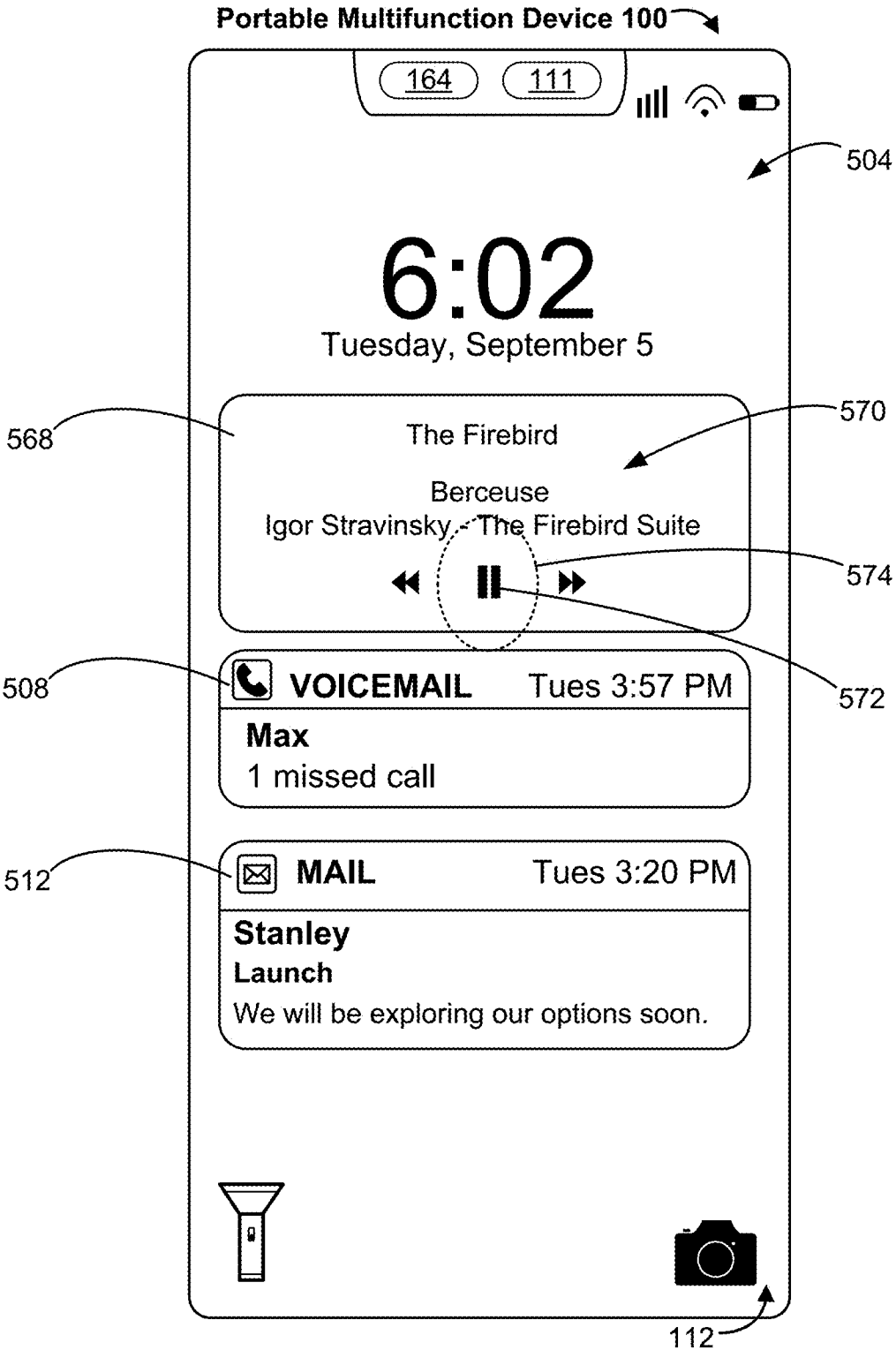


Figure 5AP

Masimo Ex. 1001
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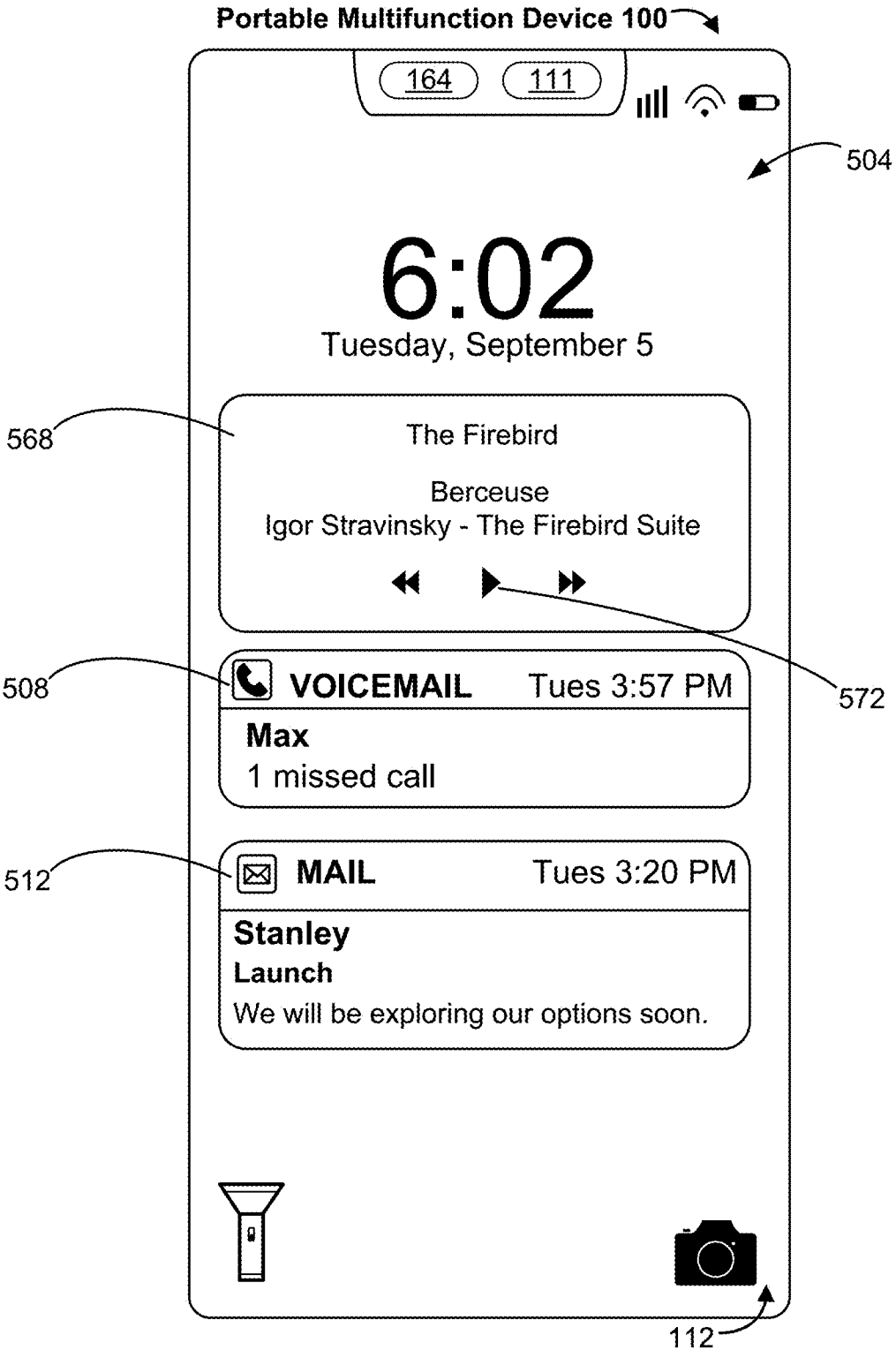

Portable Multifunction Device 100
164
111
504
6:02
Tuesday, September 5
568
The Firebird
Berceuse
Igor Stravinsky - The Firebird Suite
508
VOICEMAIL
Tues 3:57 PM
Max
1 missed call
572
512
MAIL
Tues 3:20 PM
Stanley
Launch
We will be exploring our options soon.
112

Figure 5AQ

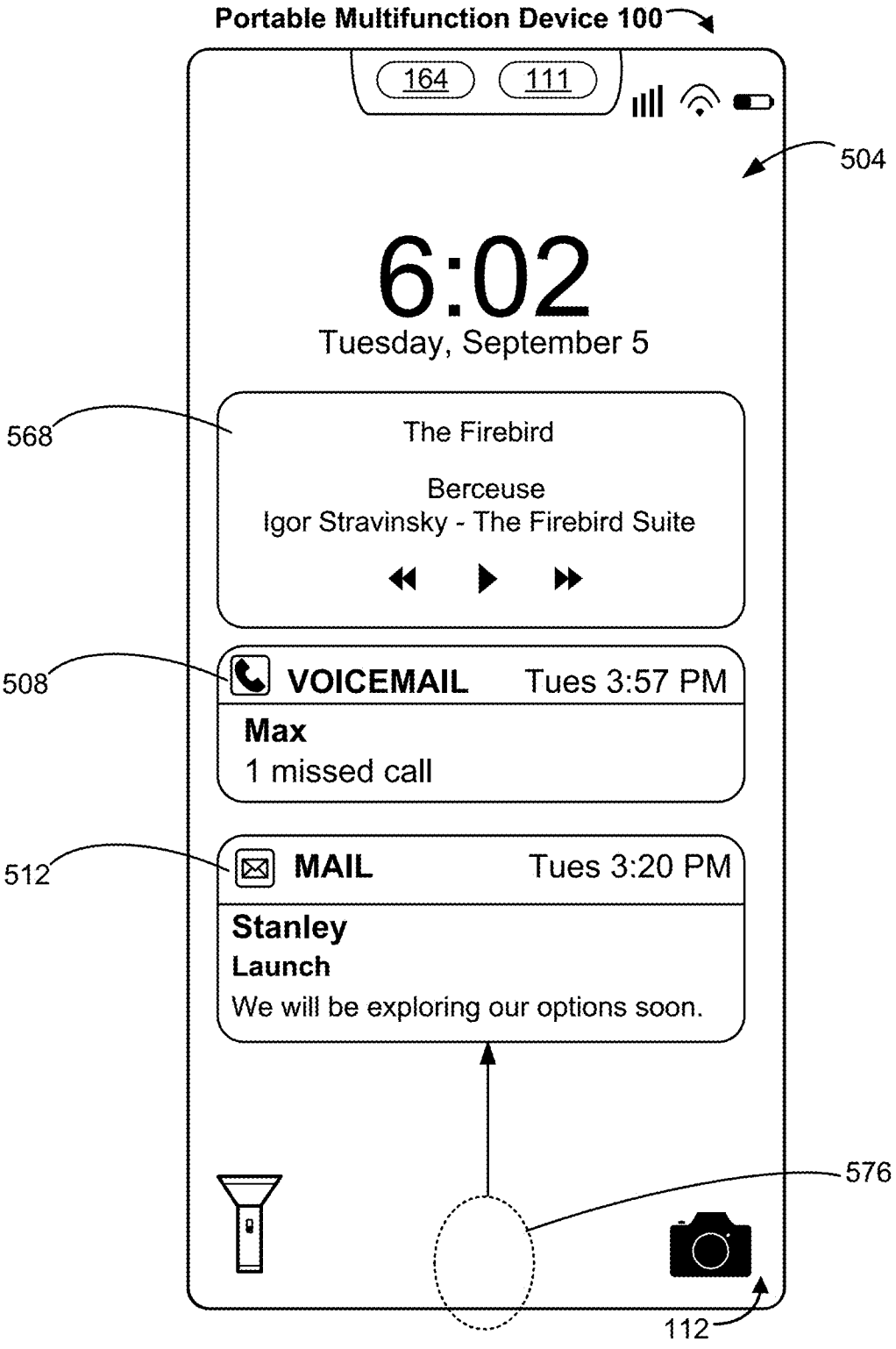

Portable Multifunction Device 100
164
111
504
6:02
Tuesday, September 5
568
The Firebird
Berceuse
Igor Stravinsky - The Firebird Suite
508
VOICEMAIL
Tues 3:57 PM
Max
1 missed call
512
MAIL
Tues 3:20 PM
Stanley
Launch
We will be exploring our options soon.
576
112

Figure 5AR

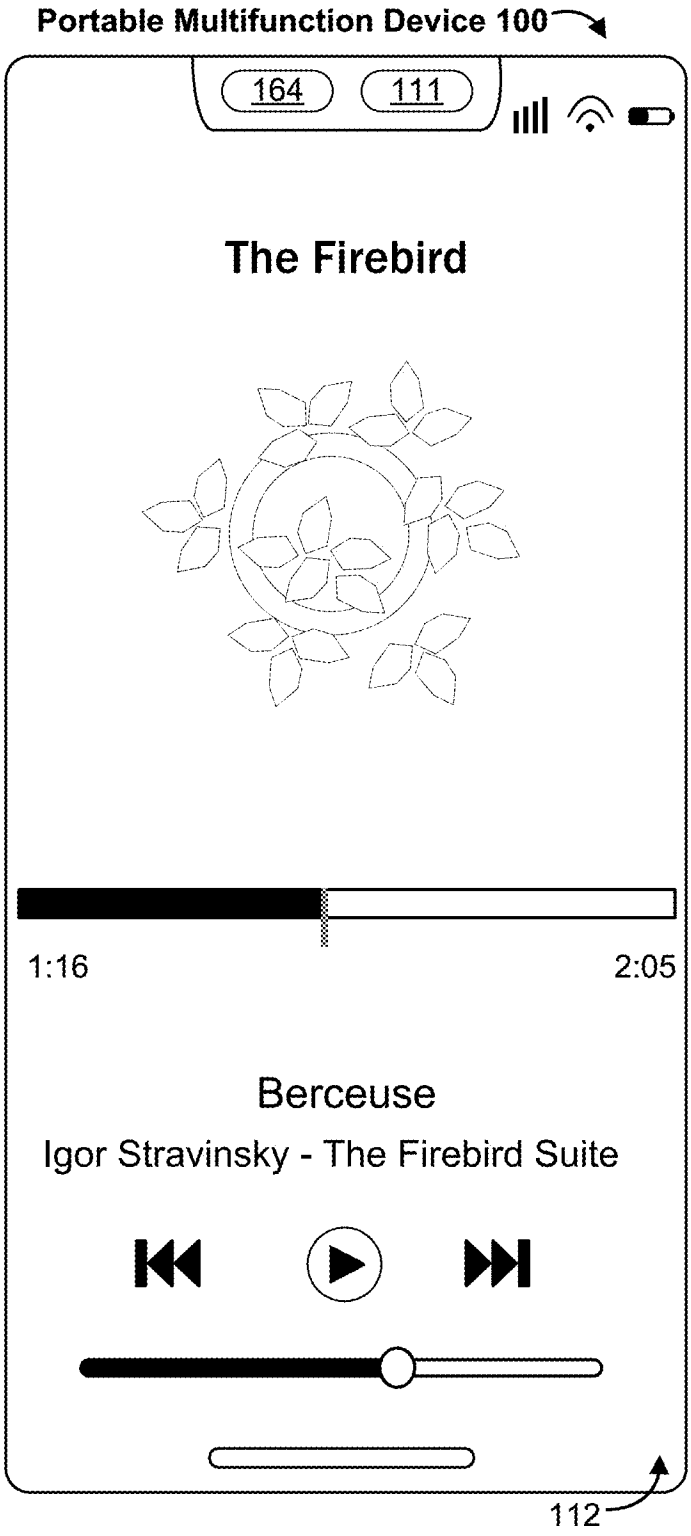

Portable Multifunction Device 100
164
111
The Firebird
1:16
2:05
Berceuse
Igor Stravinsky - The Firebird Suite
112

Figure 5AS

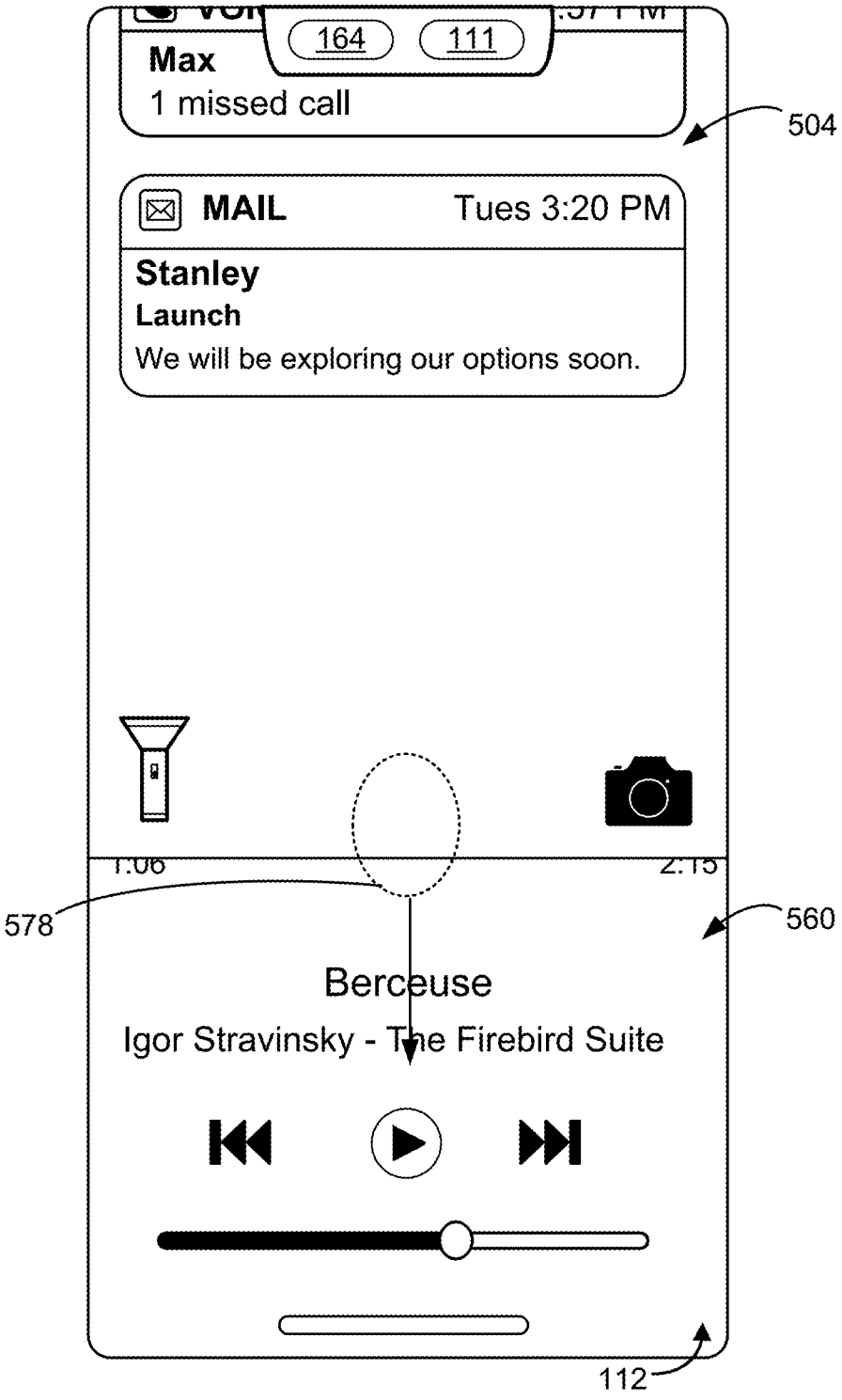

164
111
Max
1 missed call
504
MAIL
Tues 3:20 PM
Stanley
Launch
We will be exploring our options soon.
1:06
2:15
578
560
Berceuse
Igor Stravinsky - The Firebird Suite
112

Figure 5AT

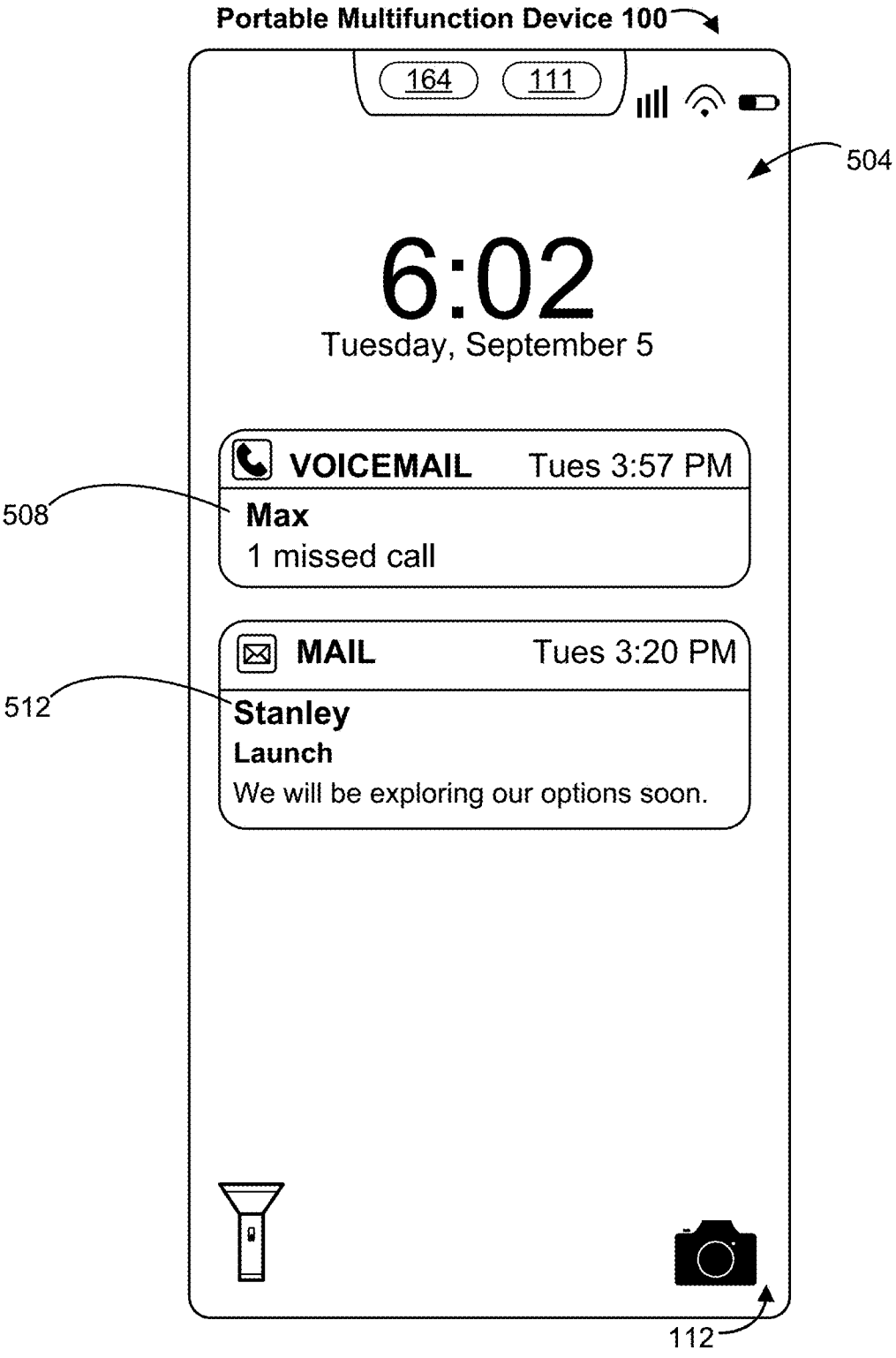

Portable Multifunction Device 100
164
111
504
6:02
Tuesday, September 5
VOICEMAIL Tues 3:57 PM
Max
1 missed call
508
MAIL Tues 3:20 PM
512
Stanley
Launch
We will be exploring our options soon.
112

Figure 5AU

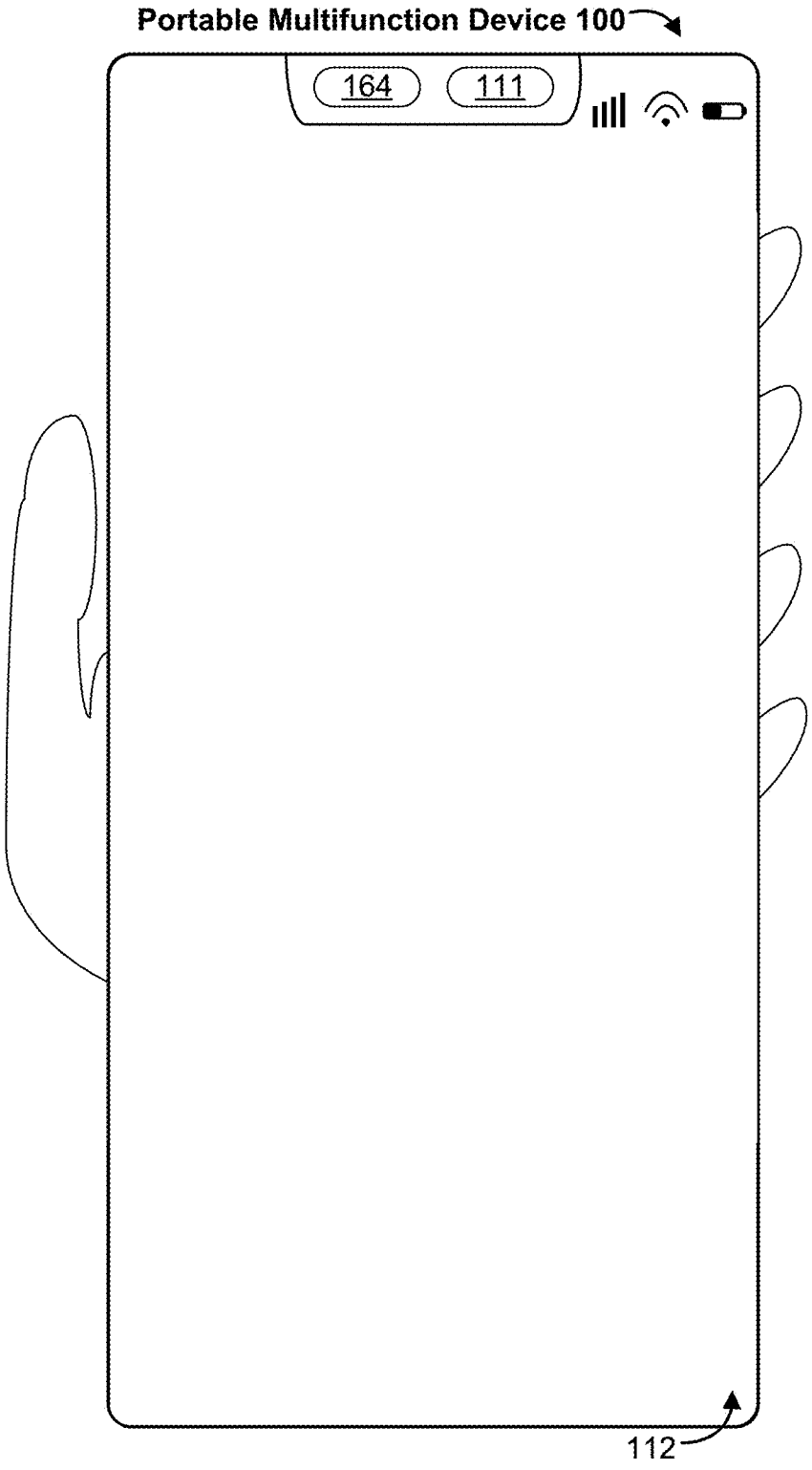


Figure 5AV

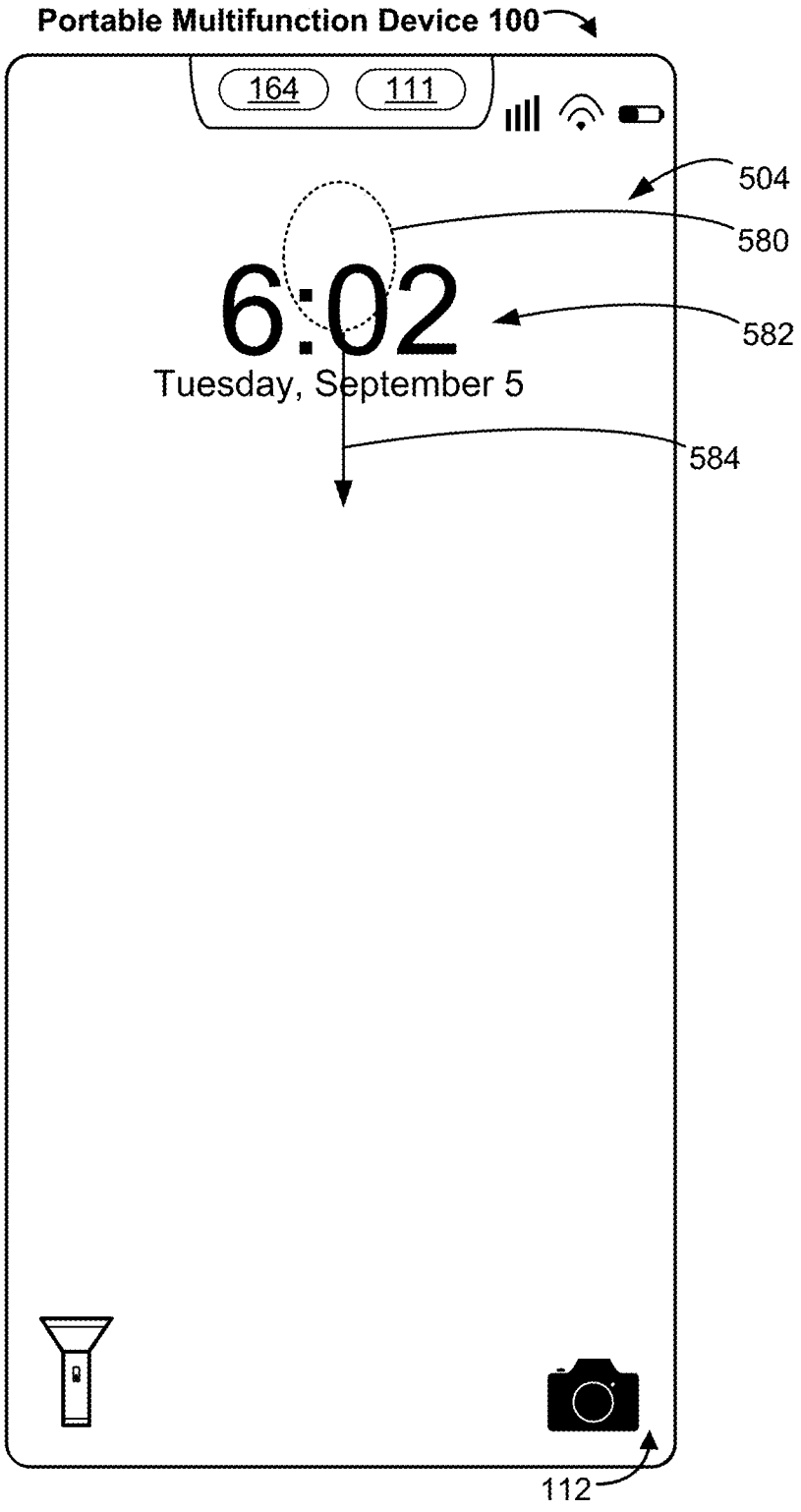

Portable Multifunction Device 100
164
111
504
580
6:02
582
Tuesday, September 5
584
112

Figure 5AW

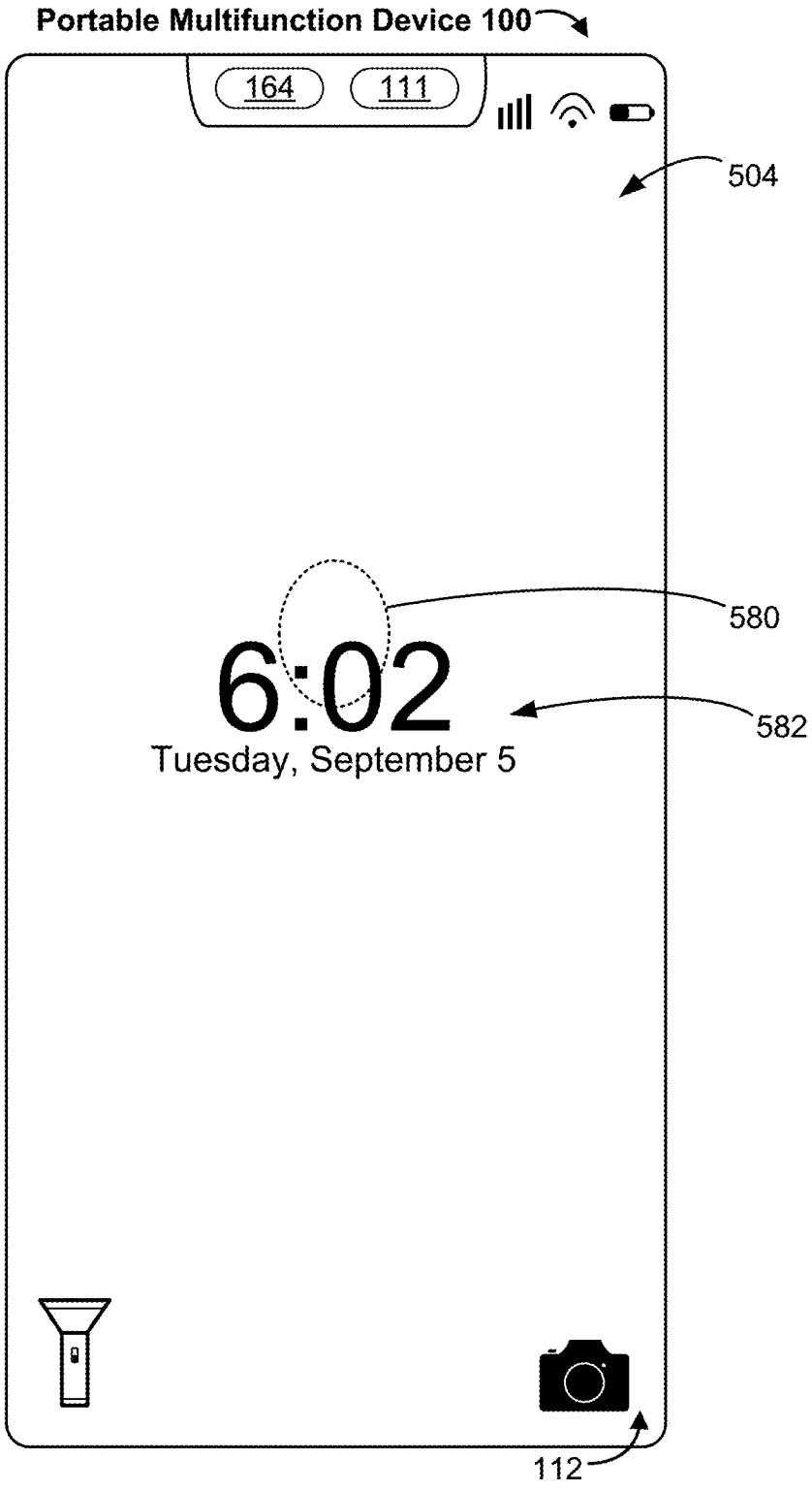

Portable Multifunction Device 100
164
111
504
580
6:02
582
Tuesday, September 5
112

Figure 5AX

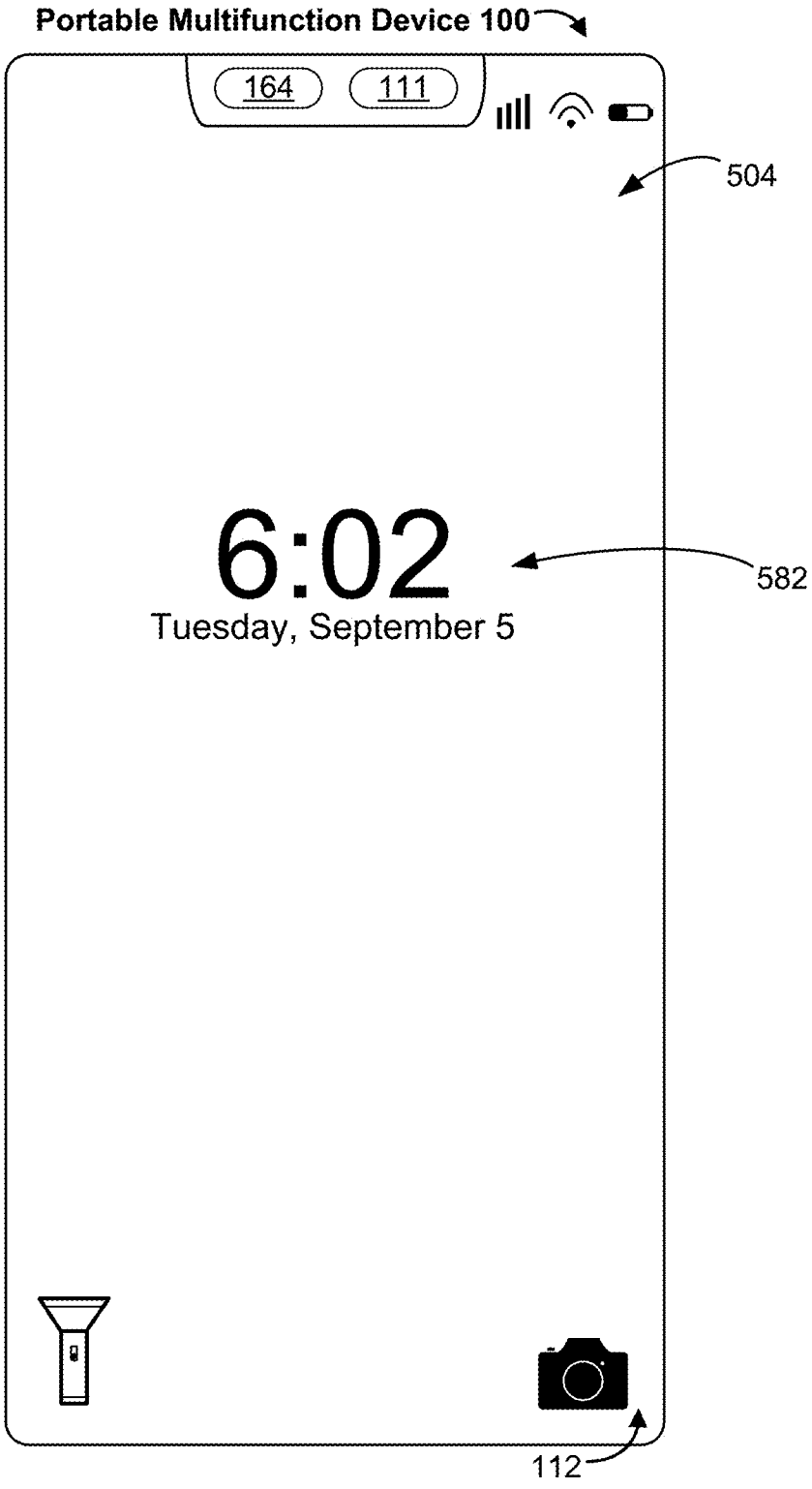

Portable Multifunction Device 100
164
111
504
6:02
Tuesday, September 5
582
112

Figure 5AY

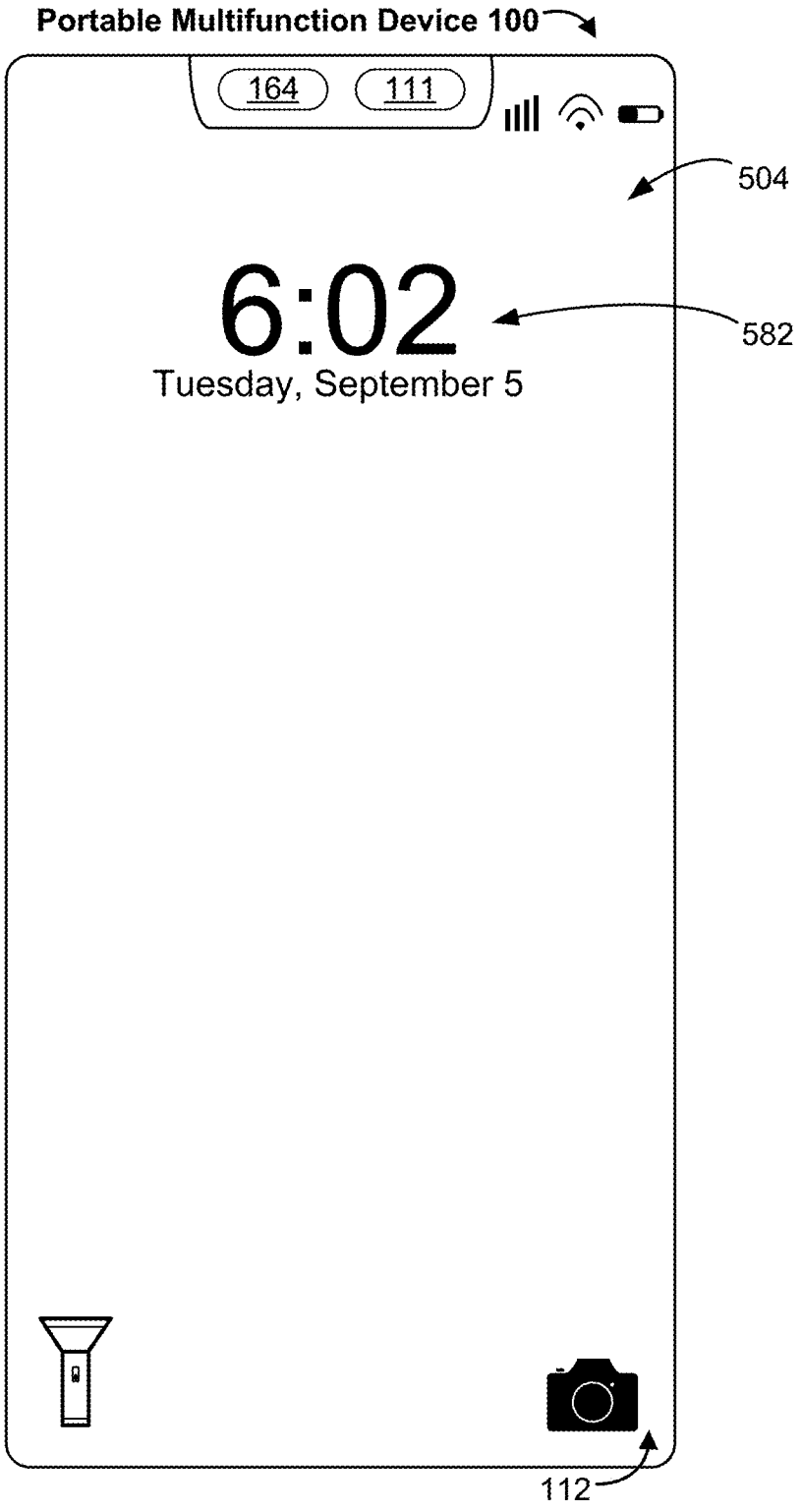

Portable Multifunction Device 100
164
111
504
6:02
582
Tuesday, September 5
112

Figure 5AZ

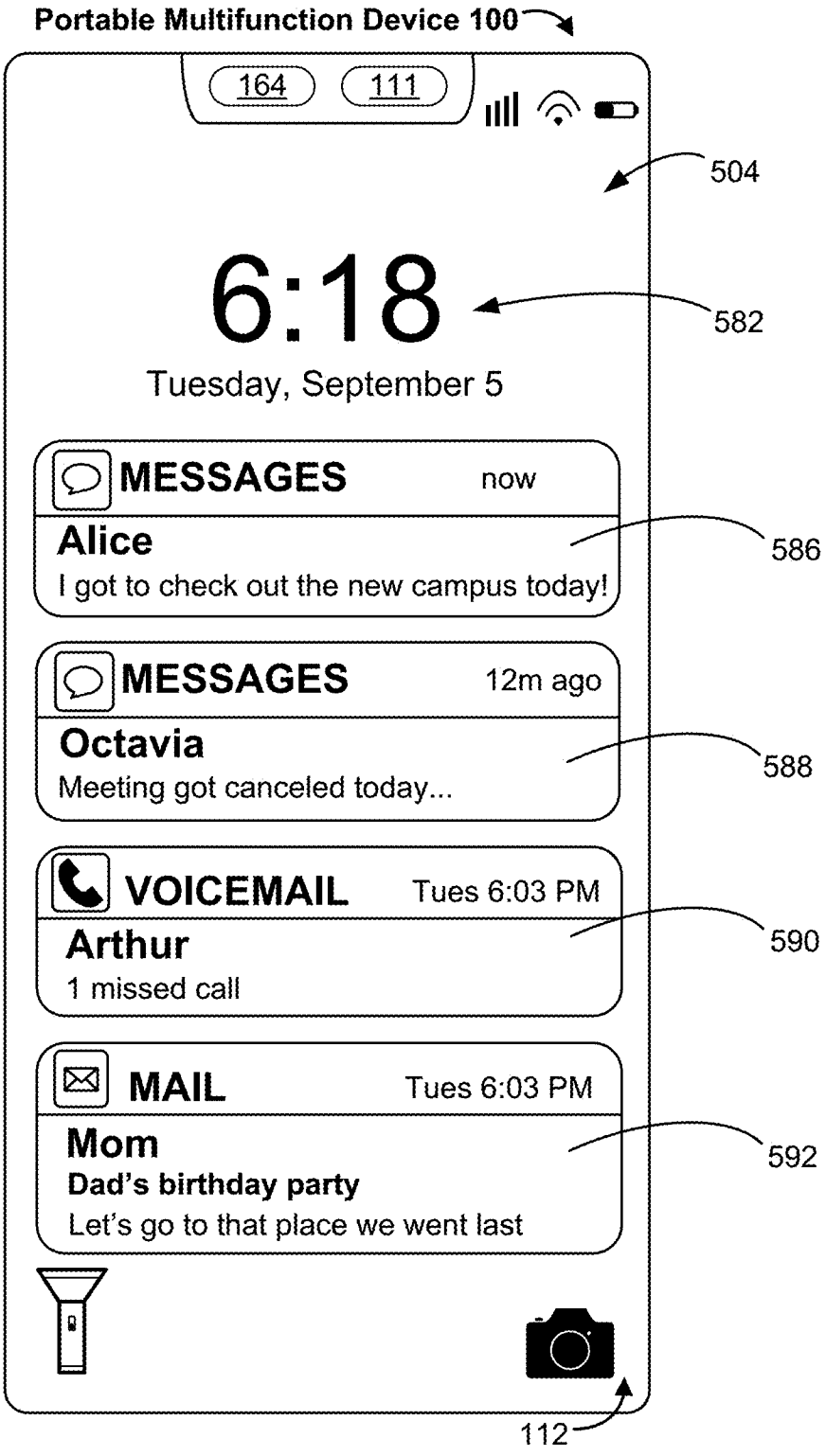


Figure 5BA

Masimo Ex. 1001
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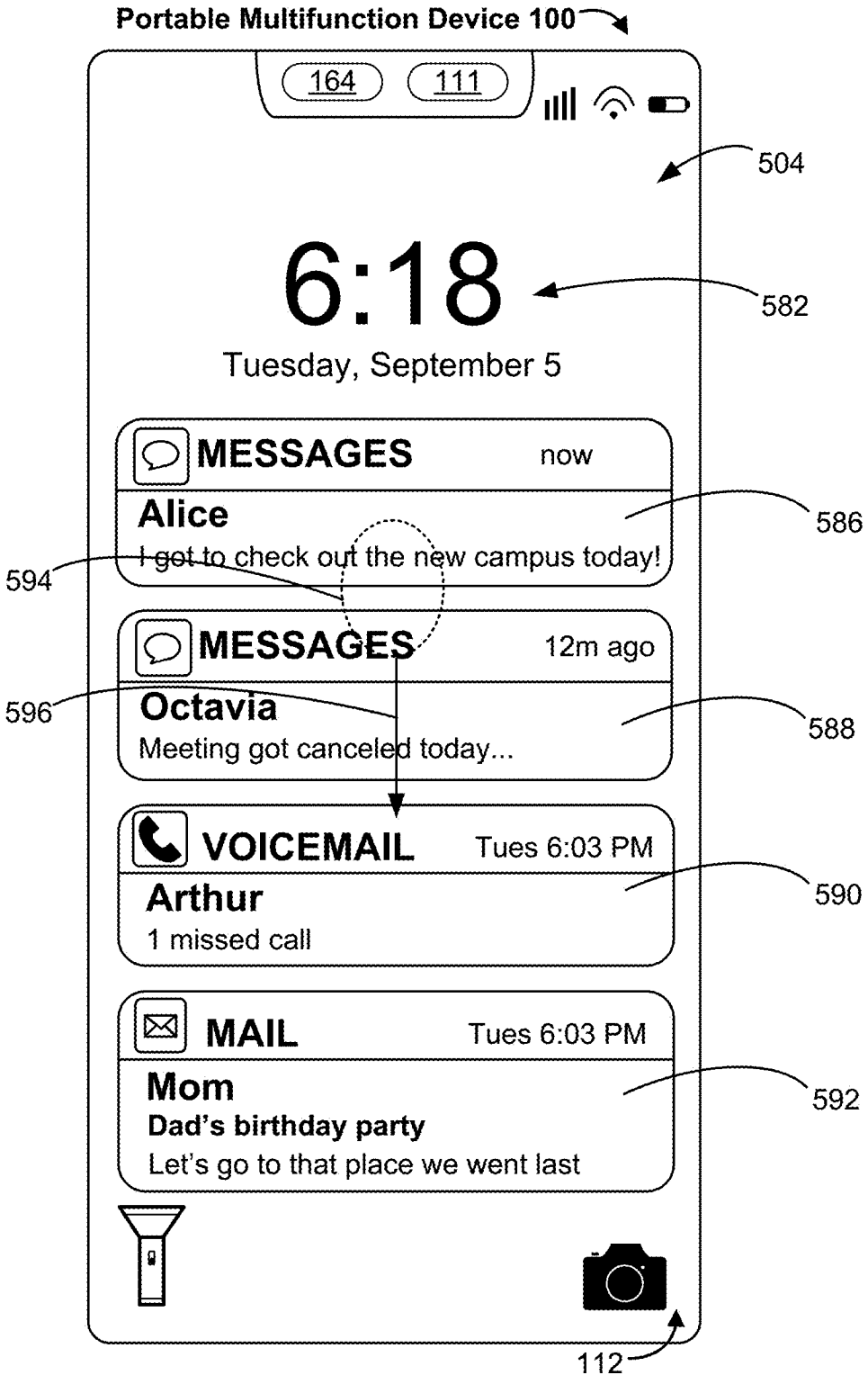


Figure 5BB

Masimo Ex. 1001
IPR Petition - USP 11,106,352

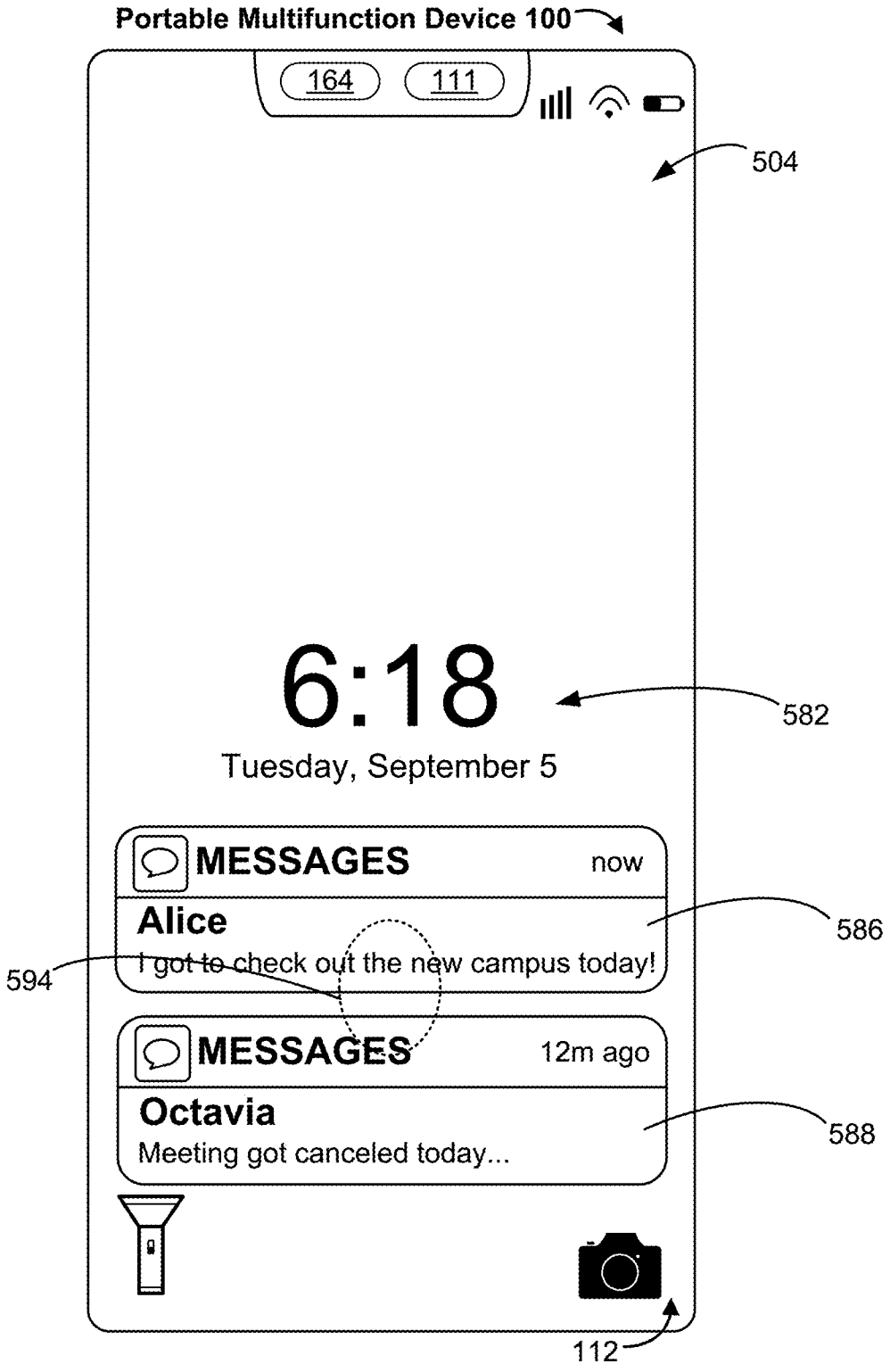


Figure 5BC

Masimo Ex. 1001
IPR Petition - USP 11,106,352

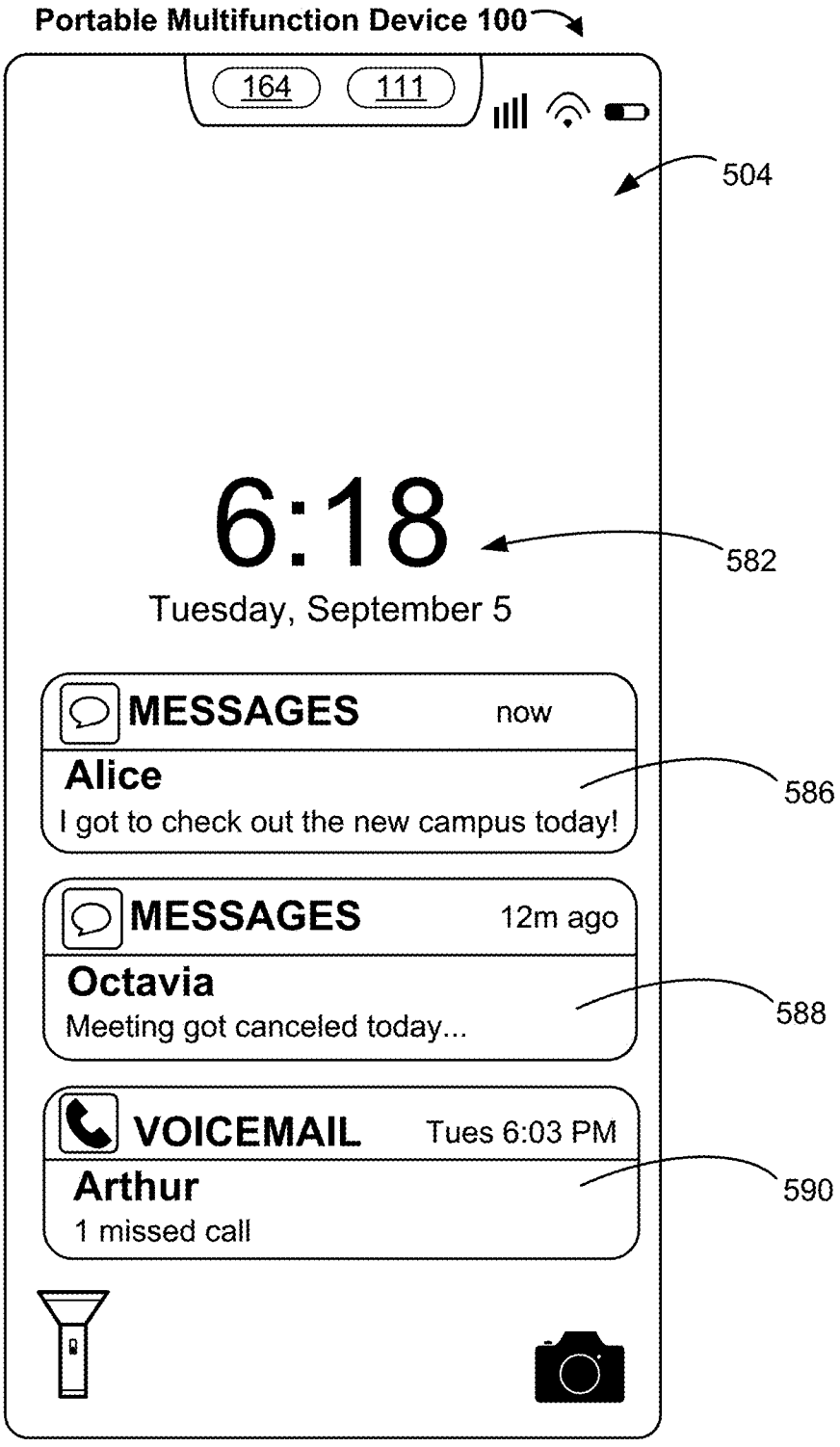


Figure 5BD

Masimo Ex. 1001
IPR Petition - USP 11,106,352

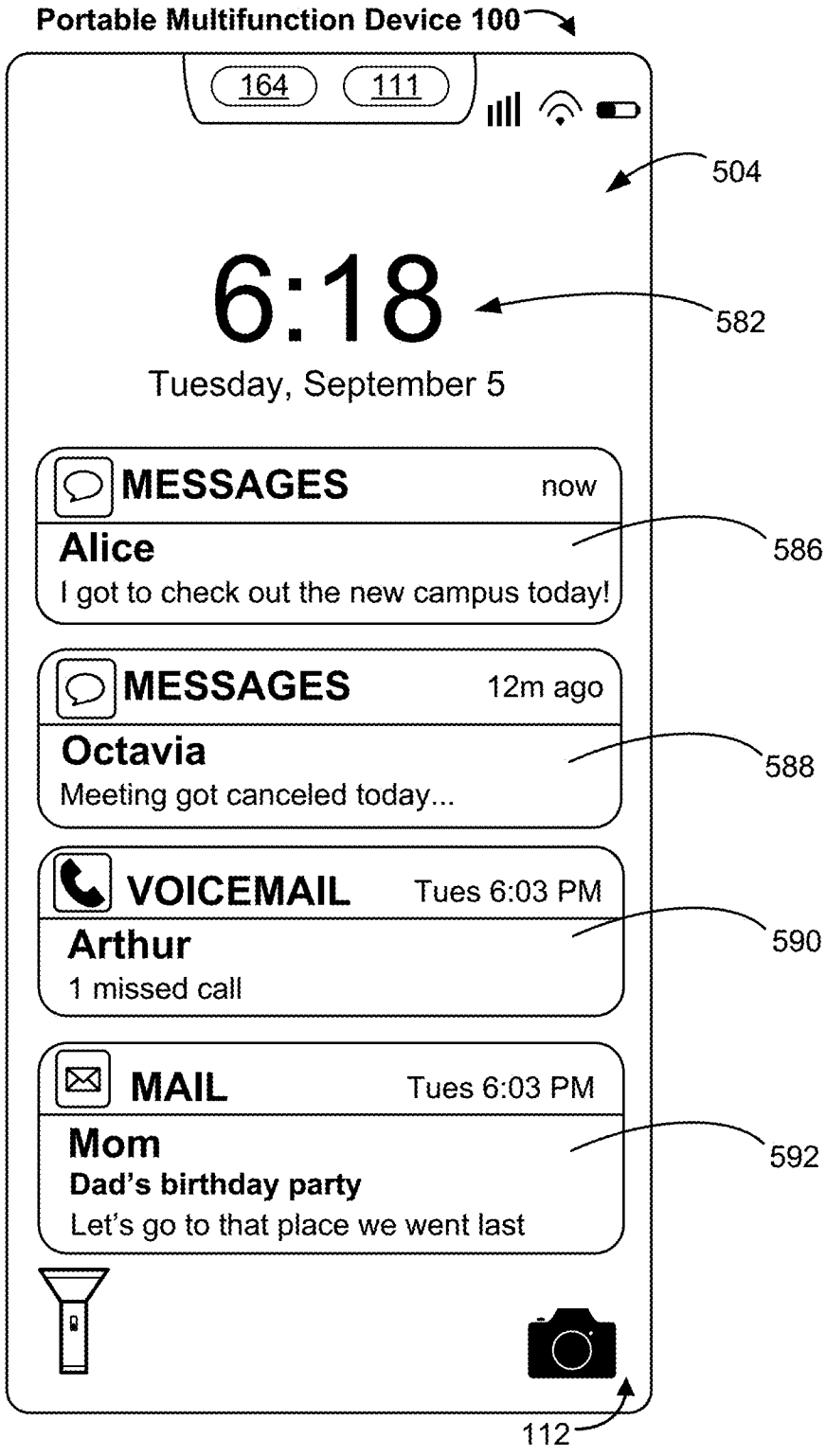


Figure 5BE

Masimo Ex. 1001
IPR Petition - USP 11,106,352

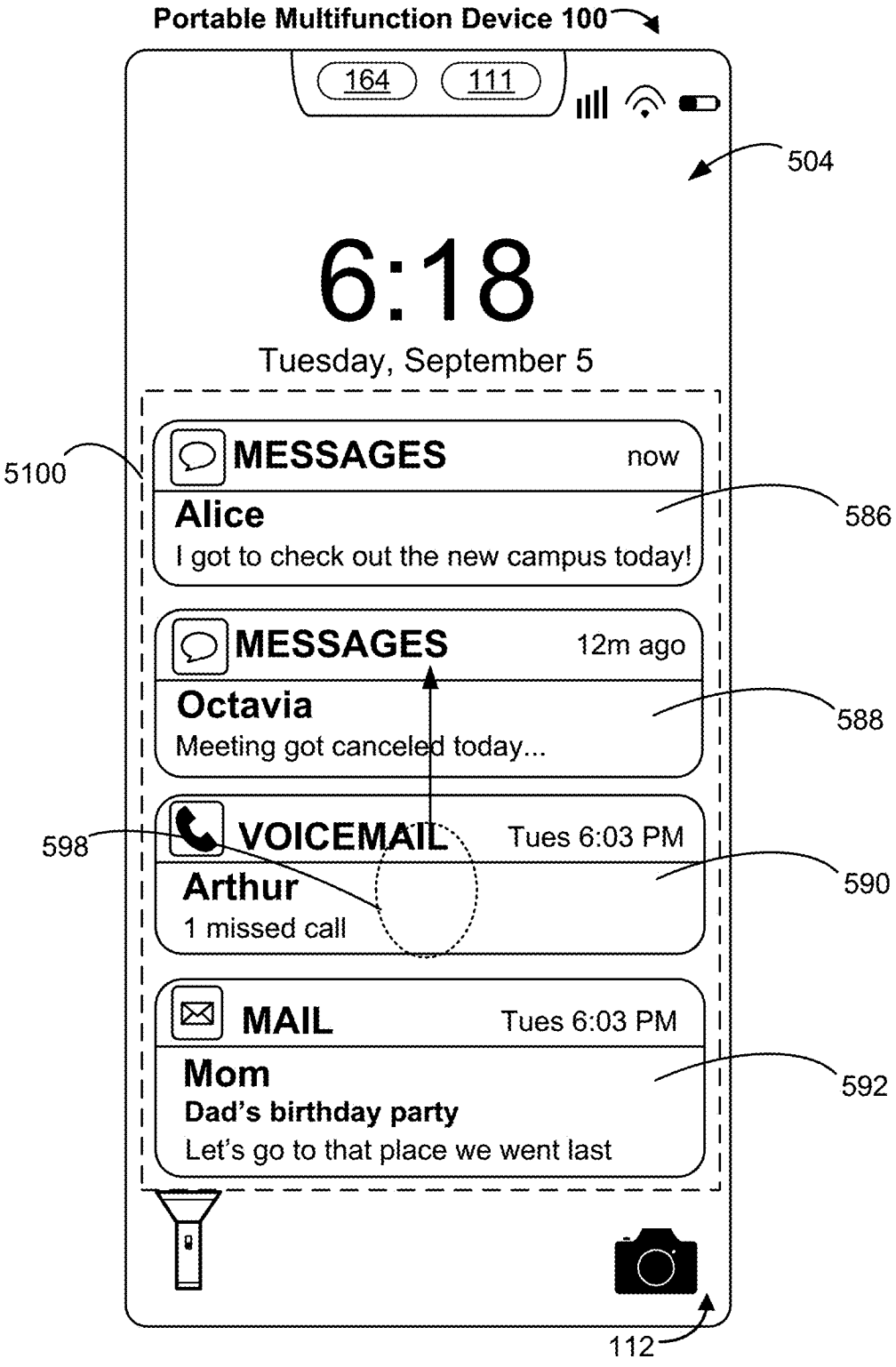


Figure 5BF

Masimo Ex. 1001
IPR Petition - USP 11,106,352

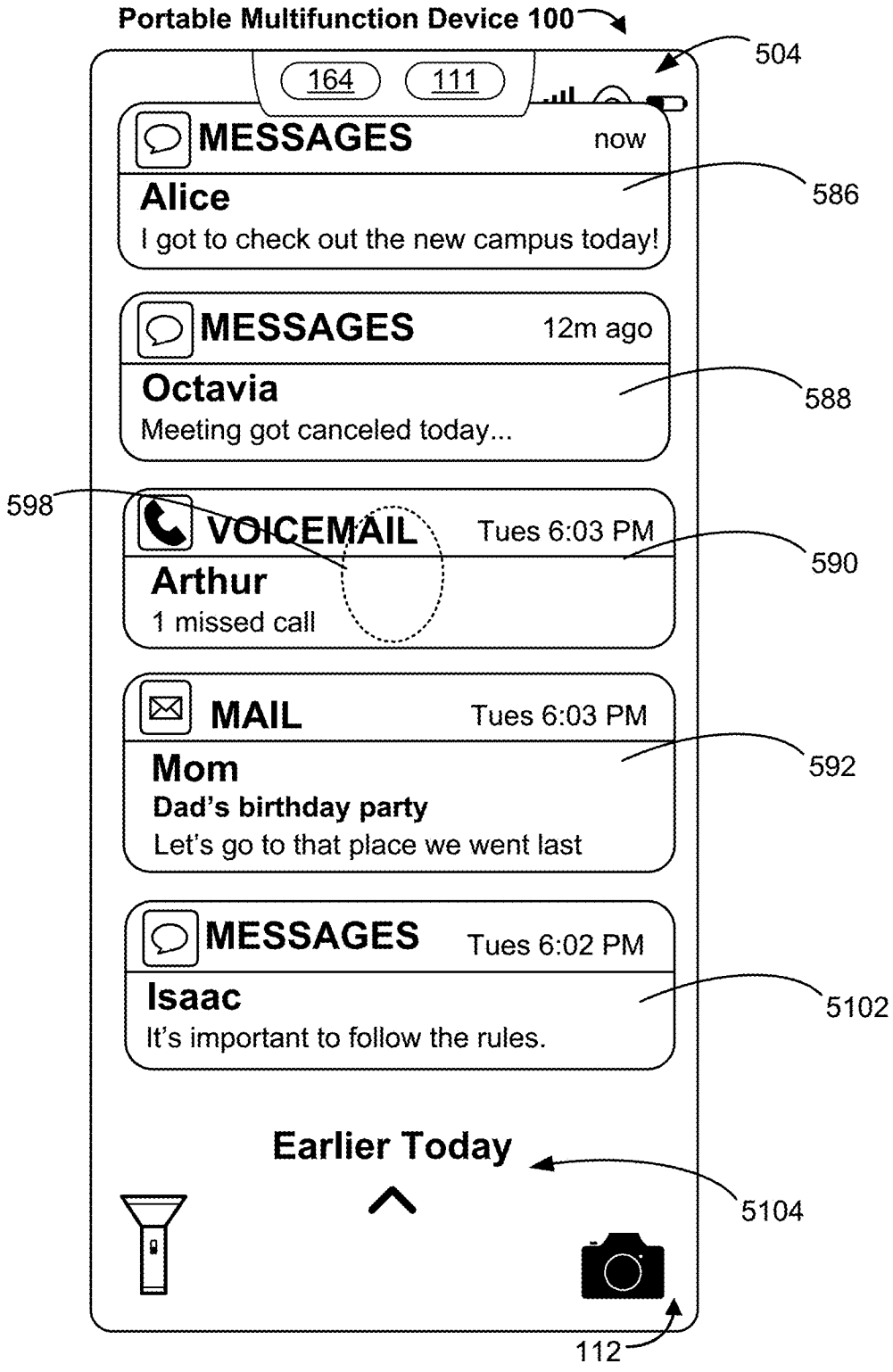


Figure 5BG

Masimo Ex. 1001
IPR Petition - USP 11,106,352

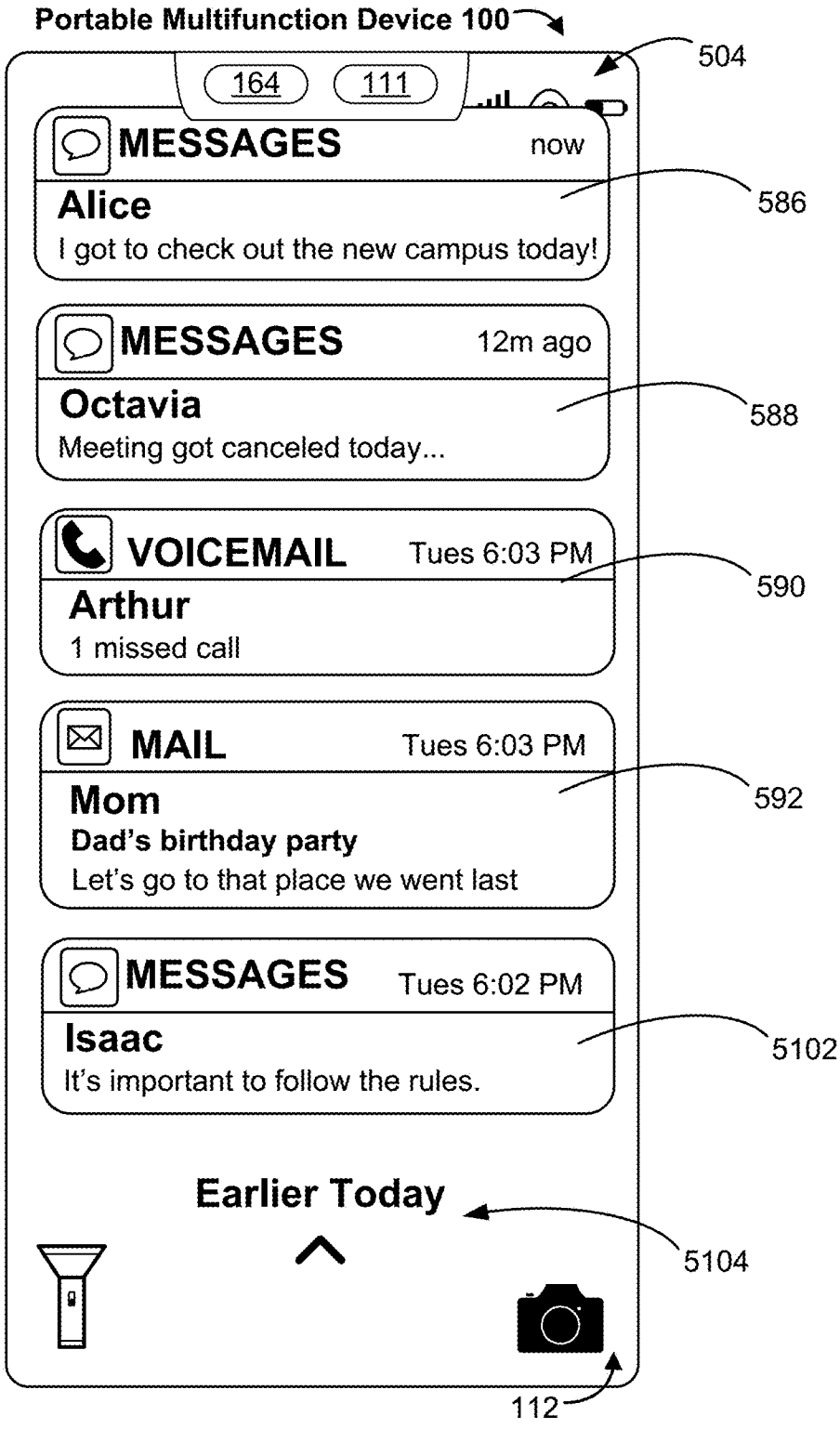


Figure 5BH

Masimo Ex. 1001
IPR Petition - USP 11,106,352

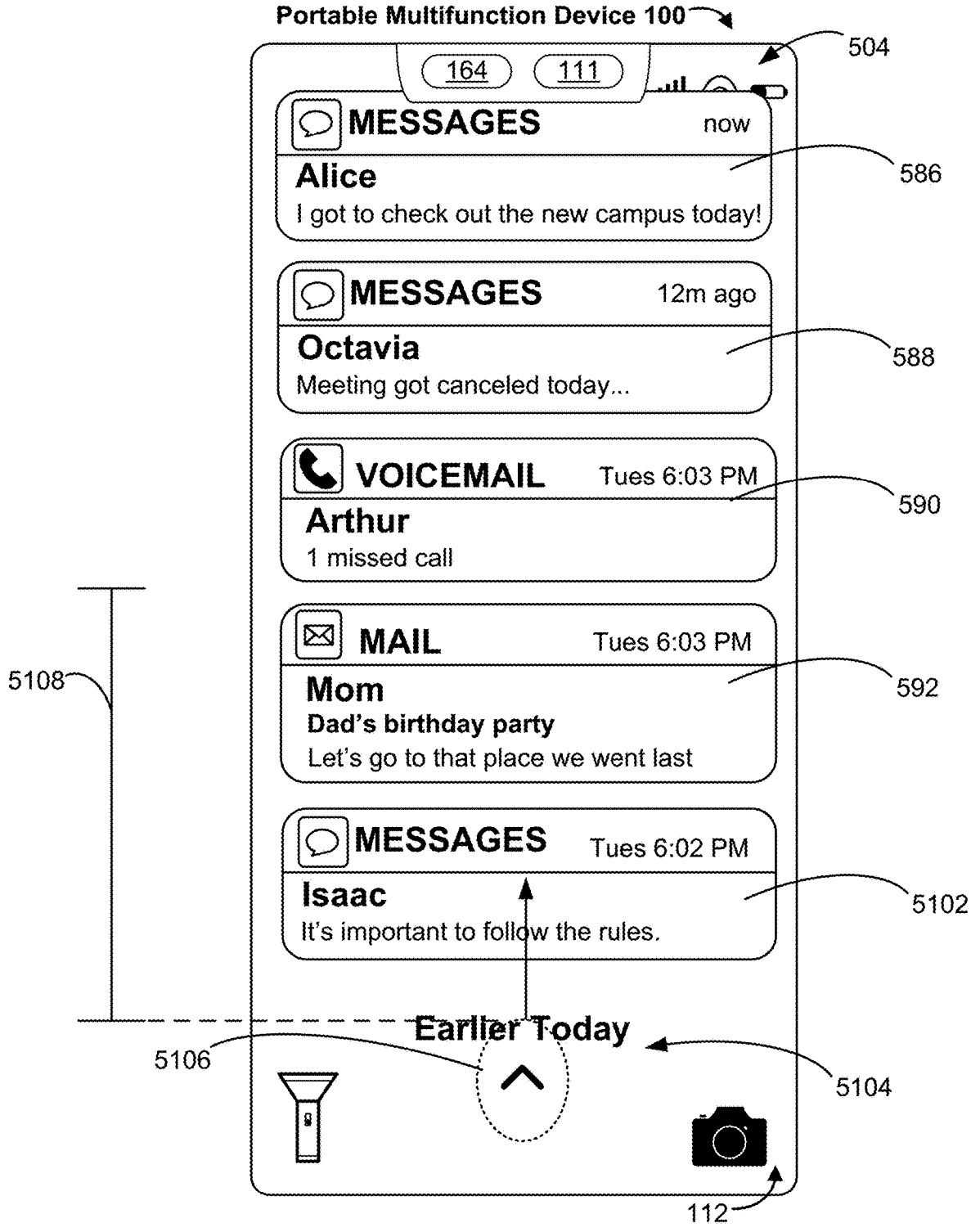


Figure 5BI

Masimo Ex. 1001
IPR Petition - USP 11,106,352

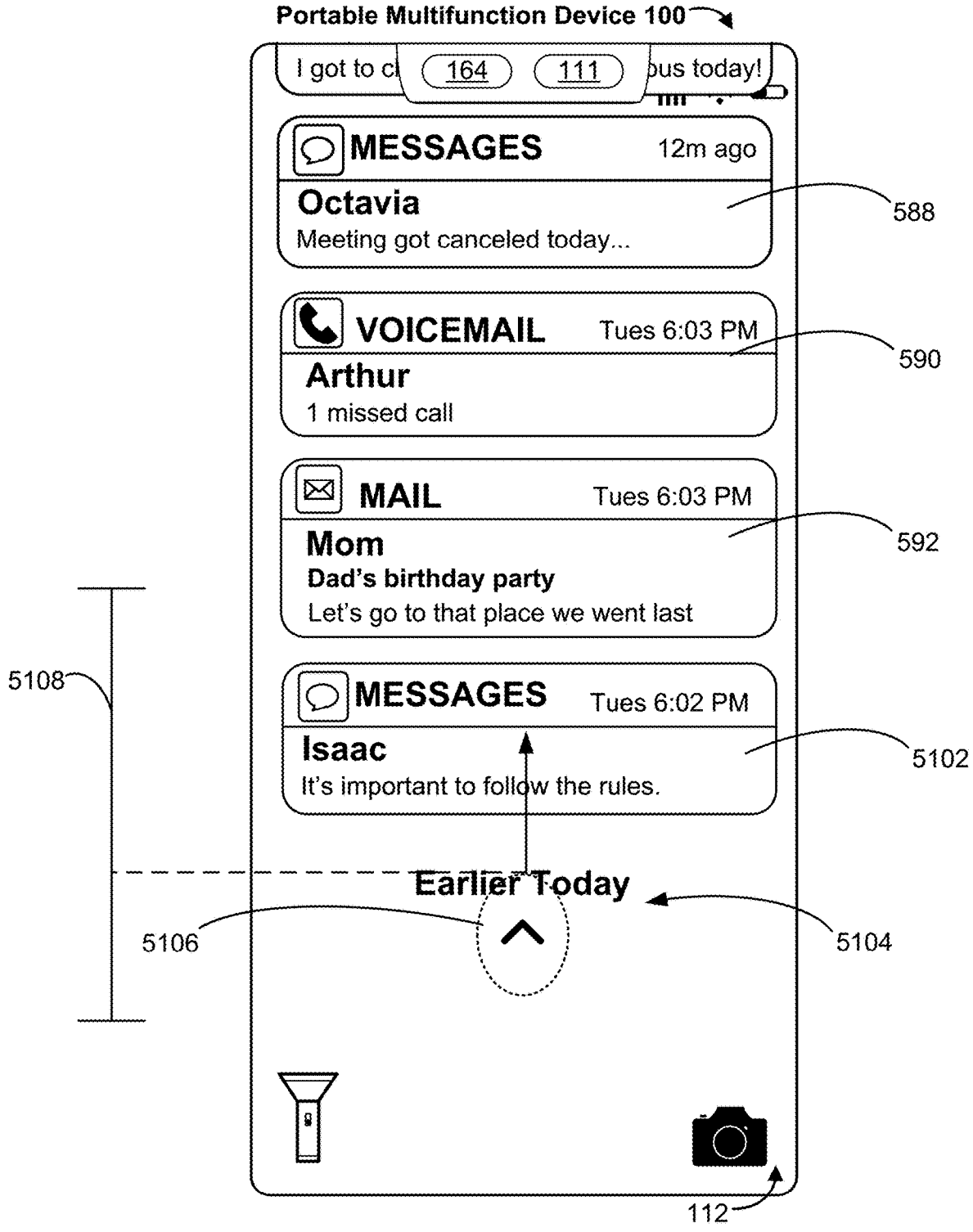


Figure 5BJ

Masimo Ex. 1001
IPR Petition - USP 11,106,352

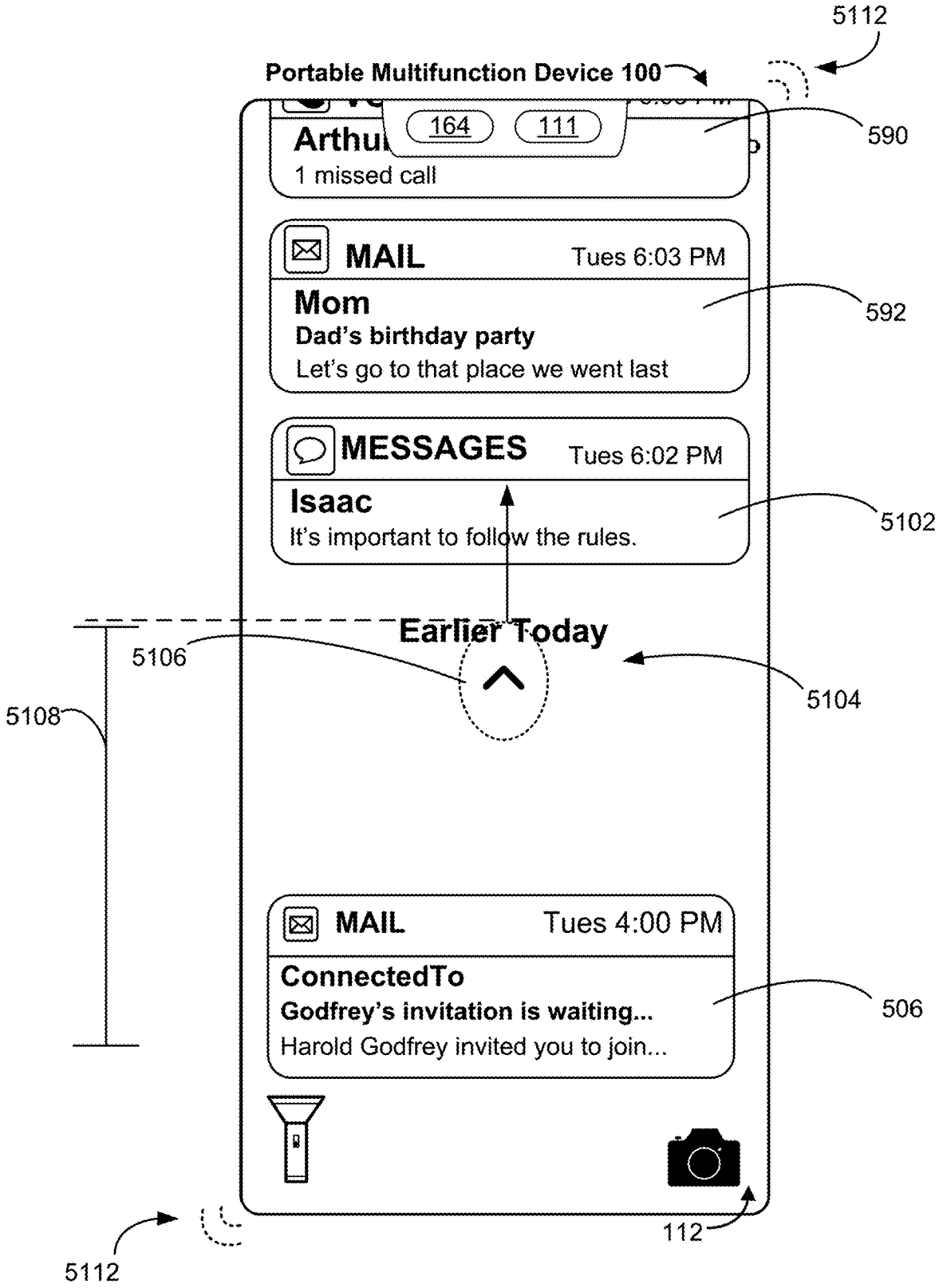

5112
Portable Multifunction Device 100
164
111
590
1 missed call
MAIL
Tues 6:03 PM
Mom
Dad's birthday party
Let's go to that place we went last
592
MESSAGES
Tues 6:02 PM
Isaac
It's important to follow the rules.
5102
Earlier Today
5106
5104
5108
MAIL
Tues 4:00 PM
ConnectedTo
Godfrey's invitation is waiting...
Harold Godfrey invited you to join...
506
112
5112

Figure 5BK

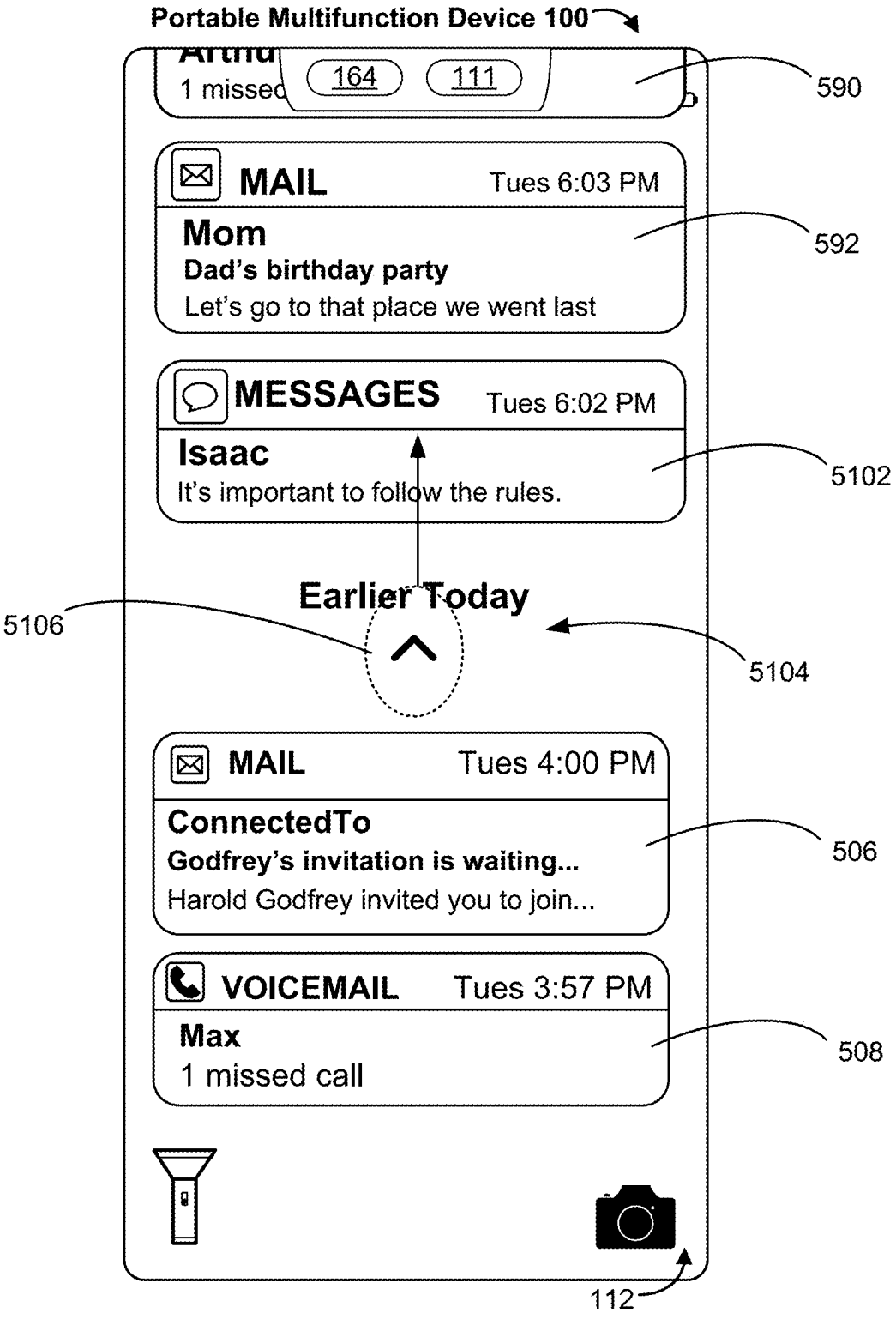


Figure 5BL

Masimo Ex. 1001
IPR Petition - USP 11,106,352

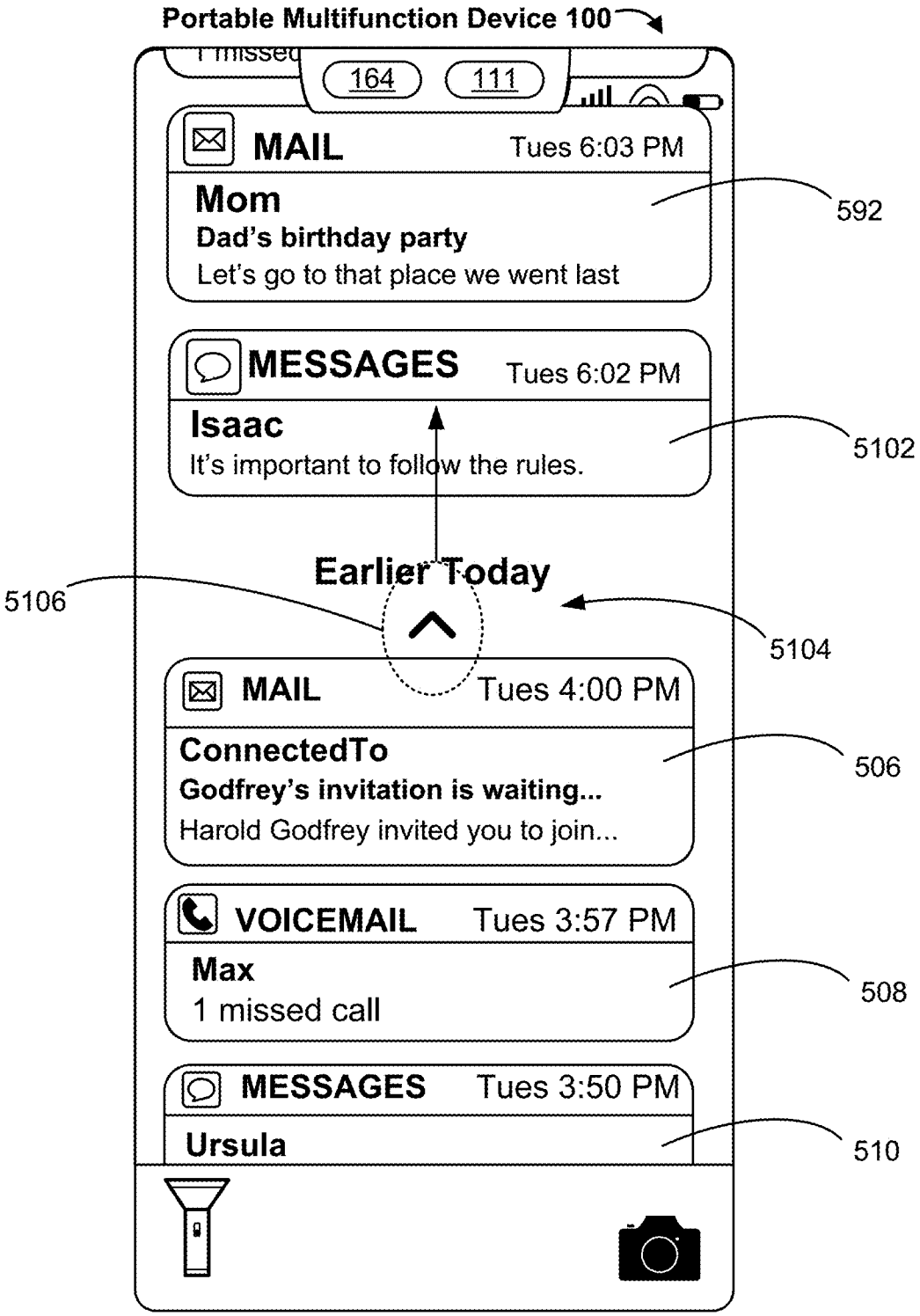


Figure 5BM

Masimo Ex. 1001
IPR Petition - USP 11,106,352

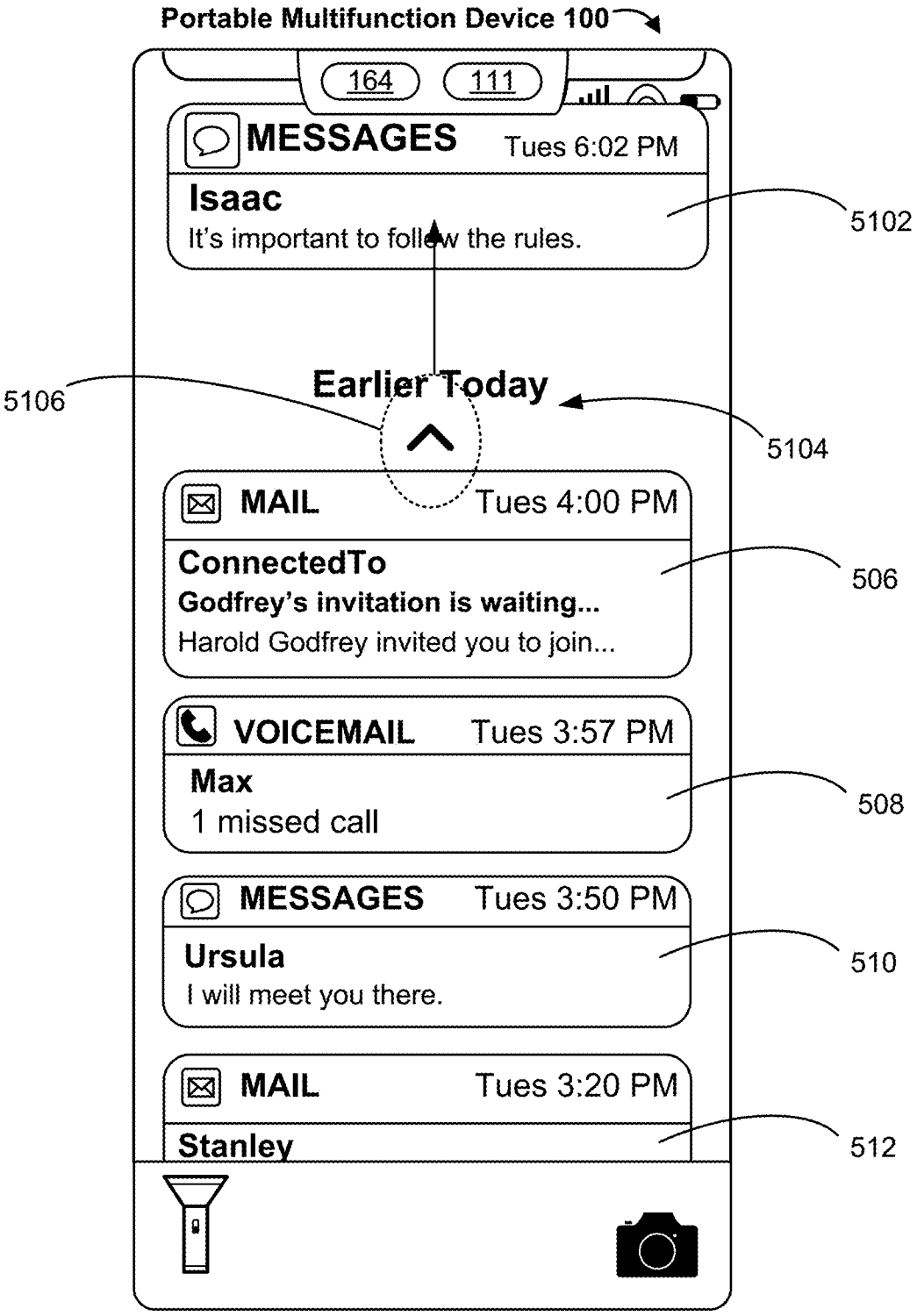


Figure 5BN

Masimo Ex. 1001
IPR Petition - USP 11,106,352

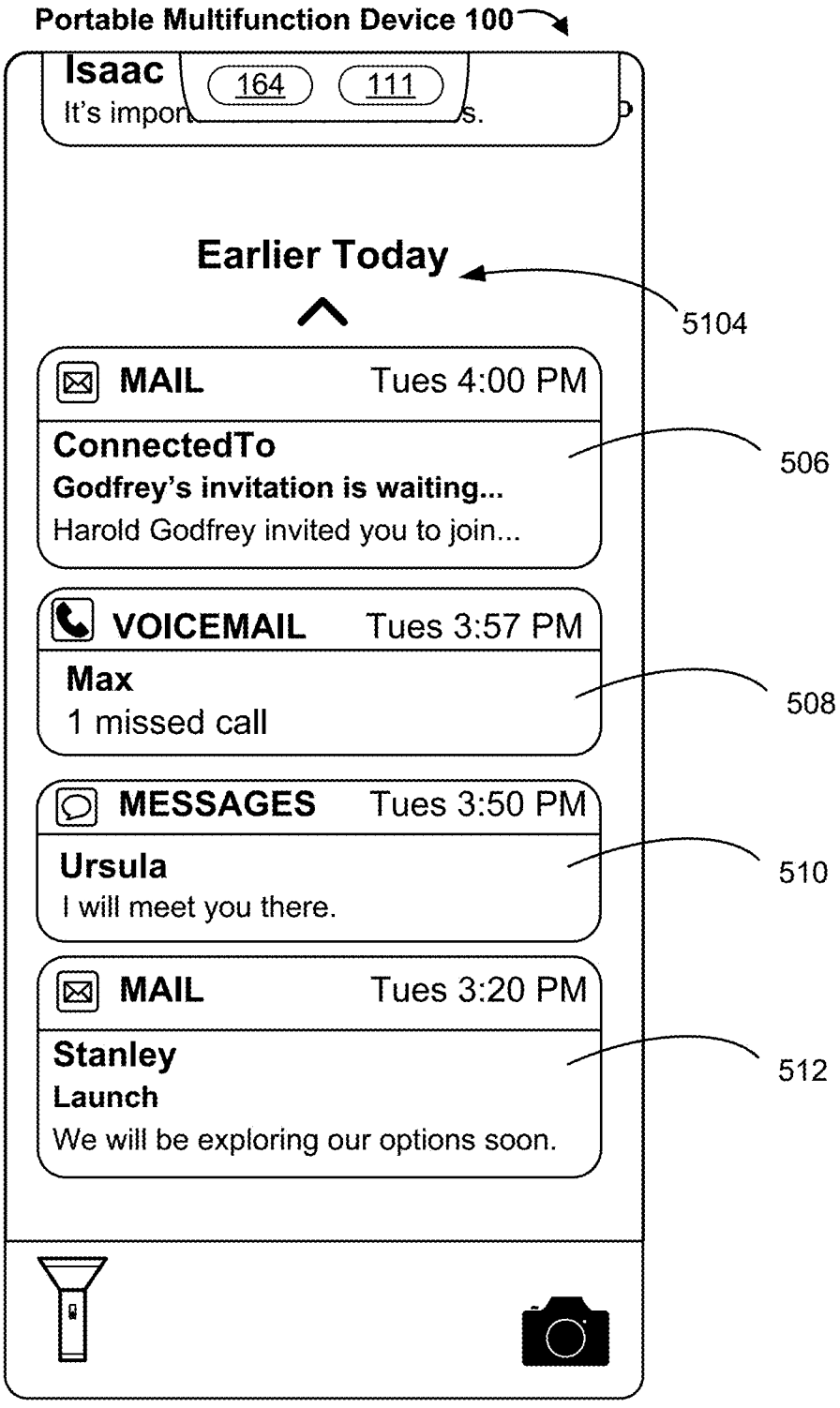


Figure 5BO

Masimo Ex. 1001
IPR Petition - USP 11,106,352

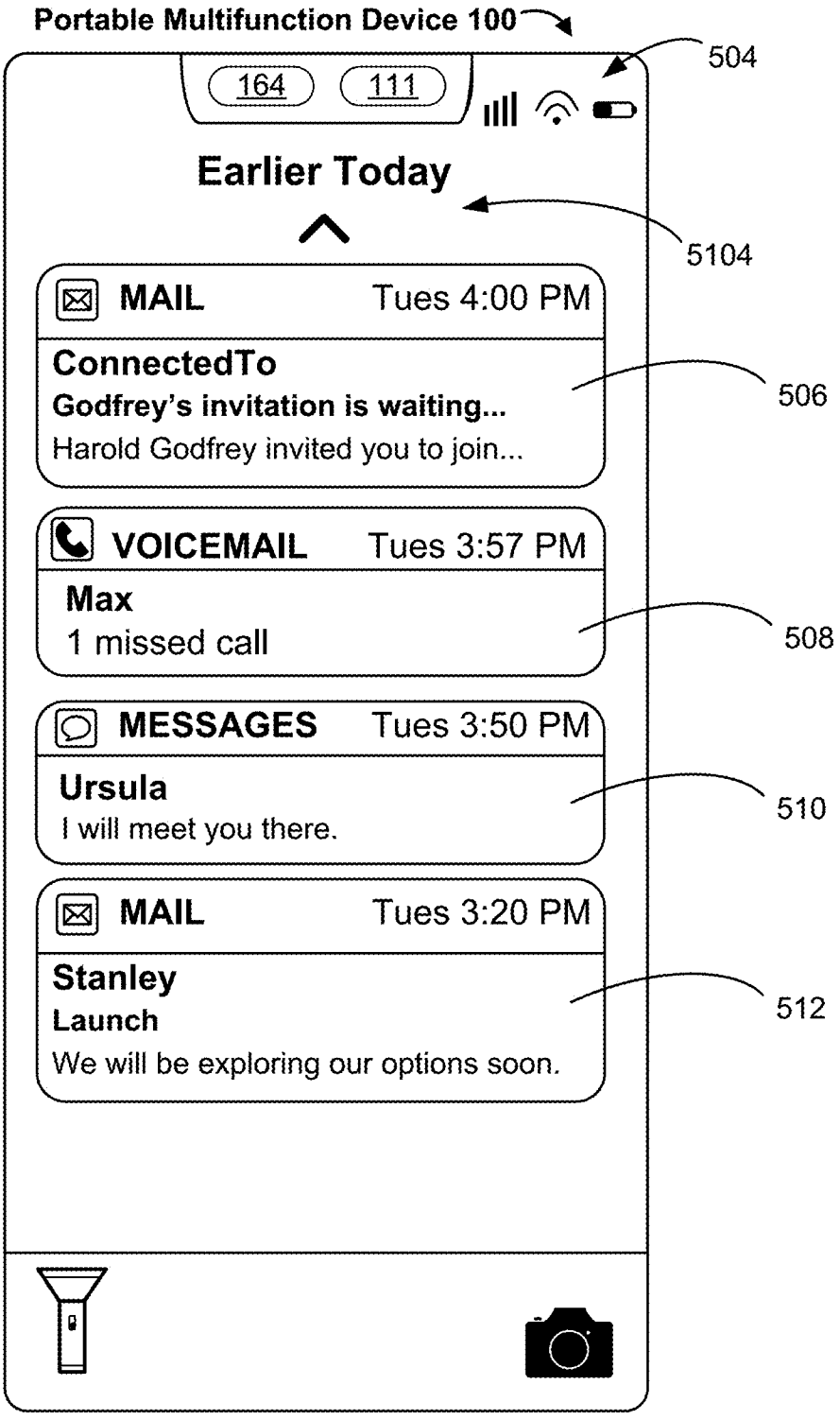

Portable Multifunction Device 100
504
164
111
Earlier Today
5104
MAIL Tues 4:00 PM
ConnectedTo
Godfrey's invitation is waiting...
Harold Godfrey invited you to join...
506
VOICEMAIL Tues 3:57 PM
Max
1 missed call
508
MESSAGES Tues 3:50 PM
Ursula
I will meet you there.
510
MAIL Tues 3:20 PM
Stanley
Launch
We will be exploring our options soon.
512

Figure 5BP

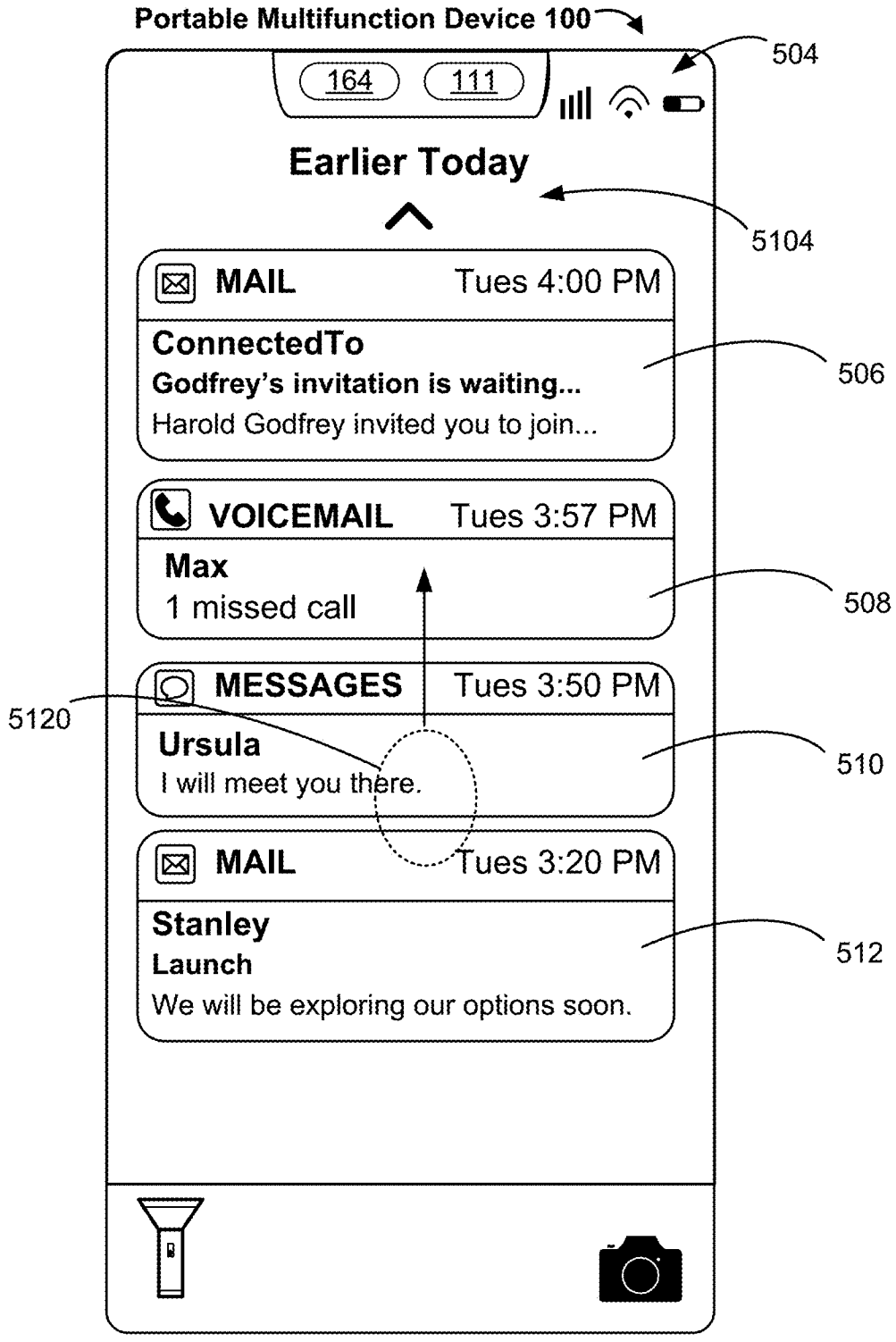

Portable Multifunction Device 100
504
164
111
Earlier Today
5104
MAIL Tues 4:00 PM
ConnectedTo
Godfrey's invitation is waiting...
Harold Godfrey invited you to join...
506
VOICEMAIL Tues 3:57 PM
Max
1 missed call
508
MESSAGES Tues 3:50 PM
5120
Ursula
I will meet you there.
510
MAIL Tues 3:20 PM
Stanley
Launch
We will be exploring our options soon.
512

Figure 5BQ

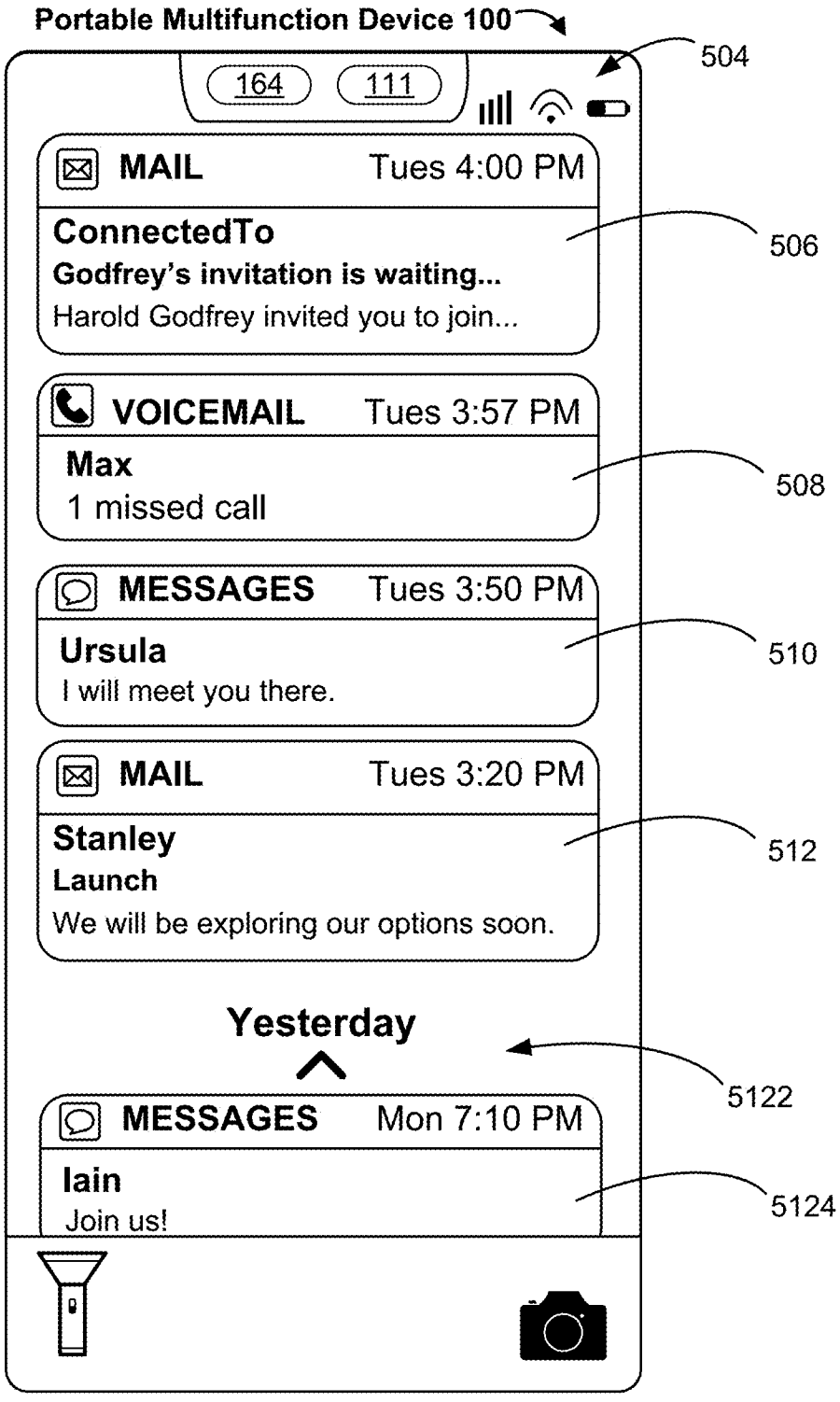

Portable Multifunction Device 100
504
164
111
MAIL Tues 4:00 PM
ConnectedTo
Godfrey's invitation is waiting...
Harold Godfrey invited you to join...
506
VOICEMAIL Tues 3:57 PM
Max
1 missed call
508
MESSAGES Tues 3:50 PM
Ursula
I will meet you there.
510
MAIL Tues 3:20 PM
Stanley
Launch
We will be exploring our options soon.
512
Yesterday
5122
MESSAGES Mon 7:10 PM
Iain
Join us!
5124

Figure 5BR

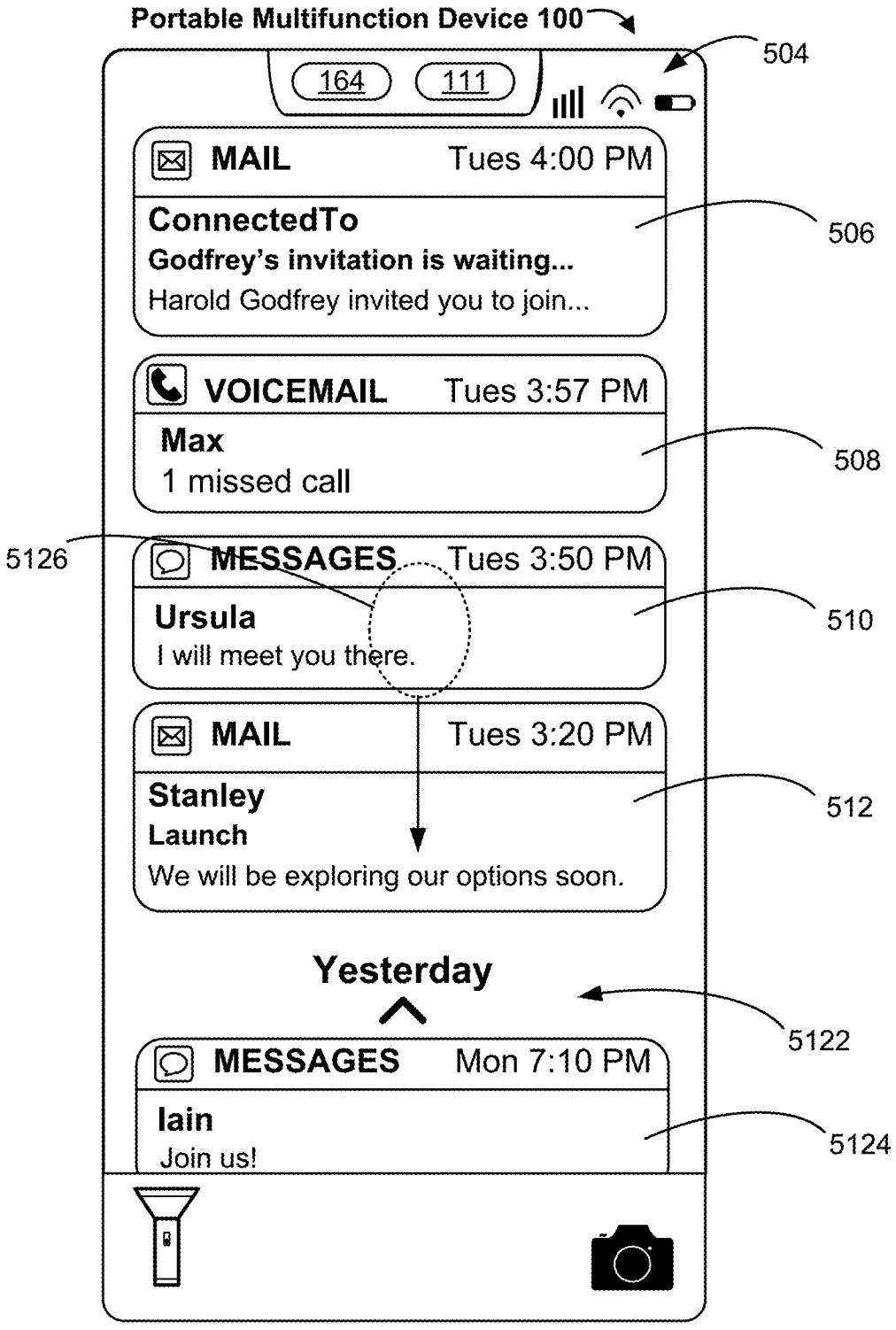


Figure 5BS

Masimo Ex. 1001
IPR Petition - USP 11,106,352

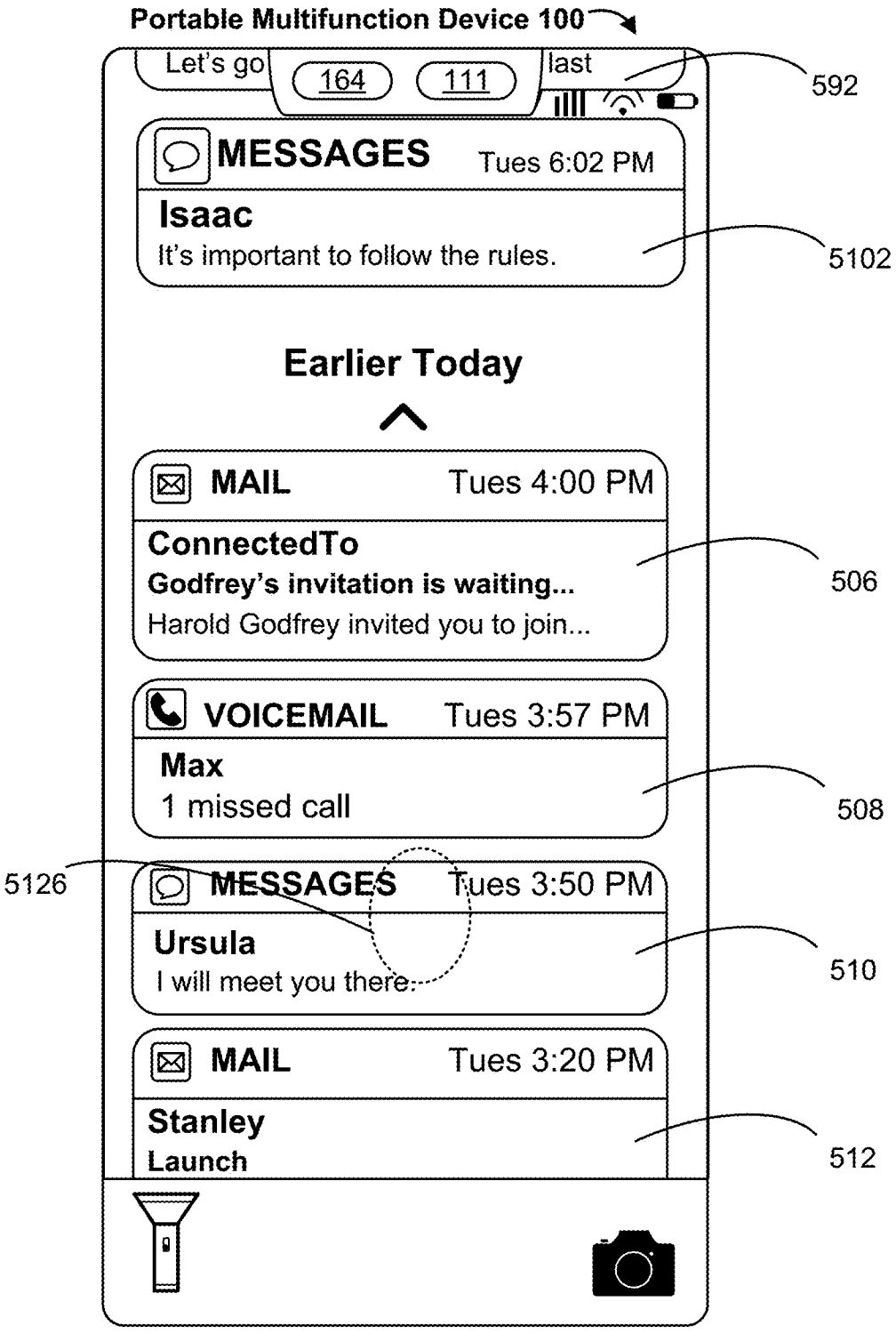


Figure 5BT

Masimo Ex. 1001
IPR Petition - USP 11,106,352

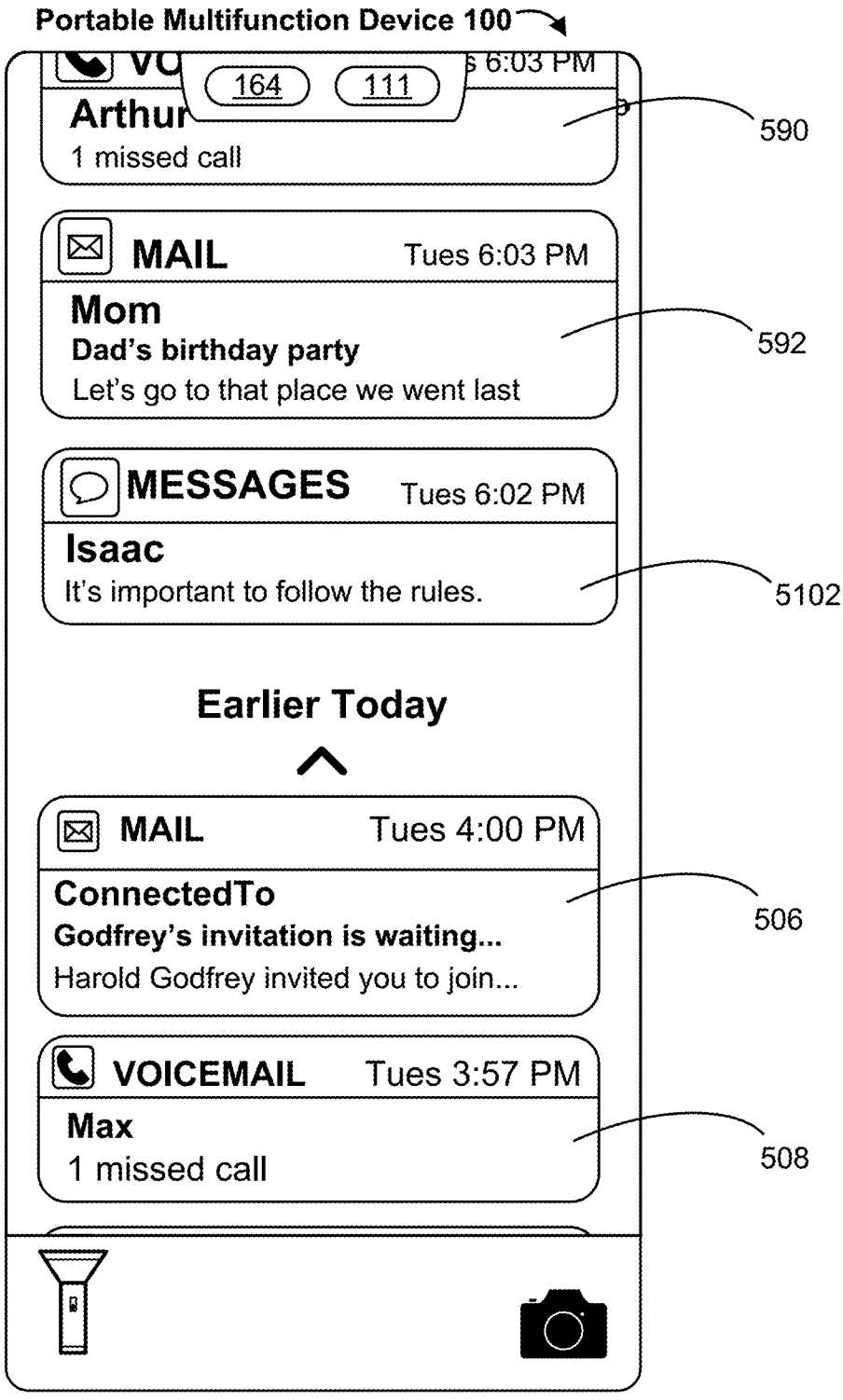


Figure 5BU

Masimo Ex. 1001
IPR Petition - USP 11,106,352

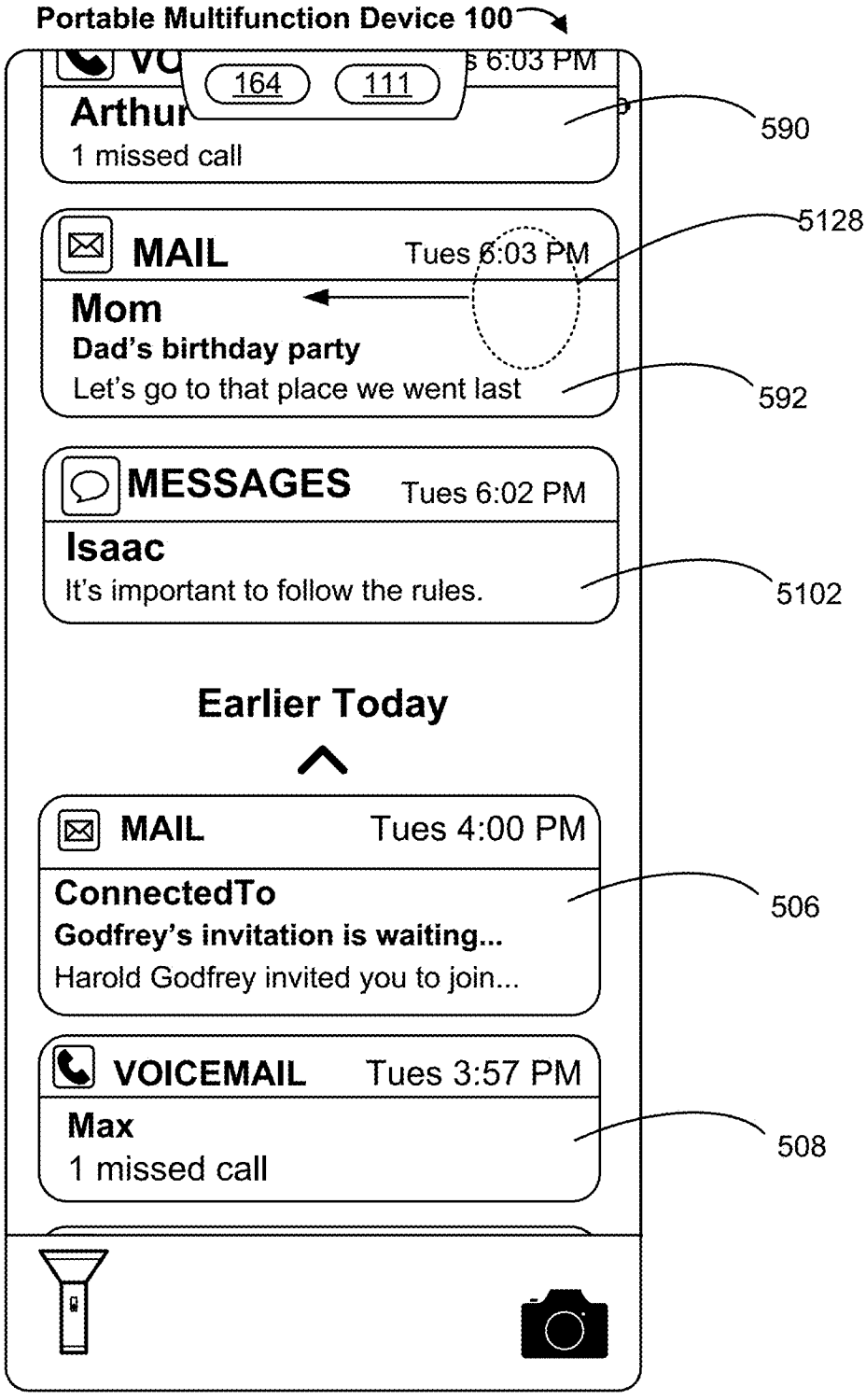


Figure 5BV

Masimo Ex. 1001
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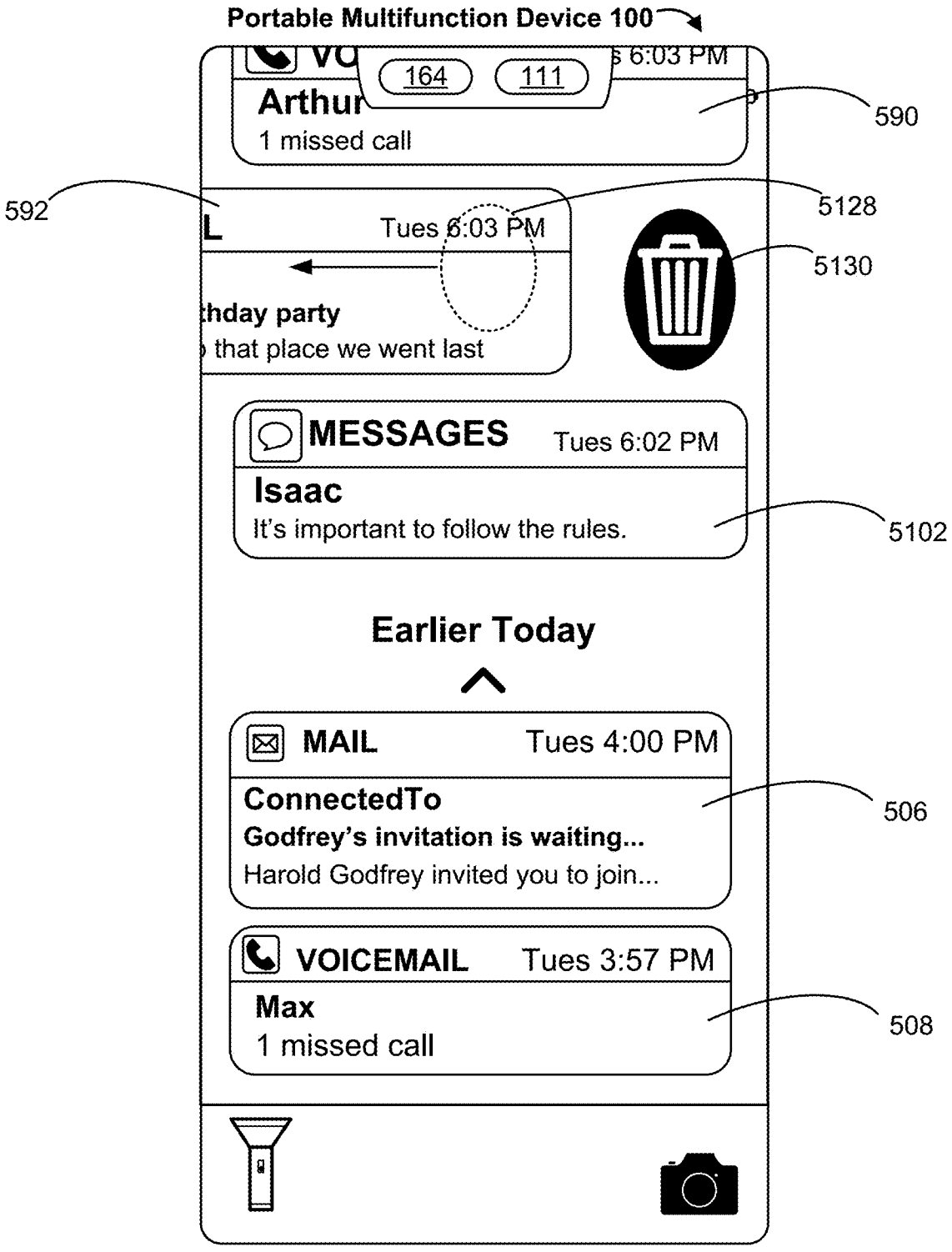

Portable Multifunction Device 100
164
111
6:03 PM
Arthur
1 missed call
590
592
5128
Tues 6:03 PM
5130
hday party
that place we went last
MESSAGES
Tues 6:02 PM
Isaac
It's important to follow the rules.
5102
Earlier Today
MAIL
Tues 4:00 PM
ConnectedTo
Godfrey's invitation is waiting...
Harold Godfrey invited you to join...
506
VOICEMAIL
Tues 3:57 PM
Max
1 missed call
508

Figure 5BW

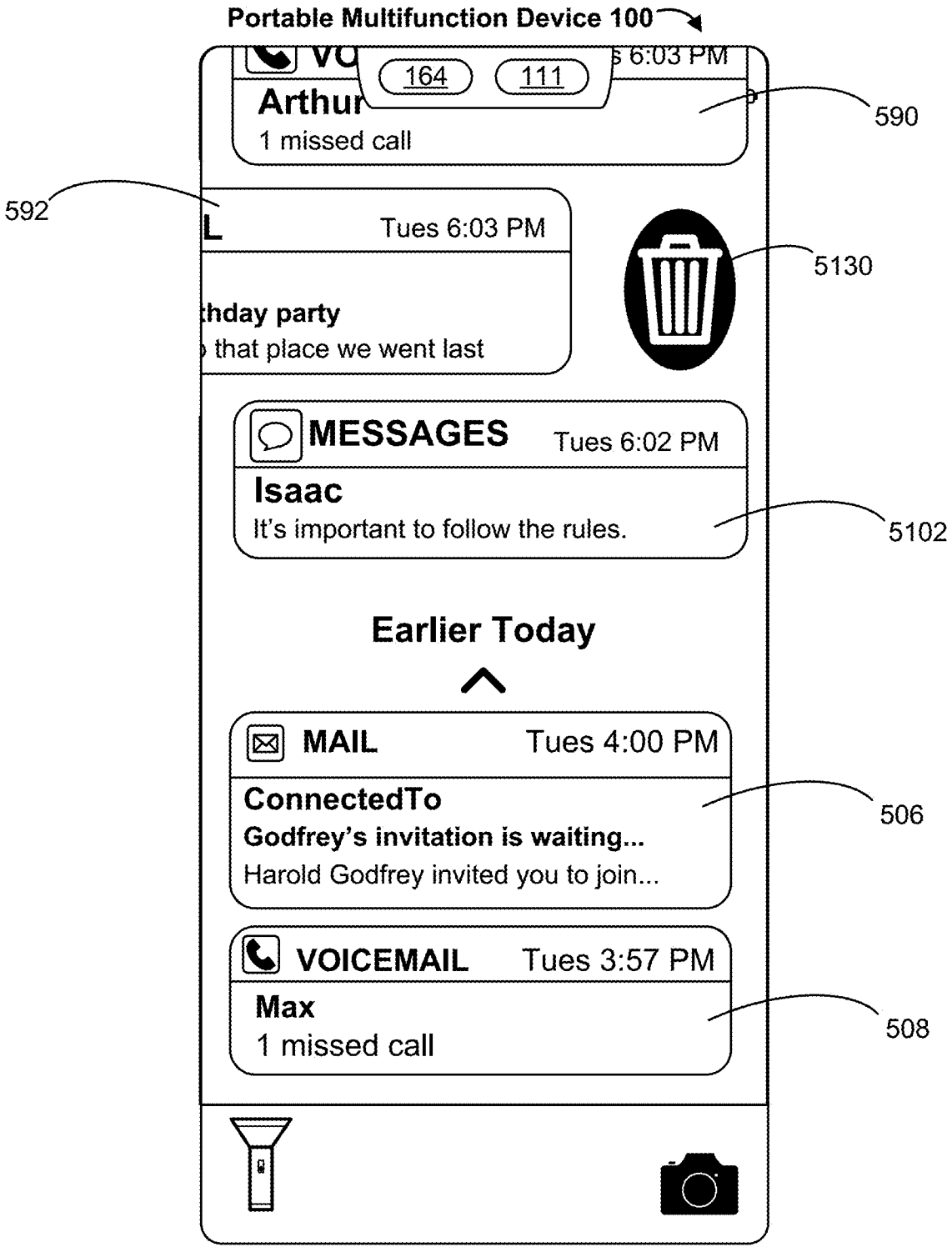


Figure 5BX

Masimo Ex. 1001
IPR Petition - USP 11,106,352

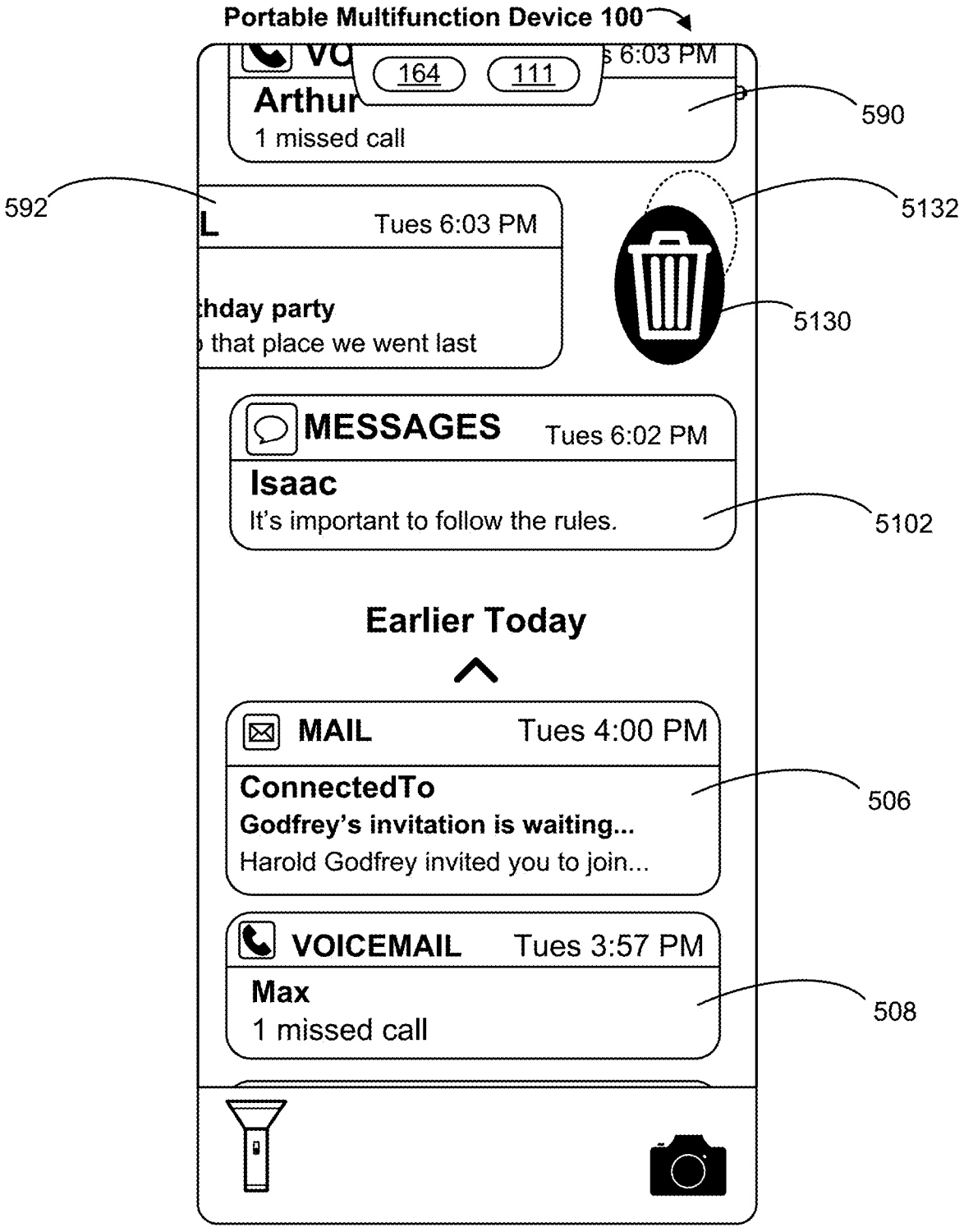


Figure 5BY

Masimo Ex. 1001
IPR Petition - USP 11,106,352

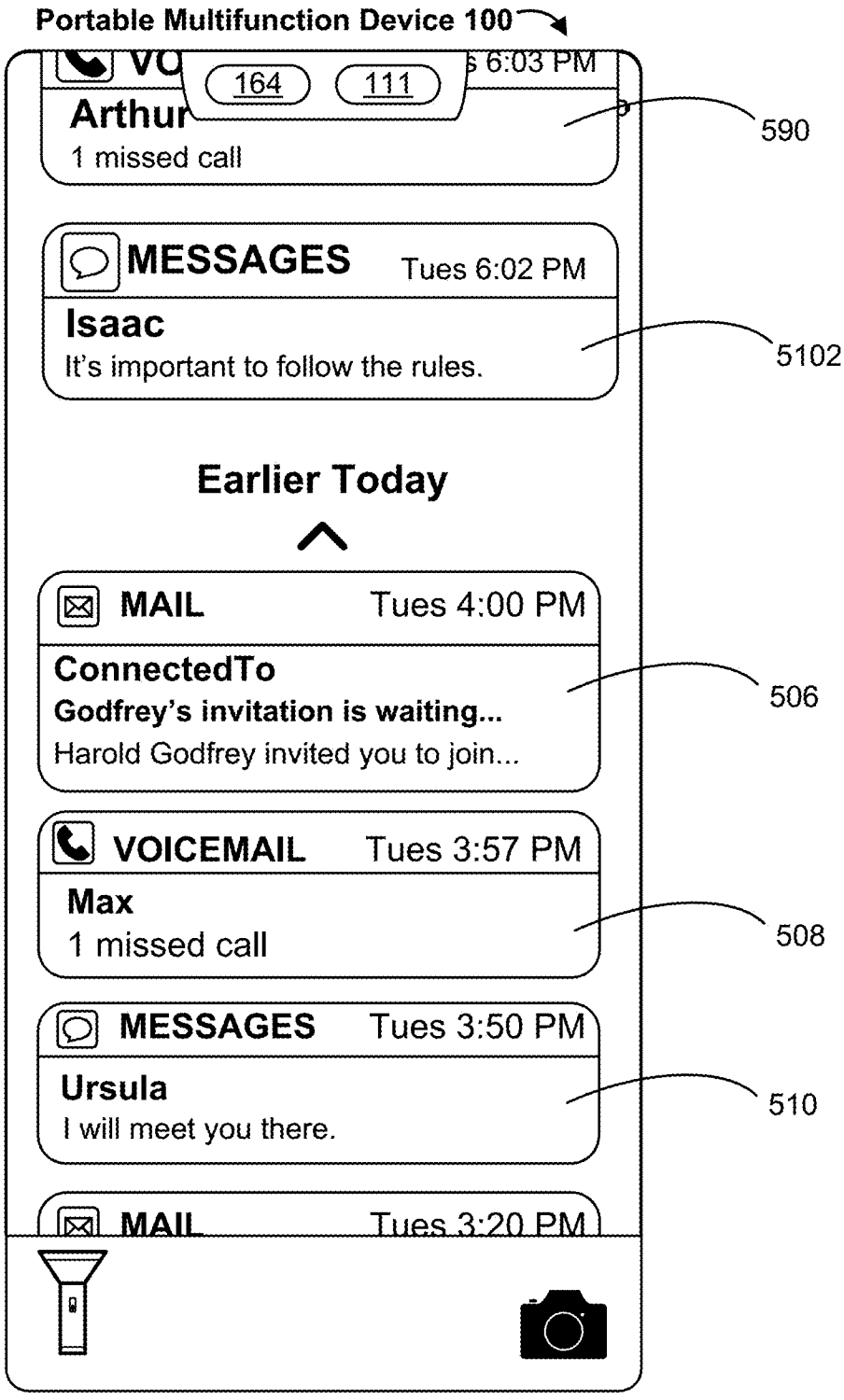


Figure 5BZ

Masimo Ex. 1001
IPR Petition - USP 11,106,352

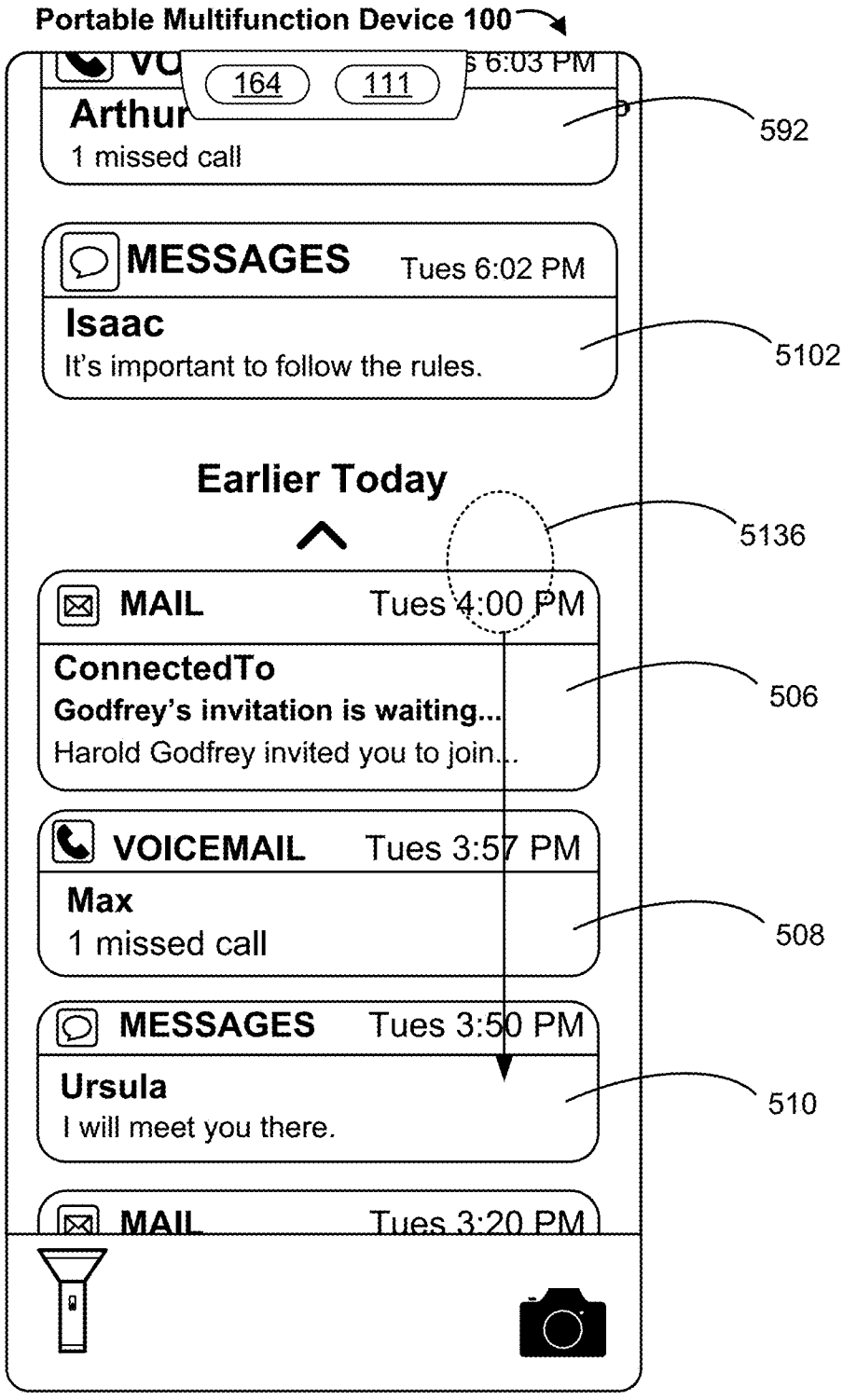


Figure 5CA

Masimo Ex. 1001
IPR Petition - USP 11,106,352

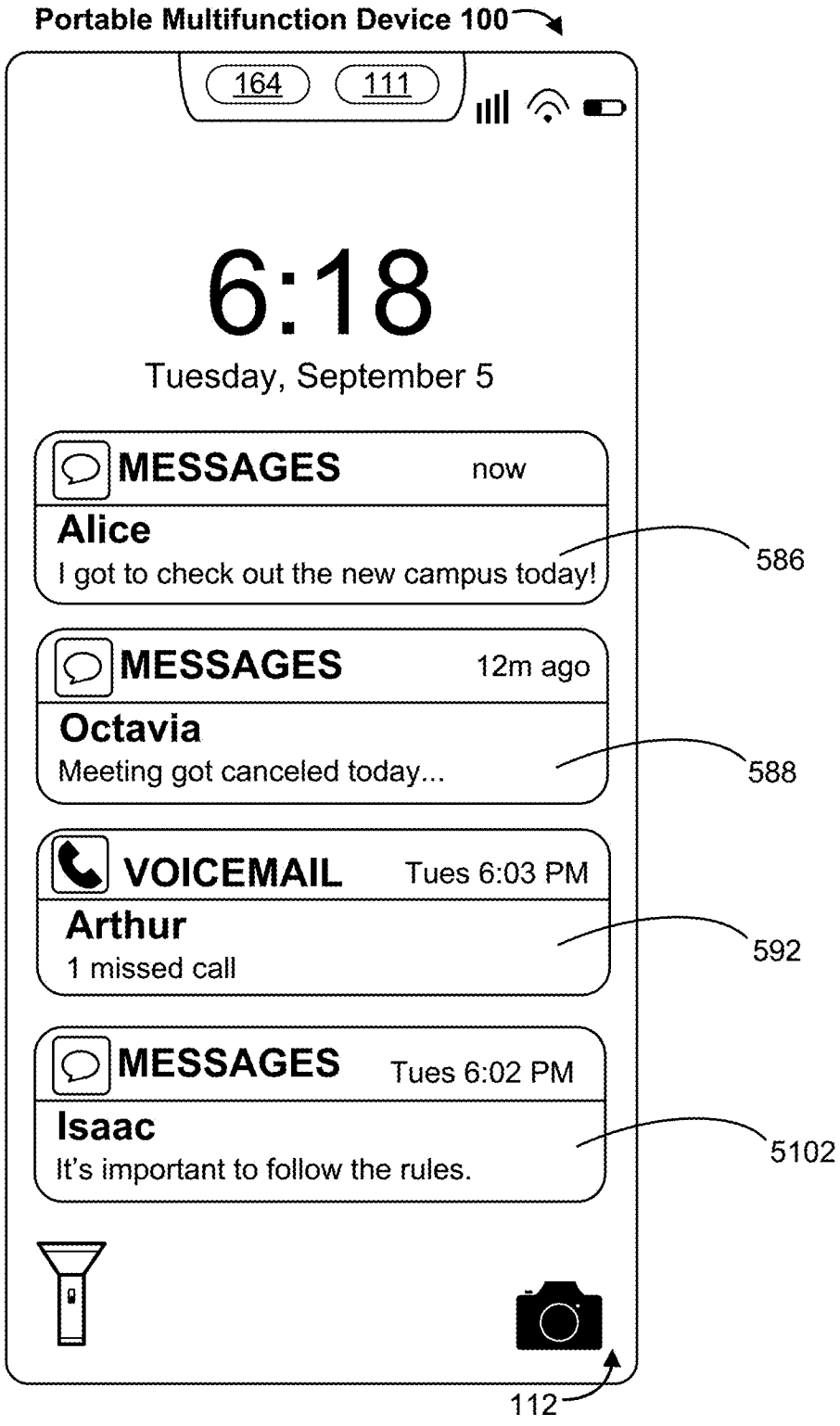


Figure 5CB

Masimo Ex. 1001
IPR Petition - USP 11,106,352

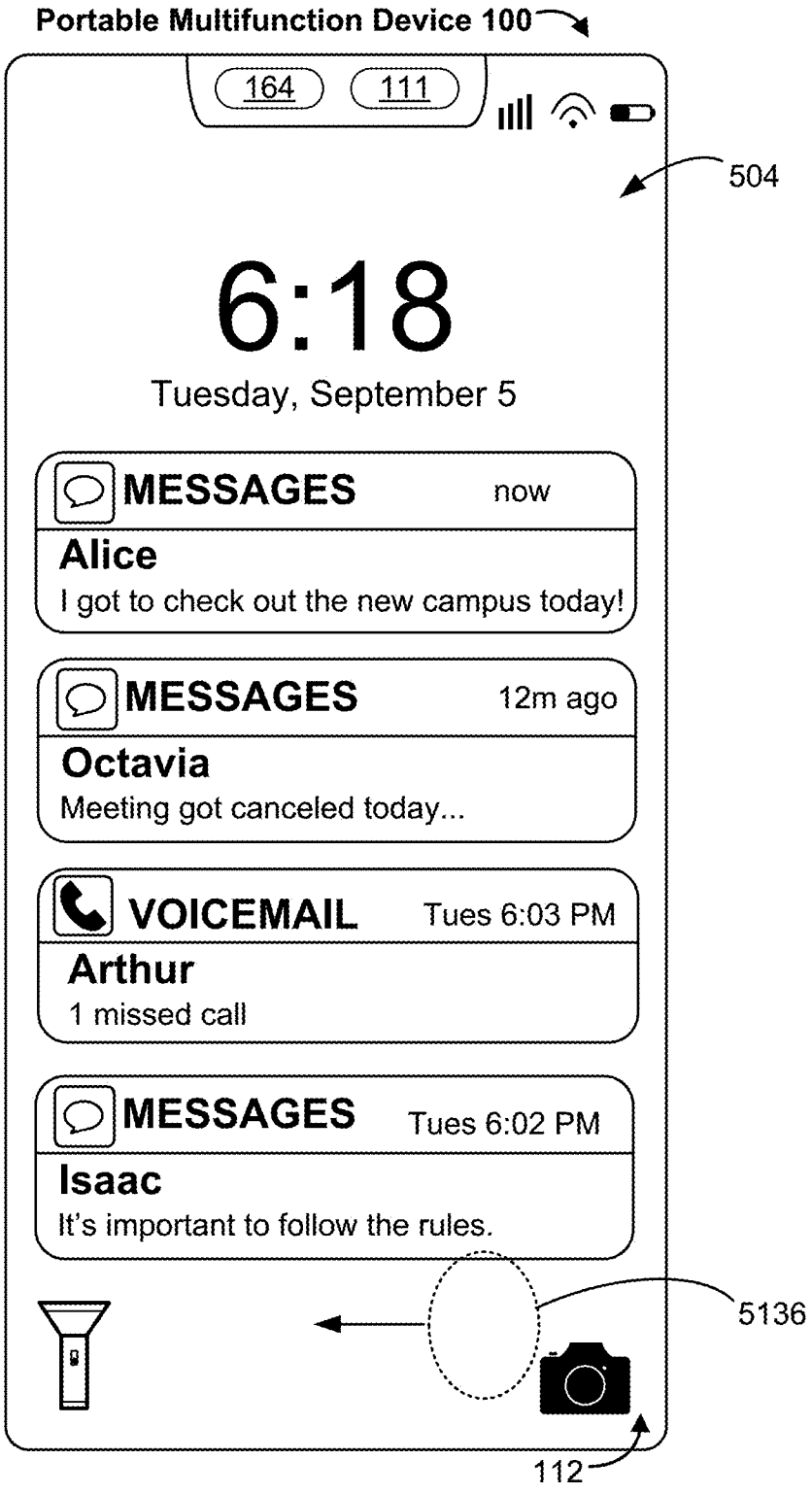


Figure 5CC

Masimo Ex. 1001
IPR Petition - USP 11,106,352

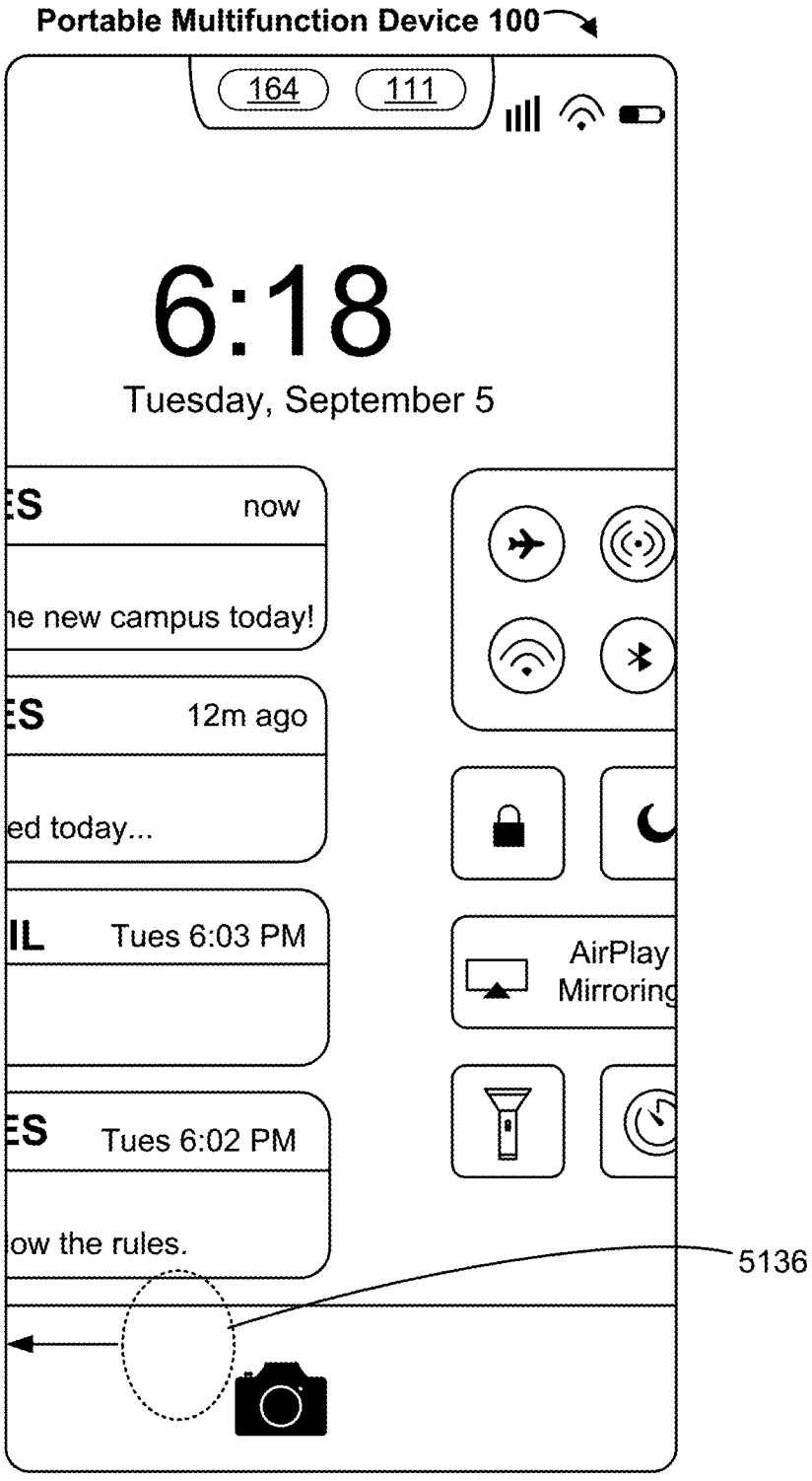

Portable Multifunction Device 100
164
111
6:18
Tuesday, September 5
now
ne new campus today!
12m ago
ed today...
Tues 6:03 PM
Tues 6:02 PM
ow the rules.
AirPlay
Mirroring
5136

Figure 5CD

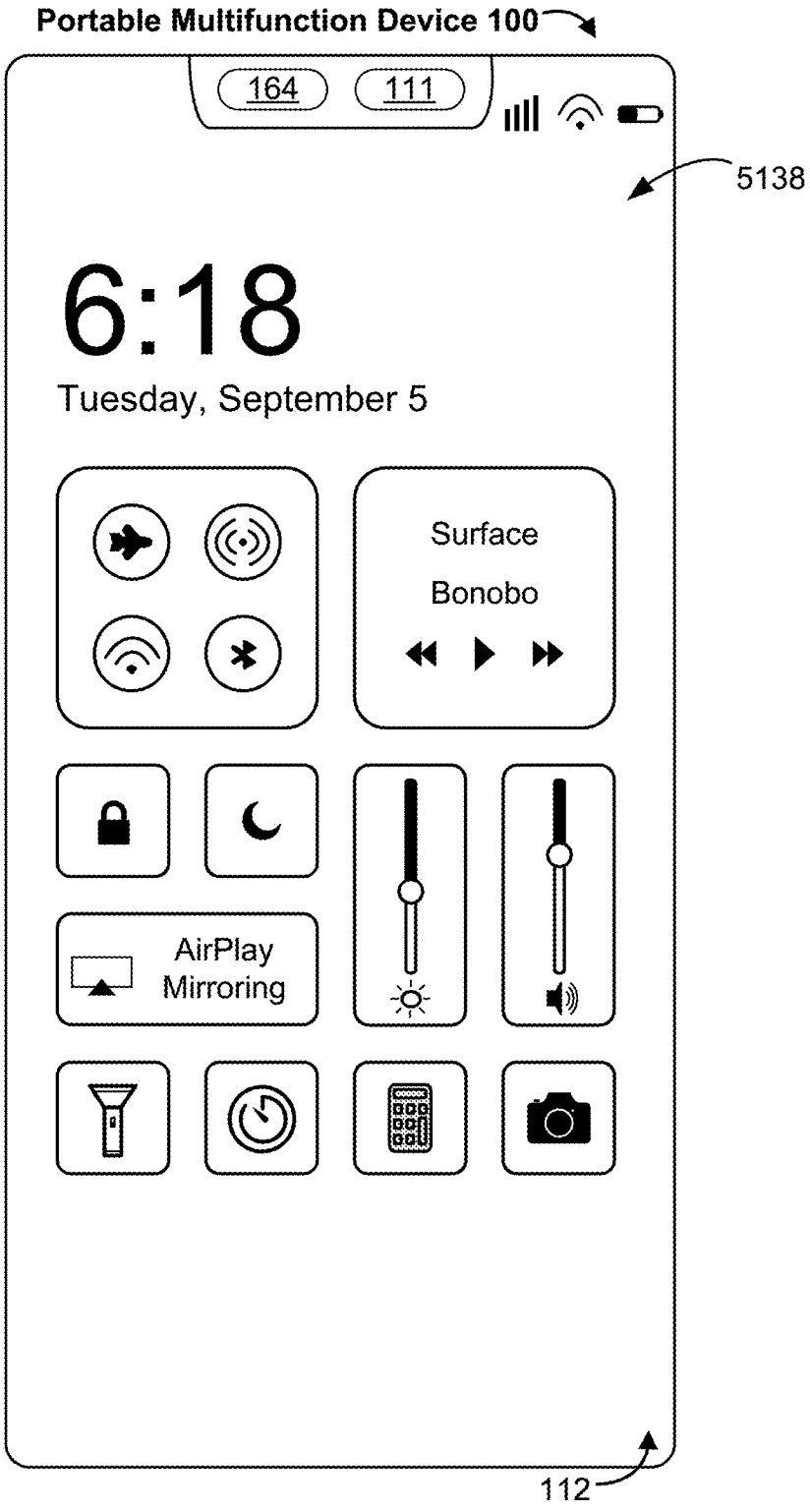

Portable Multifunction Device 100
164
111
5138
6:18
Tuesday, September 5
Surface
Bonobo
AirPlay
Mirroring
112

Figure 5CE


Portable Multifunction Device 100
164
111
5138
6:18
Tuesday, September 5
Surface
Bonobo
AirPlay
Mirroring
5142
112

Figure 5CF

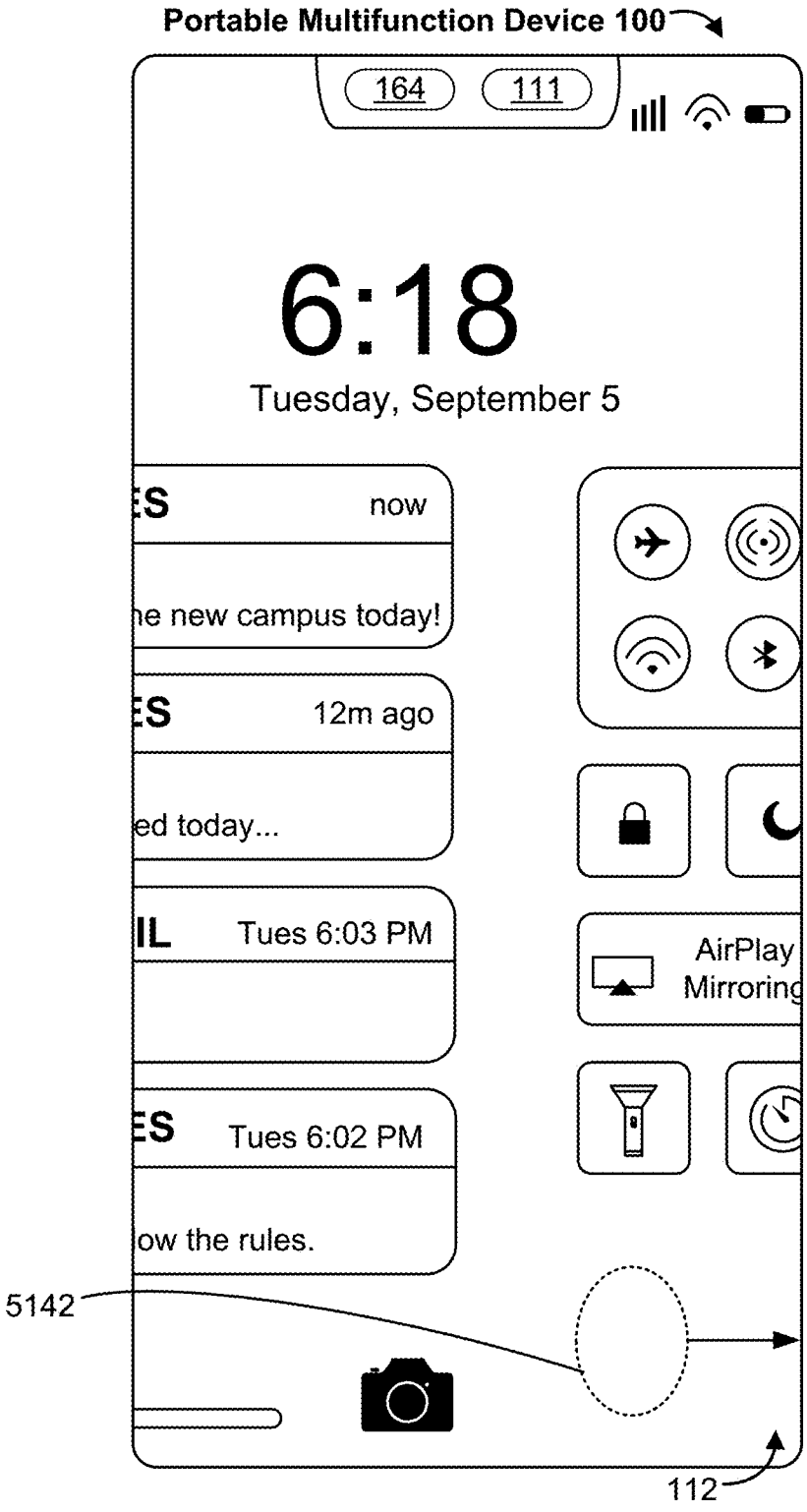

Portable Multifunction Device 100
164
111
6:18
Tuesday, September 5
now
Tues 6:03 PM
Tues 6:02 PM
AirPlay
Mirroring
5142
112

Figure 5CG

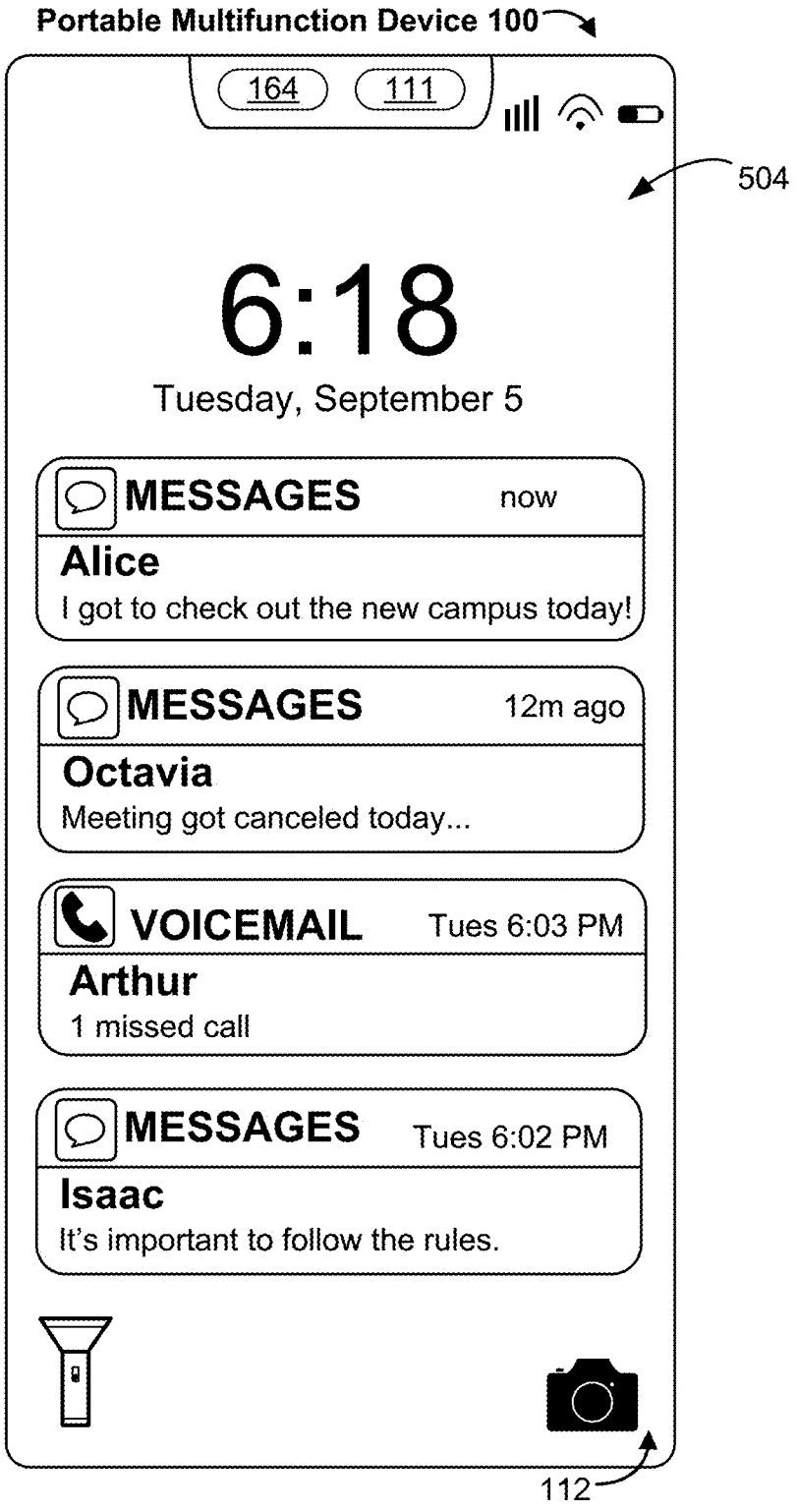

Portable Multifunction Device 100
164
111
504
6:18
Tuesday, September 5
MESSAGES
now
Alice
I got to check out the new campus today!
MESSAGES
12m ago
Octavia
Meeting got canceled today...
VOICEMAIL
Tues 6:03 PM
Arthur
1 missed call
MESSAGES
Tues 6:02 PM
Isaac
It's important to follow the rules.
112

Figure 5CH

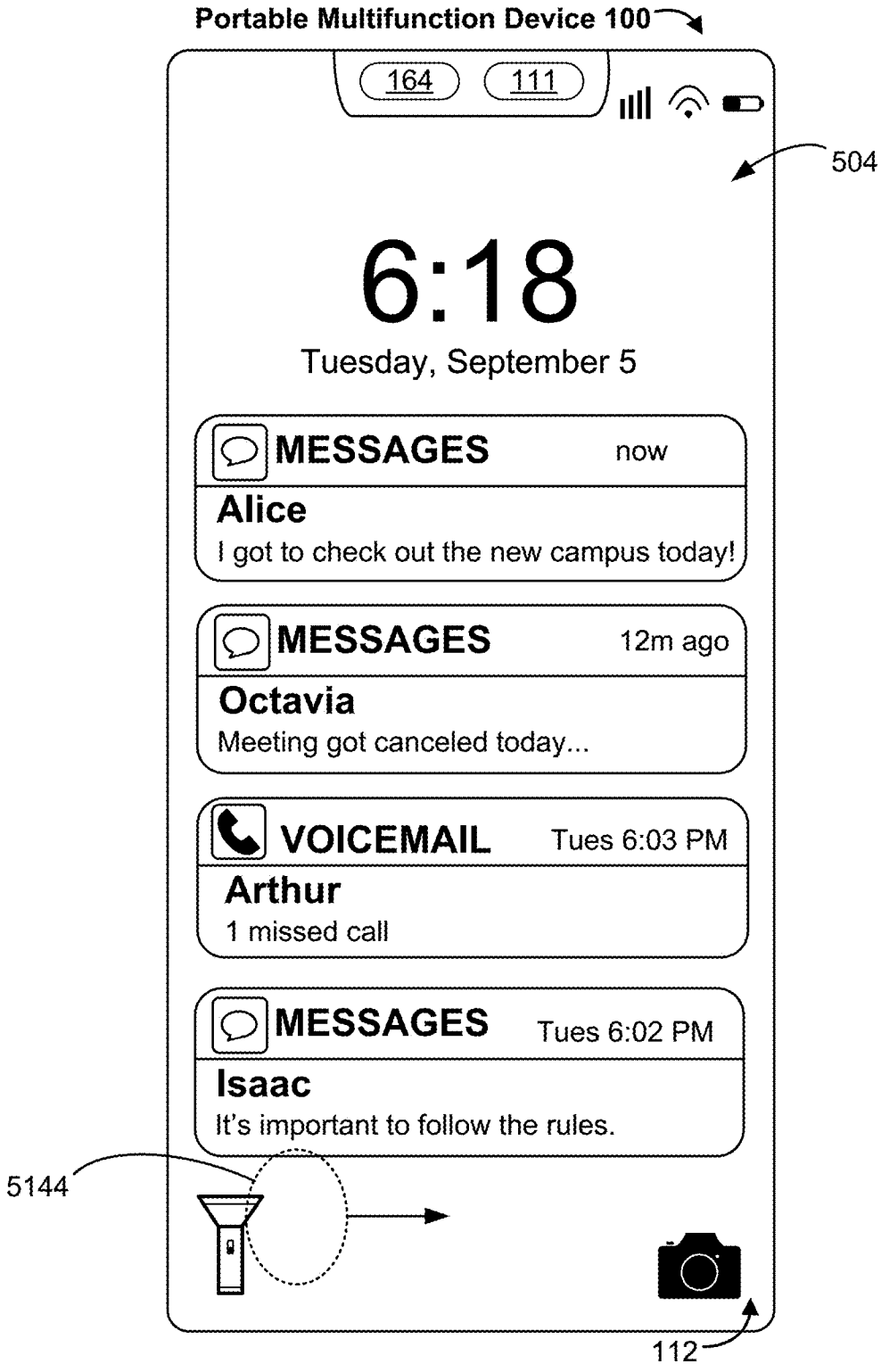

Portable Multifunction Device 100
164
111
504
6:18
Tuesday, September 5
MESSAGES now
Alice
I got to check out the new campus today!
MESSAGES 12m ago
Octavia
Meeting got canceled today...
VOICEMAIL Tues 6:03 PM
Arthur
1 missed call
MESSAGES Tues 6:02 PM
Isaac
It's important to follow the rules.
5144
112

Figure 5CI

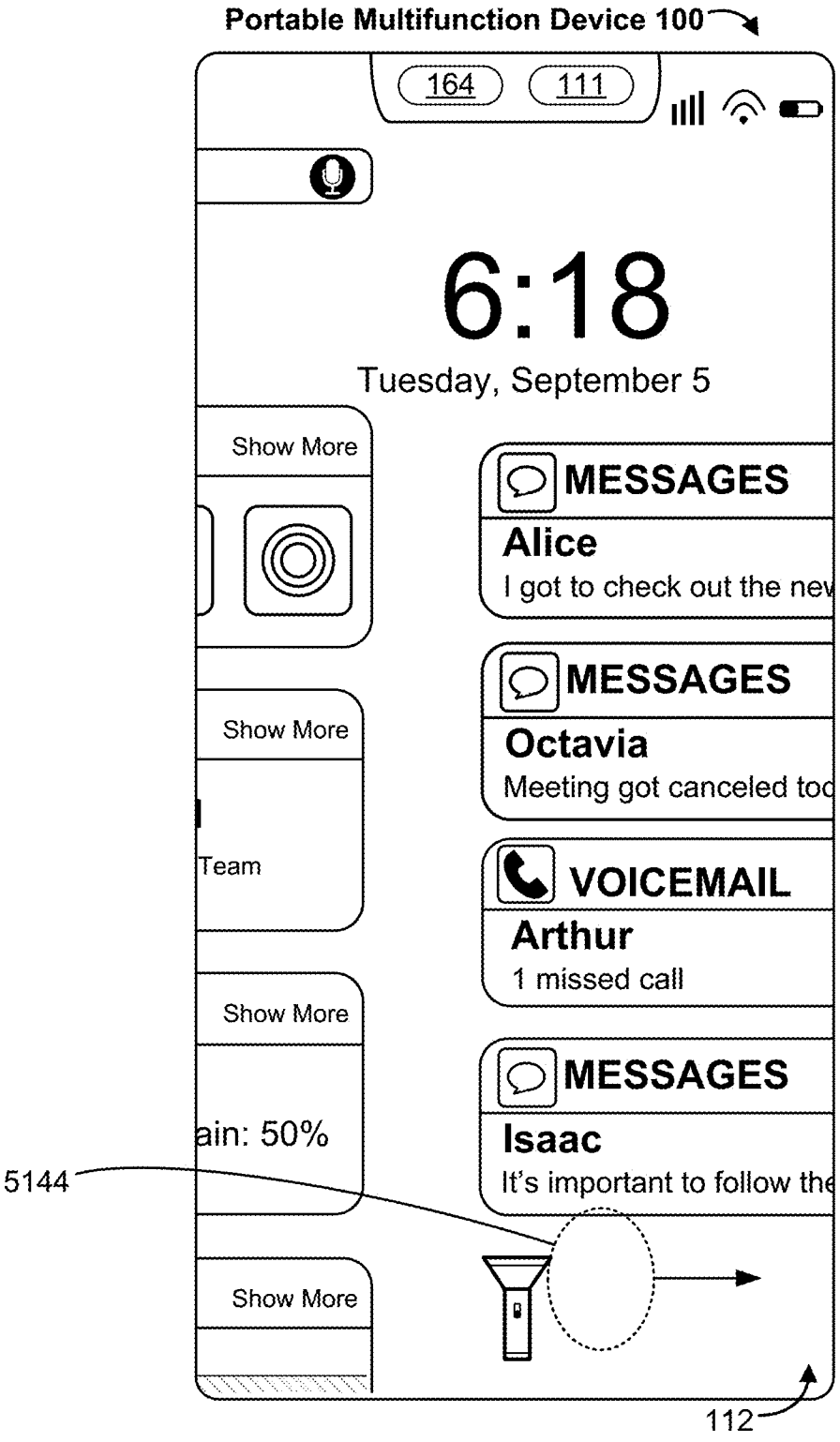


Figure 5CJ

Masimo Ex. 1001
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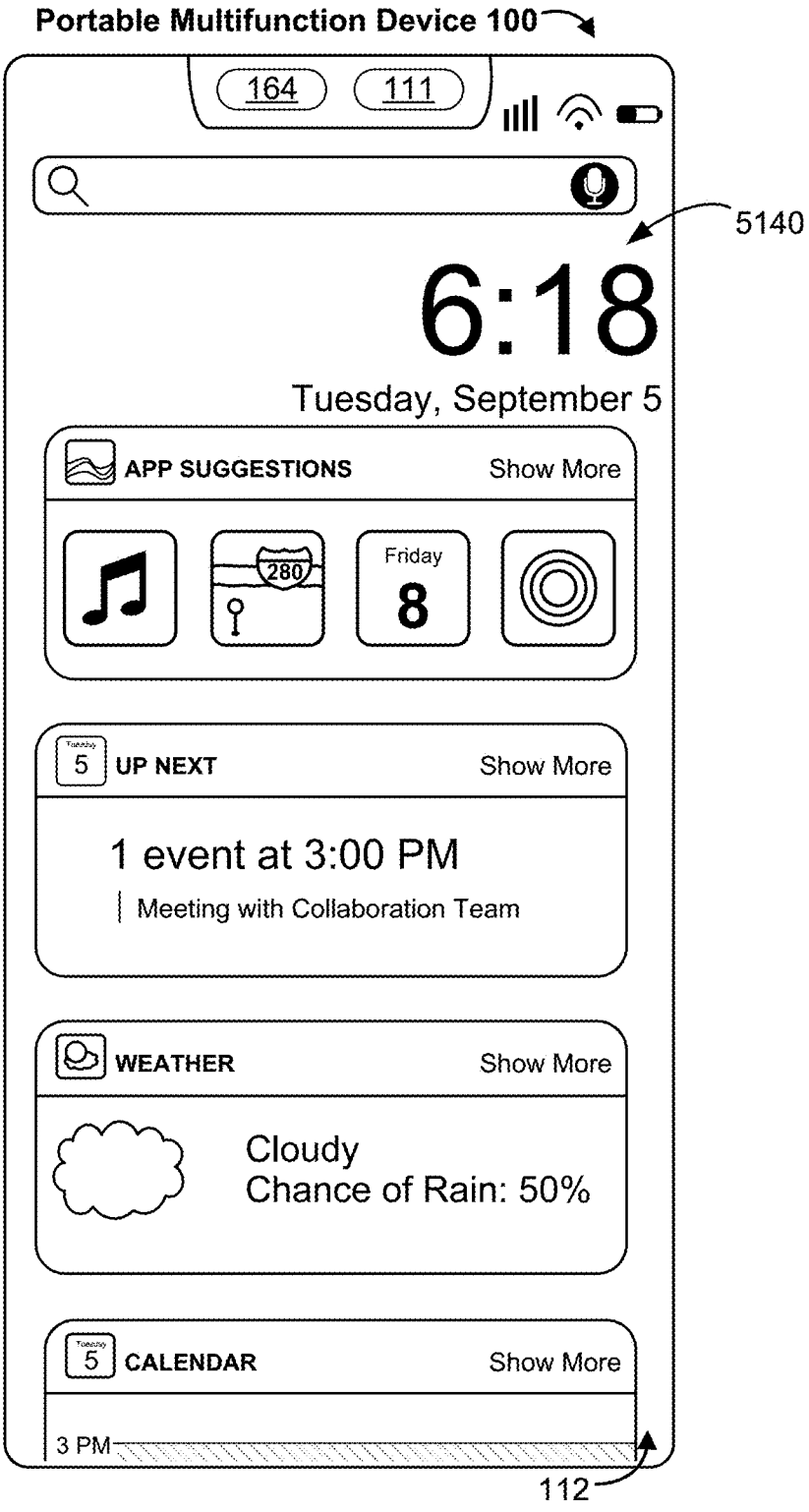


Figure 5CK

Masimo Ex. 1001
IPR Petition - USP 11,106,352

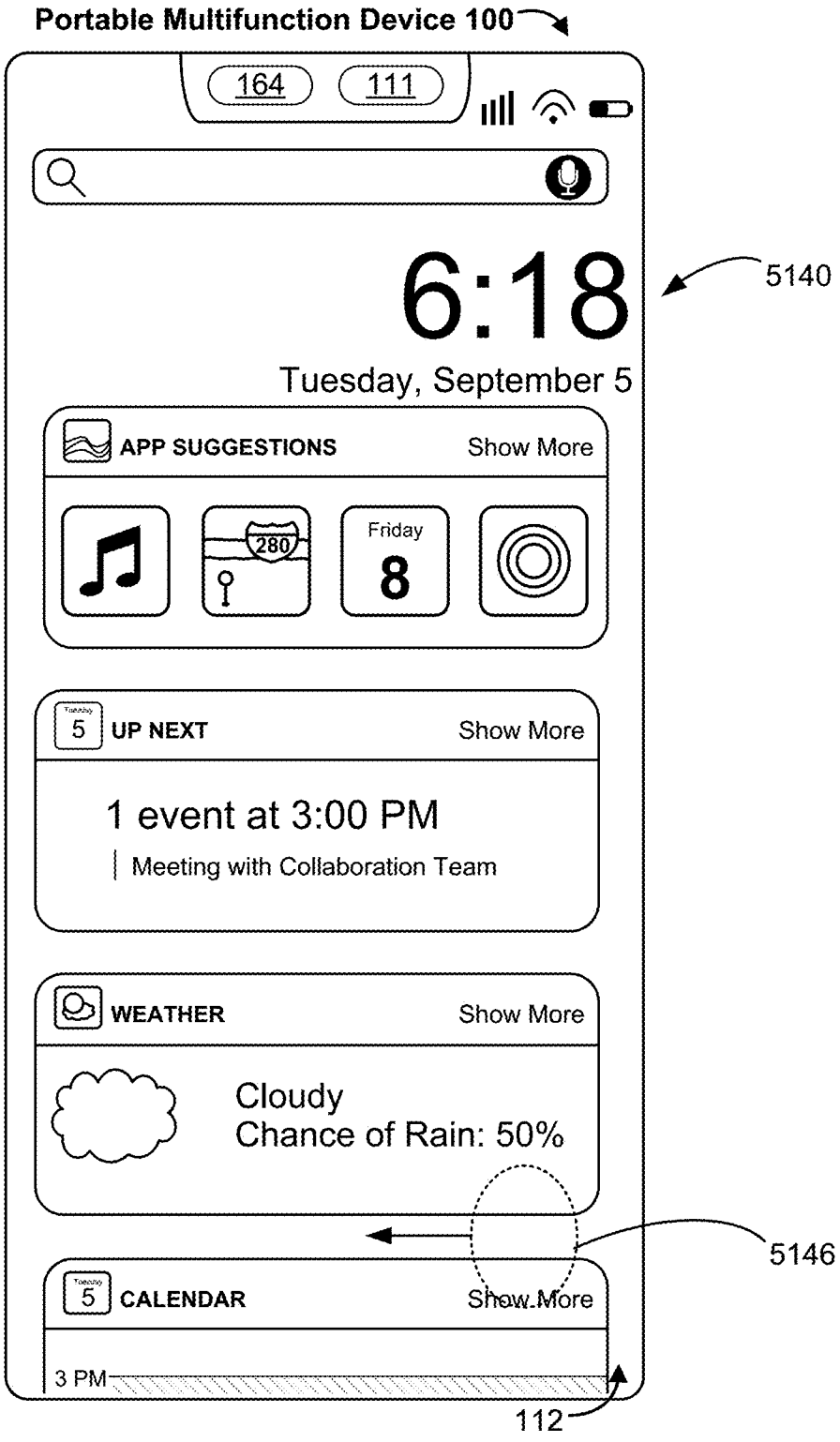


Figure 5CL

Masimo Ex. 1001
IPR Petition - USP 11,106,352

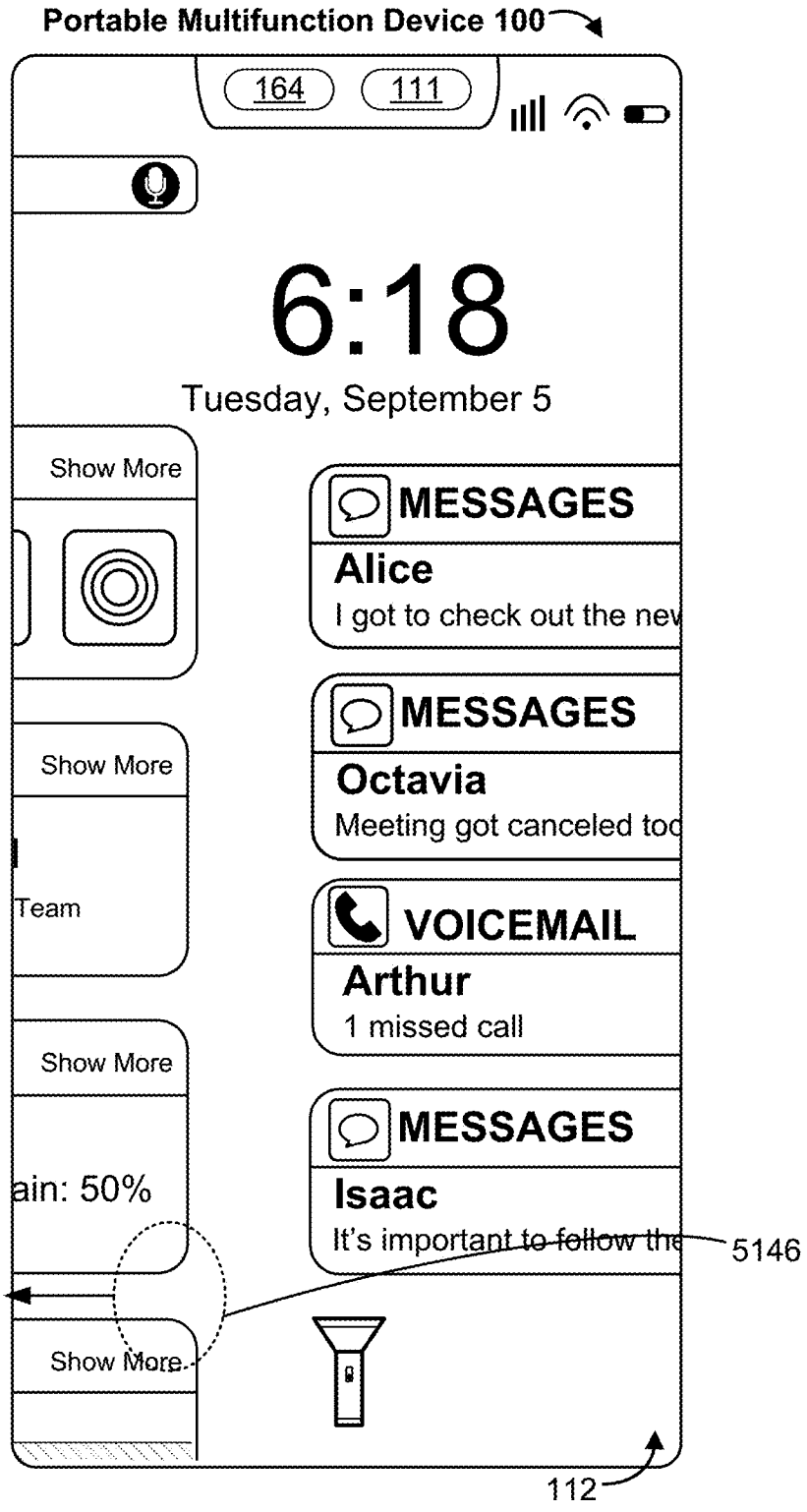

Portable Multifunction Device 100
164
111
6:18
Tuesday, September 5
Show More
MESSAGES
Alice
I got to check out the nev
Show More
MESSAGES
Octavia
Meeting got canceled toc
Team
VOICEMAIL
Arthur
1 missed call
Show More
ain: 50%
MESSAGES
Isaac
It's important to follow the
5146
Show More
112

Figure 5CM

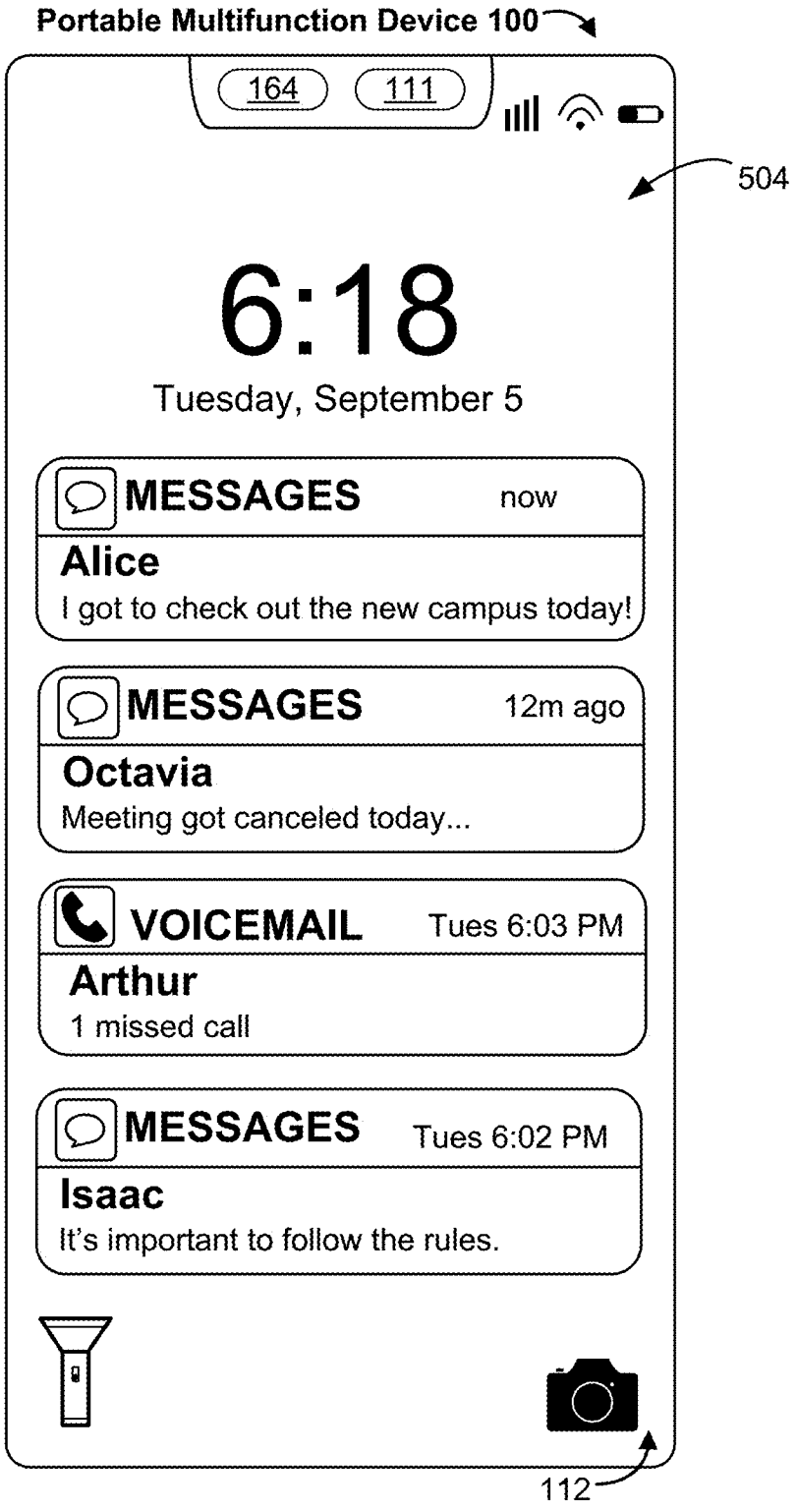

Portable Multifunction Device 100
164
111
504
6:18
Tuesday, September 5
MESSAGES
now
Alice
I got to check out the new campus today!
MESSAGES
12m ago
Octavia
Meeting got canceled today...
VOICEMAIL
Tues 6:03 PM
Arthur
1 missed call
MESSAGES
Tues 6:02 PM
Isaac
It's important to follow the rules.
112

Figure 5CN

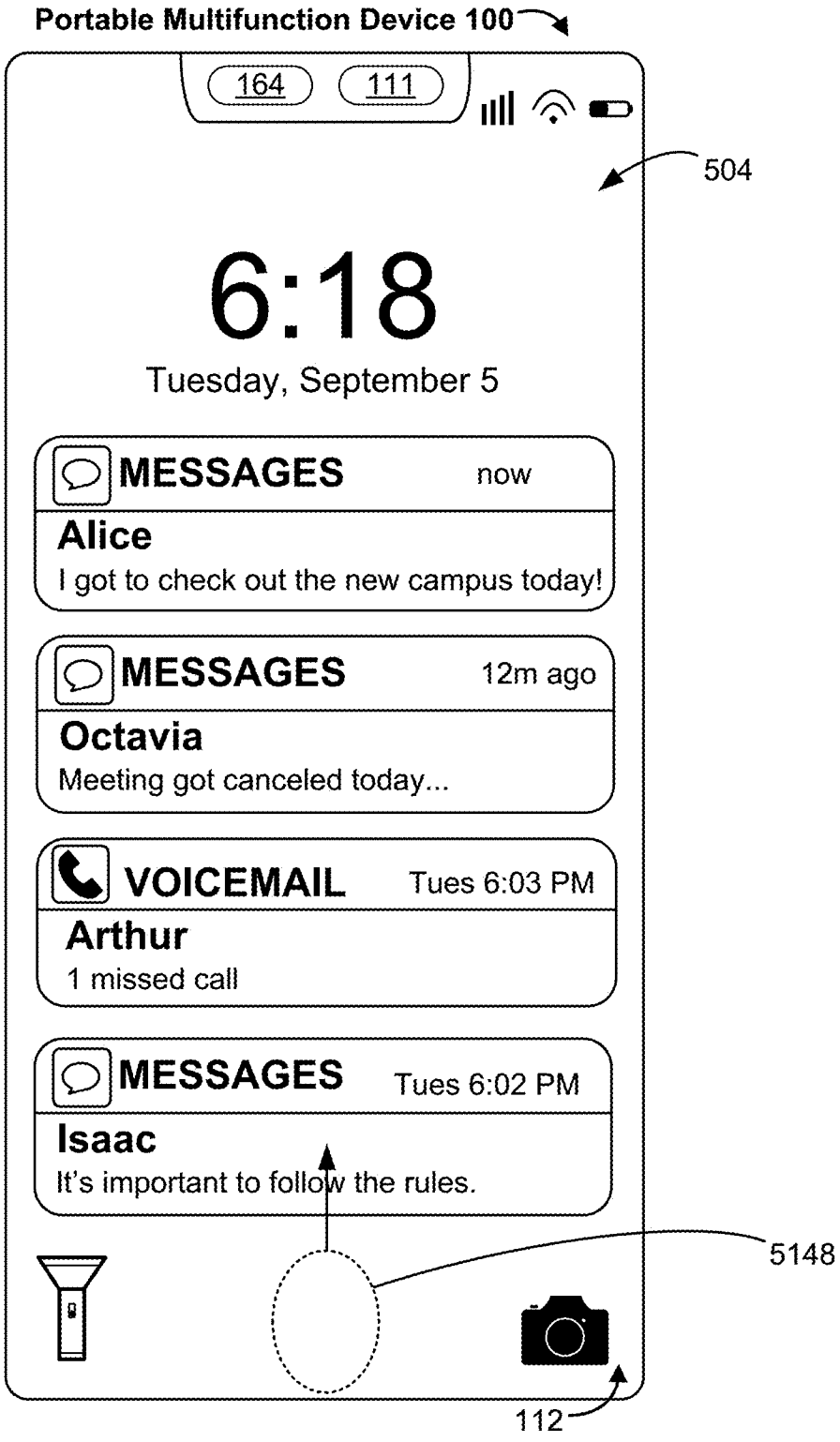


Figure 5CO

Masimo Ex. 1001
IPR Petition - USP 11,106,352

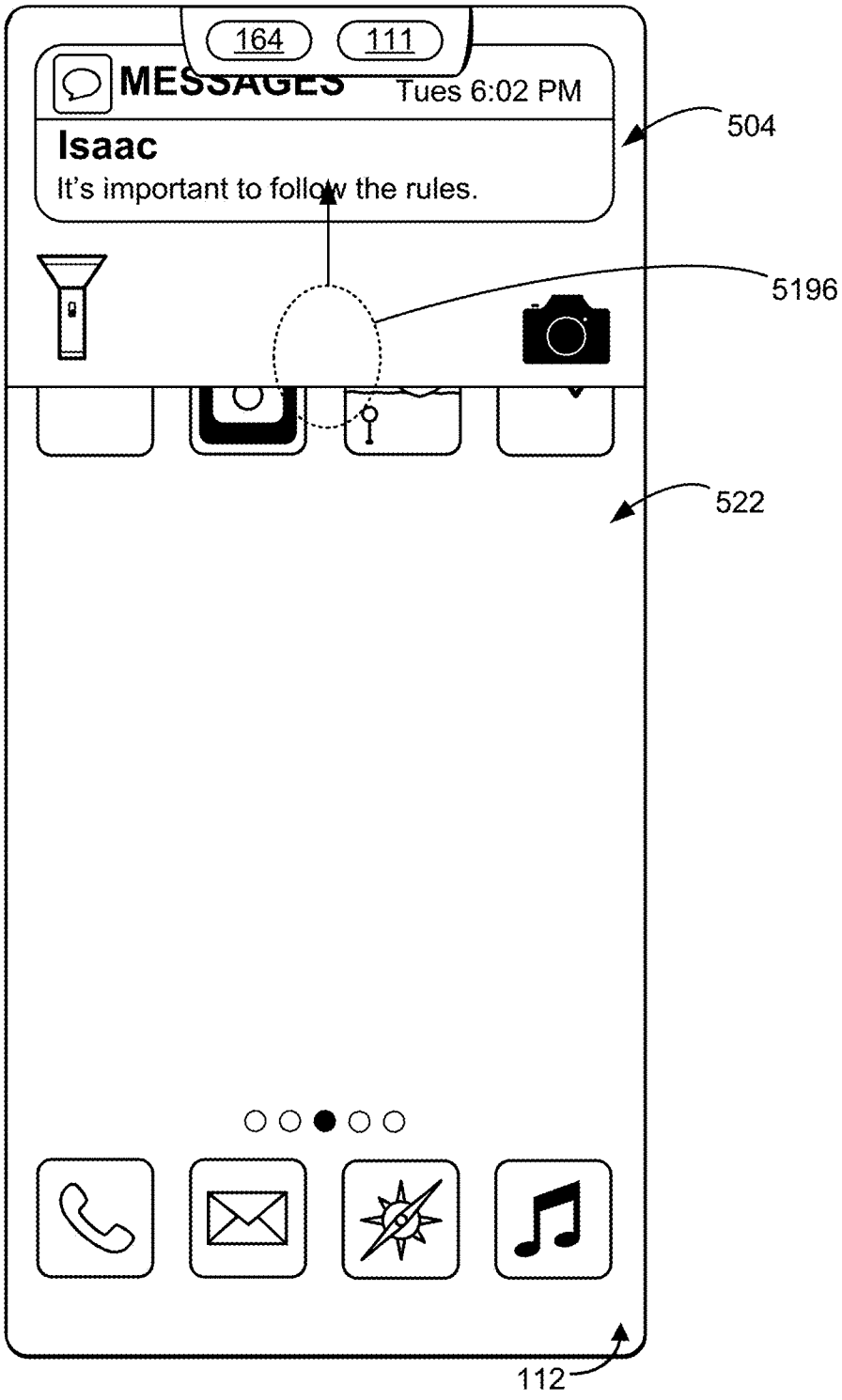

164
111
MESSAGES
Tues 6:02 PM
Isaac
It's important to follow the rules.
504
5196
522
112

Figure 5CP

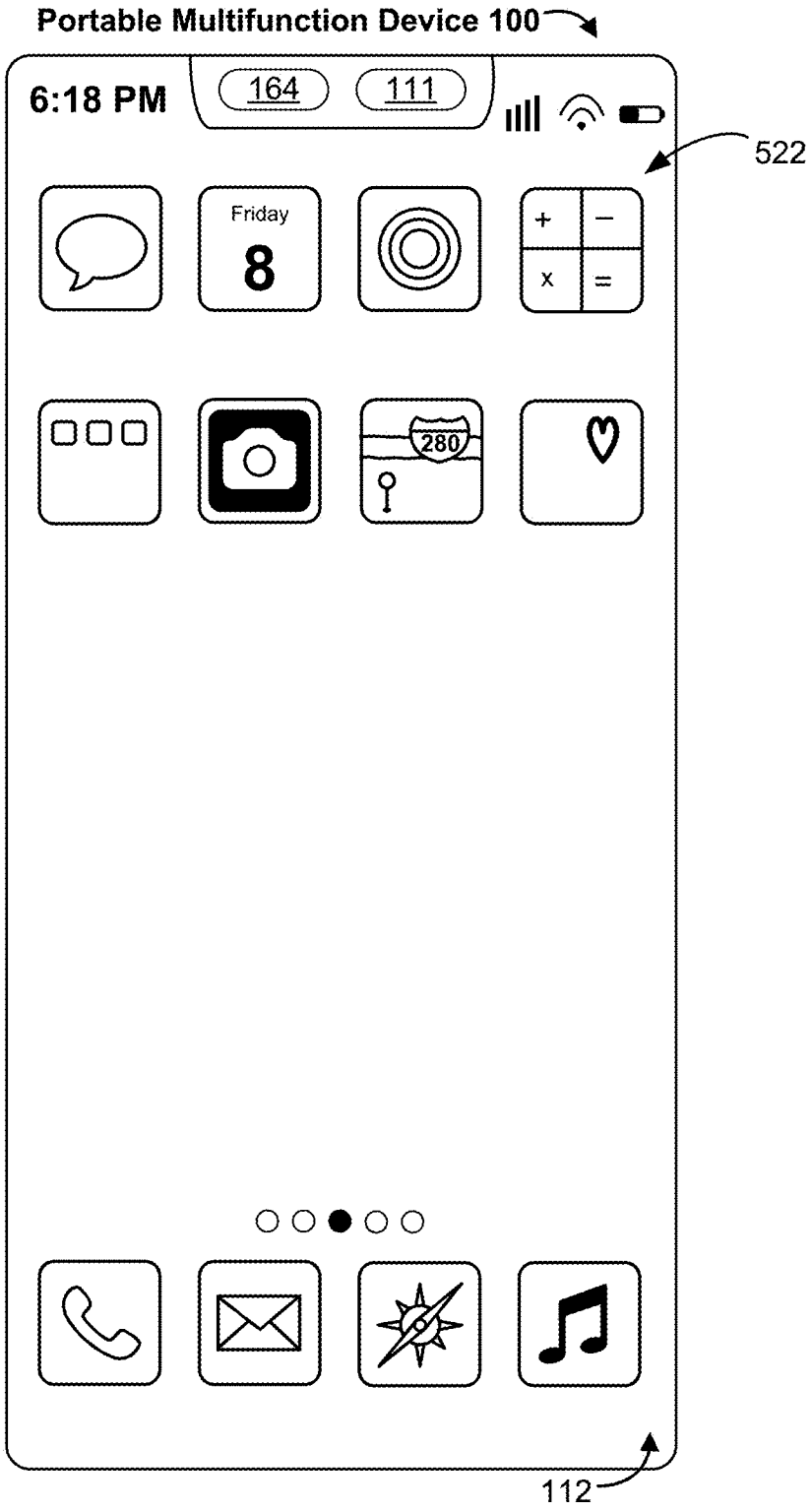

Portable Multifunction Device 100
6:18 PM
164
111
522
Friday
8
280
112

Figure 5CQ

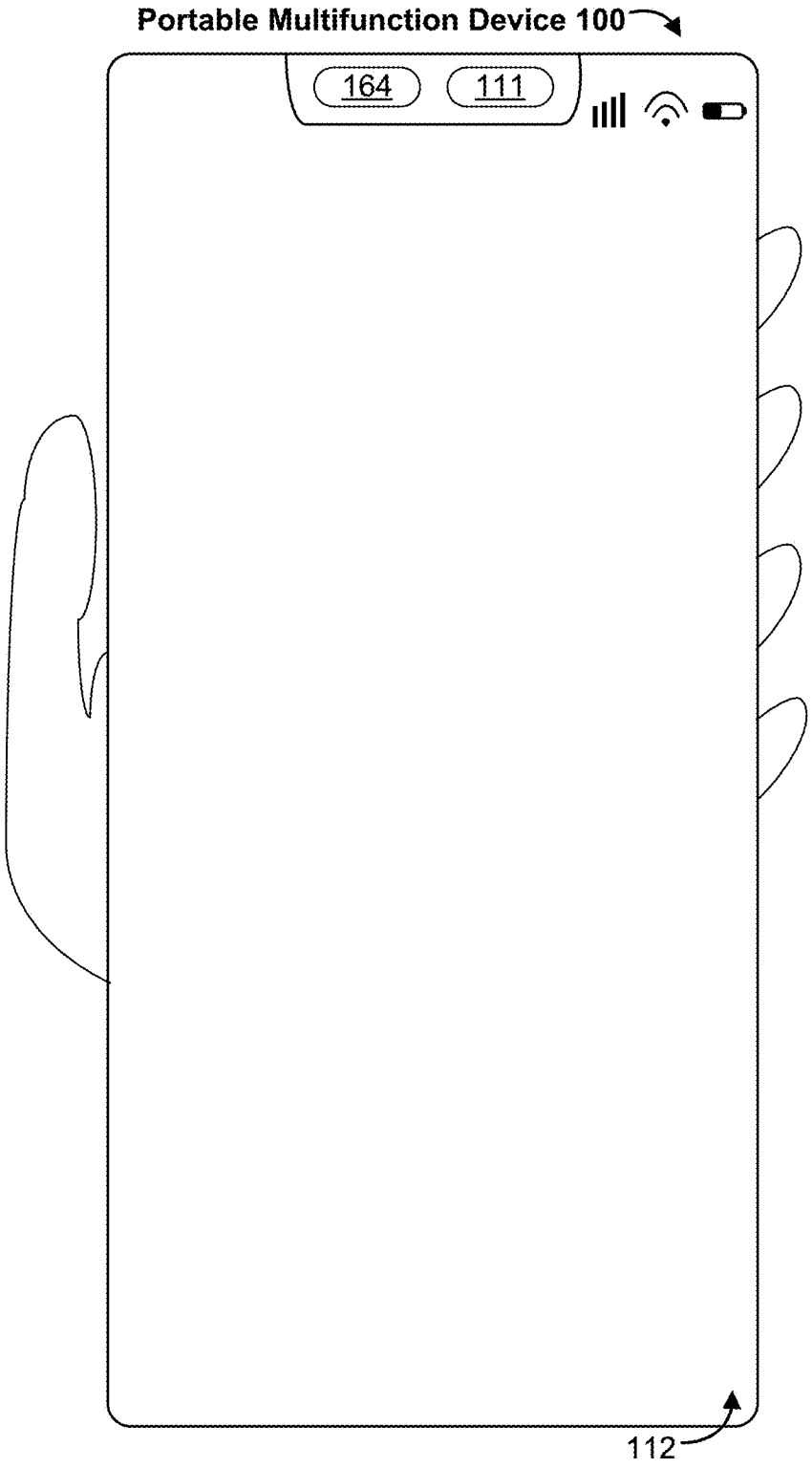


Figure 5CR

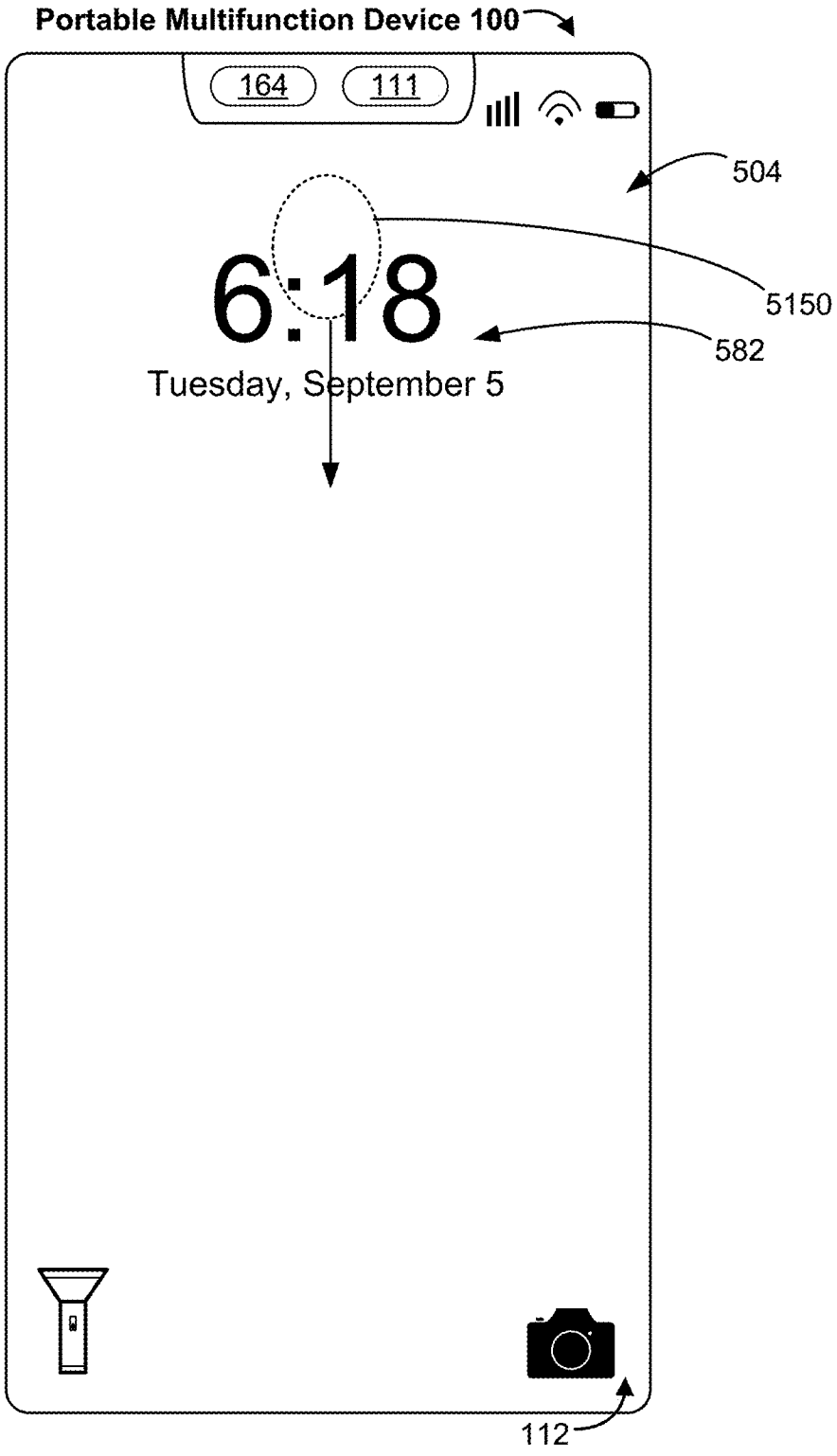


Figure 5CS

Masimo Ex. 1001
IPR Petition - USP 11,106,352

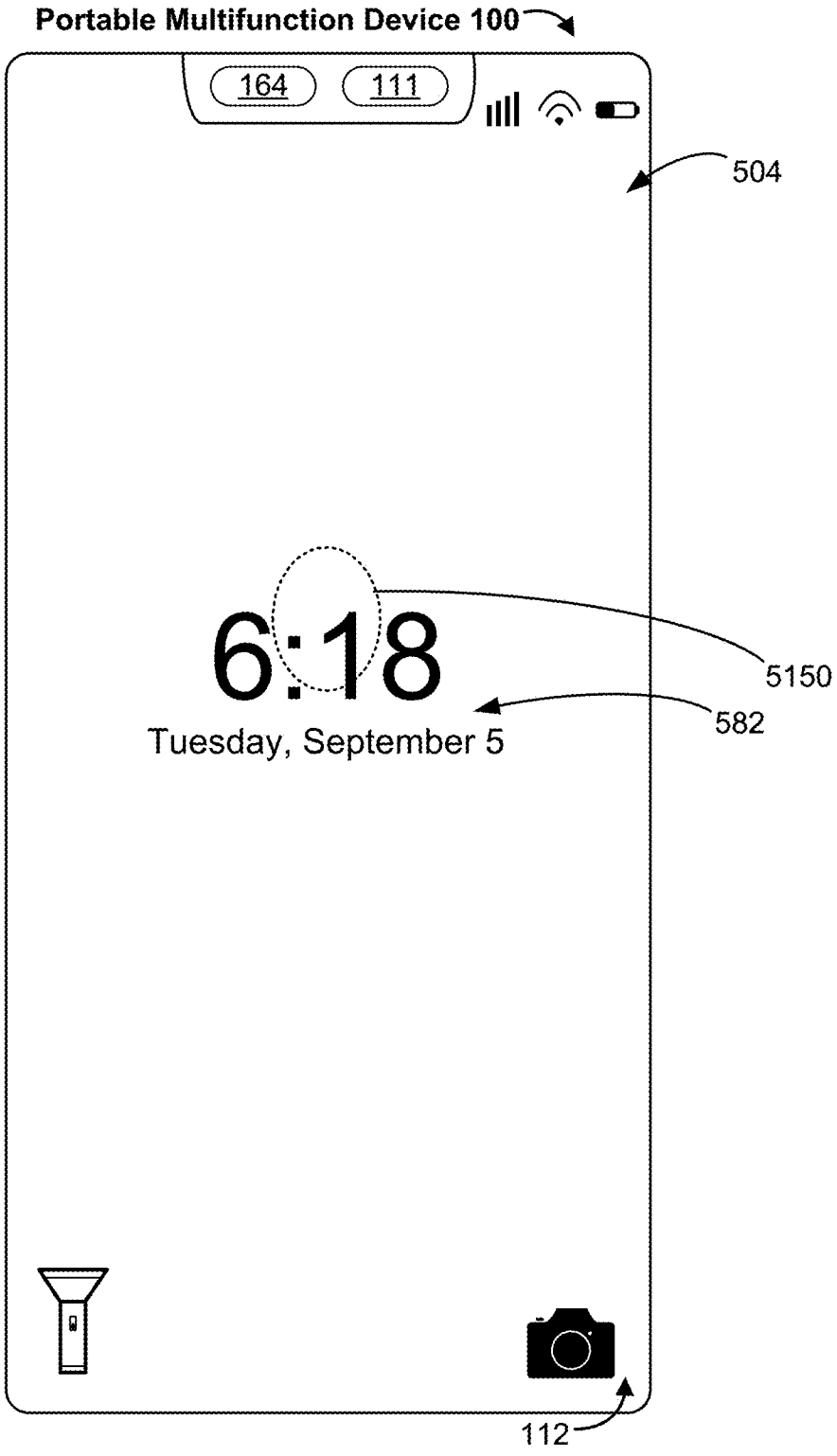


Figure 5CT

Masimo Ex. 1001
IPR Petition - USP 11,106,352

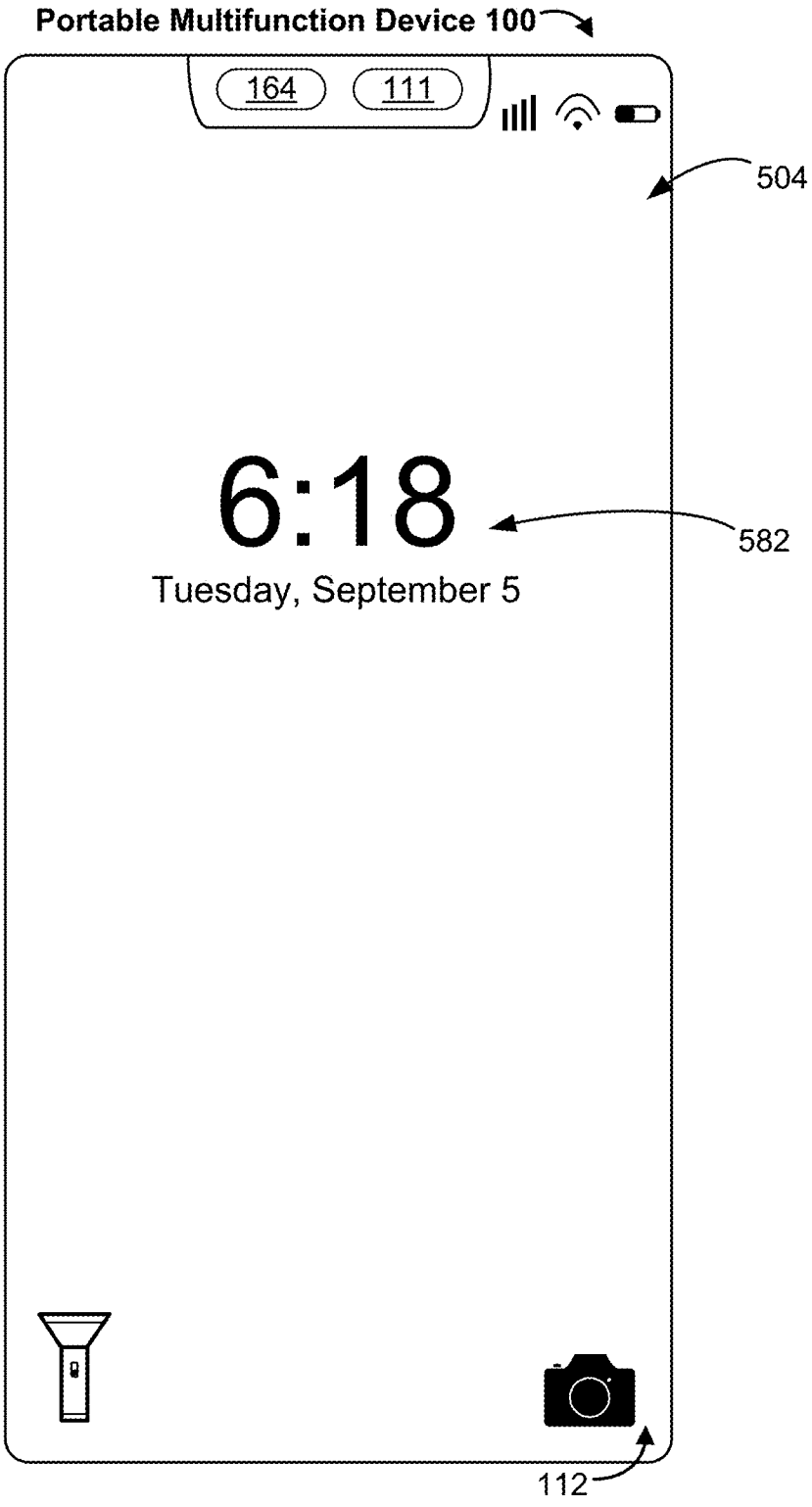


Figure 5CU

Masimo Ex. 1001
IPR Petition - USP 11,106,352

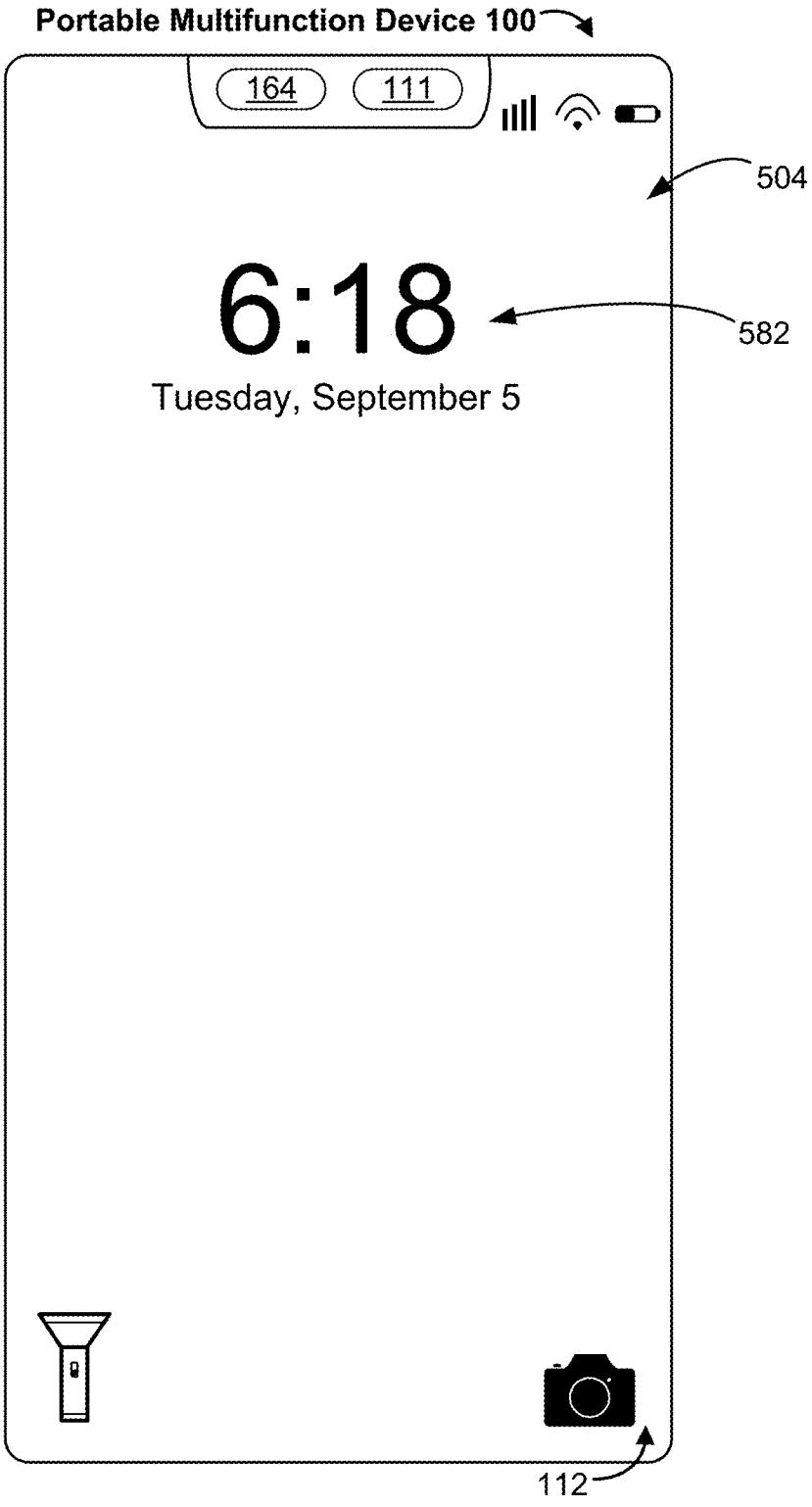


Figure 5CV

Masimo Ex. 1001
IPR Petition - USP 11,106,352

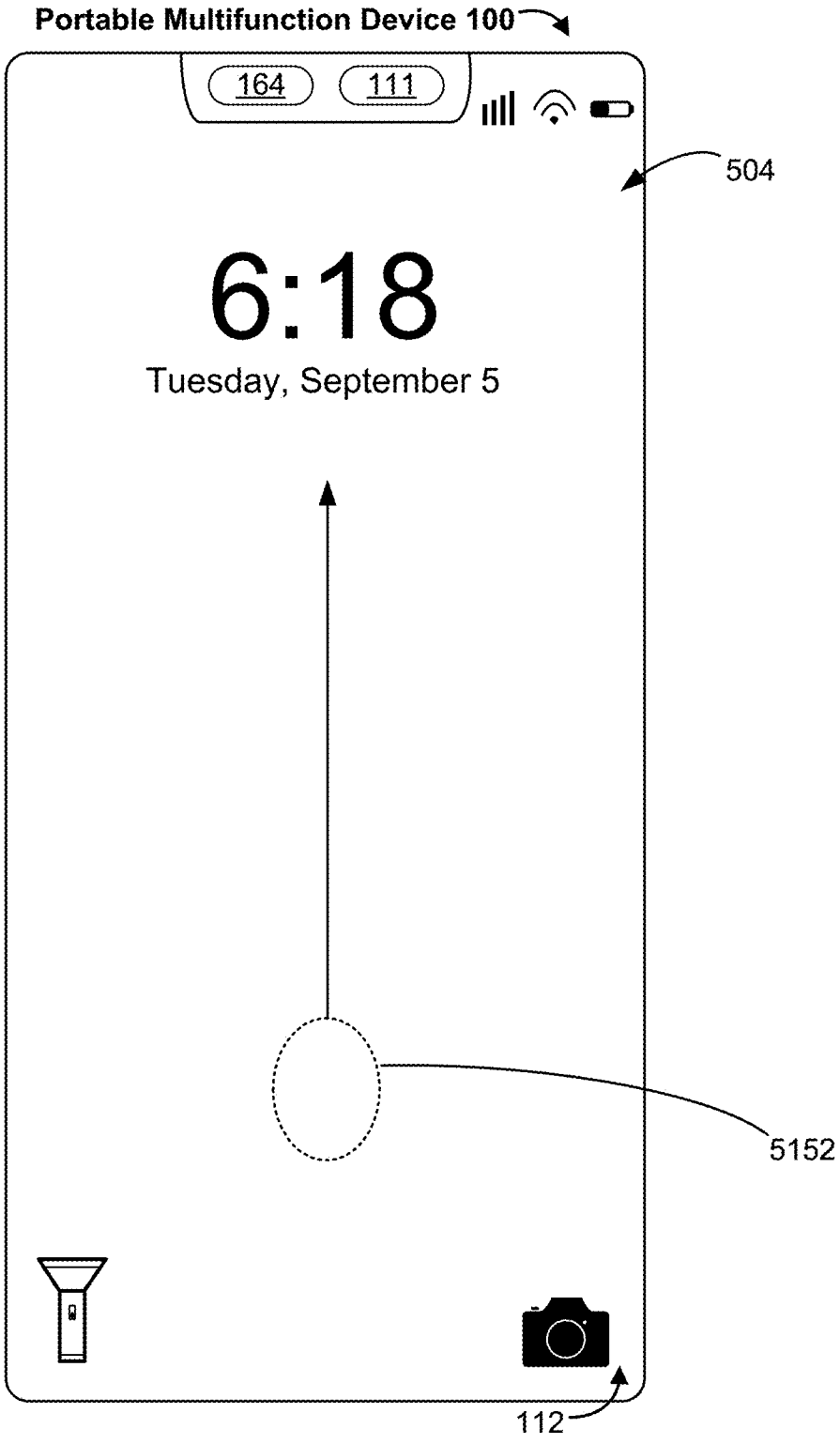


Figure 5CW

Masimo Ex. 1001
IPR Petition - USP 11,106,352

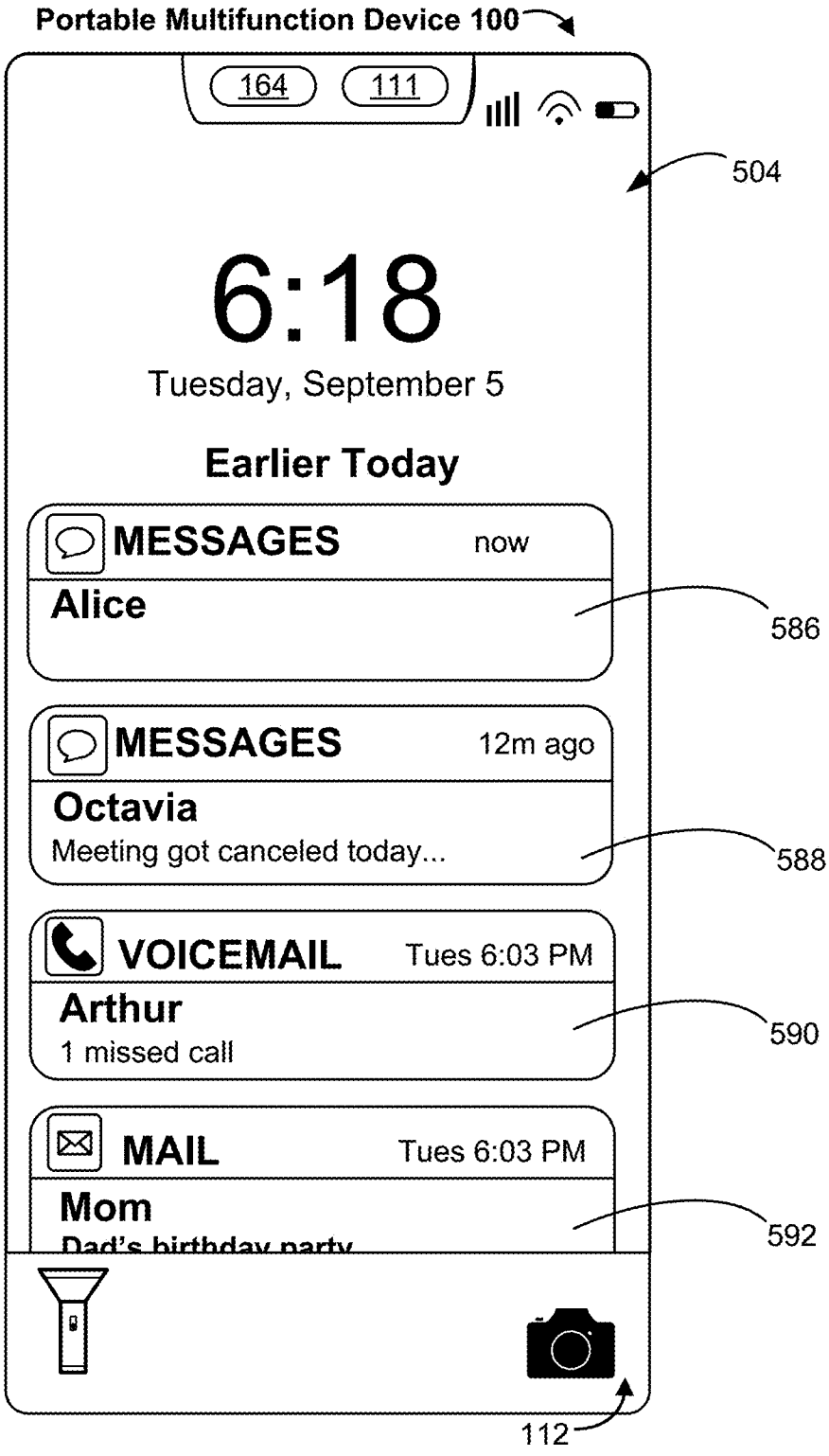


Figure 5CX

Masimo Ex. 1001
IPR Petition - USP 11,106,352

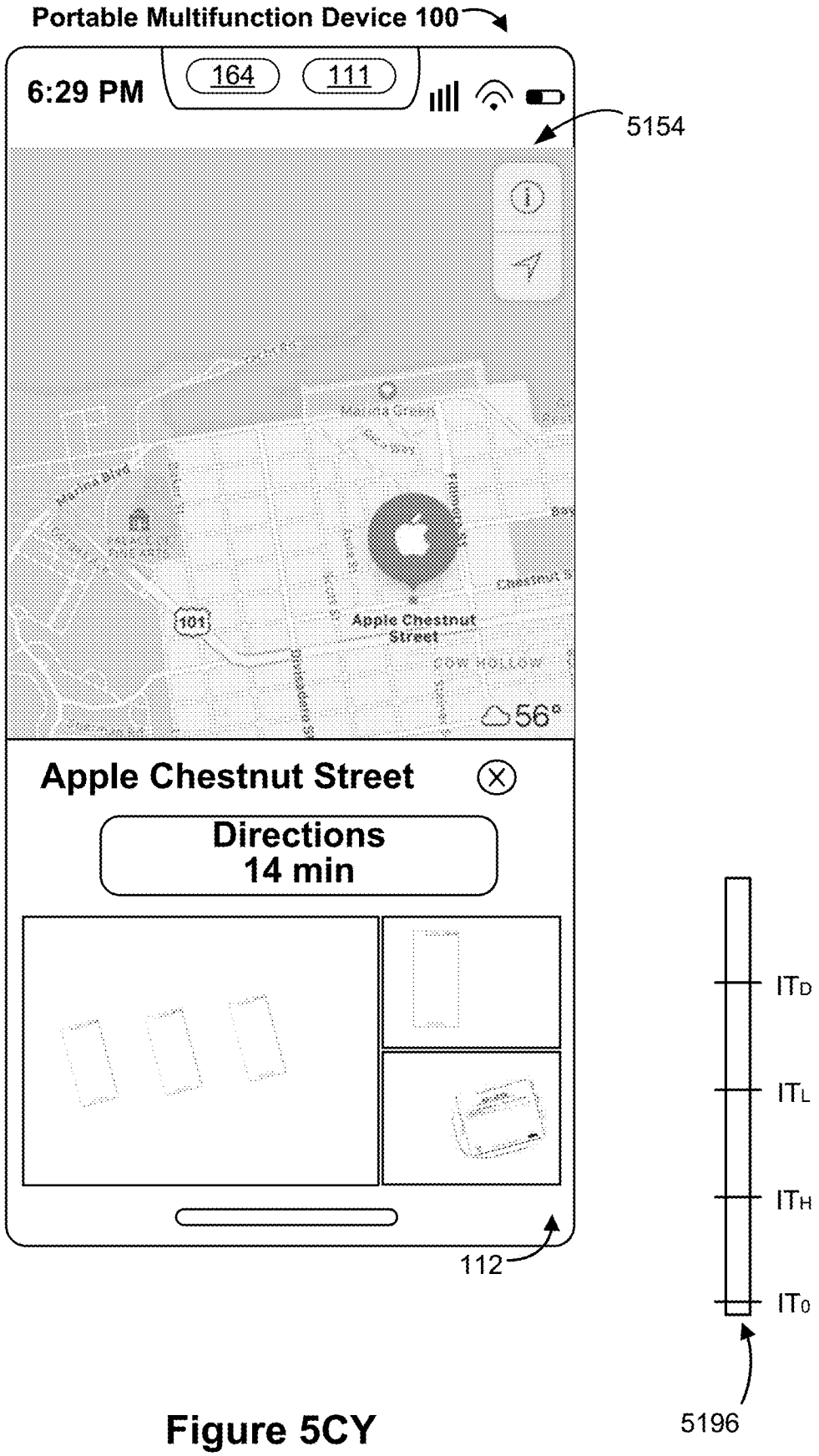


Figure 5CY

Masimo Ex. 1001
IPR Petition - USP 11,106,352

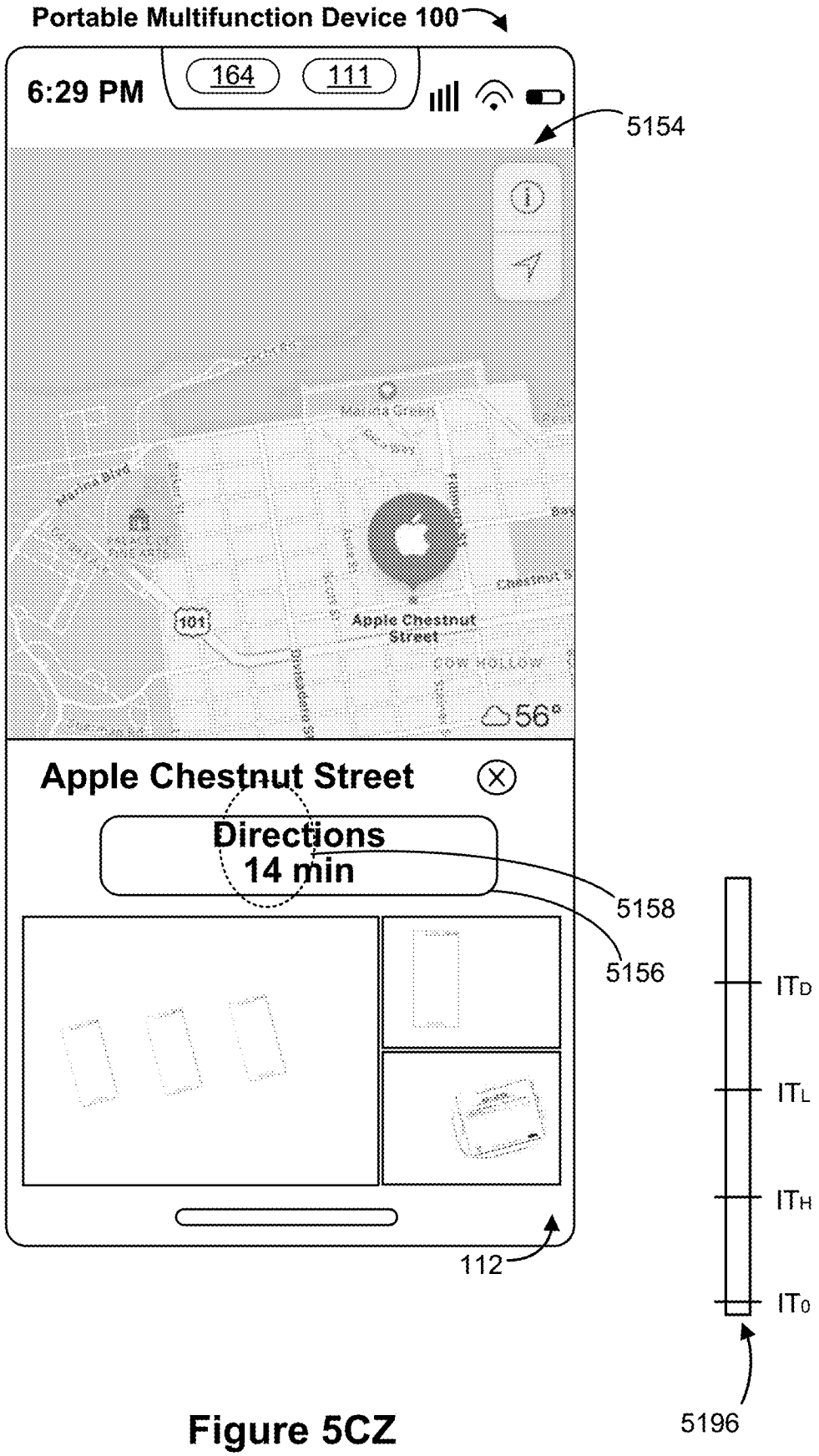


Figure 5CZ

Masimo Ex. 1001
IPR Petition - USP 11,106,352



Figure 5DA

Masimo Ex. 1001
IPR Petition - USP 11,106,352


Portable Multifunction Device 100
6:29 PM
164
111
400 ft
Turn right onto
Golden Gate Ave
5162
5160
To Apple Chestnut Str...
16 min
End
112

Figure 5DB

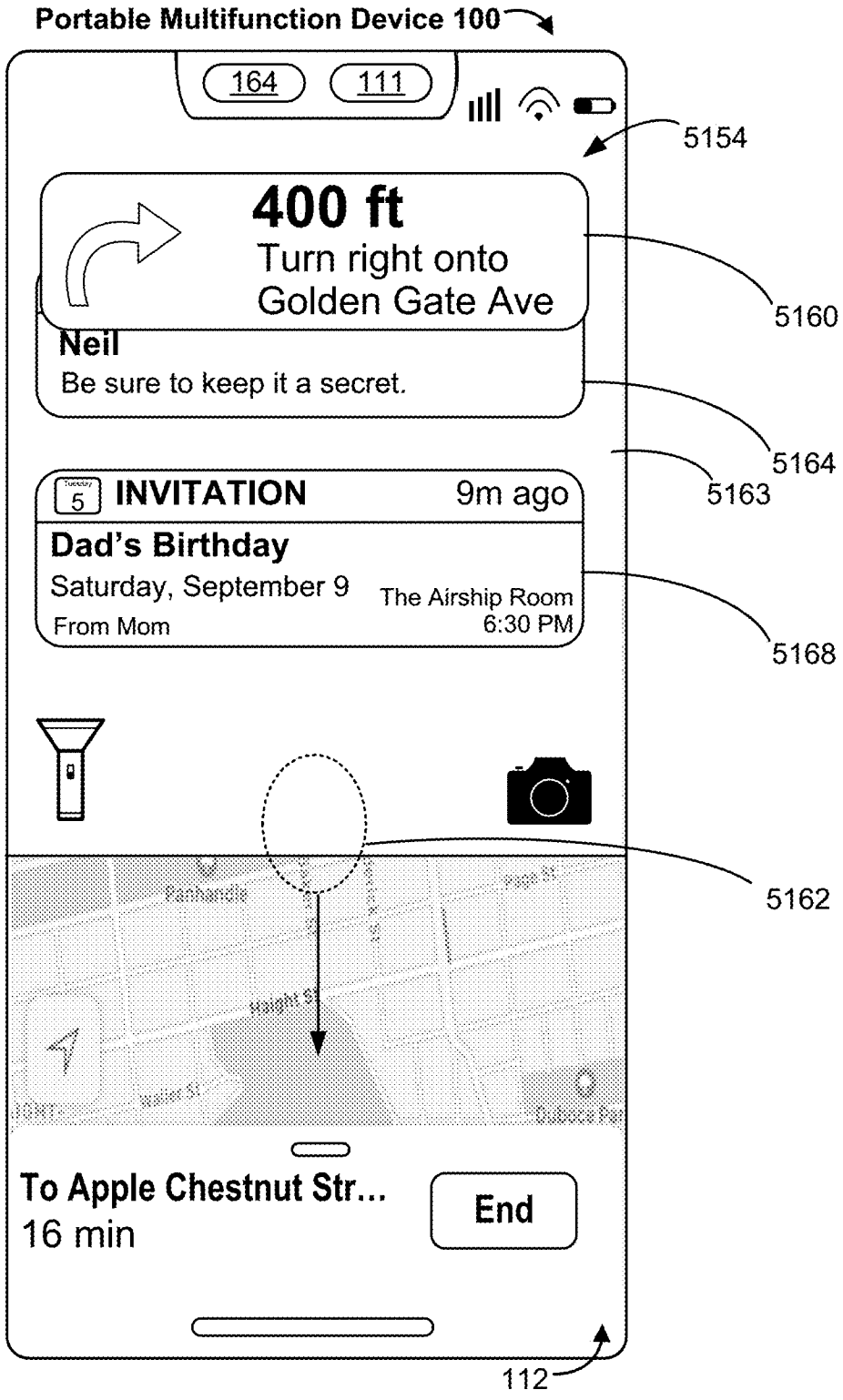


Figure 5DC

Masimo Ex. 1001
IPR Petition - USP 11,106,352

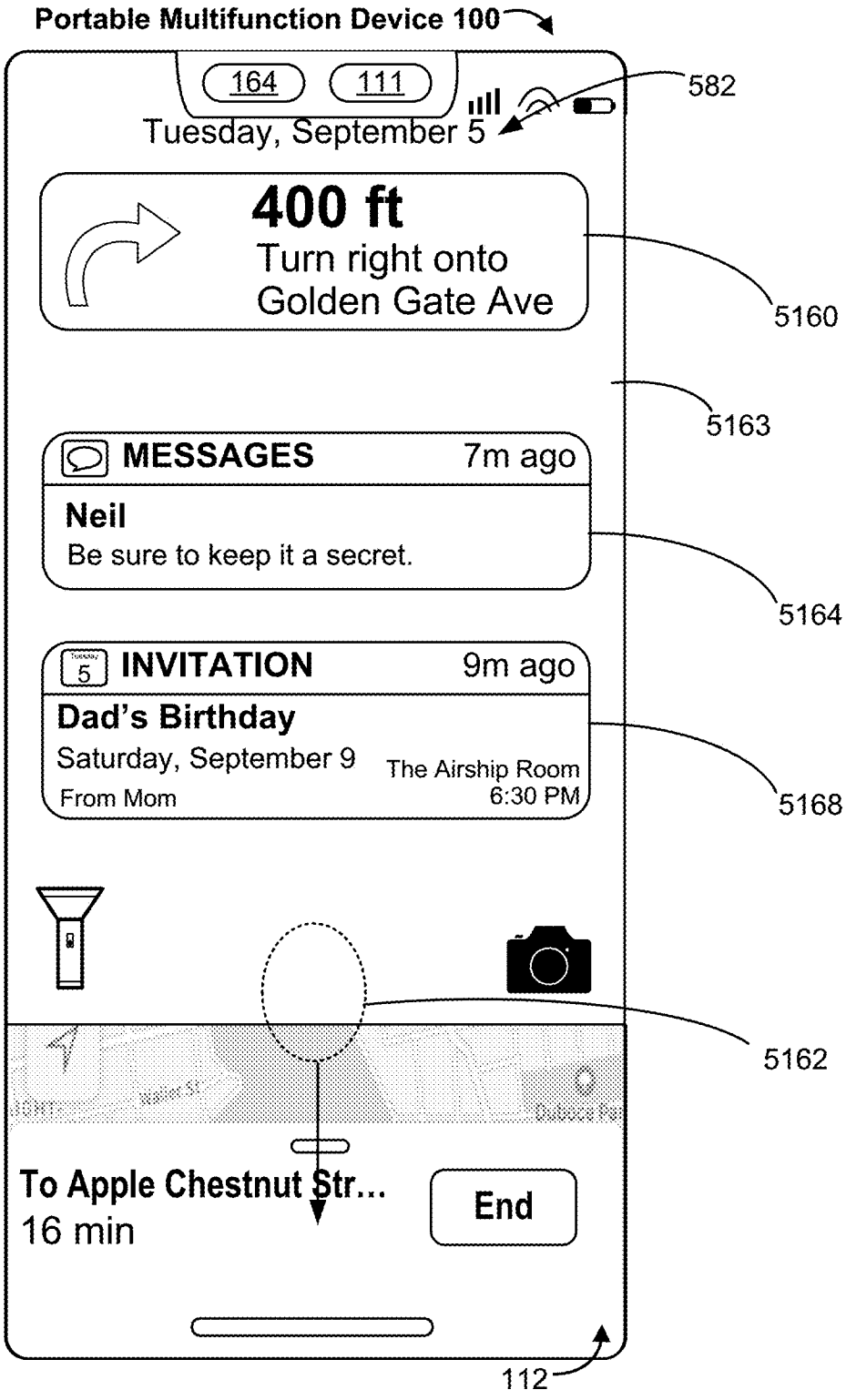


Figure 5DD

Masimo Ex. 1001
IPR Petition - USP 11,106,352



Figure 5DE

Masimo Ex. 1001
IPR Petition - USP 11,106,352

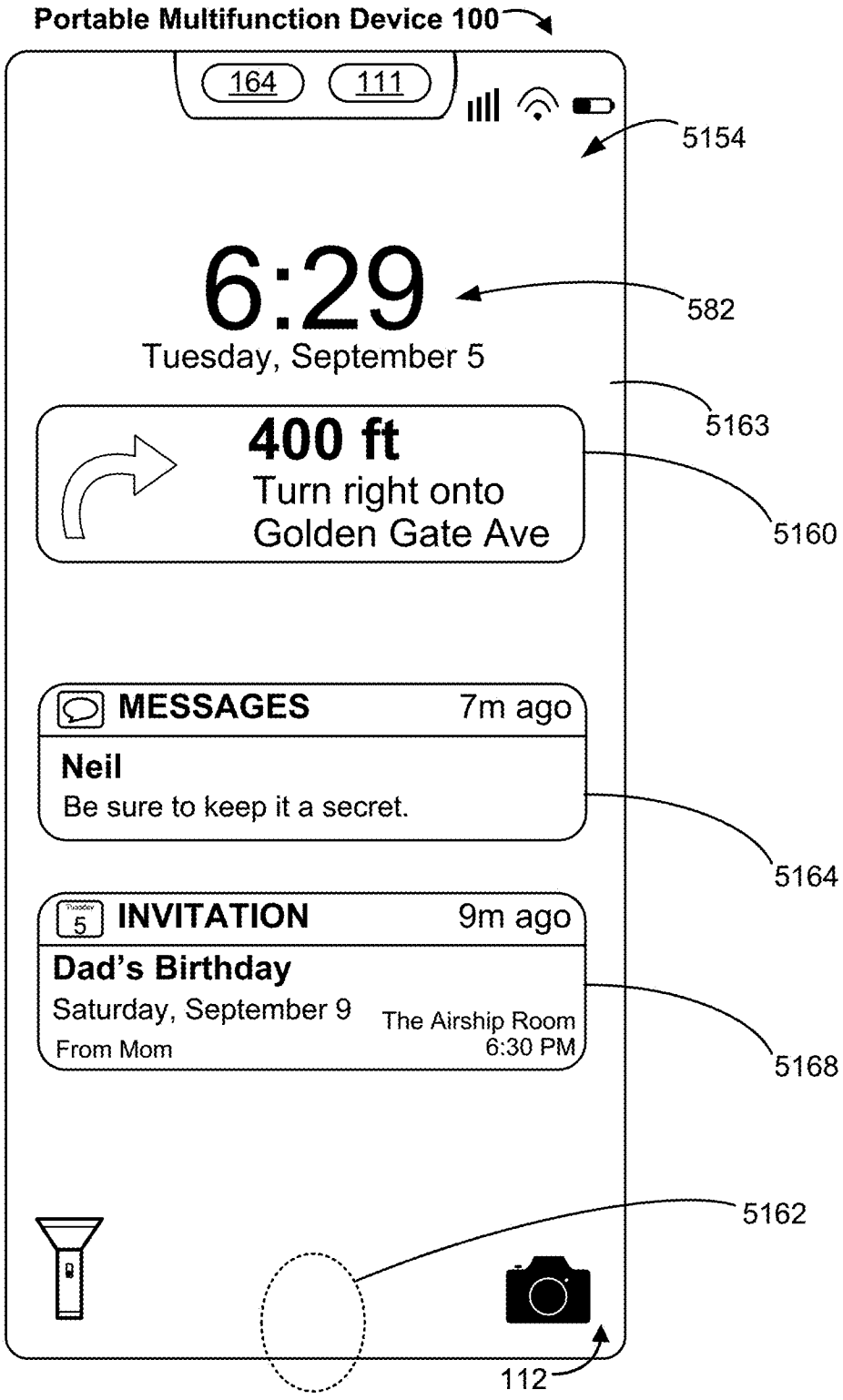


Figure 5DF

Masimo Ex. 1001
IPR Petition - USP 11,106,352

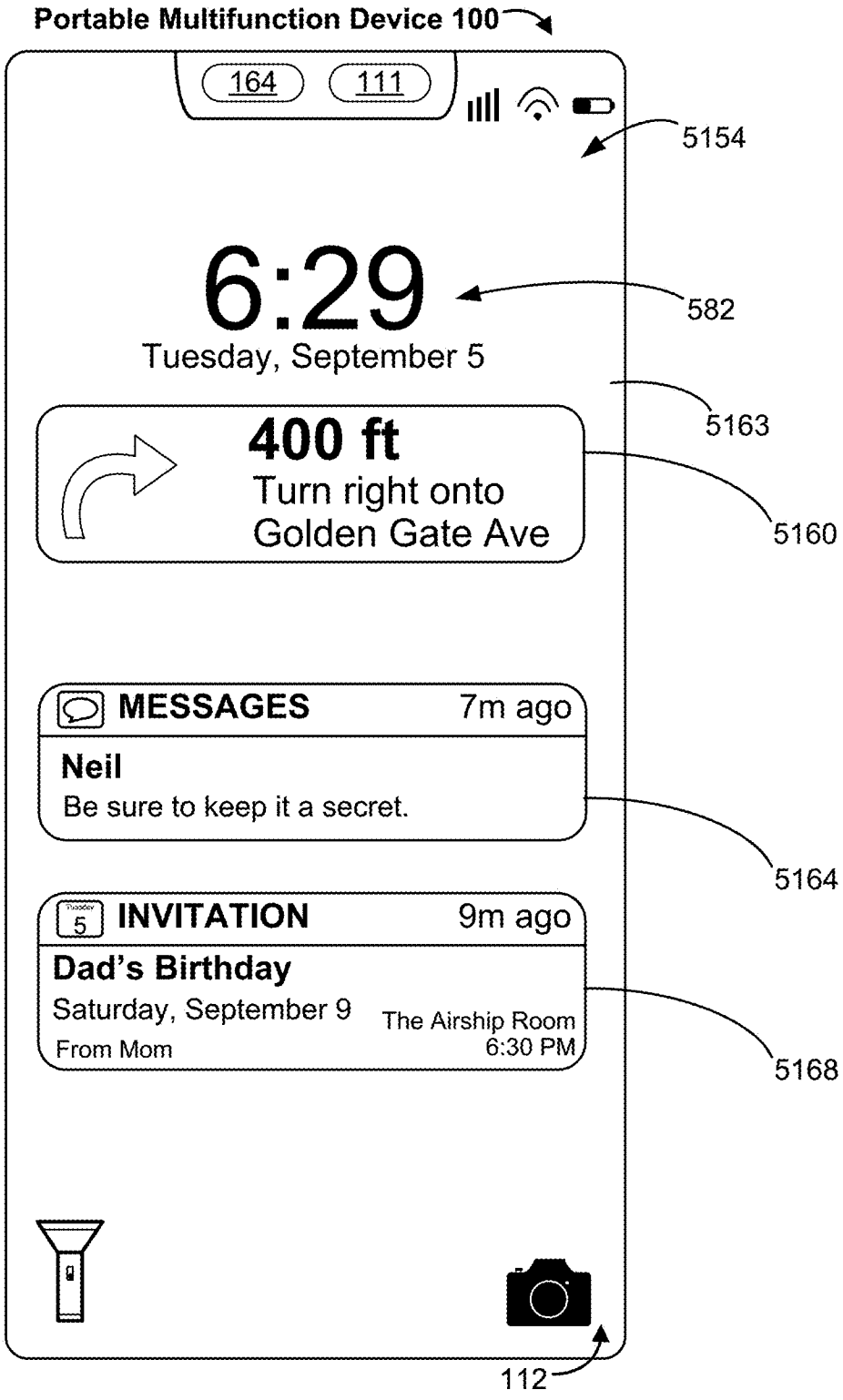

Portable Multifunction Device 100
164
111
5154
6:29
582
Tuesday, September 5
5163
400 ft
Turn right onto
Golden Gate Ave
5160
MESSAGES
7m ago
Neil
Be sure to keep it a secret.
5164
INVITATION
9m ago
Dad's Birthday
Saturday, September 9
The Airship Room
From Mom
6:30 PM
5168
112

Figure 5DG

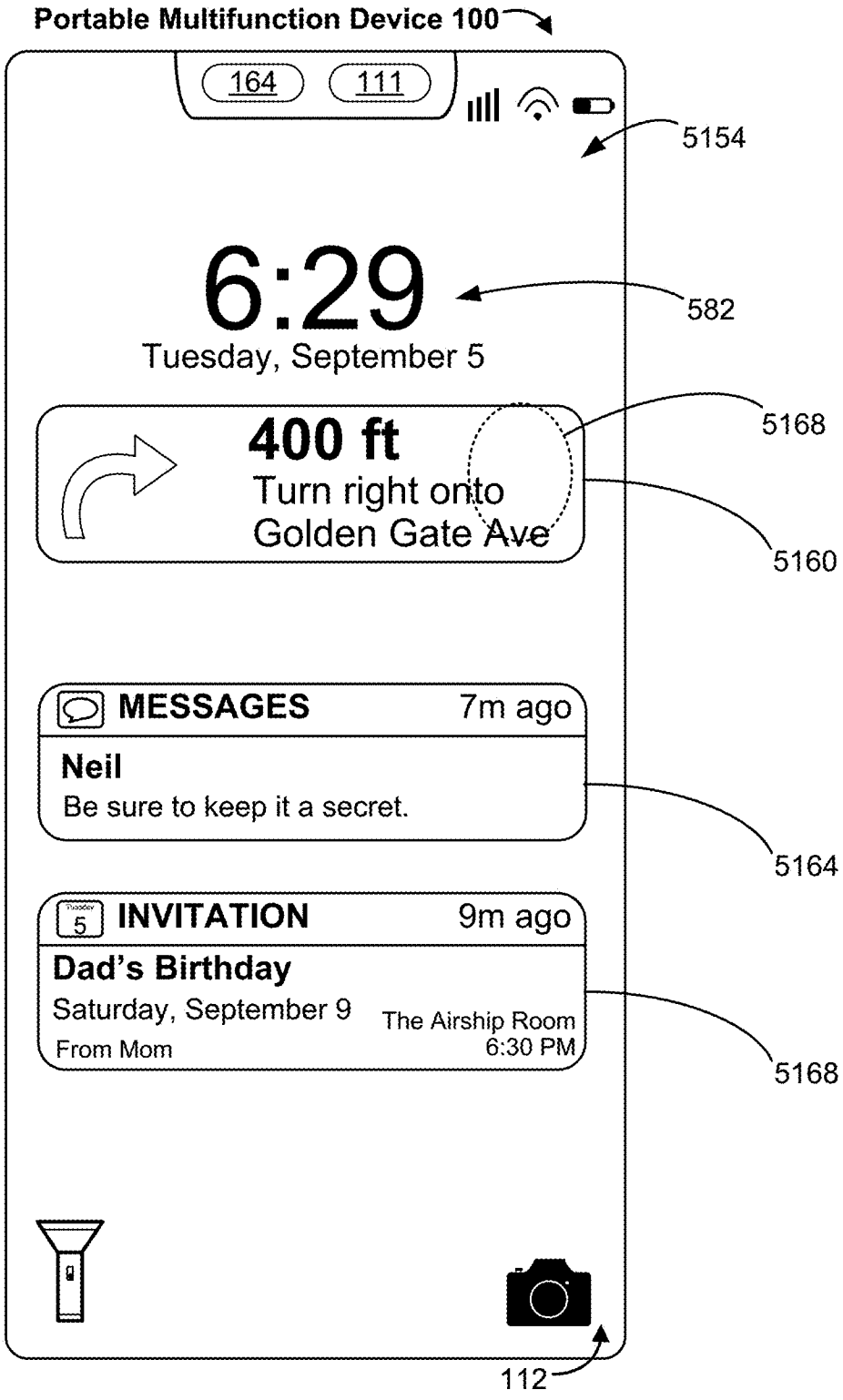


Figure 5DH

Masimo Ex. 1001
IPR Petition - USP 11,106,352



Figure 5DI

Masimo Ex. 1001
IPR Petition - USP 11,106,352

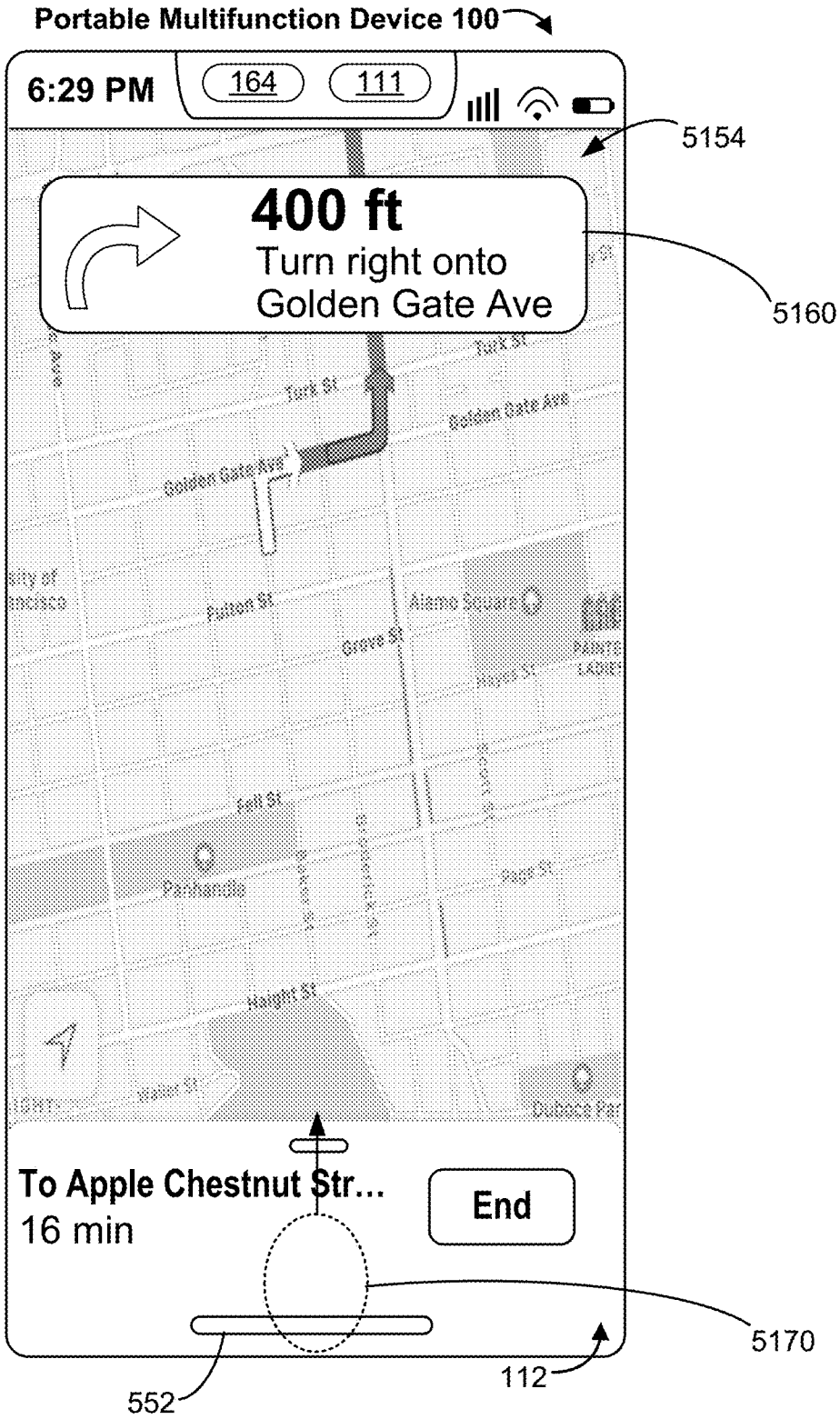


Figure 5DJ

Masimo Ex. 1001
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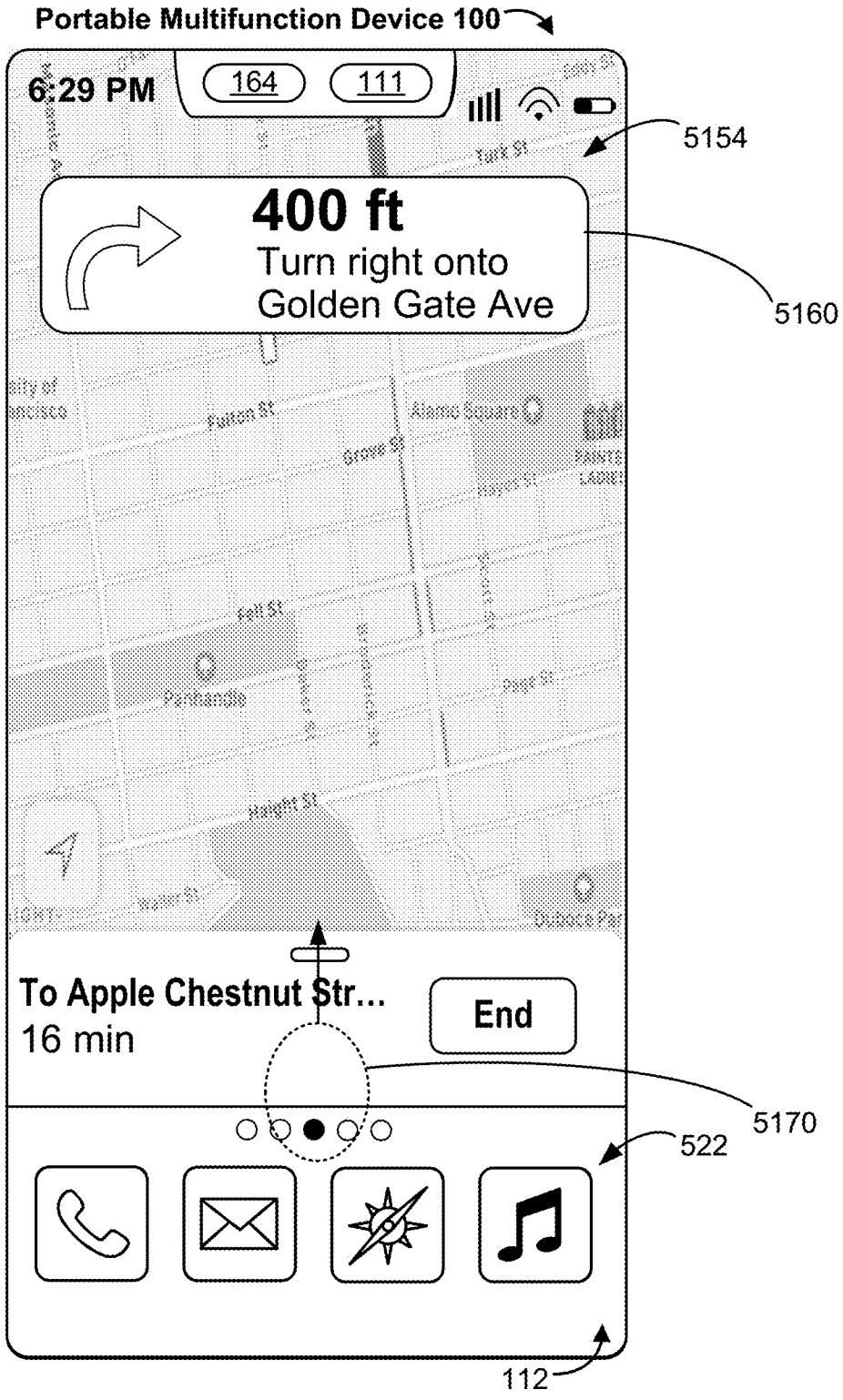


Figure 5DK

Masimo Ex. 1001
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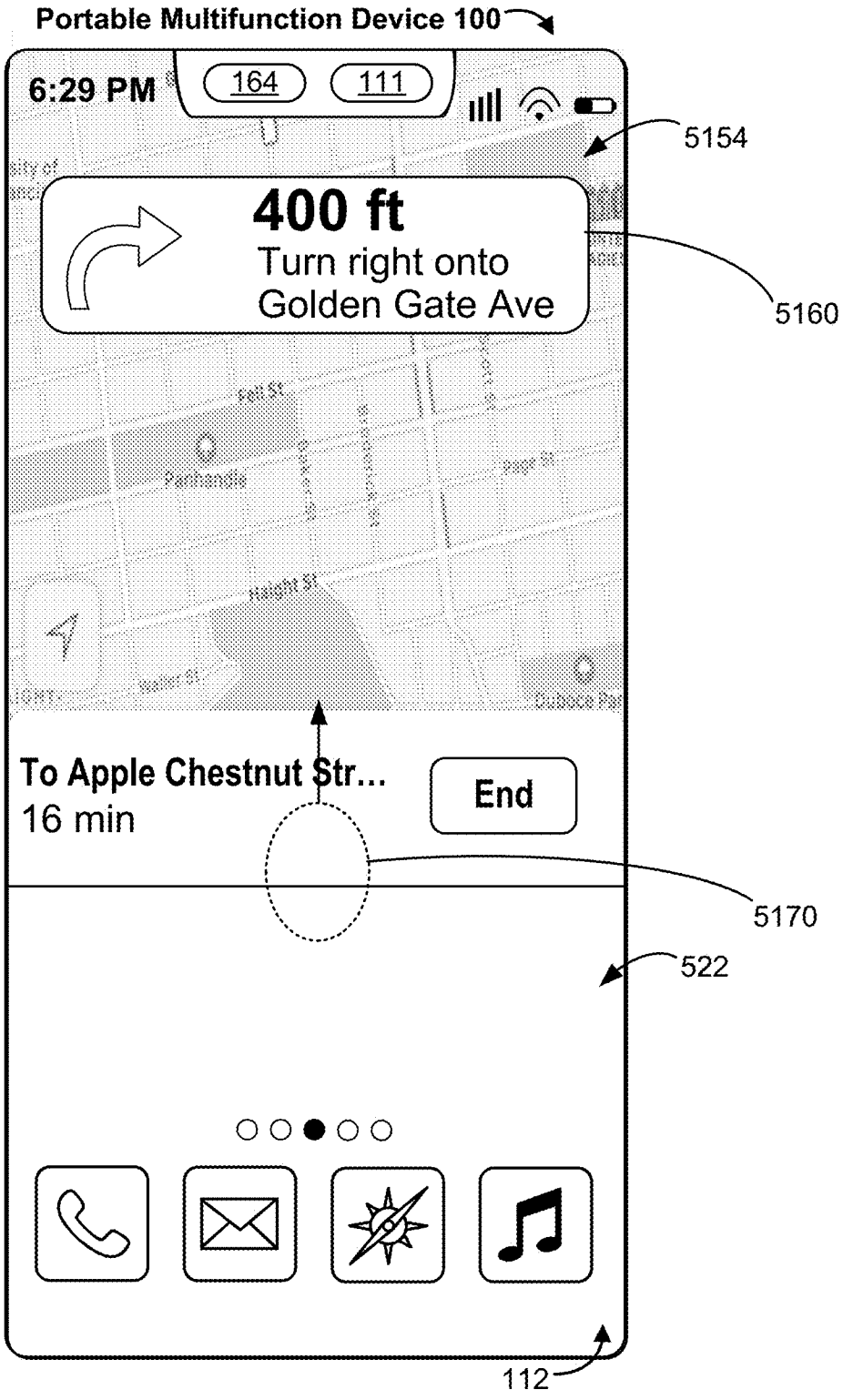


Figure 5DL

Masimo Ex. 1001
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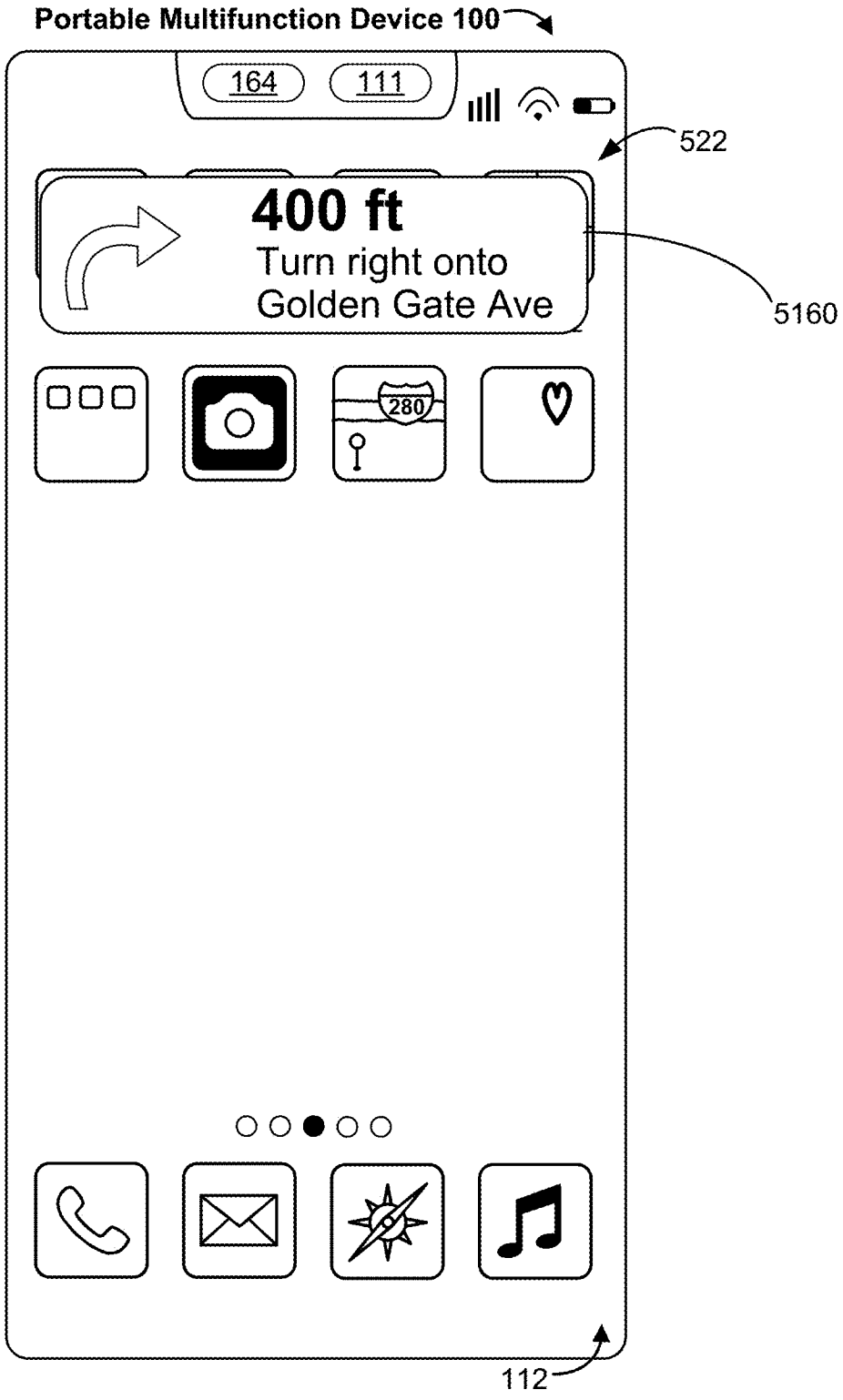

Portable Multifunction Device 100
164
111
522
400 ft
Turn right onto
Golden Gate Ave
5160
280
112

Figure 5DM

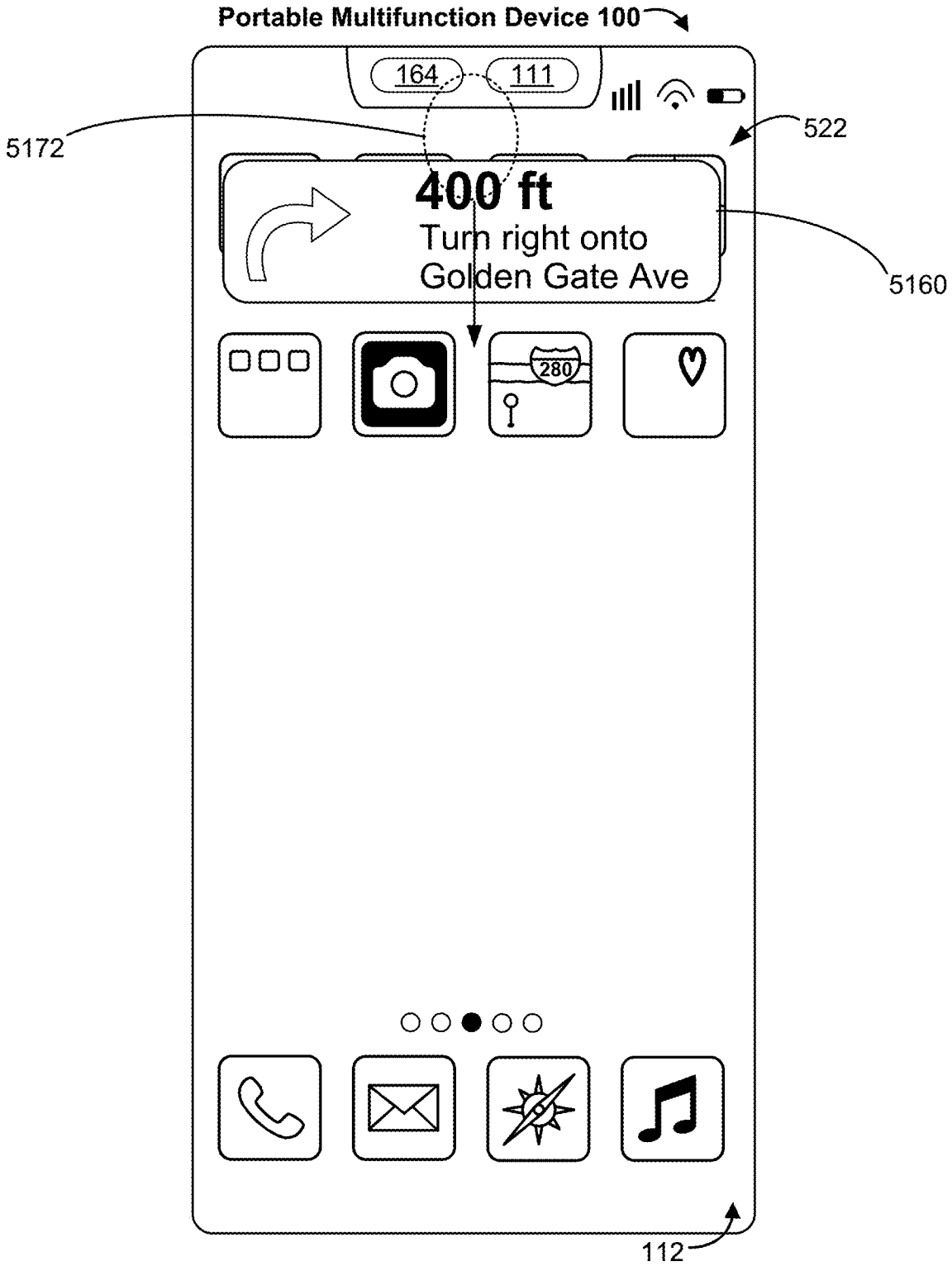

Portable Multifunction Device 100
164
111
5172
522
400 ft
Turn right onto
Golden Gate Ave
5160
280
112

Figure 5DN

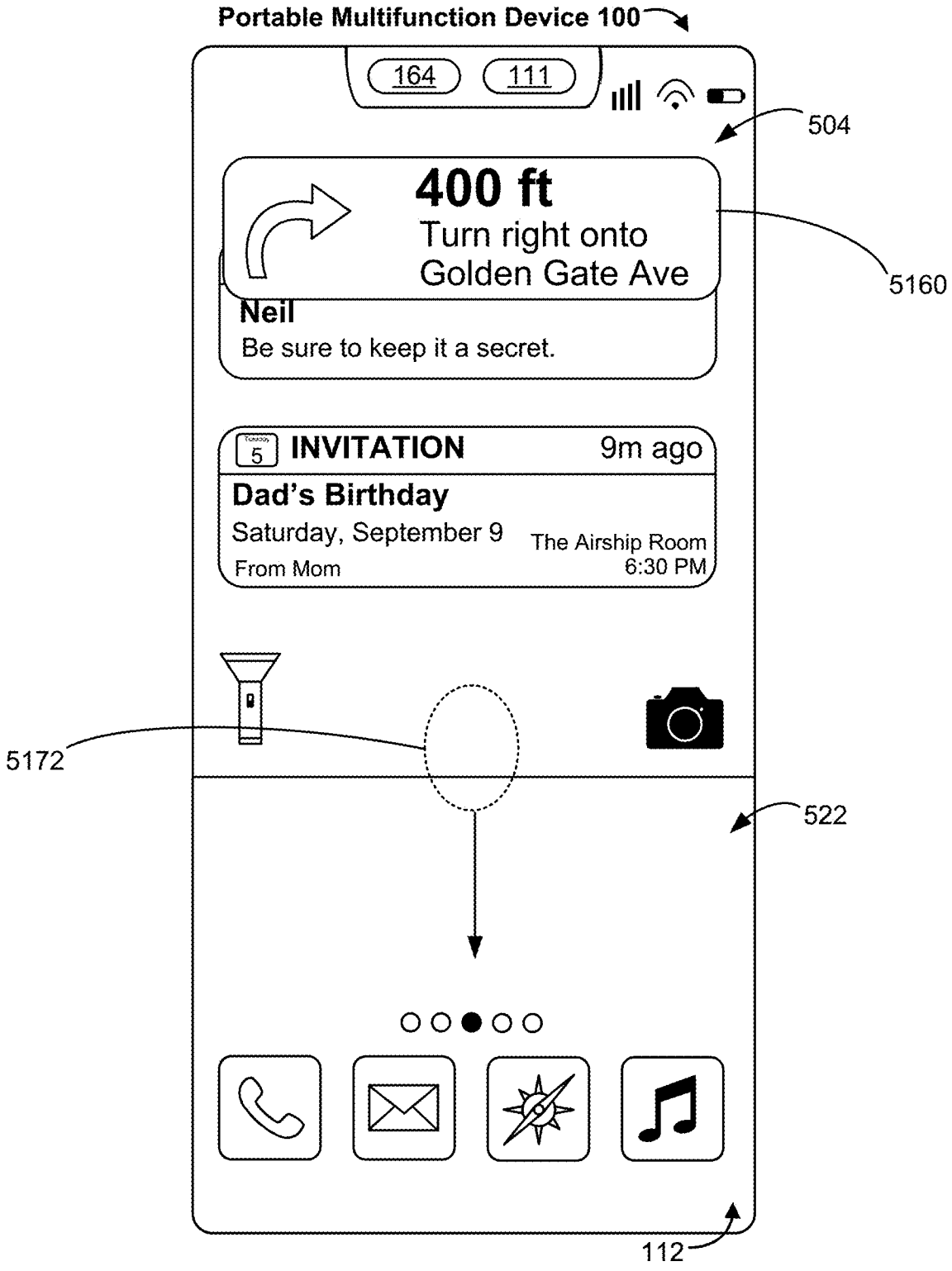


Figure 5DO

Masimo Ex. 1001
IPR Petition - USP 11,106,352


Portable Multifunction Device 100
164
111
504
6:29
Tuesday, September 5
400 ft
Turn right onto
Golden Gate Ave
5160
MESSAGES
7m ago
Neil
Be sure to keep it a secret.
5164
INVITATION
9m ago
Dad's Birthday
Saturday, September 9
The Airship Room
From Mom
6:30 PM
5168
112

Figure 5DP

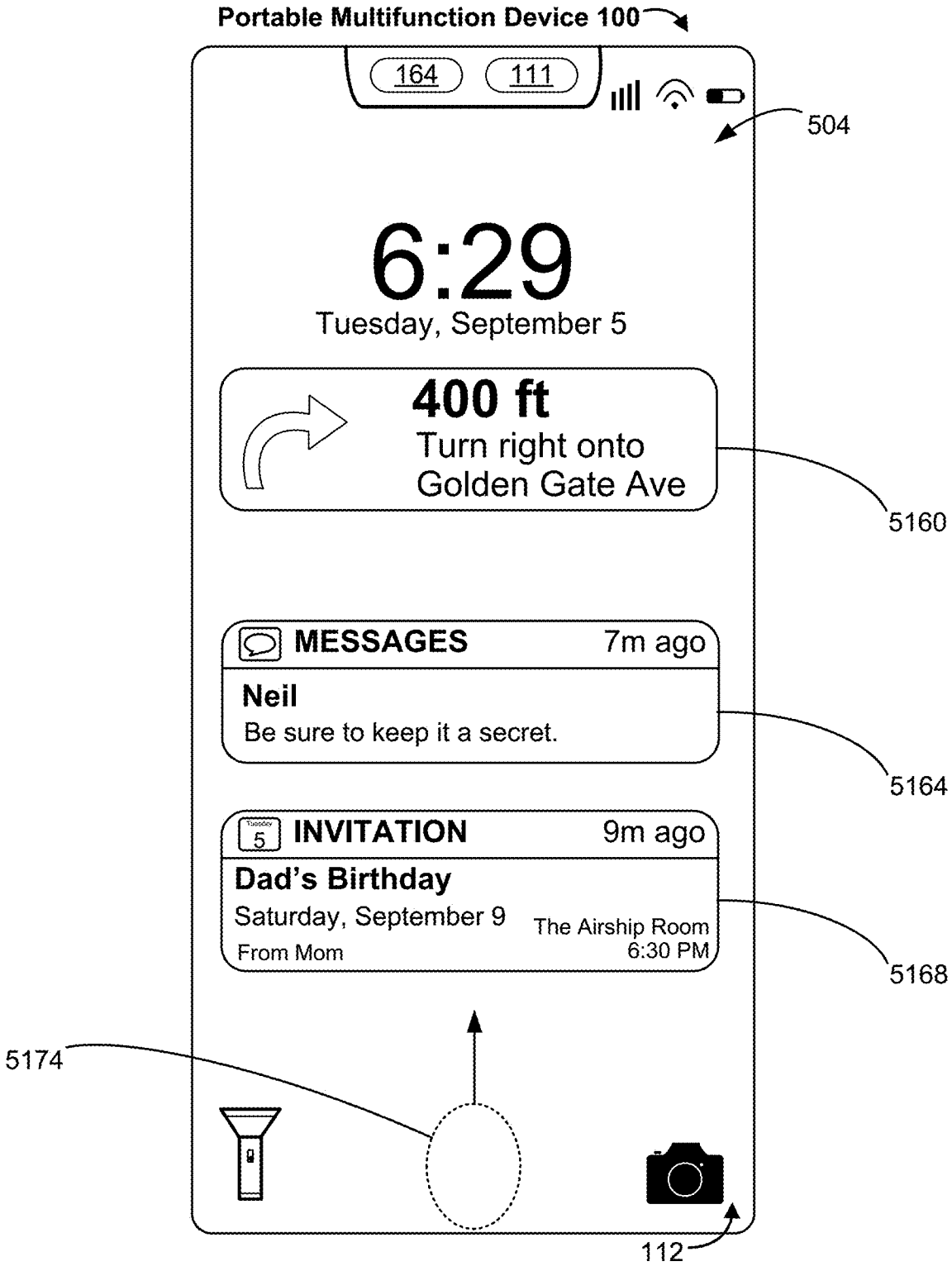


Figure 5DQ

Masimo Ex. 1001
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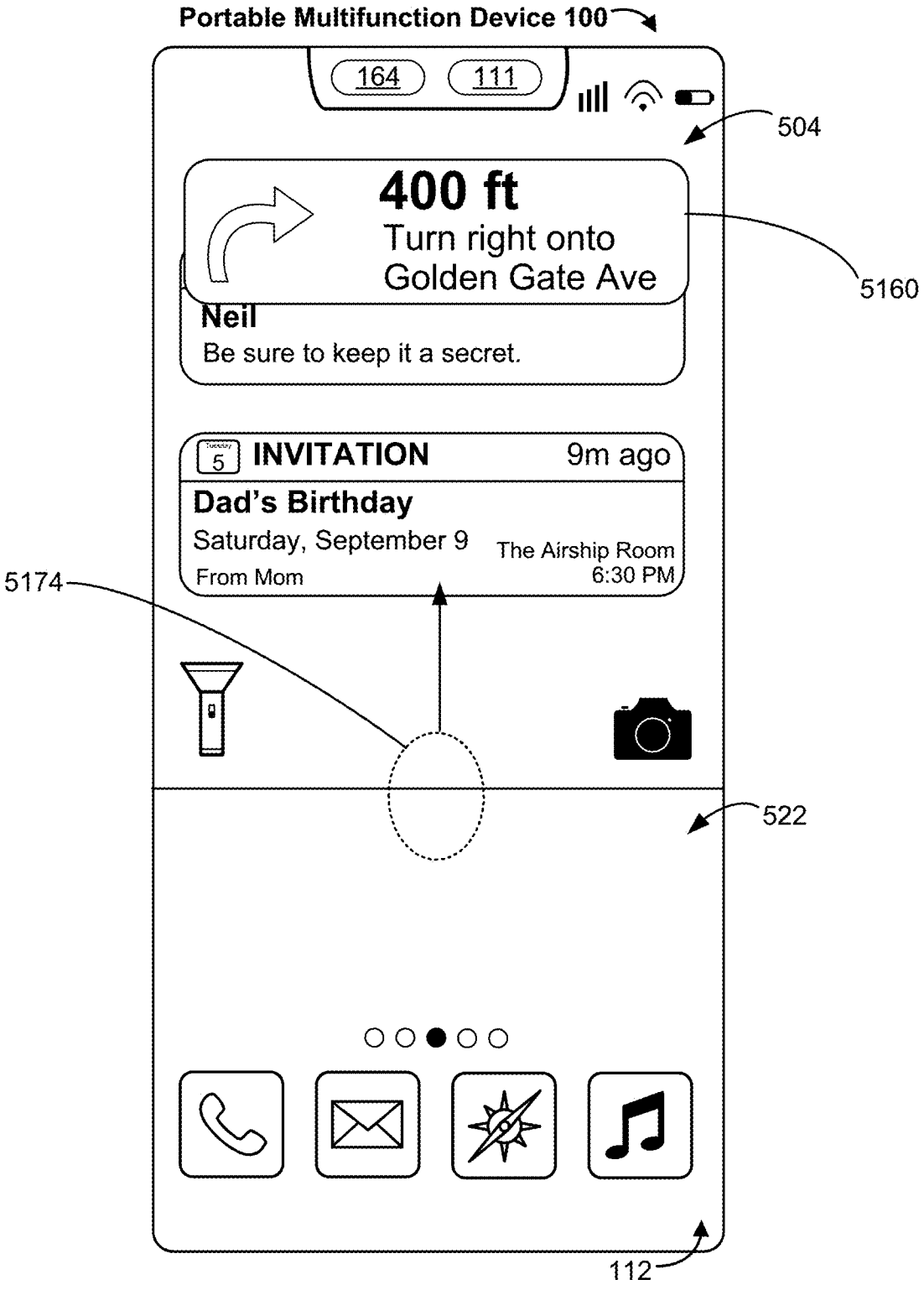


Figure 5DR

Masimo Ex. 1001
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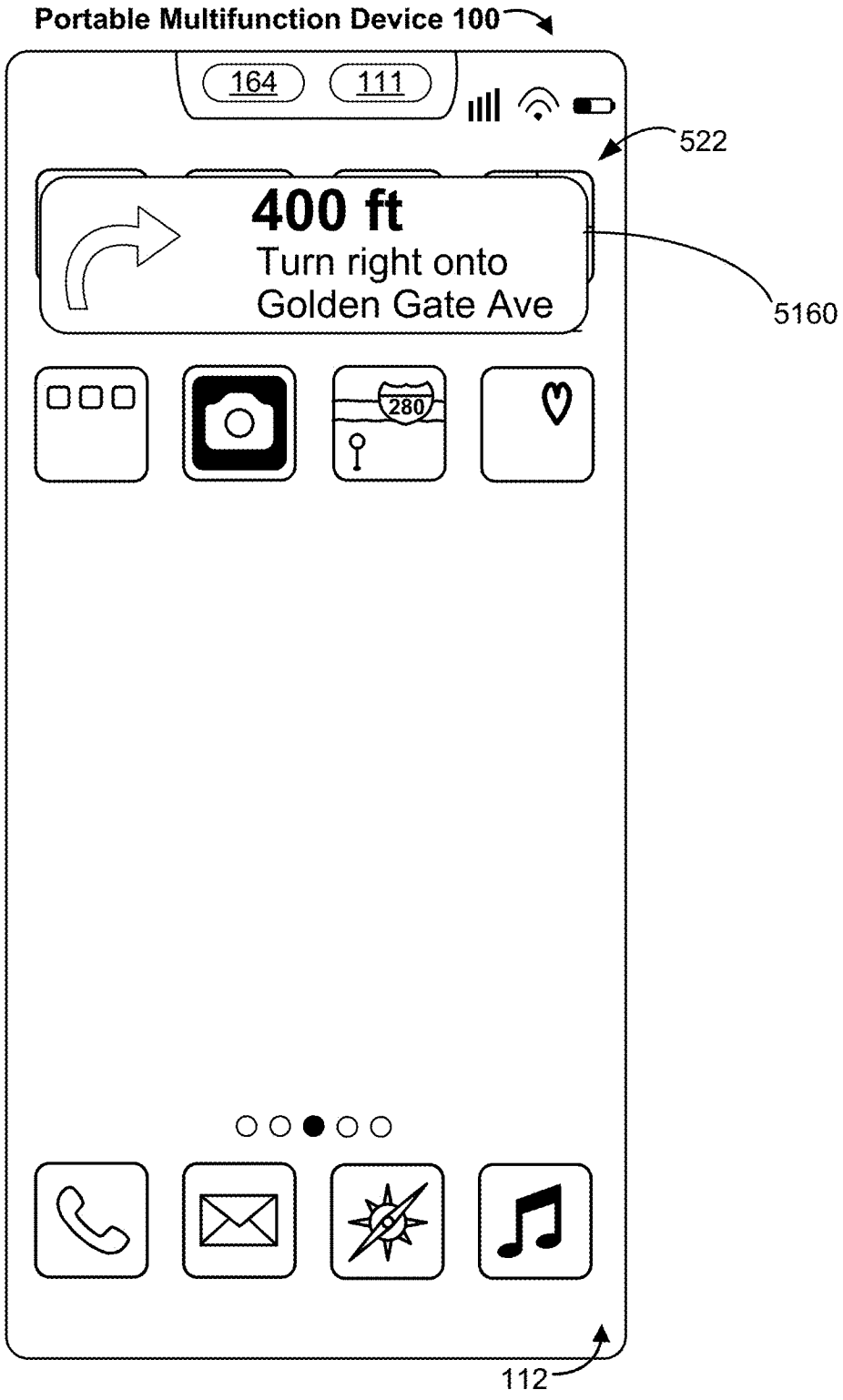


Figure 5DS

Masimo Ex. 1001
IPR Petition - USP 11,106,352

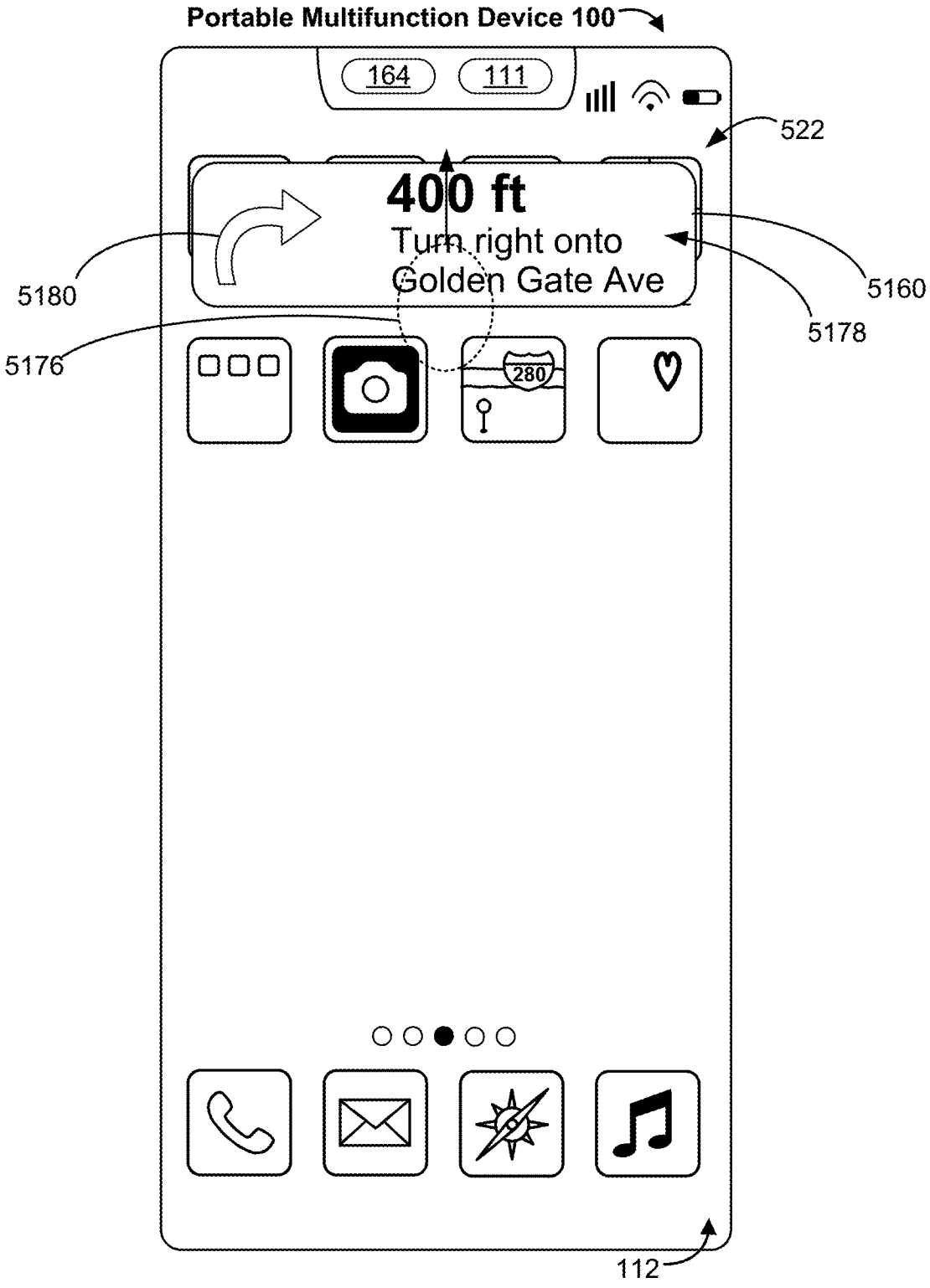

Portable Multifunction Device 100
164
111
522
400 ft
Turn right onto
Golden Gate Ave
5180
5160
5178
5176
280
112

Figure 5DT

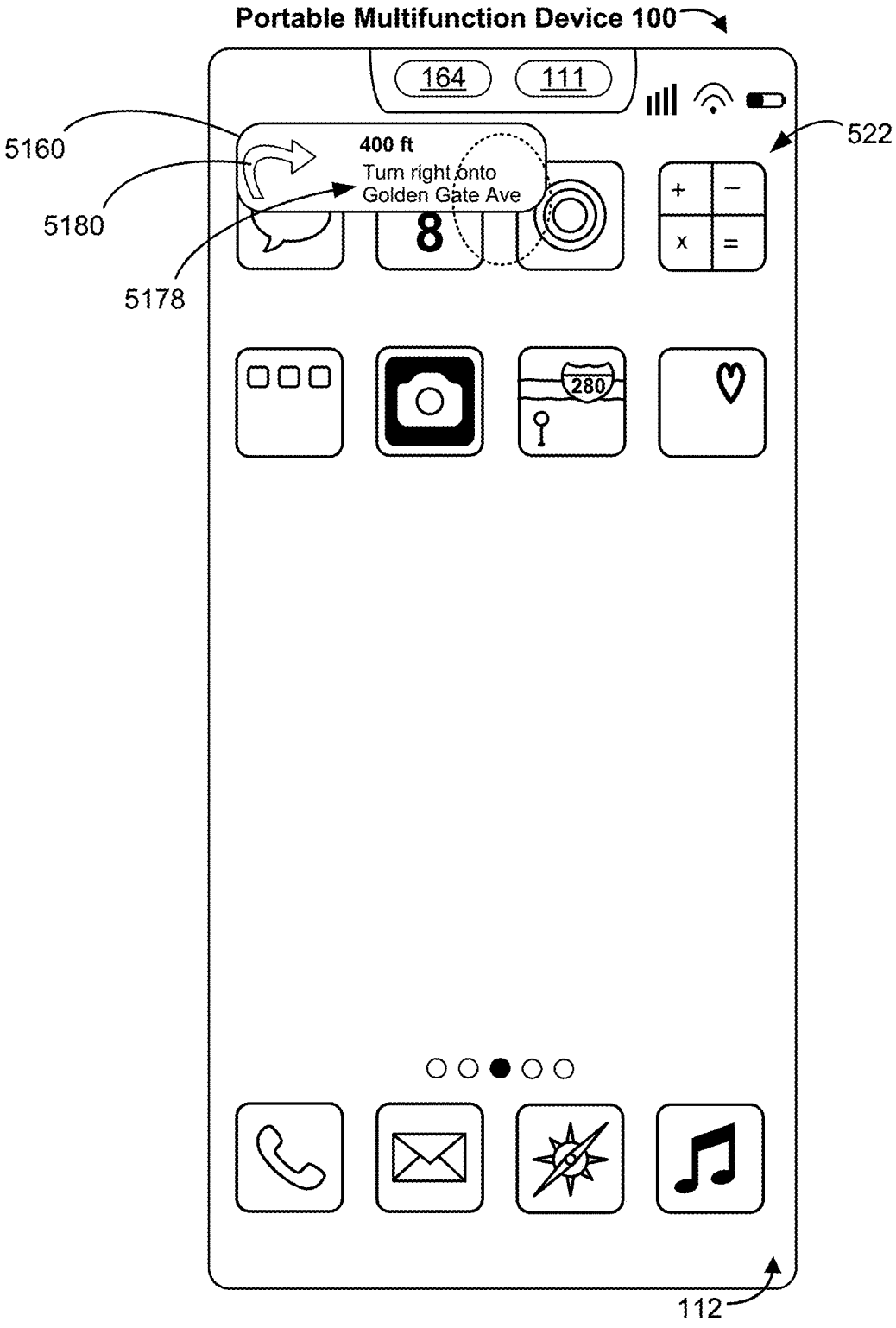


Figure 5DU

Masimo Ex. 1001
IPR Petition - USP 11,106,352

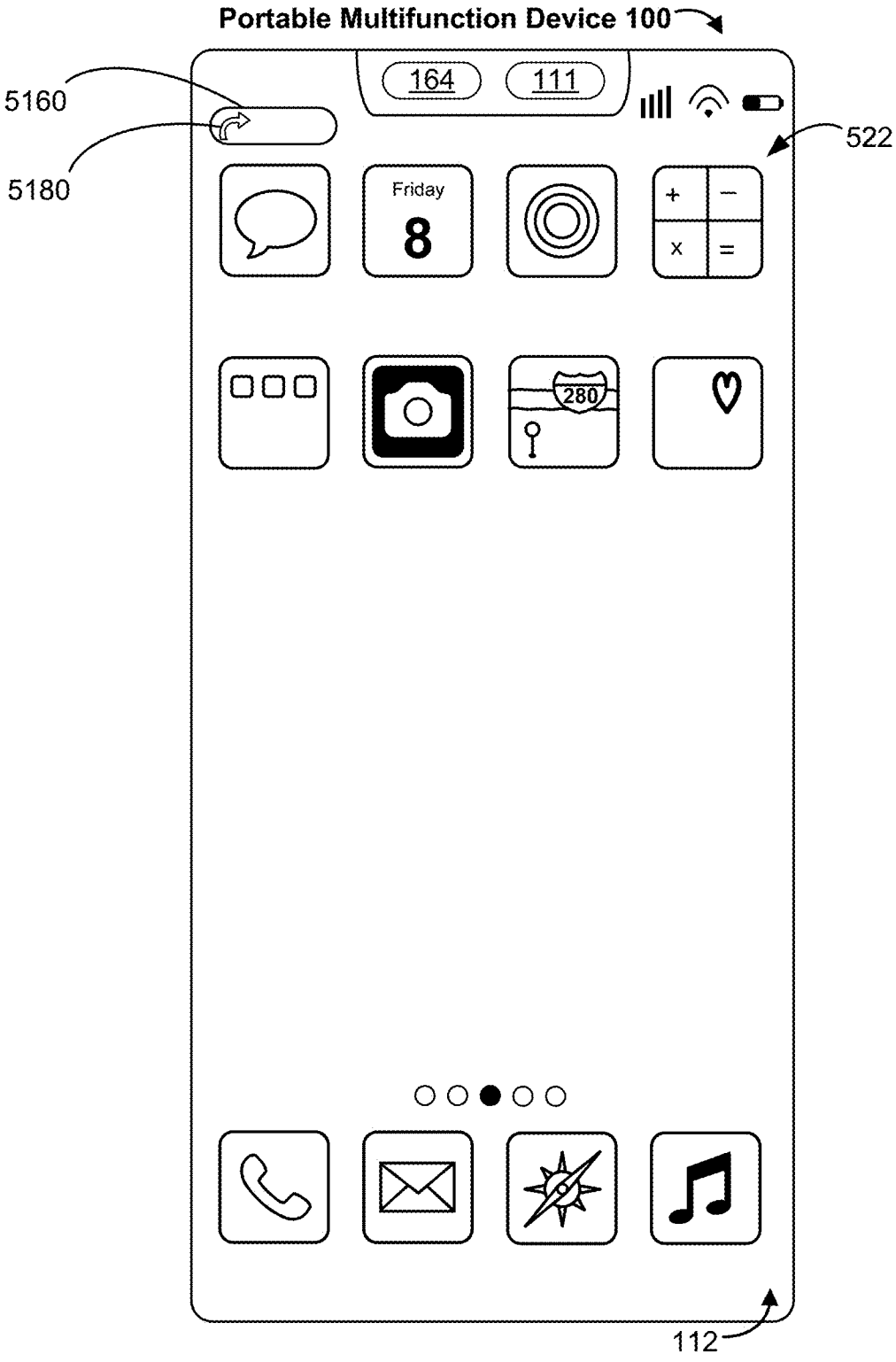

Portable Multifunction Device 100
164
111
5160
5180
522
Friday
8
280
112

Figure 5DV

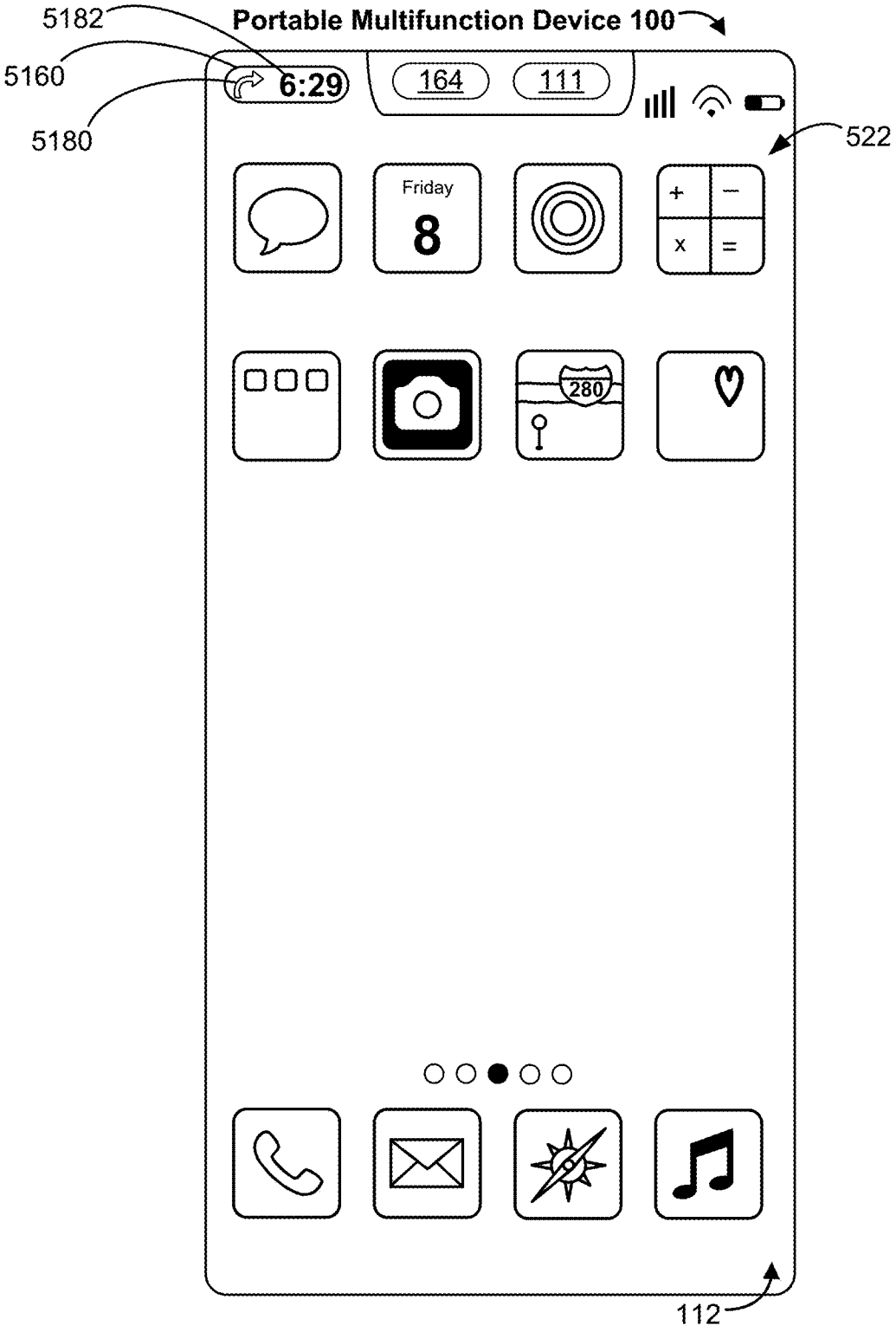

5182
Portable Multifunction Device 100
5160
6:29
164
111
5180
522
Friday
8
280
112

Figure 5DW

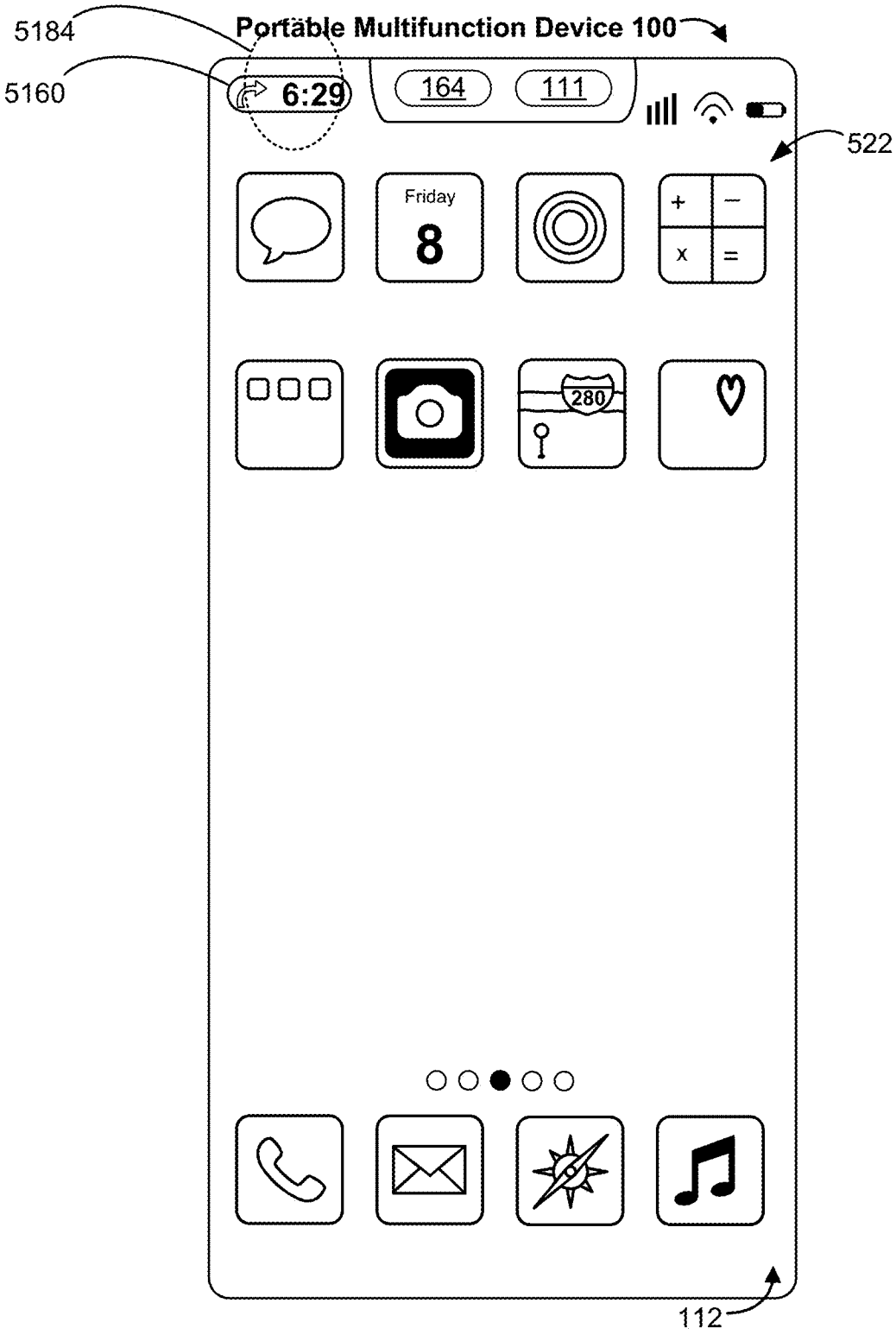

5184
Portable Multifunction Device 100
5160
6:29
164
111
522
Friday
8
280
112

Figure 5DX



Figure 5DY

Masimo Ex. 1001
IPR Petition - USP 11,106,352

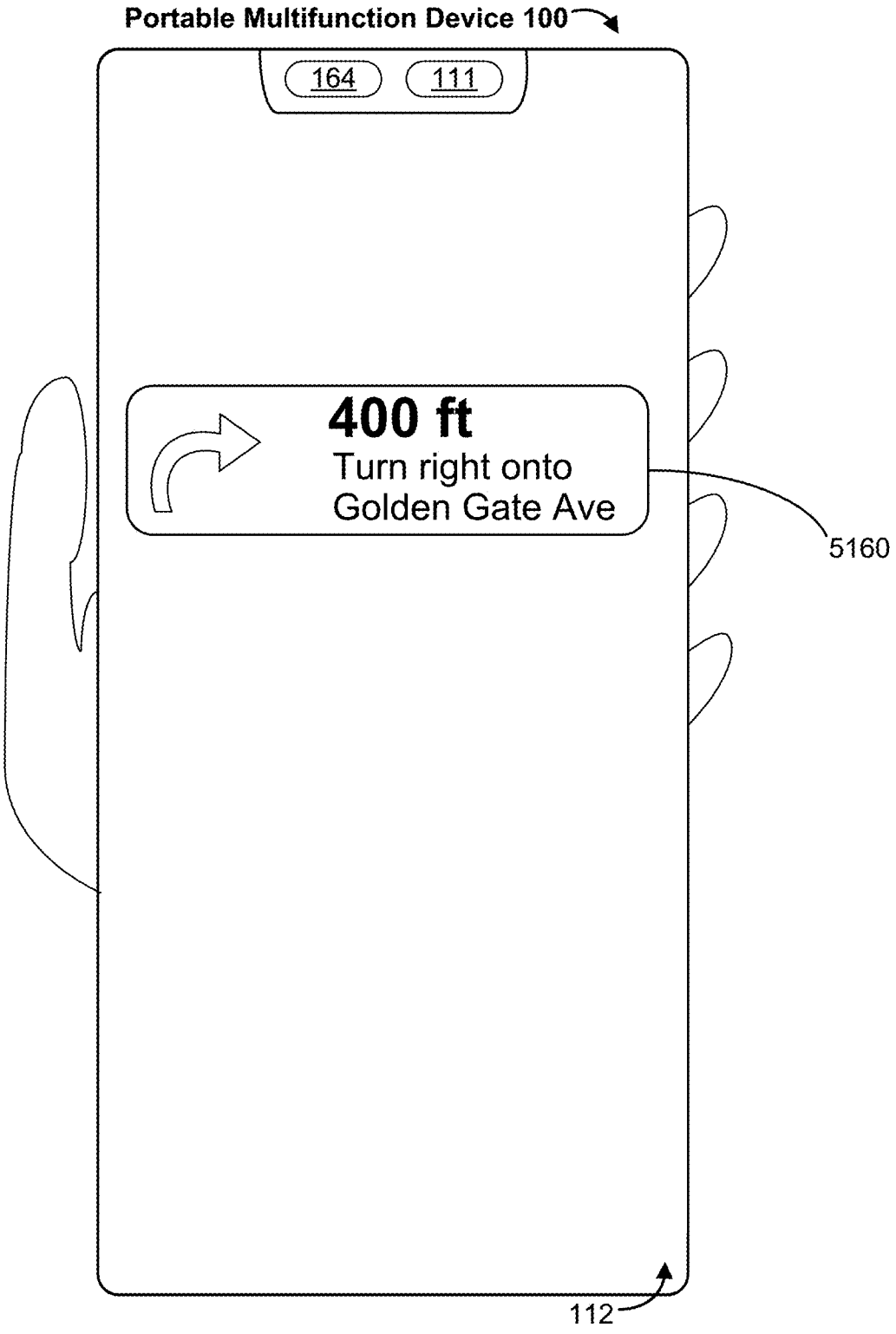


Figure 5DZ

Masimo Ex. 1001
IPR Petition - USP 11,106,352

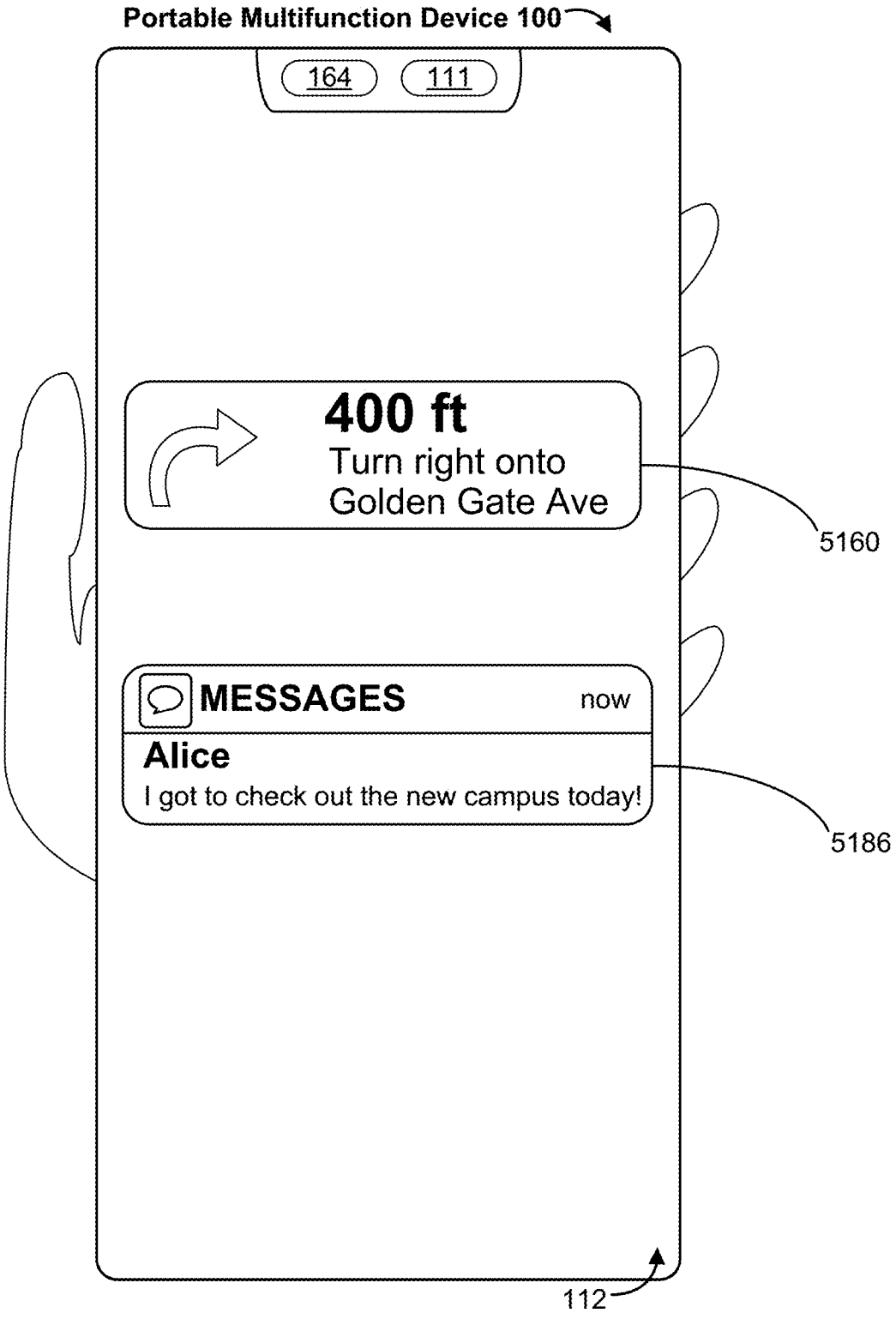


Figure 5EA

Masimo Ex. 1001
IPR Petition - USP 11,106,352

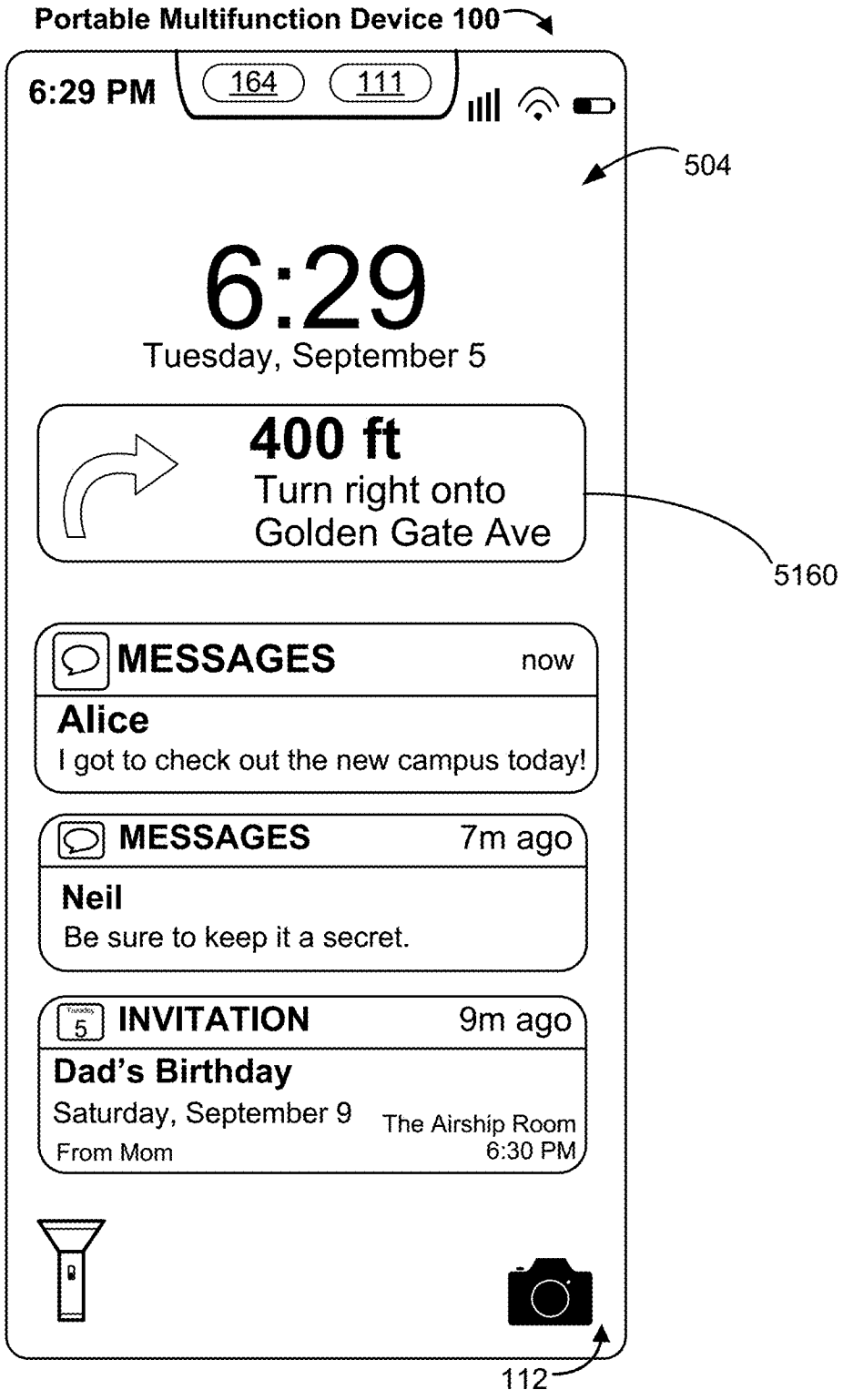


Figure 5EB

Masimo Ex. 1001
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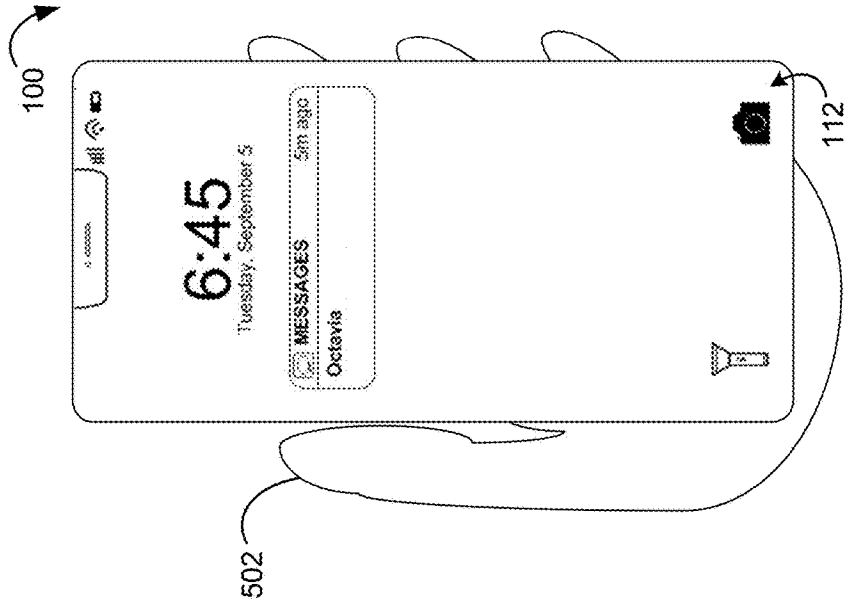


Figure 5EC4

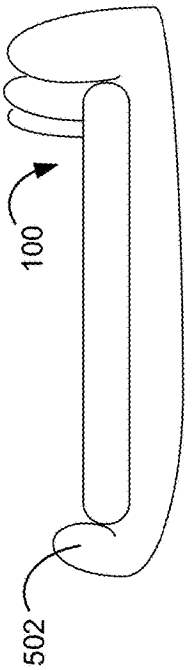


Figure 5EC1

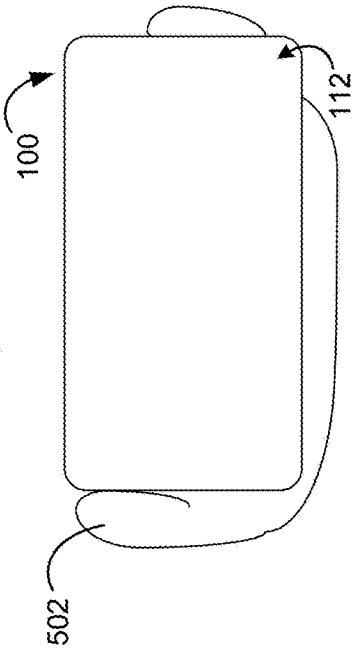


Figure 5EC2

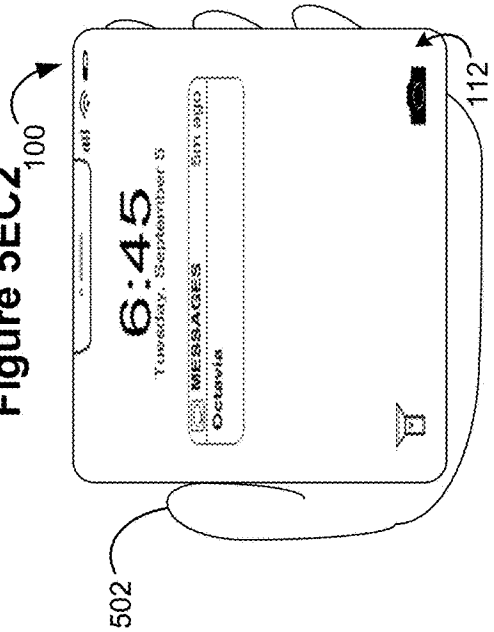


Figure 5EC3

Masimo Ex. 1001
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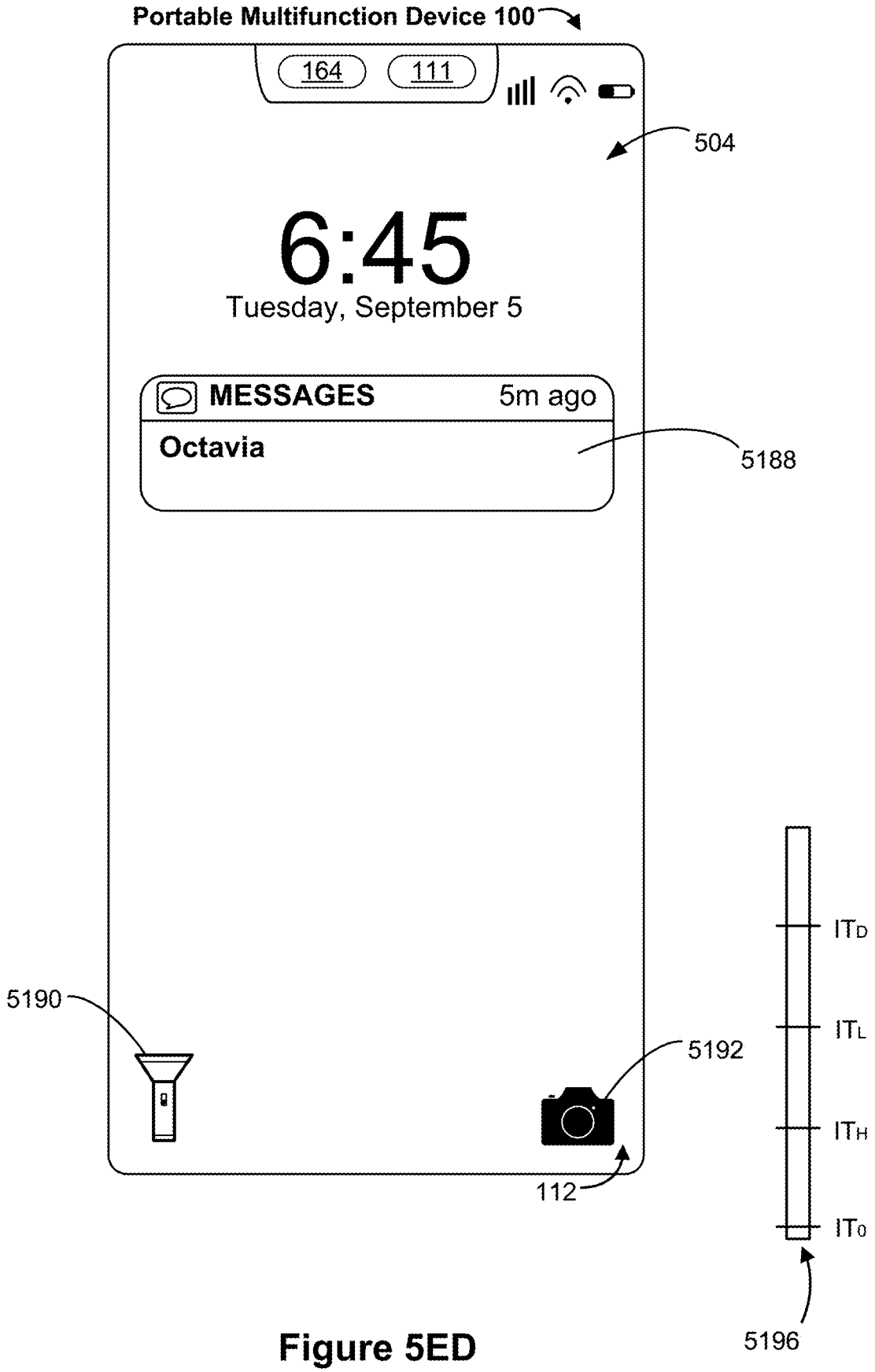


Figure 5ED

Masimo Ex. 1001
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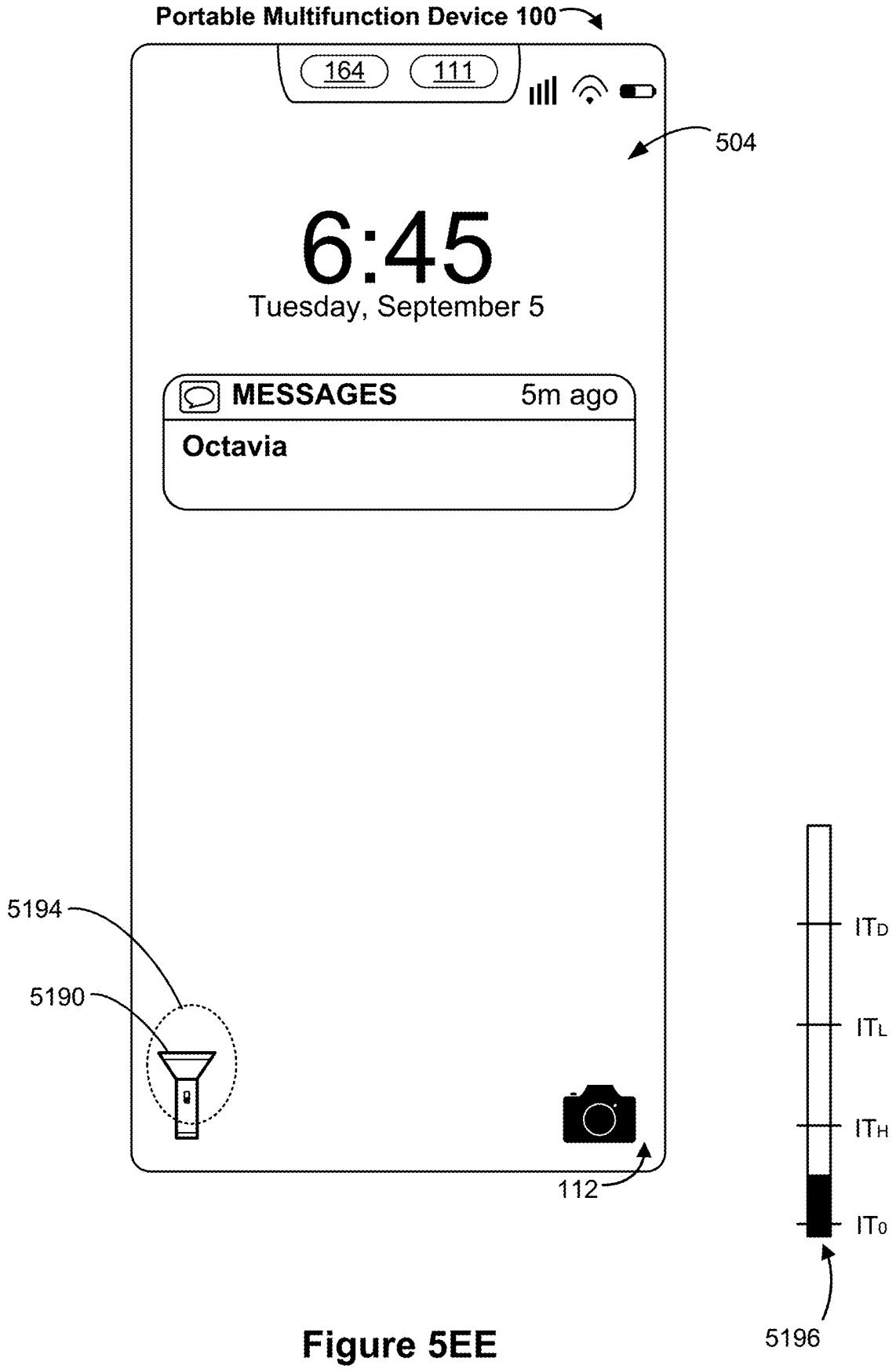

Portable Multifunction Device 100
164
111
504
6:45
Tuesday, September 5
MESSAGES
5m ago
Octavia
5194
5190
112
ITD
ITL
ITH
ITO
5196

Figure 5EE

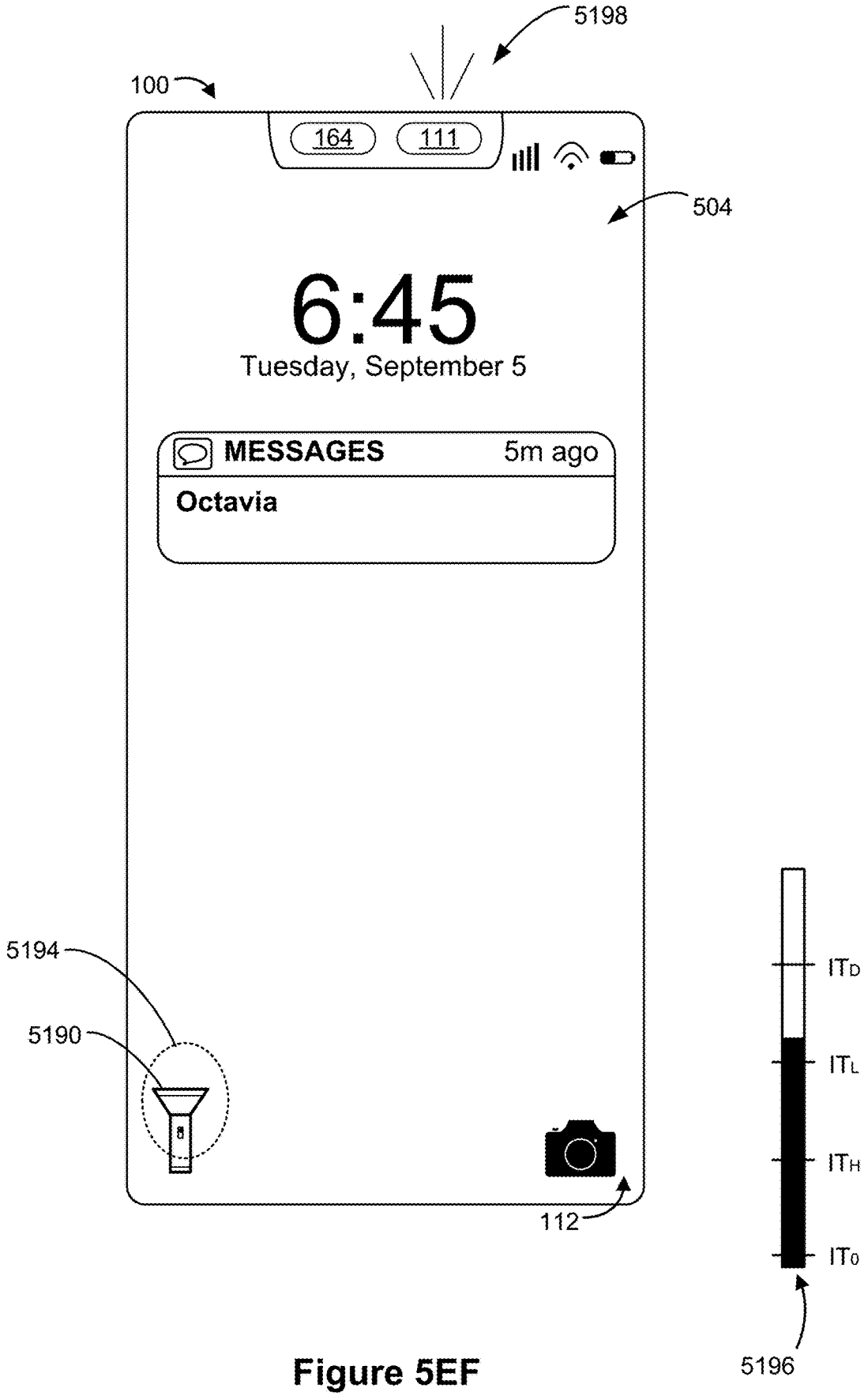


Figure 5EF

Masimo Ex. 1001
IPR Petition - USP 11,106,352

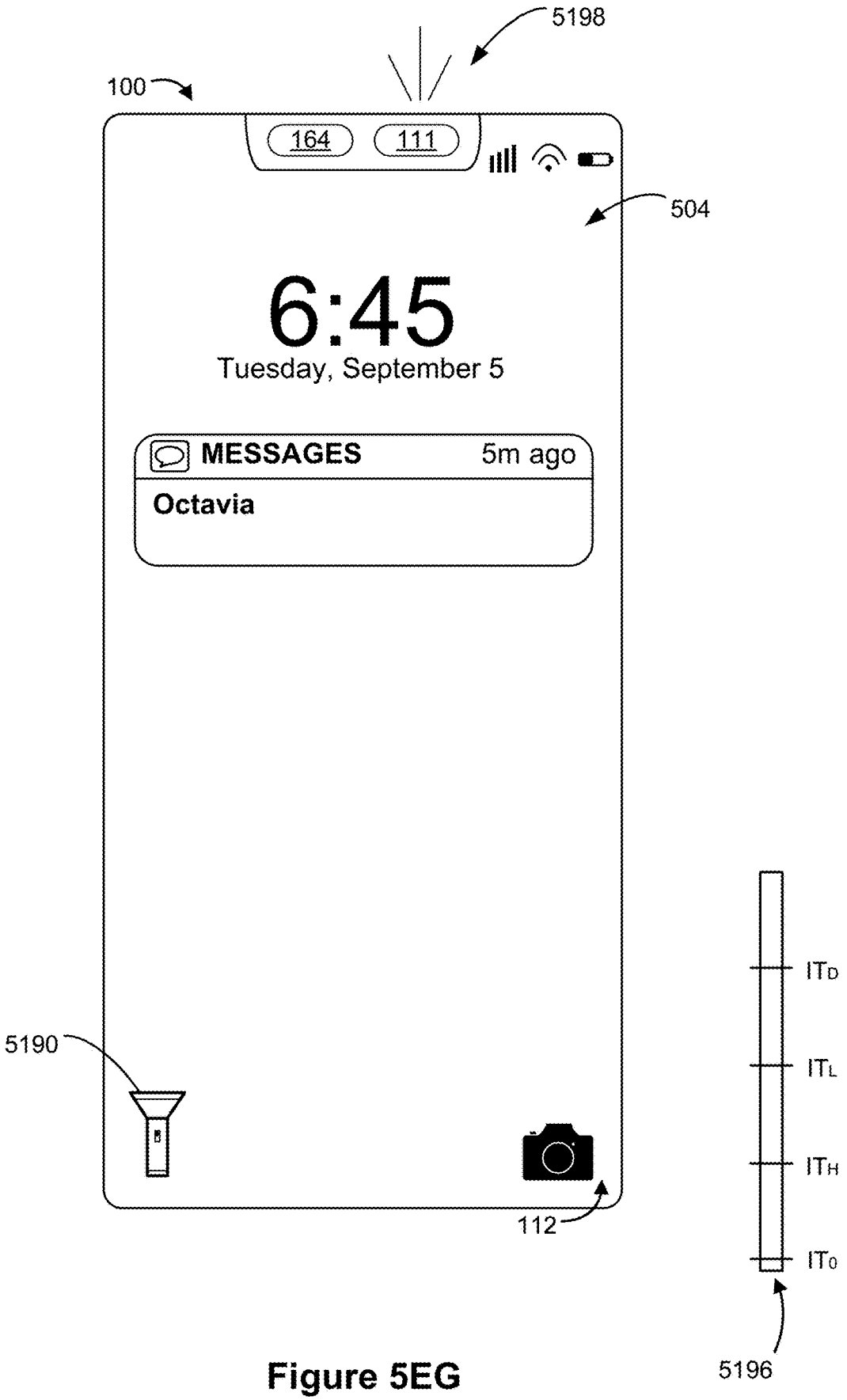


Figure 5EG

Masimo Ex. 1001
IPR Petition - USP 11,106,352

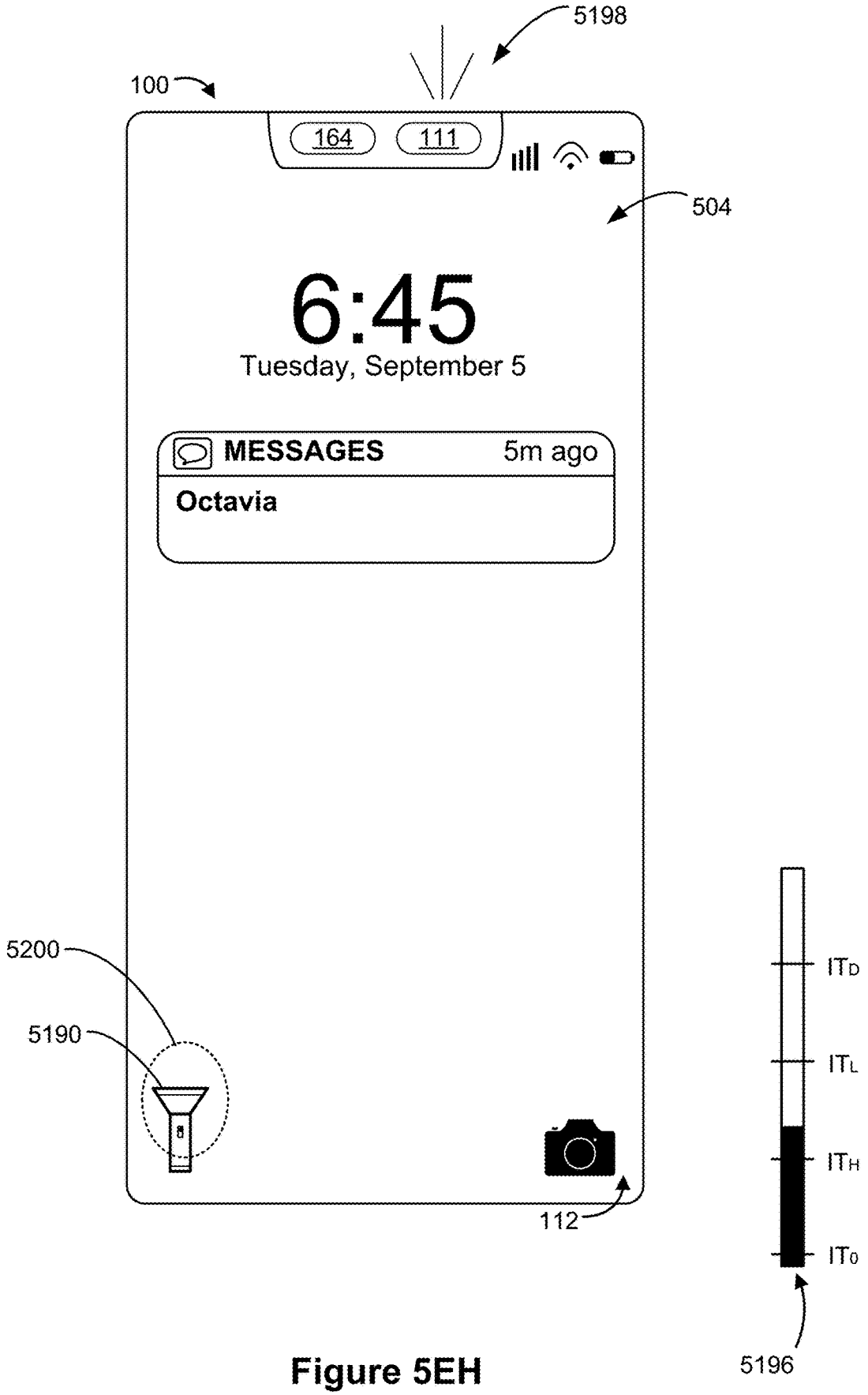


Figure 5EH

Masimo Ex. 1001
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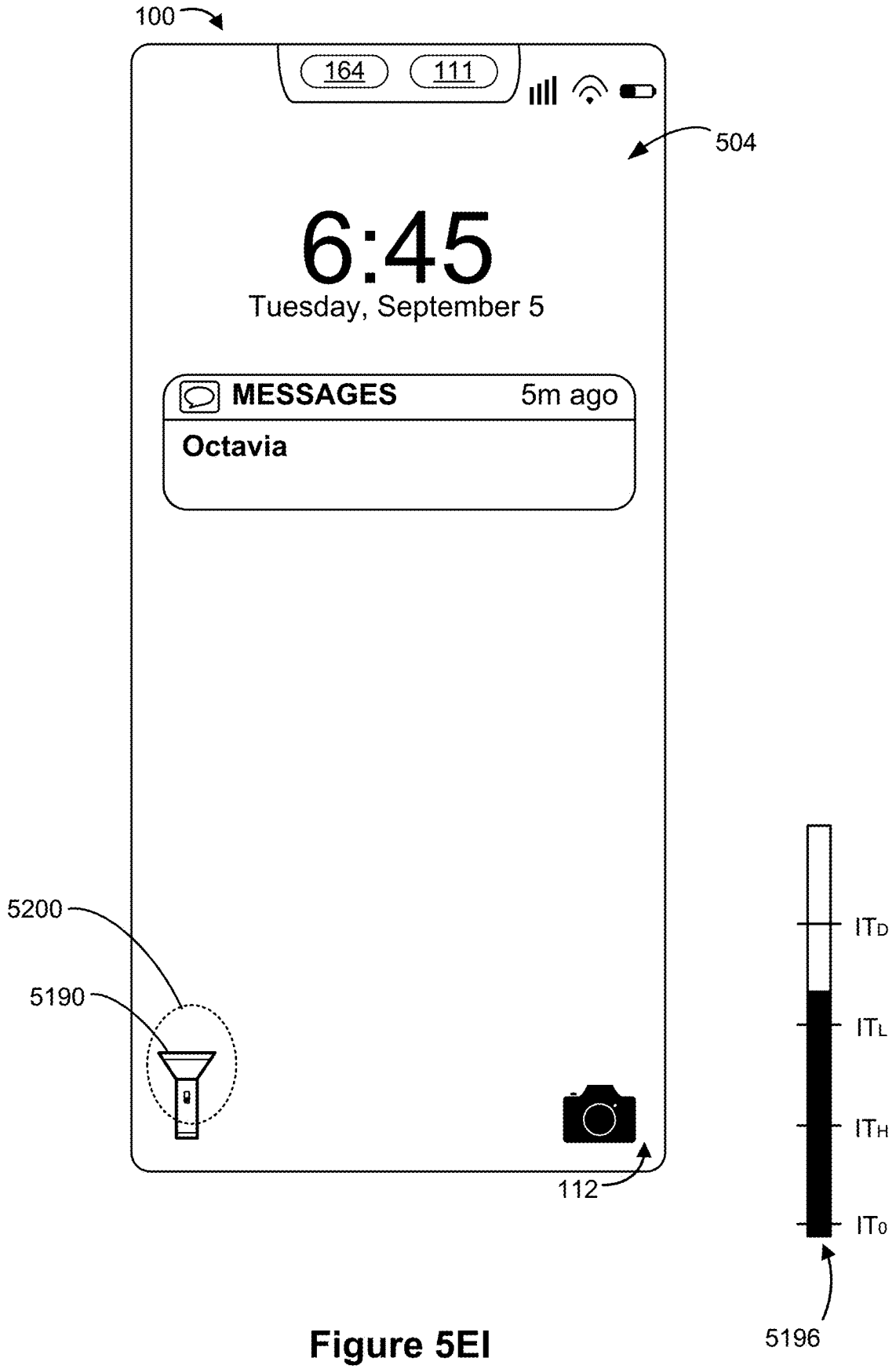

100
164
111
504
6:45
Tuesday, September 5
MESSAGES
5m ago
Octavia
5200
5190
112
ITD
ITL
ITH
ITO
5196

Figure 5EI

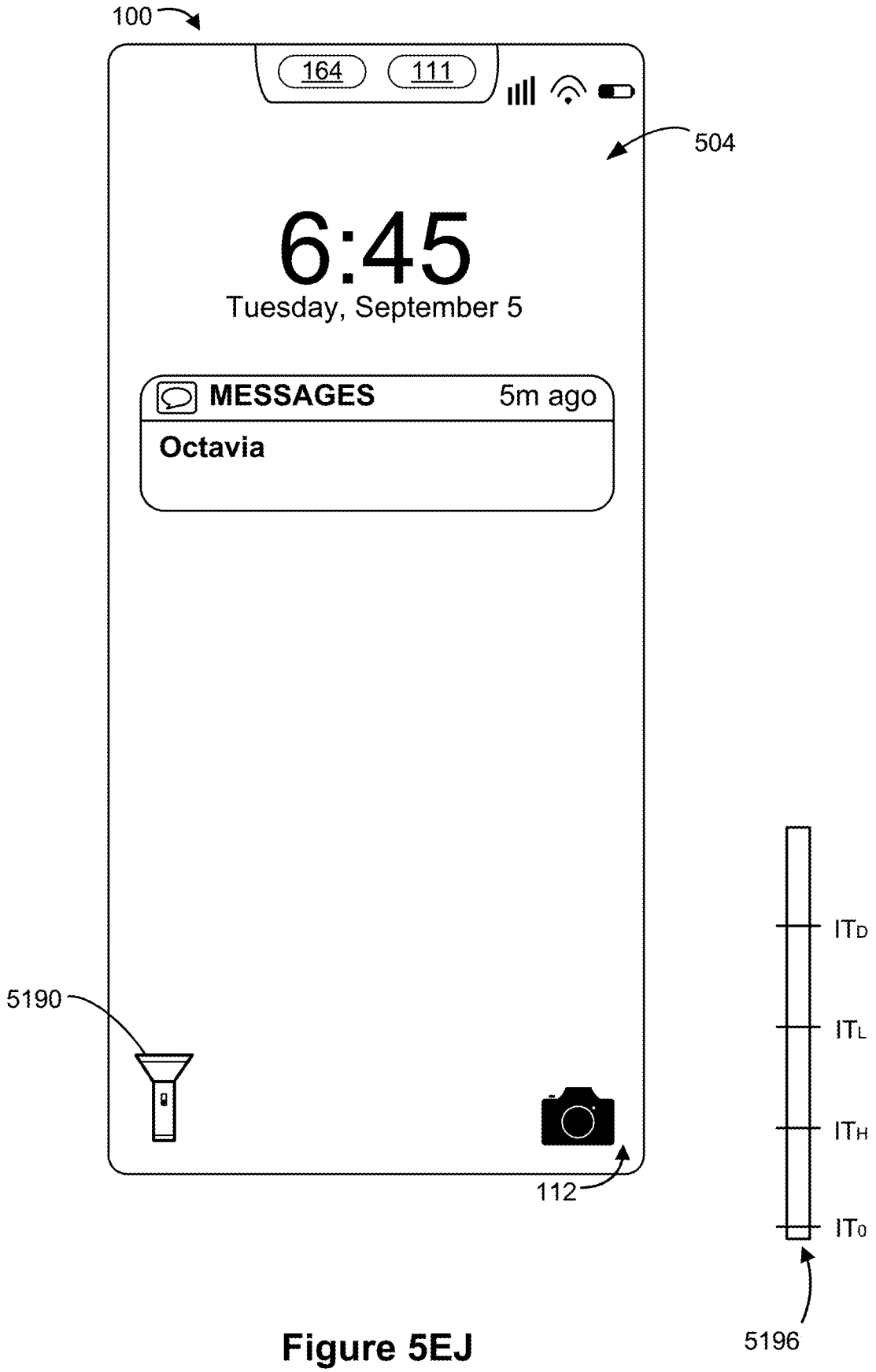

100
164
111
504
6:45
Tuesday, September 5
MESSAGES
5m ago
Octavia
5190
112
ITD
ITL
ITH
ITO
5196

Figure 5EJ

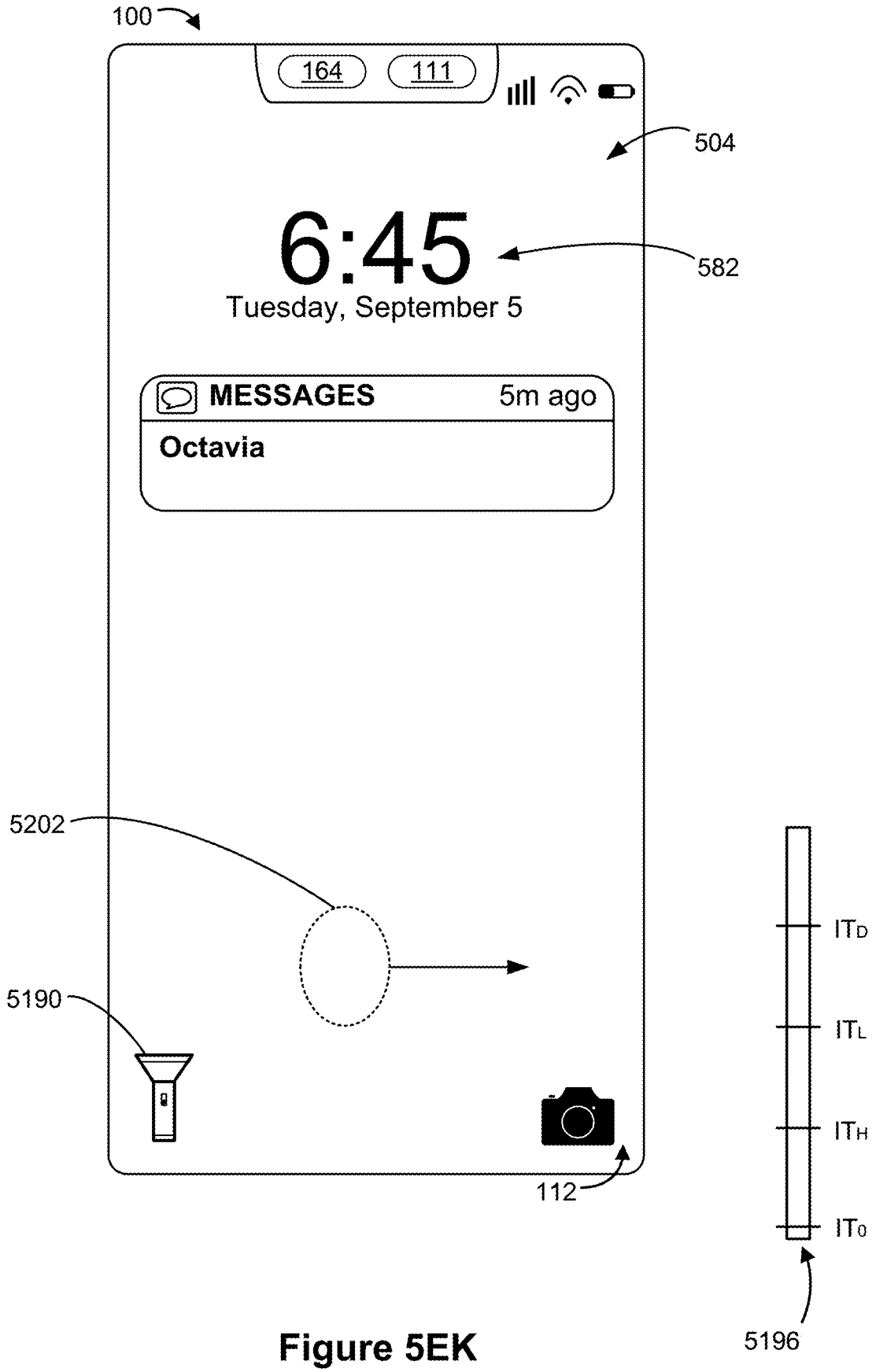


Figure 5EK

Masimo Ex. 1001
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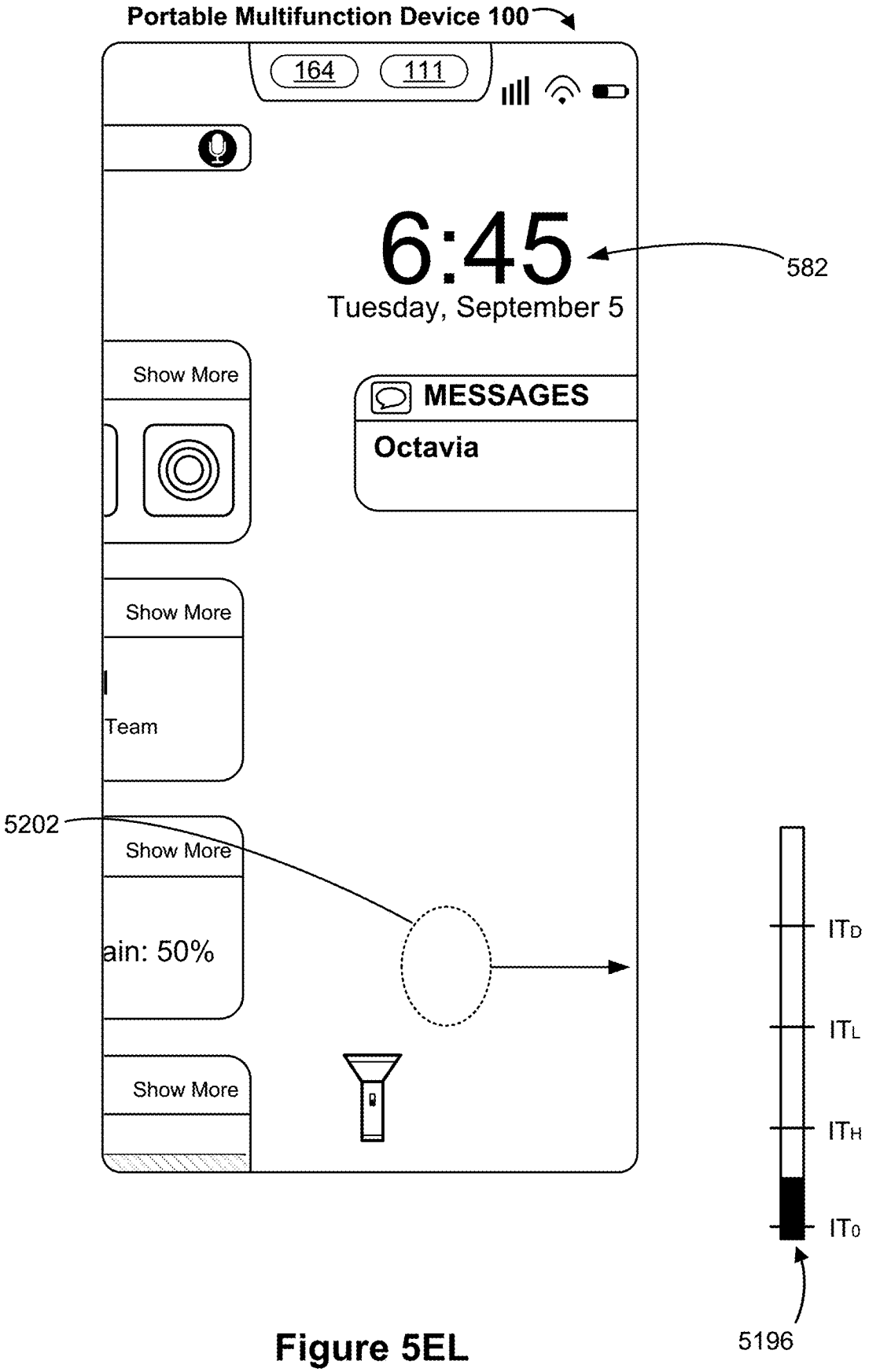

Portable Multifunction Device 100
164
111
6:45
582
Tuesday, September 5
Show More
MESSAGES
Octavia
Show More
Team
5202
Show More
ain: 50%
Show More
ITD
ITL
ITH
ITO
5196

Figure 5EL

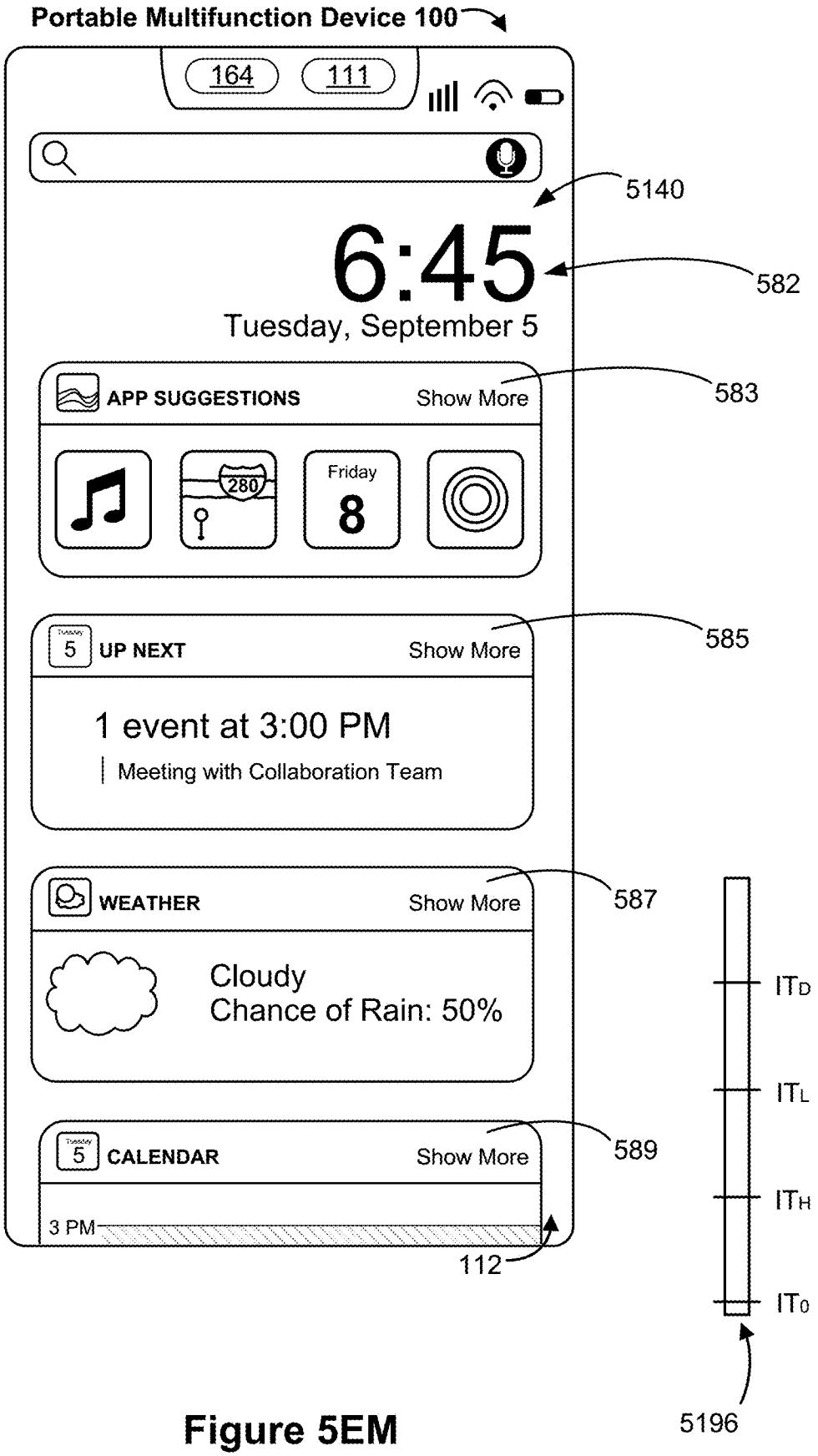

Portable Multifunction Device 100
164
111
5140
6:45
582
Tuesday, September 5
APP SUGGESTIONS
Show More
583
280
Friday
8
5
UP NEXT
Show More
585
1 event at 3:00 PM
Meeting with Collaboration Team
WEATHER
Show More
587
Cloudy
Chance of Rain: 50%
5
CALENDAR
Show More
589
3 PM
112
ITD
ITL
ITH
IT0
5196

Figure 5EM

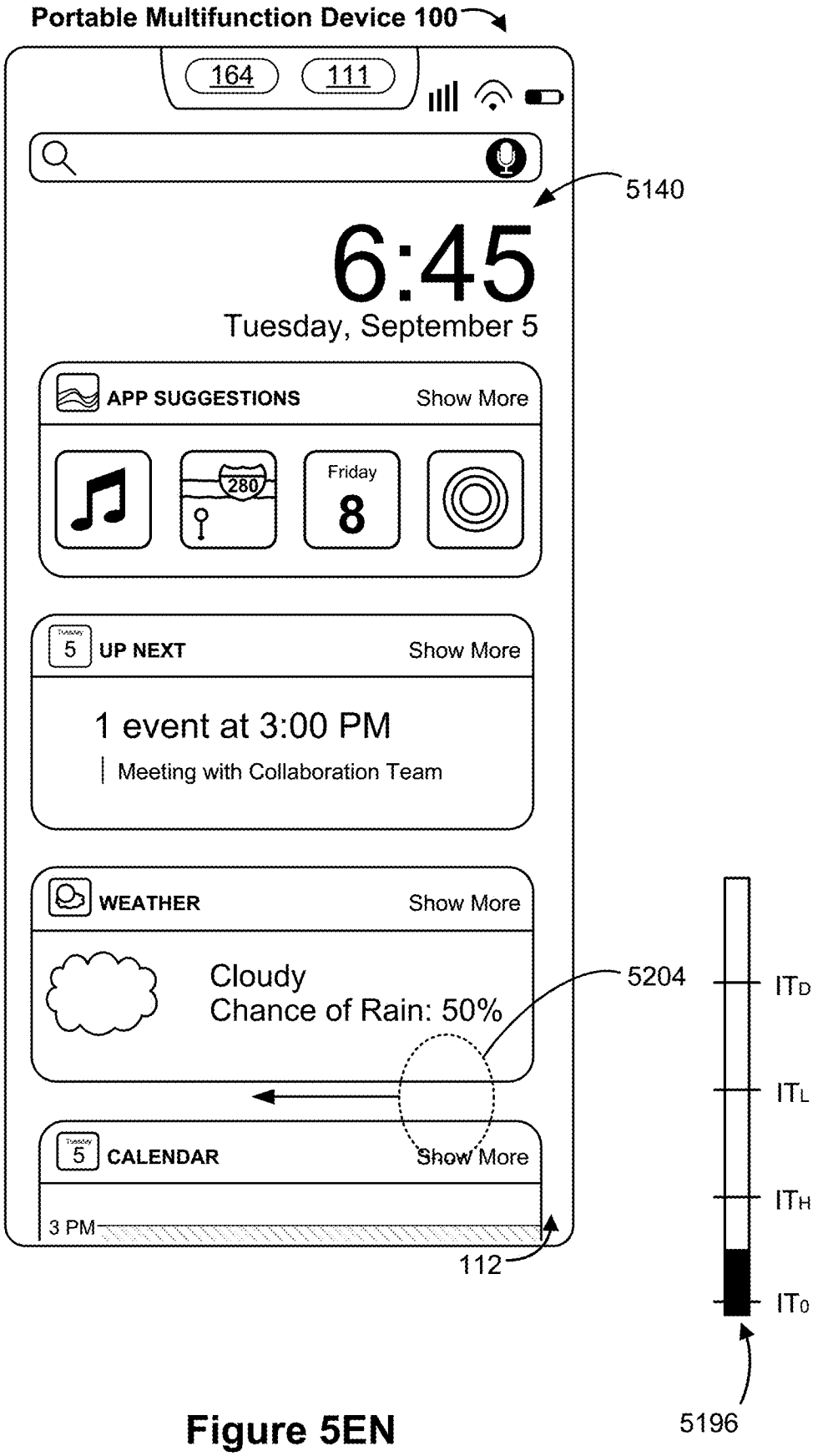

Portable Multifunction Device 100
164
111
5140
6:45
Tuesday, September 5
APP SUGGESTIONS
Show More
280
Friday
8
5
UP NEXT
Show More
1 event at 3:00 PM
Meeting with Collaboration Team
WEATHER
Show More
Cloudy
Chance of Rain: 50%
5204
5
CALENDAR
Show More
3 PM
112
IT_D
IT_L
IT_H
IT_0
5196

Figure 5EN

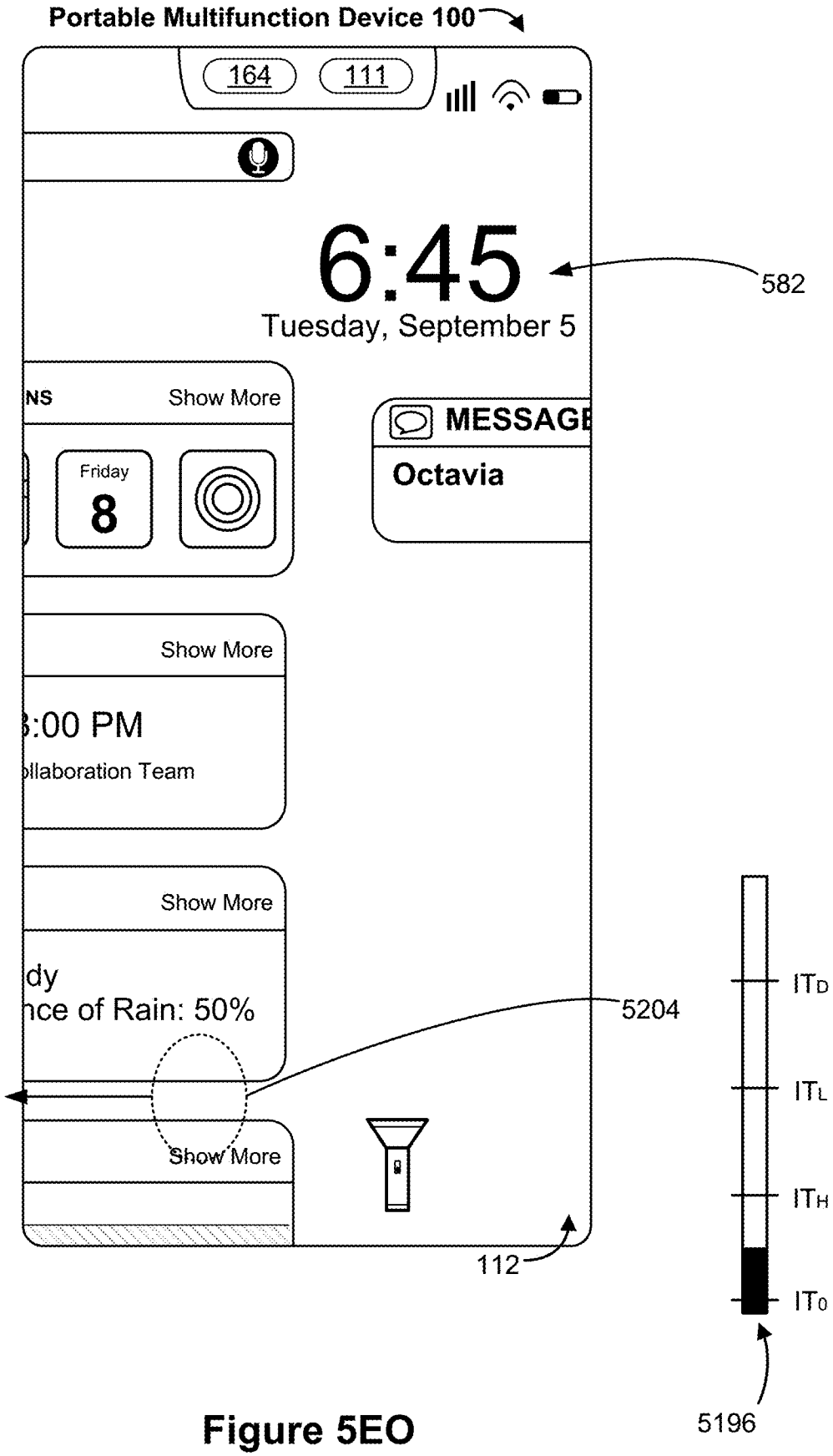

Portable Multifunction Device 100
164
111
6:45
582
Tuesday, September 5
NS
Show More
Friday
8
MESSAGE
Octavia
Show More
:00 PM
llaboration Team
Show More
dy
nce of Rain: 50%
5204
Show More
112
ITD
ITL
ITH
IT0
5196

Figure 5EO

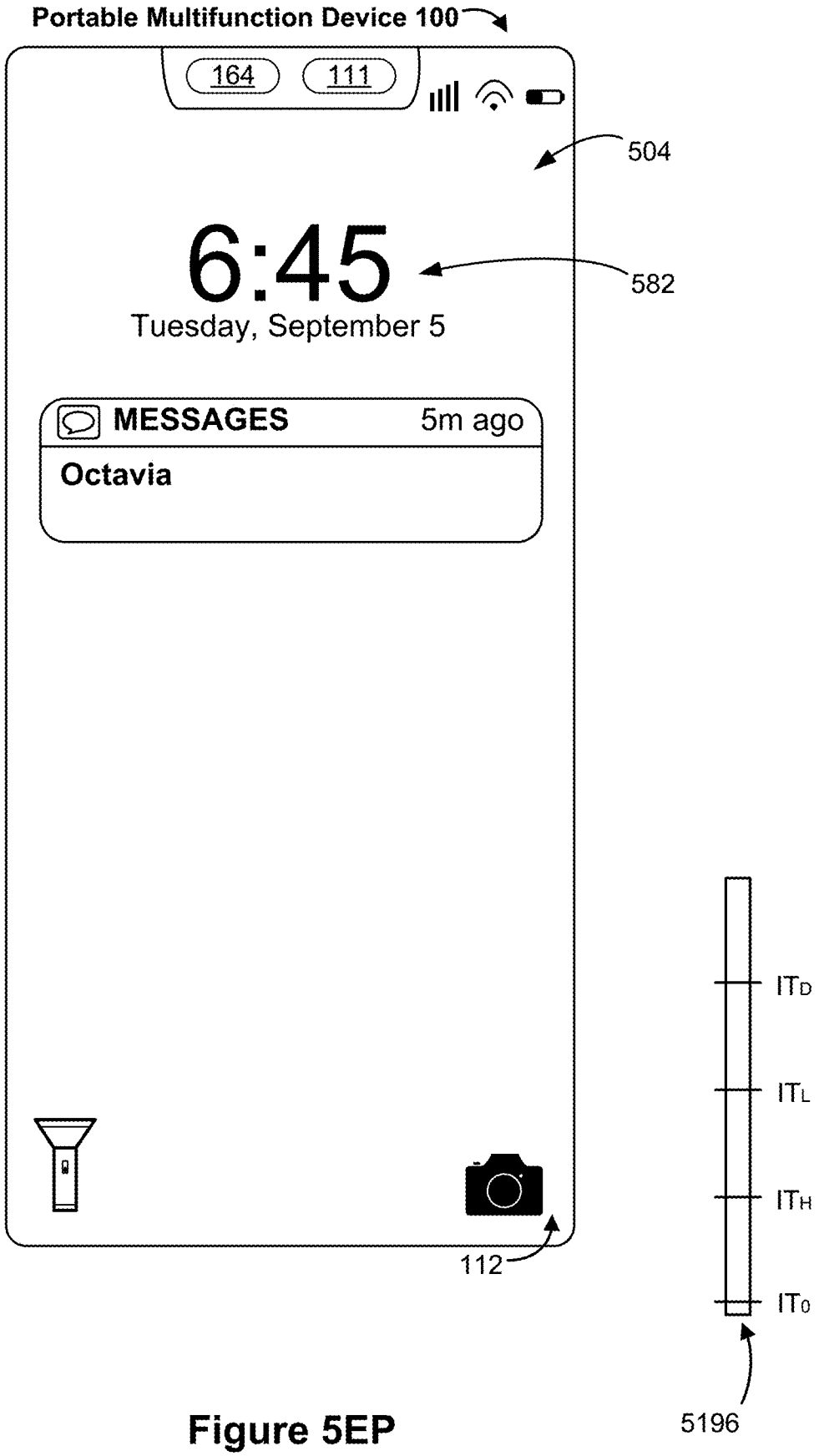

Portable Multifunction Device 100
164
111
504
6:45
582
Tuesday, September 5
MESSAGES
5m ago
Octavia
112
ITD
ITL
ITH
ITO
5196

Figure 5EP

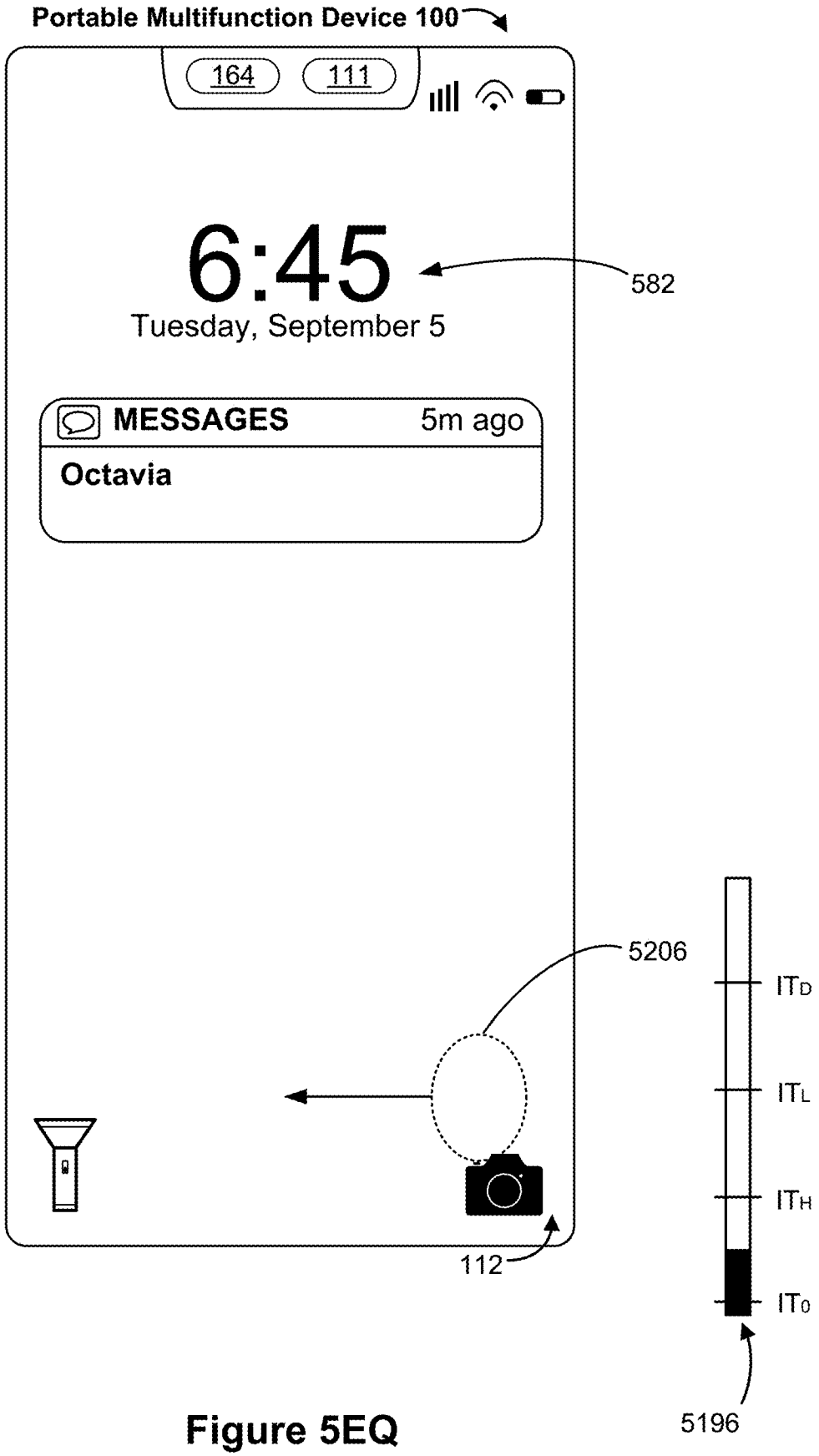

Portable Multifunction Device 100
164
111
6:45
582
Tuesday, September 5
MESSAGES
5m ago
Octavia
5206
ITD
ITL
ITH
IT0
112
5196

Figure 5EQ

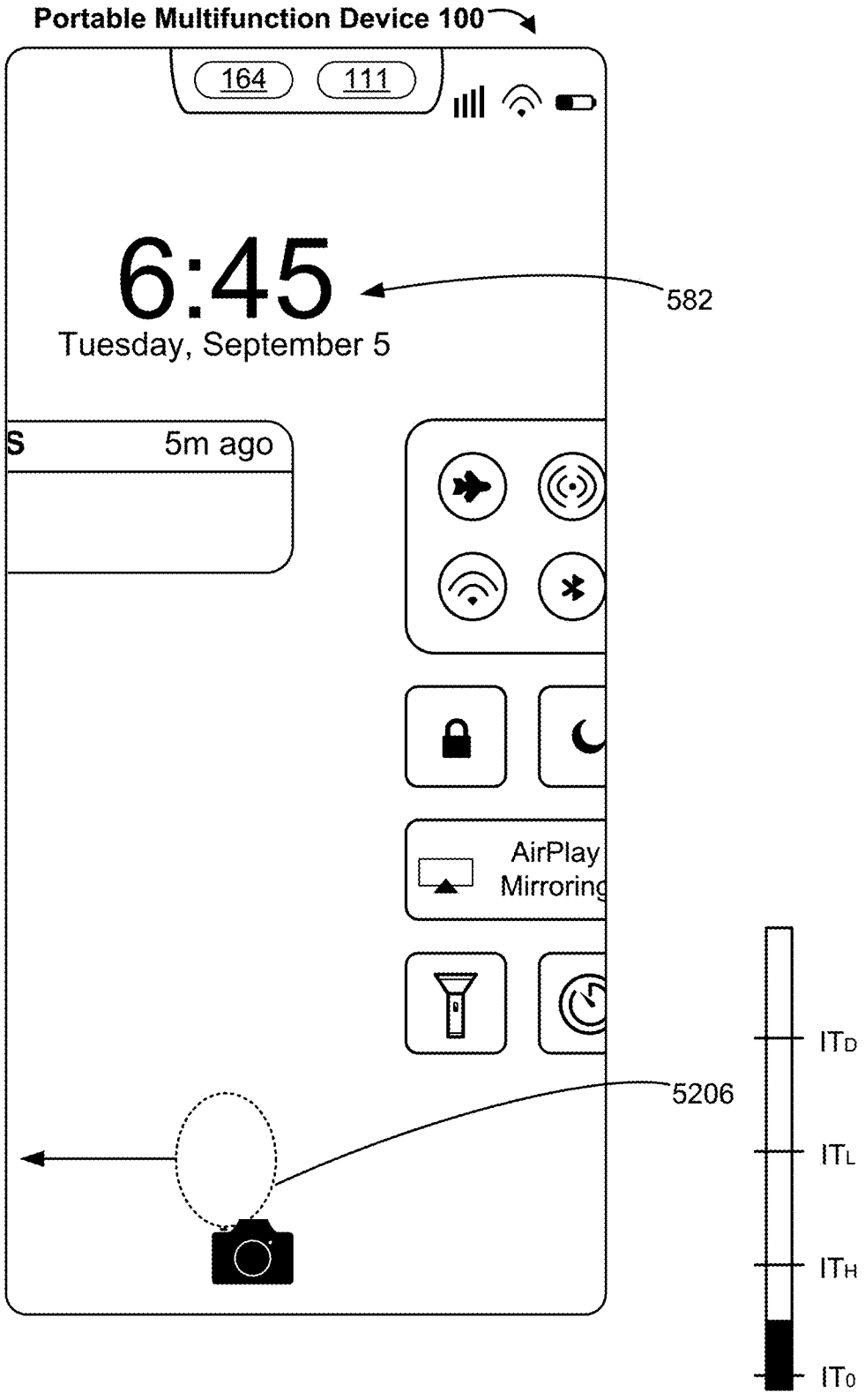

Portable Multifunction Device 100
164
111
6:45
582
Tuesday, September 5
S
5m ago
AirPlay
Mirroring
5206
ITD
ITL
ITH
IT0

Figure 5ER

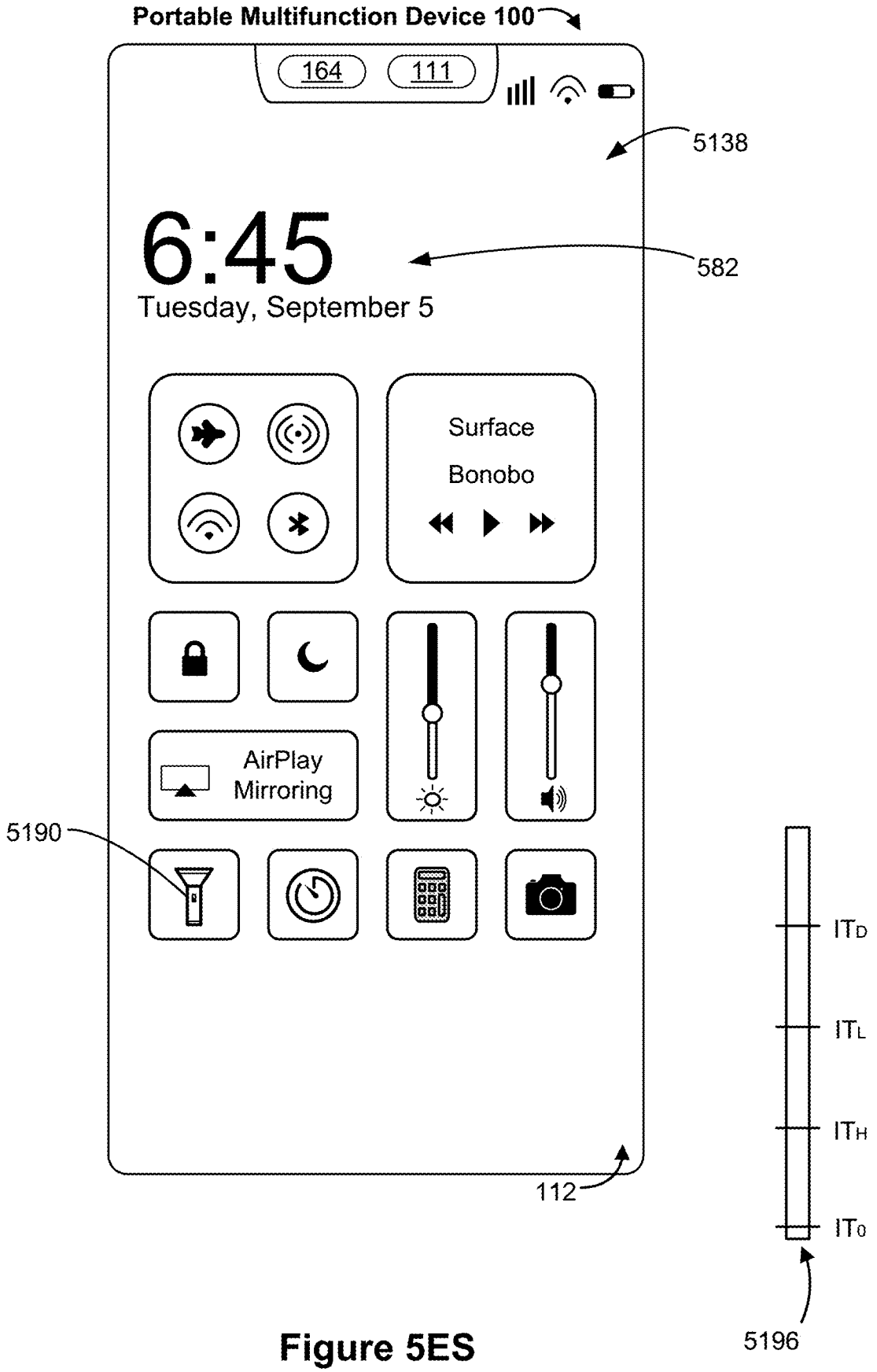


Figure 5ES

Masimo Ex. 1001
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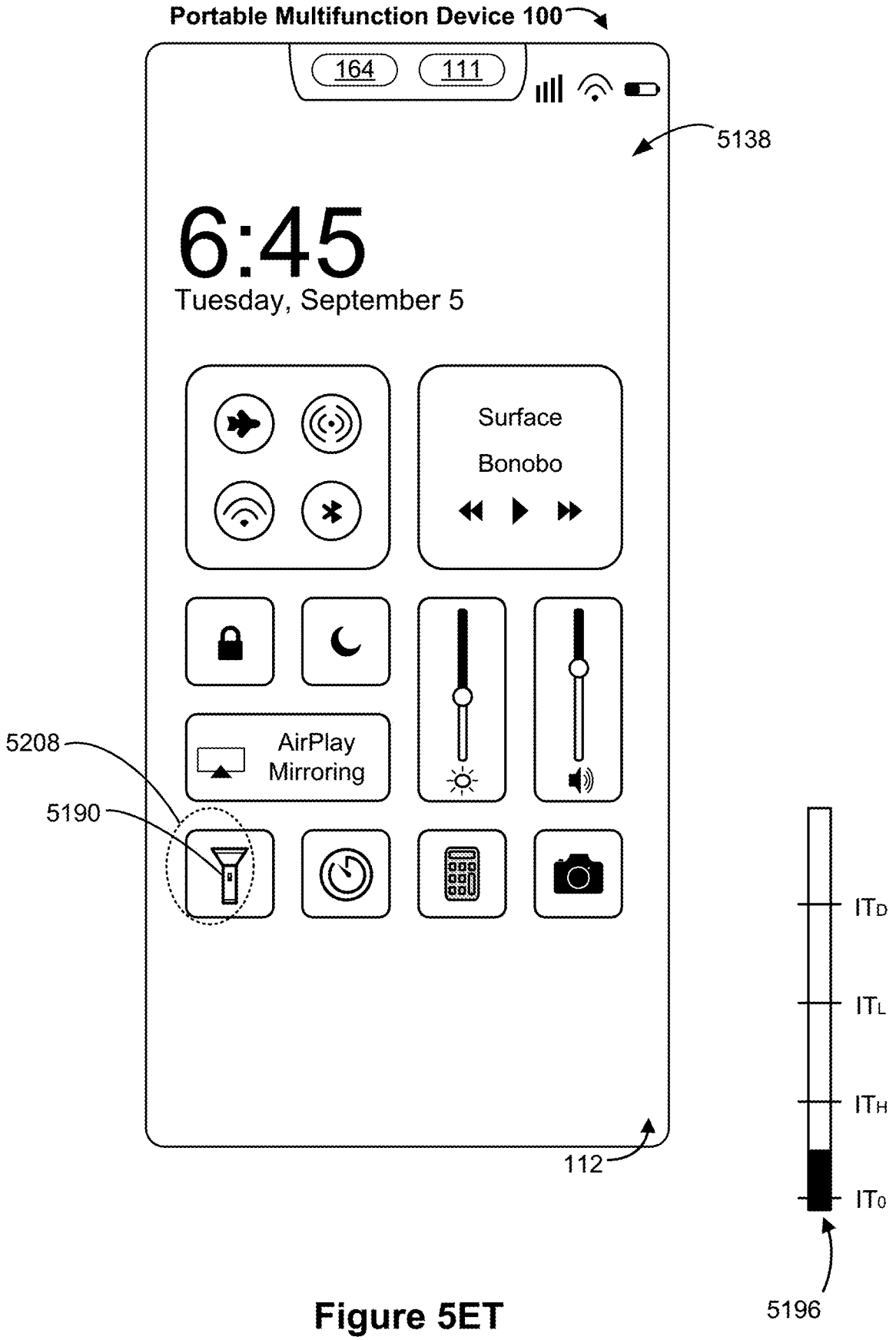

Portable Multifunction Device 100
164
111
5138
6:45
Tuesday, September 5
Surface
Bonobo
AirPlay
Mirroring
5208
5190
112
ITD
ITL
ITH
IT0
5196

Figure 5ET

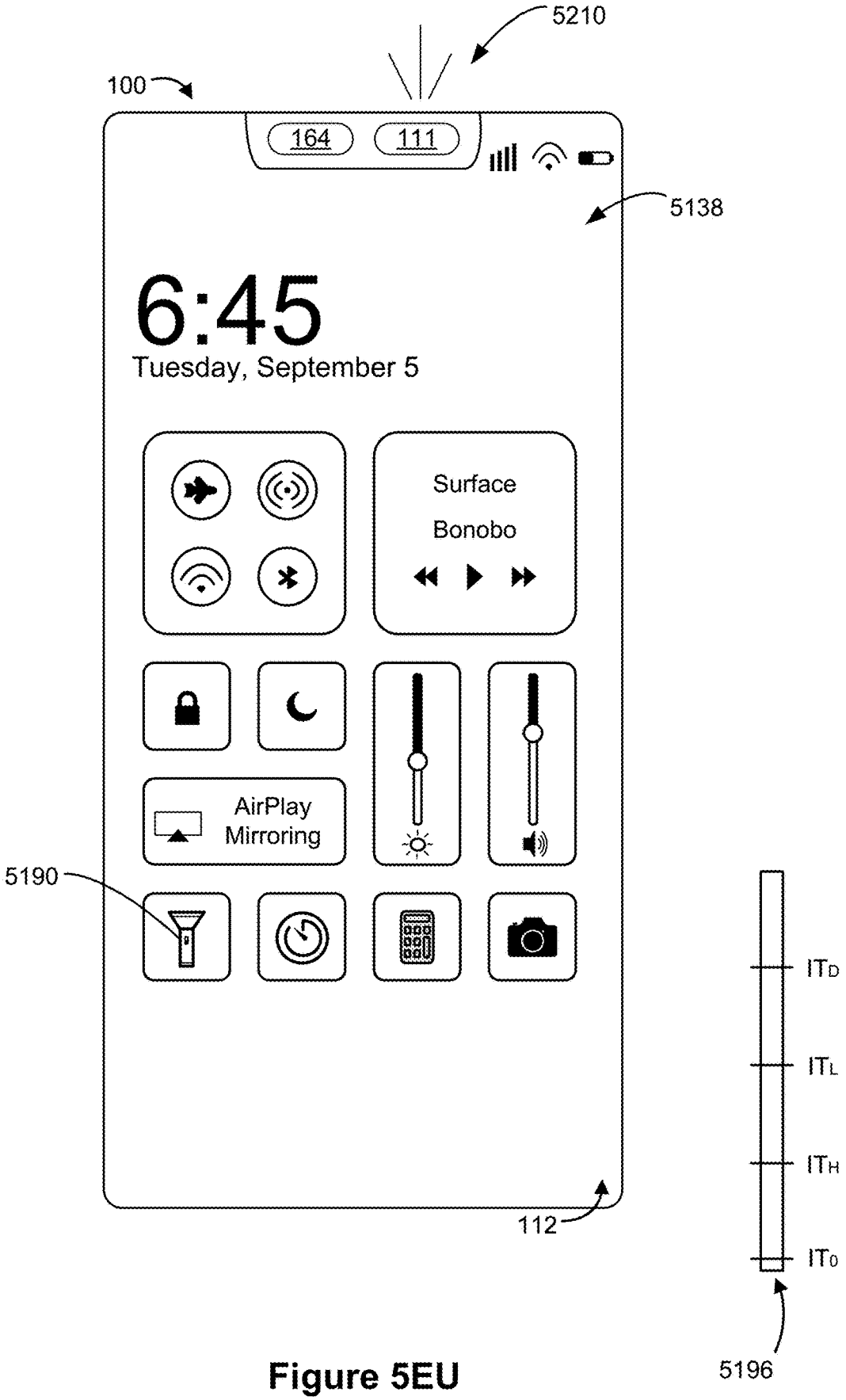

5210
100
164
111
5138
6:45
Tuesday, September 5
Surface
Bonobo
AirPlay
Mirroring
5190
112
ITD
ITL
ITH
IT0
5196

Figure 5EU

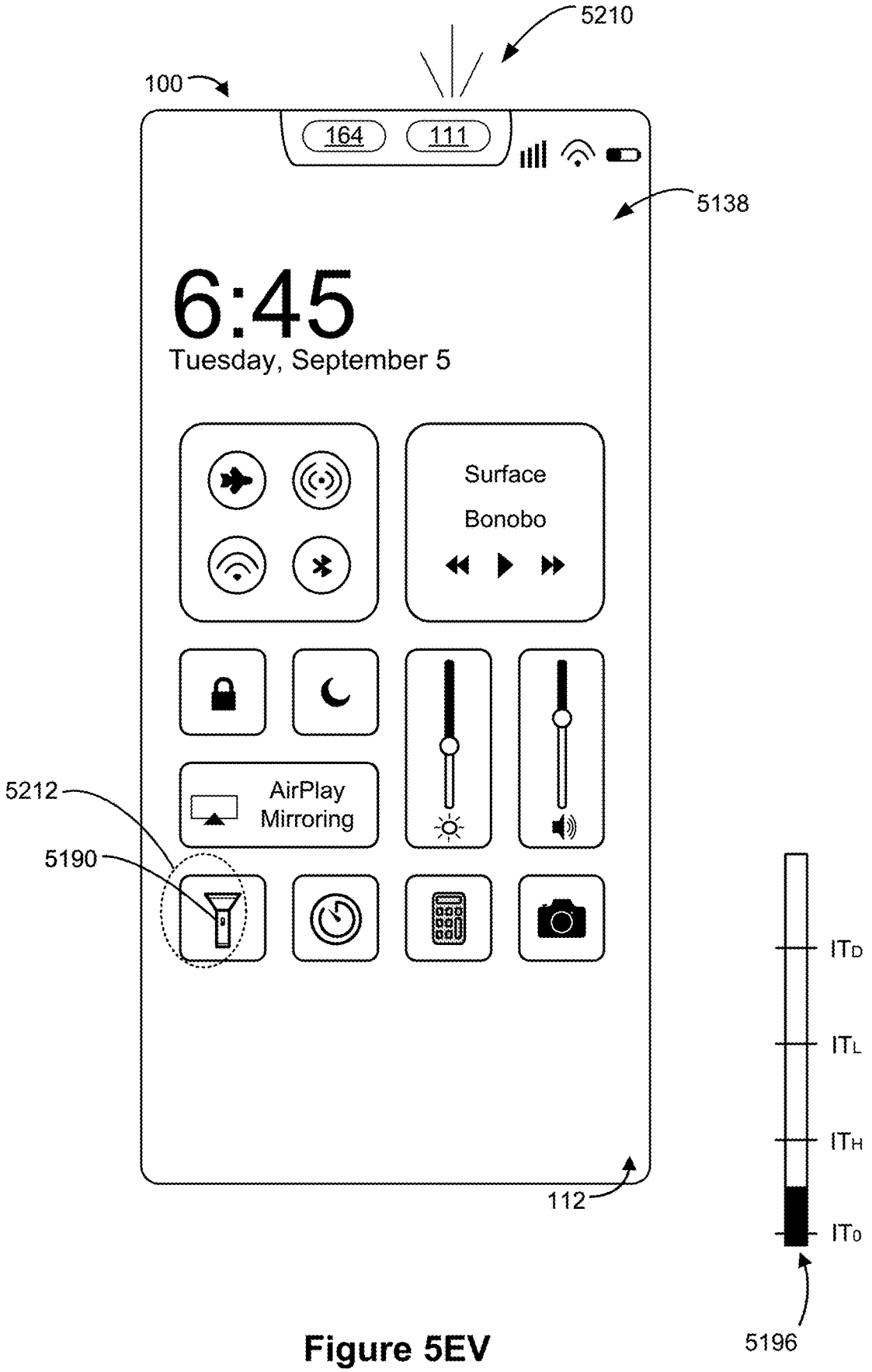

5210
100
164
111
5138
6:45
Tuesday, September 5
Surface
Bonobo
AirPlay
Mirroring
5212
5190
112
ITD
ITL
ITH
ITO
5196

Figure 5EV

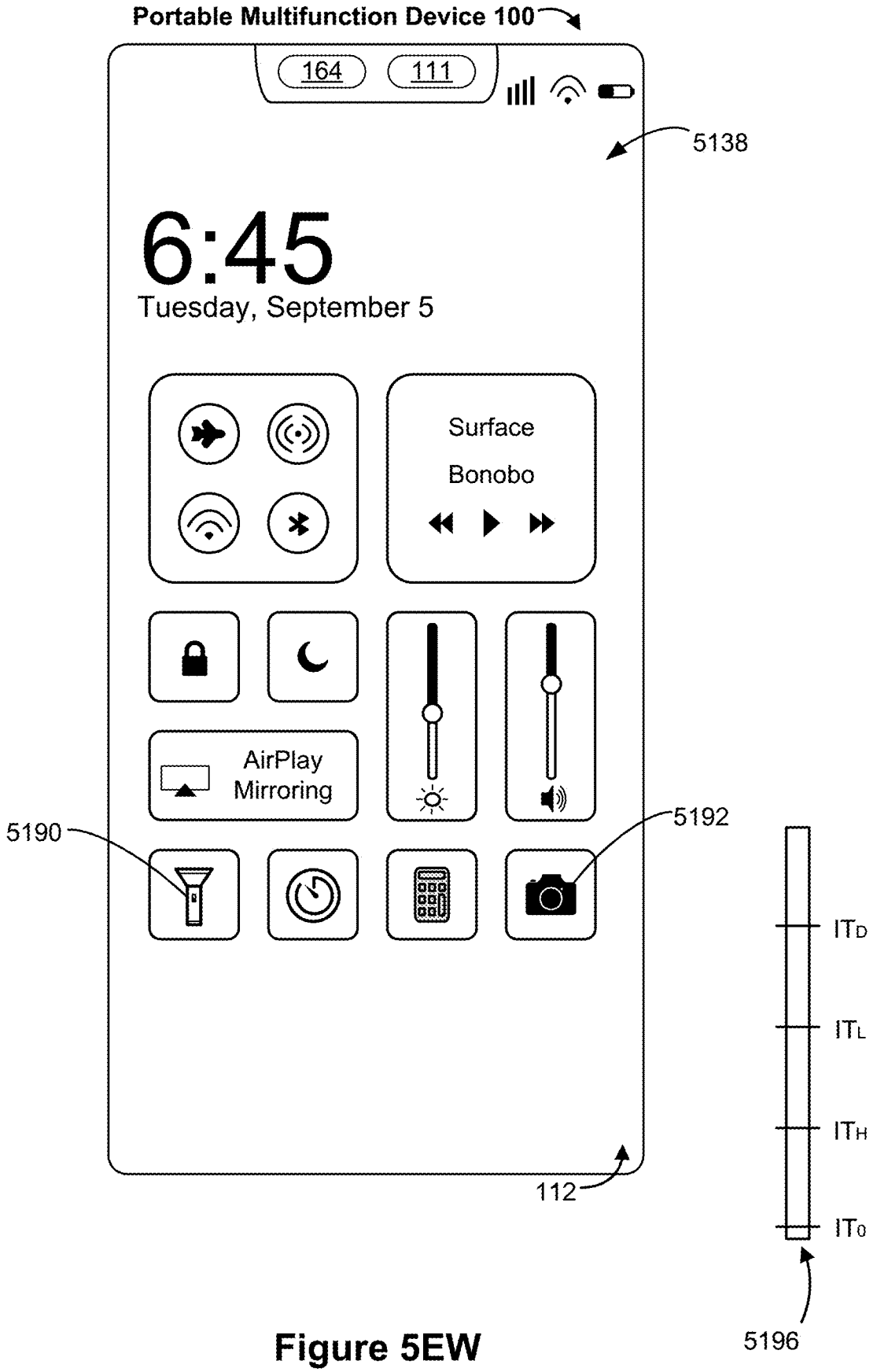

Portable Multifunction Device 100
164
111
5138
6:45
Tuesday, September 5
Surface
Bonobo
AirPlay
Mirroring
5190
5192
112
ITD
ITL
ITH
ITO
5196

Figure 5EW

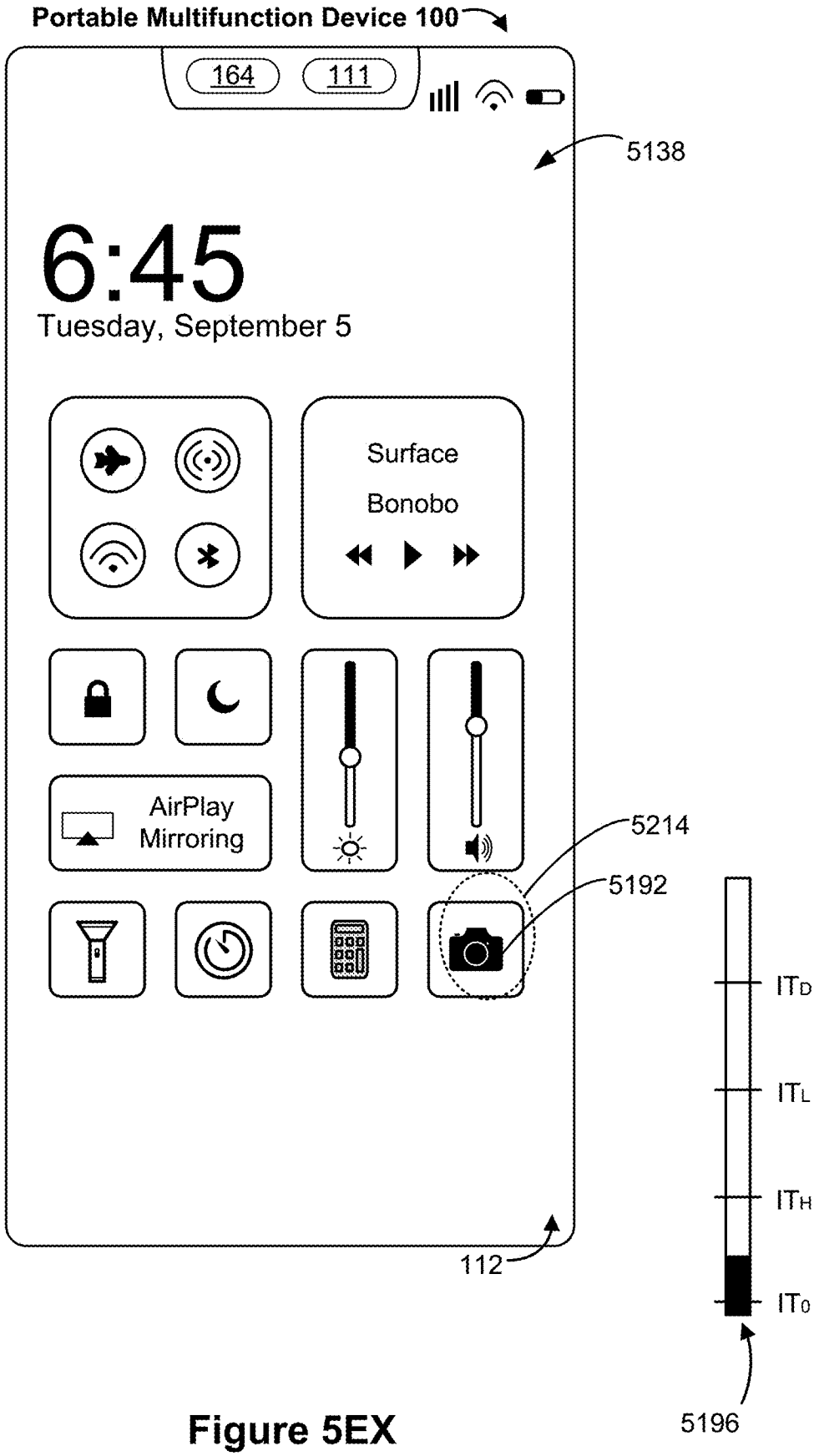

Portable Multifunction Device 100
164
111
5138
6:45
Tuesday, September 5
Surface
Bonobo
AirPlay
Mirroring
5214
5192
ITD
ITL
ITH
IT0
112
5196

Figure 5EX

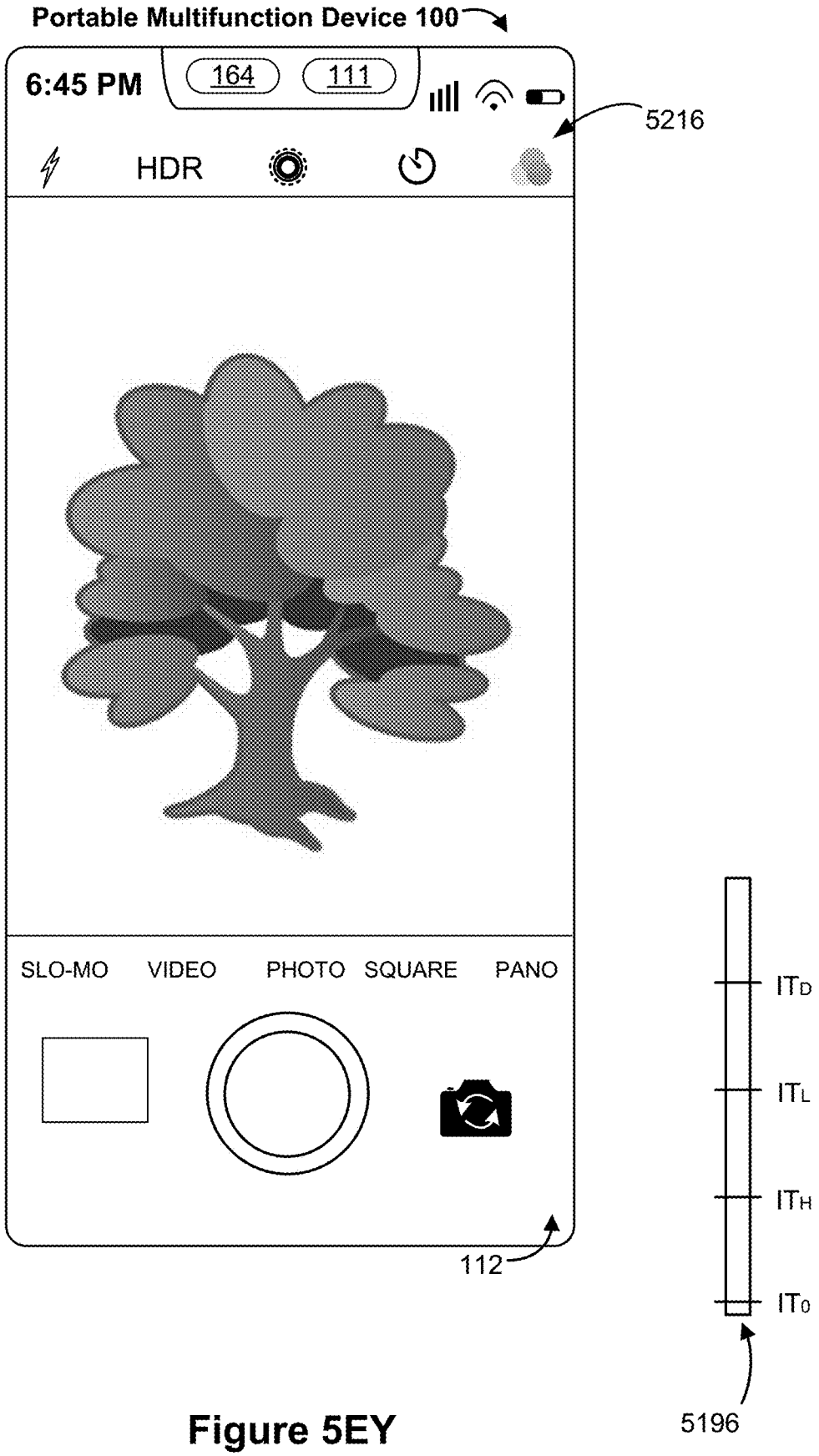


Figure 5EY

Masimo Ex. 1001
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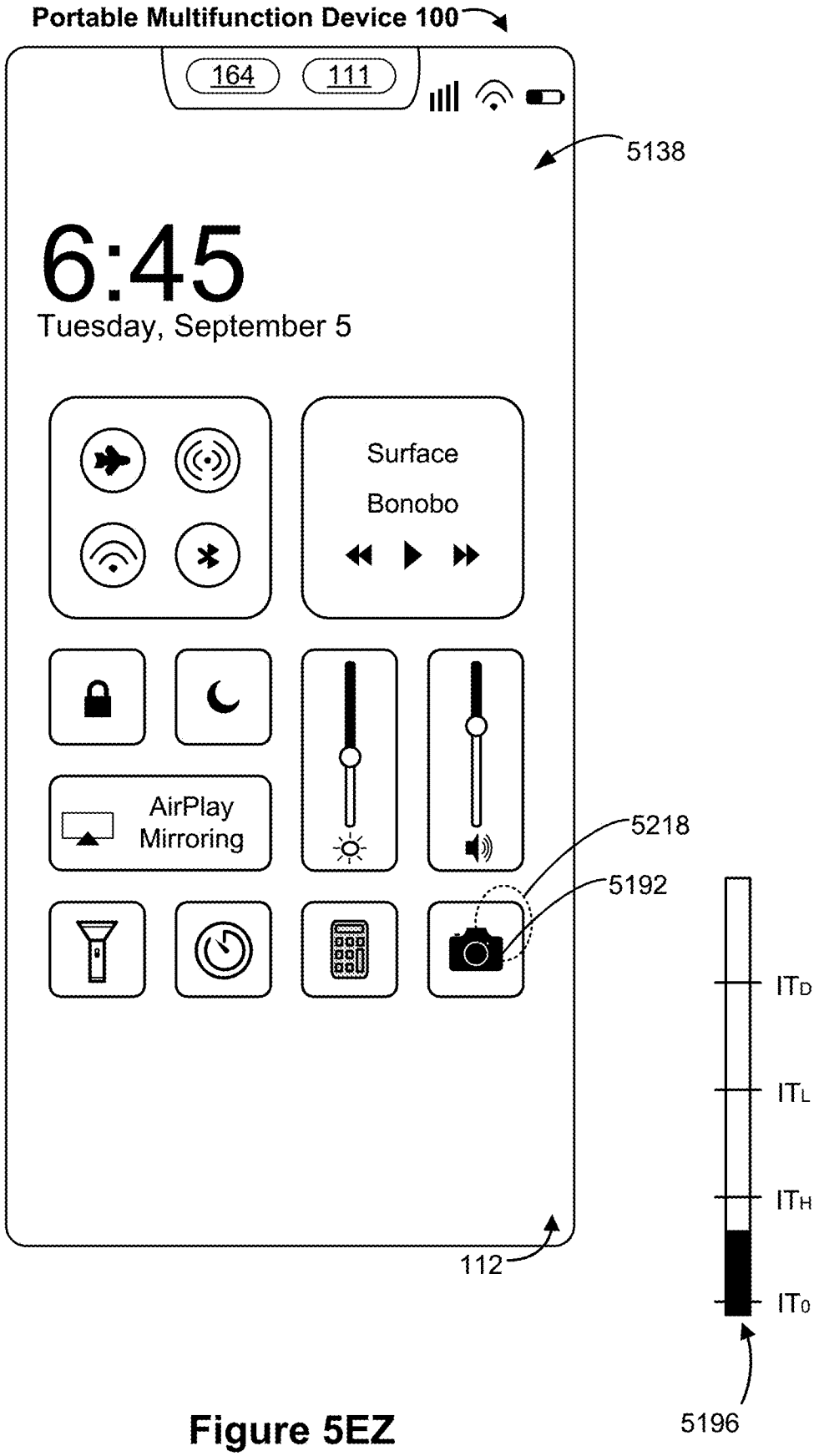


Figure 5EZ

Masimo Ex. 1001
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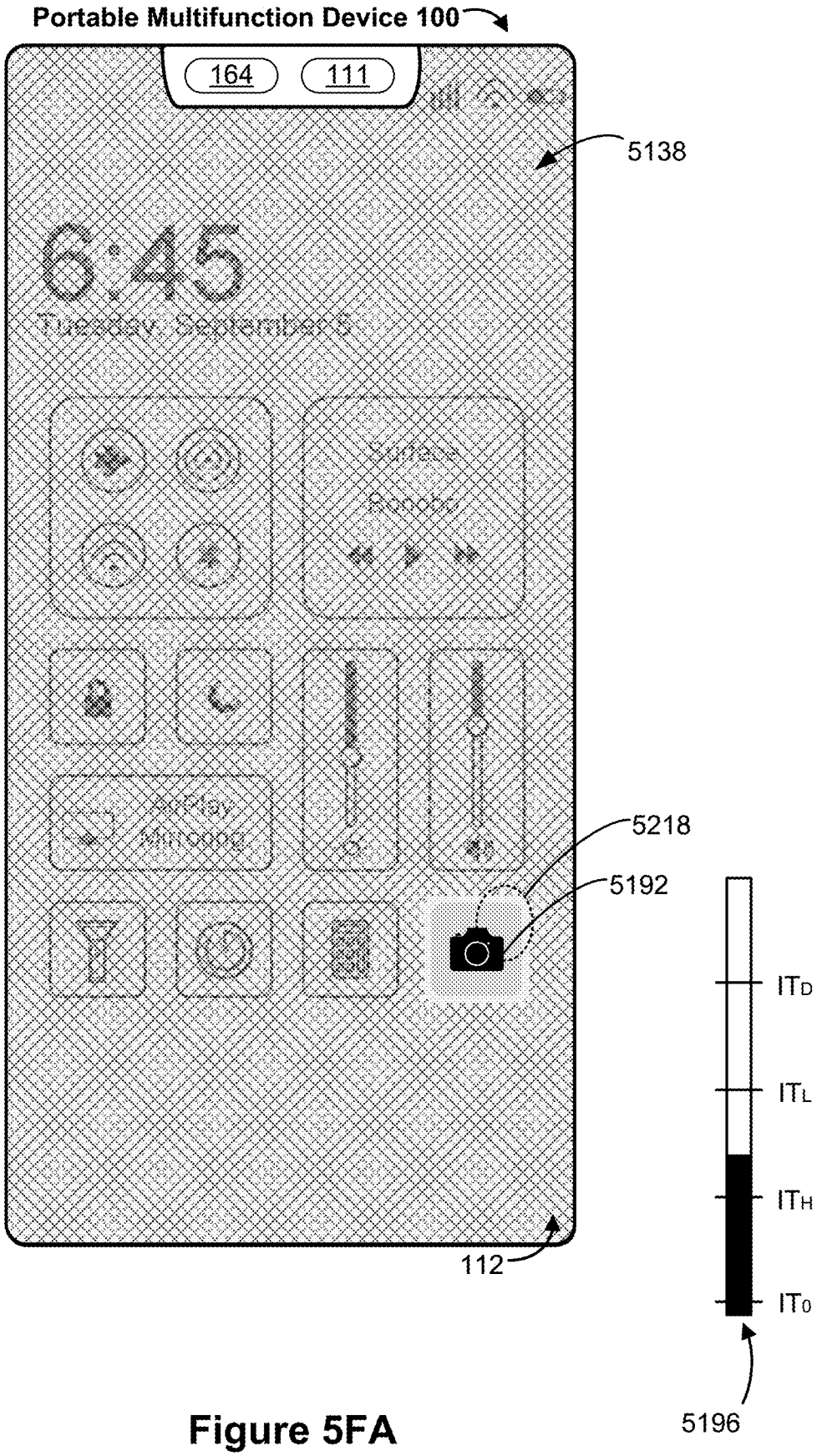


Figure 5FA

Masimo Ex. 1001
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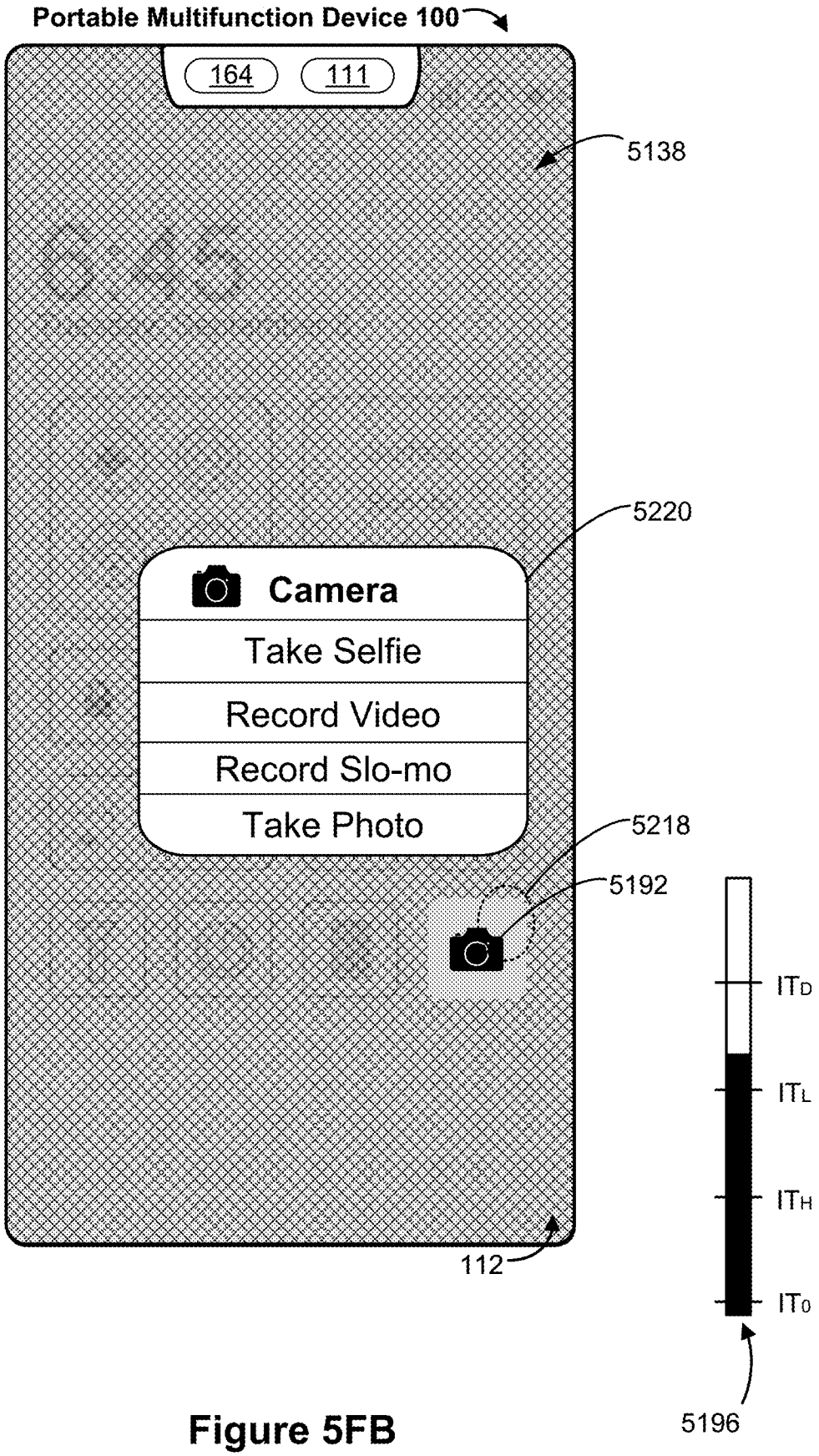


Figure 5FB

Masimo Ex. 1001
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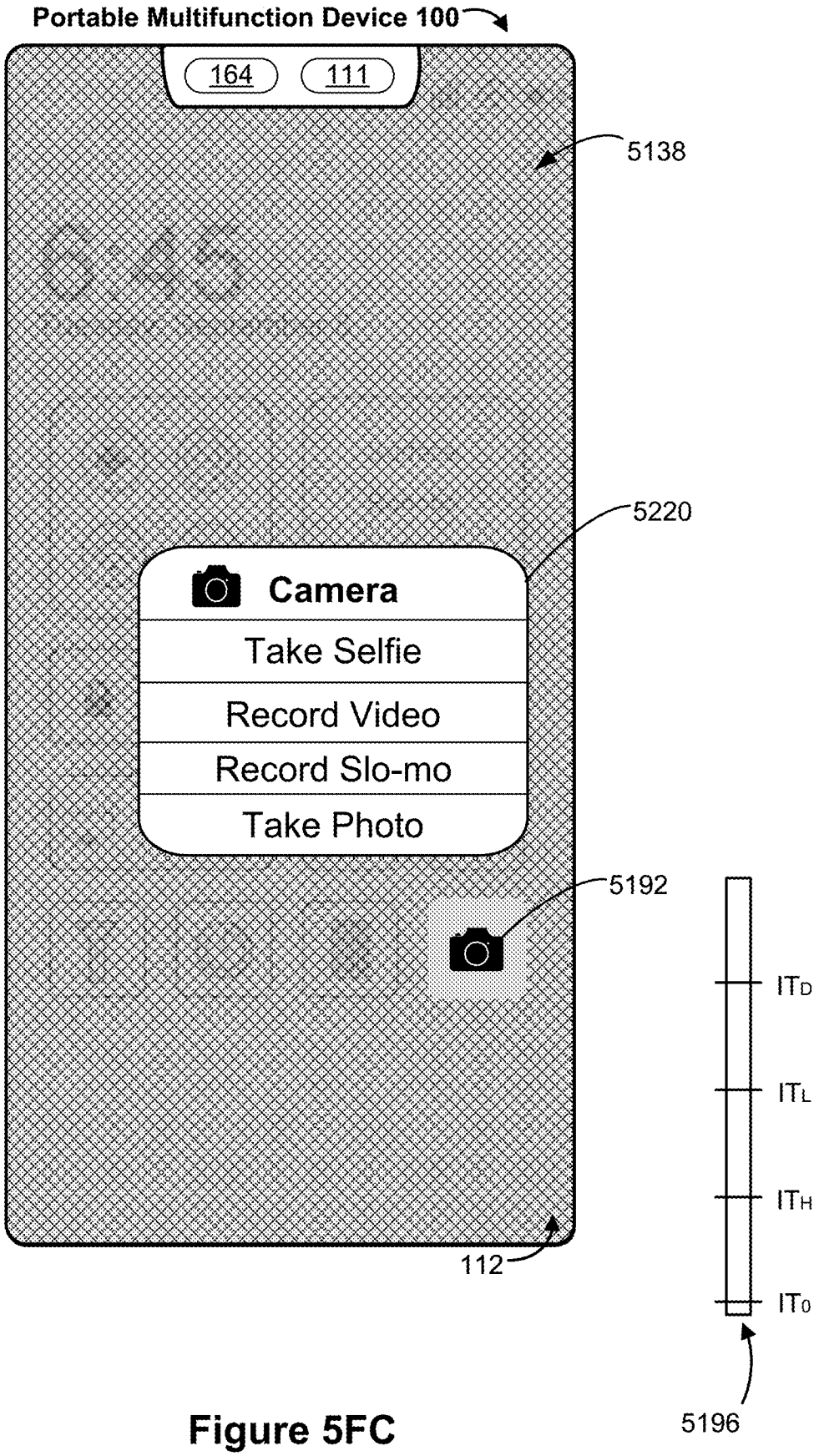


Figure 5FC

Masimo Ex. 1001
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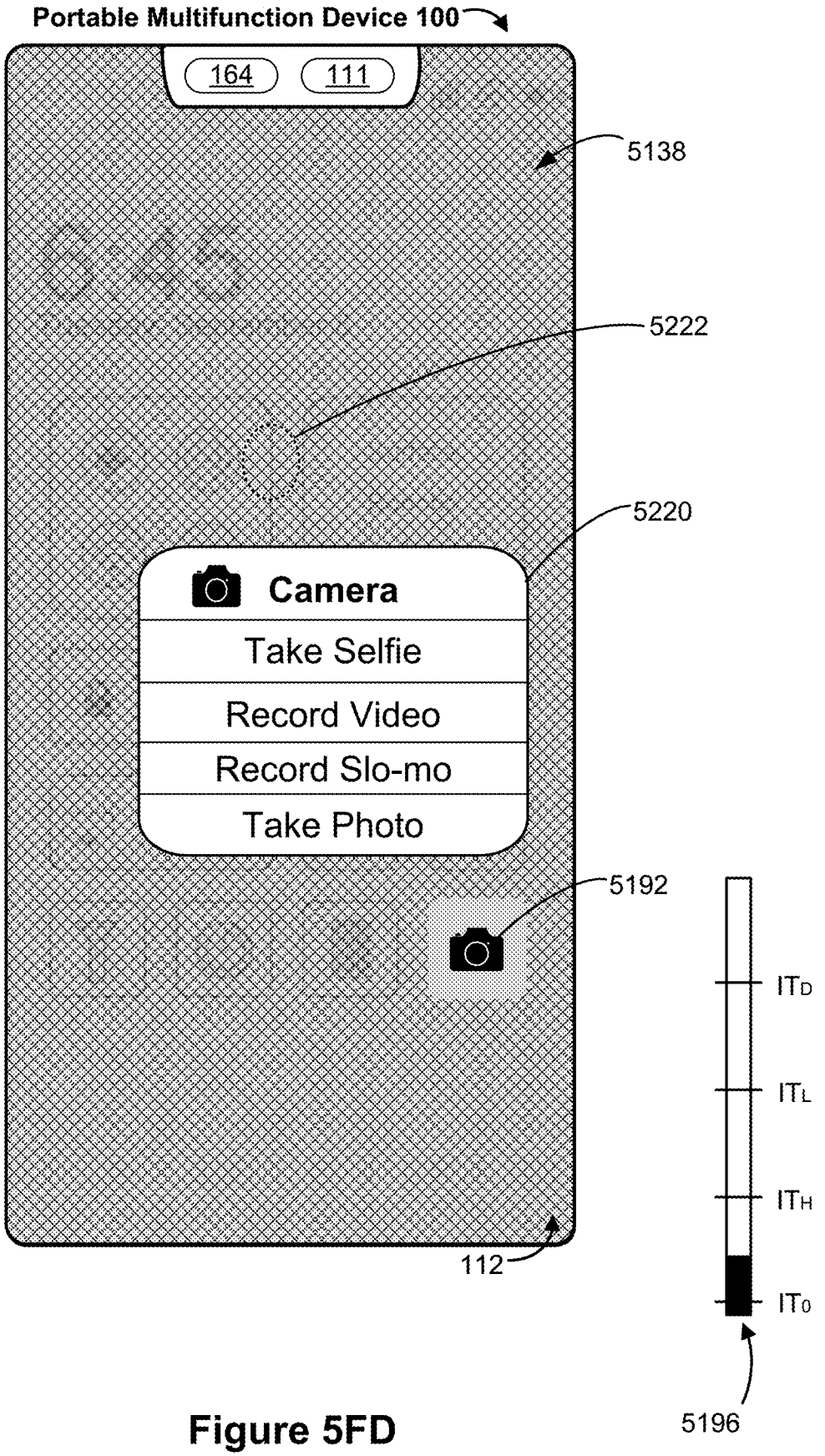


Figure 5FD

Masimo Ex. 1001
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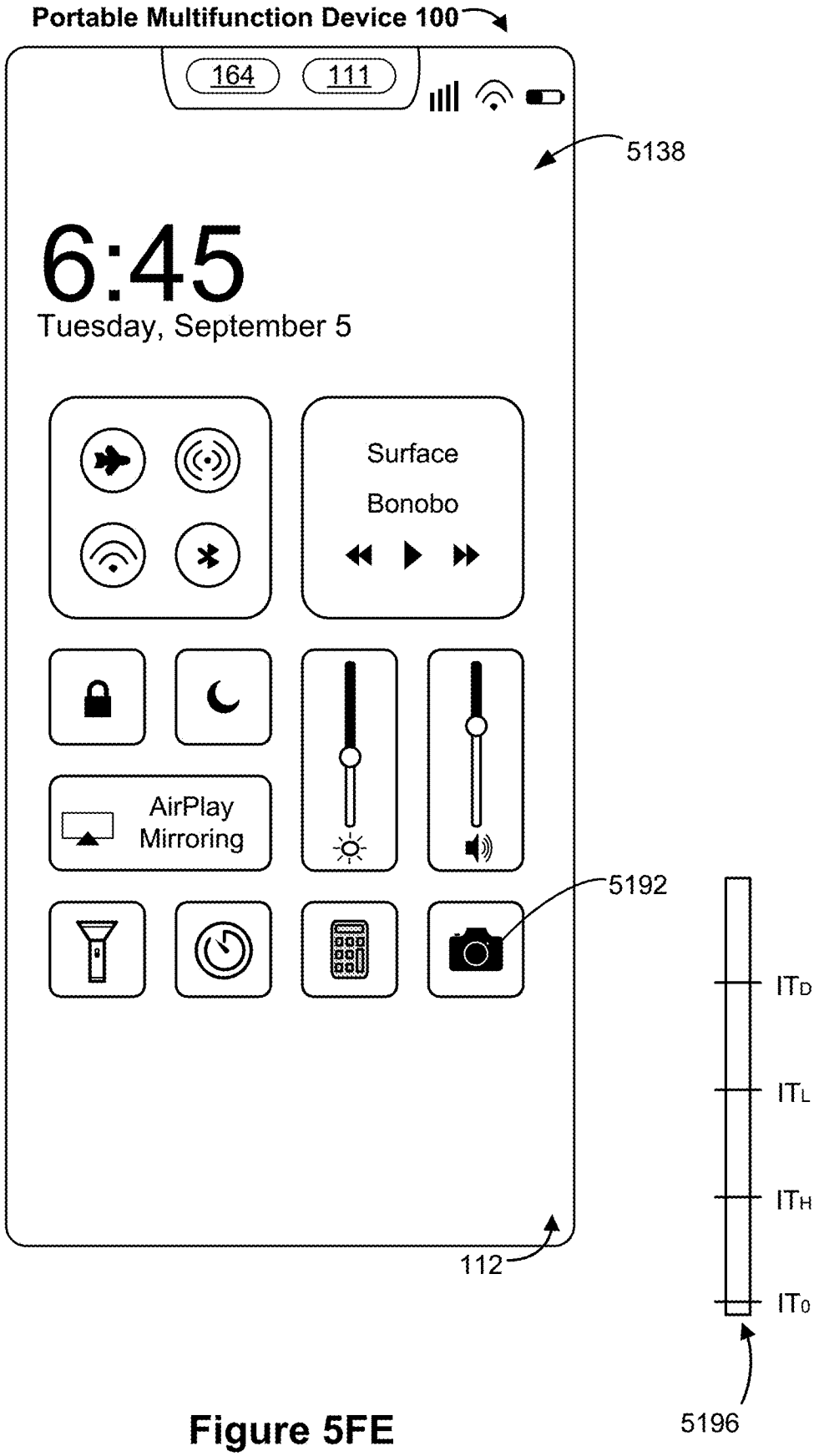


Figure 5FE

Masimo Ex. 1001
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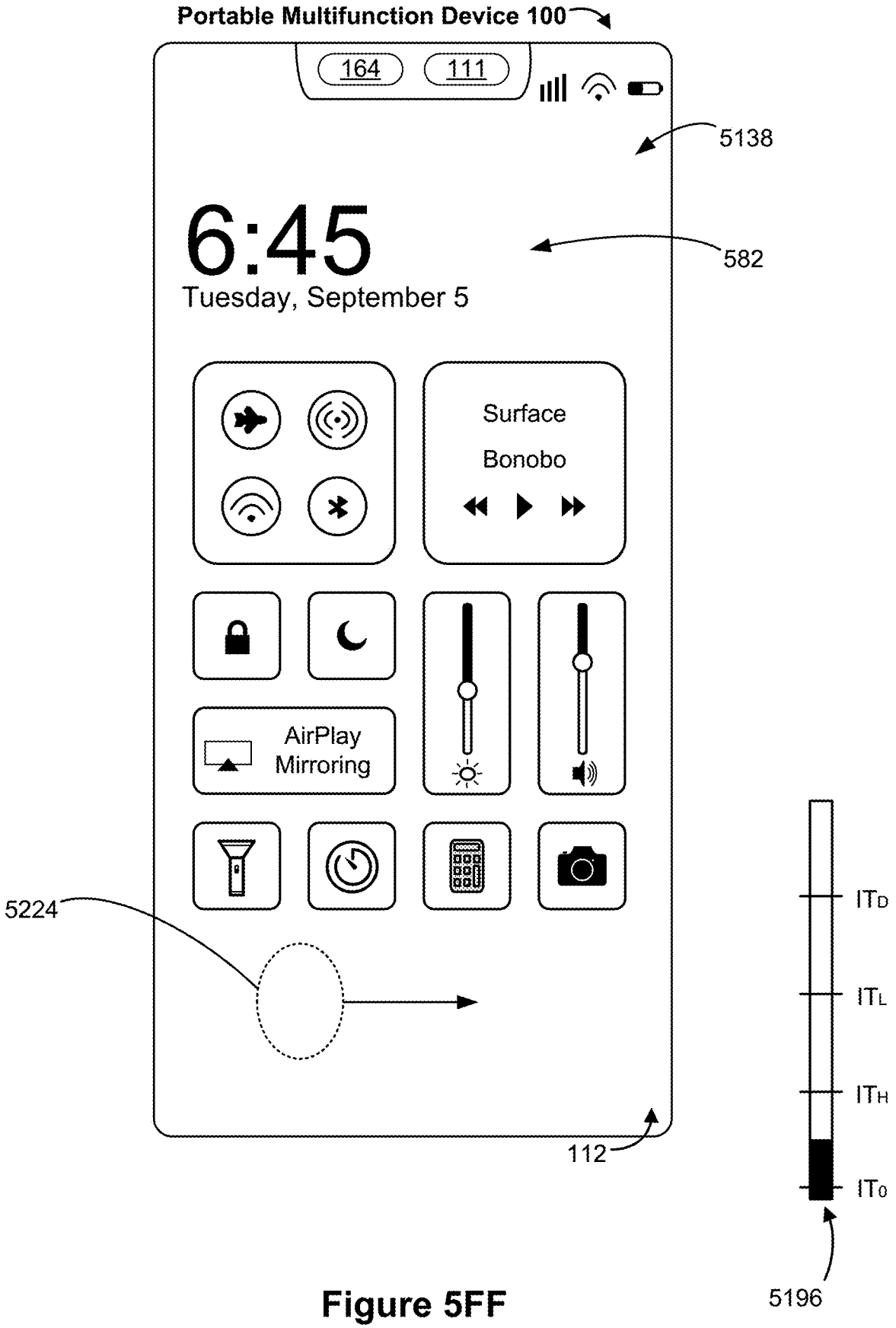

Portable Multifunction Device 100
164
111
5138
6:45
582
Tuesday, September 5
Surface
Bonobo
AirPlay
Mirroring
5224
112
ITD
ITL
ITH
ITO
5196

Figure 5FF

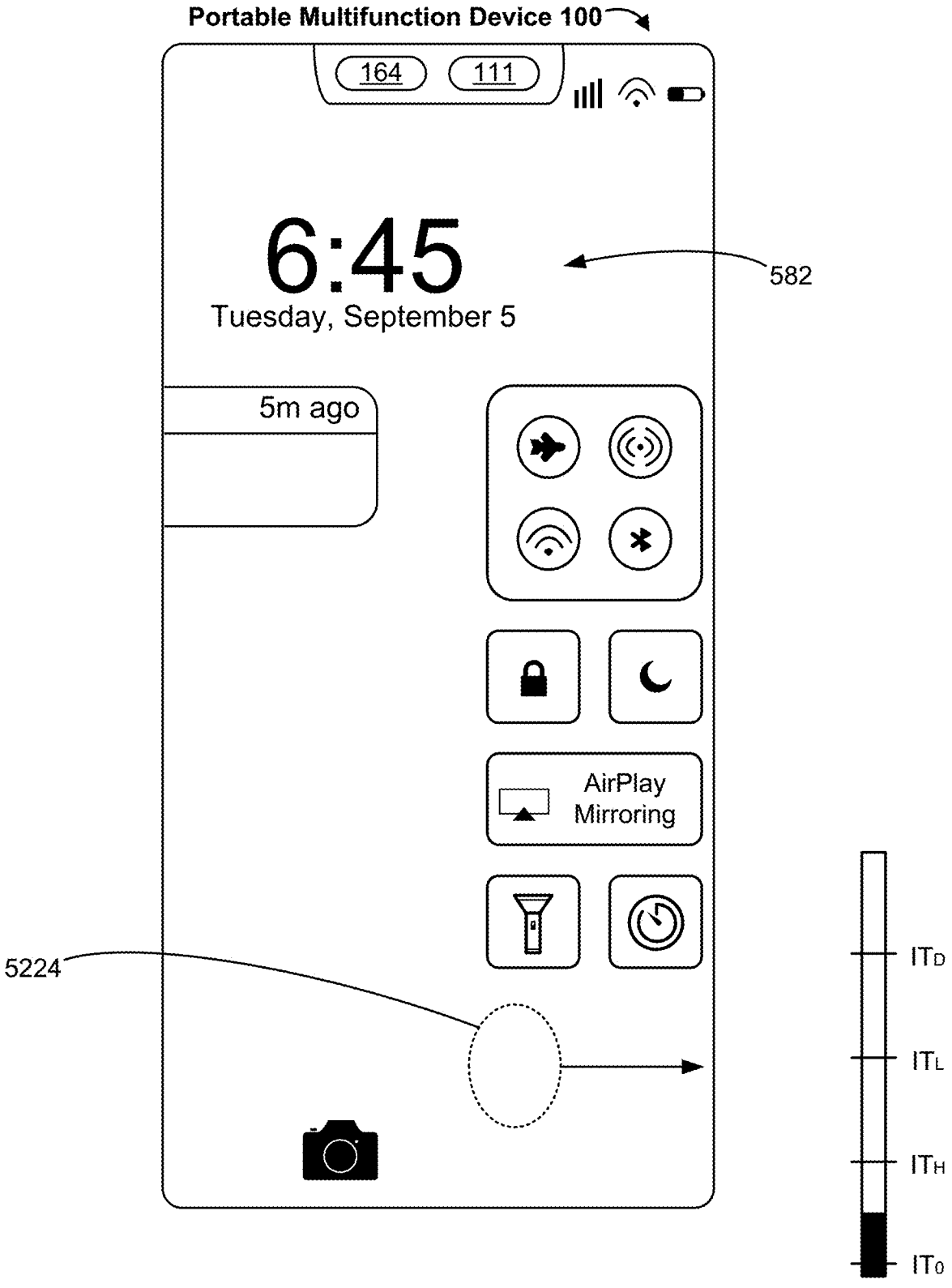

Portable Multifunction Device 100
164
111
6:45
Tuesday, September 5
582
5m ago
AirPlay
Mirroring
5224
ITD
ITL
ITH
IT0

Figure 5FG

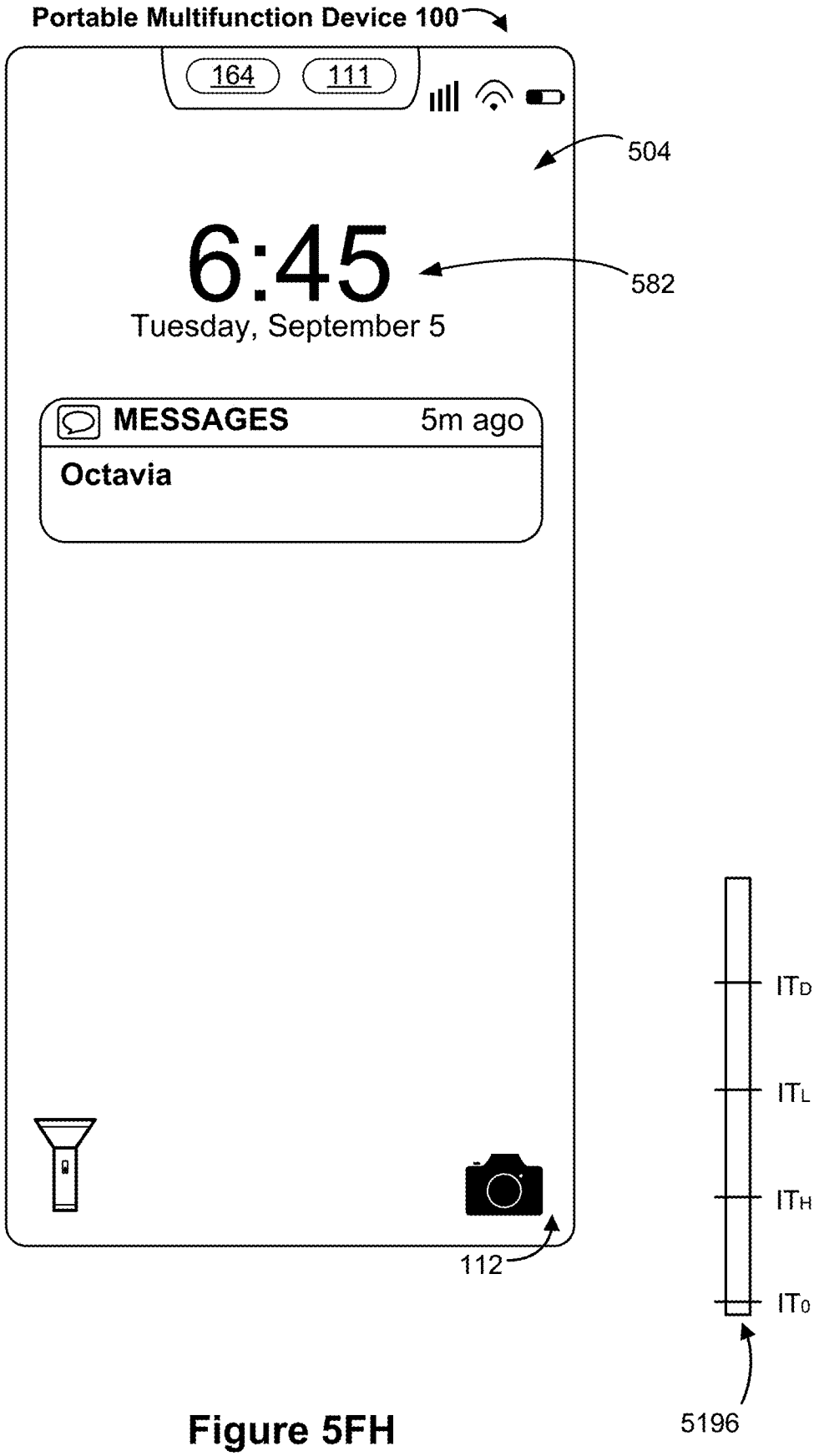

Portable Multifunction Device 100
164
111
504
6:45
582
Tuesday, September 5
MESSAGES
5m ago
Octavia
112
ITD
ITL
ITH
IT0
5196

Figure 5FH

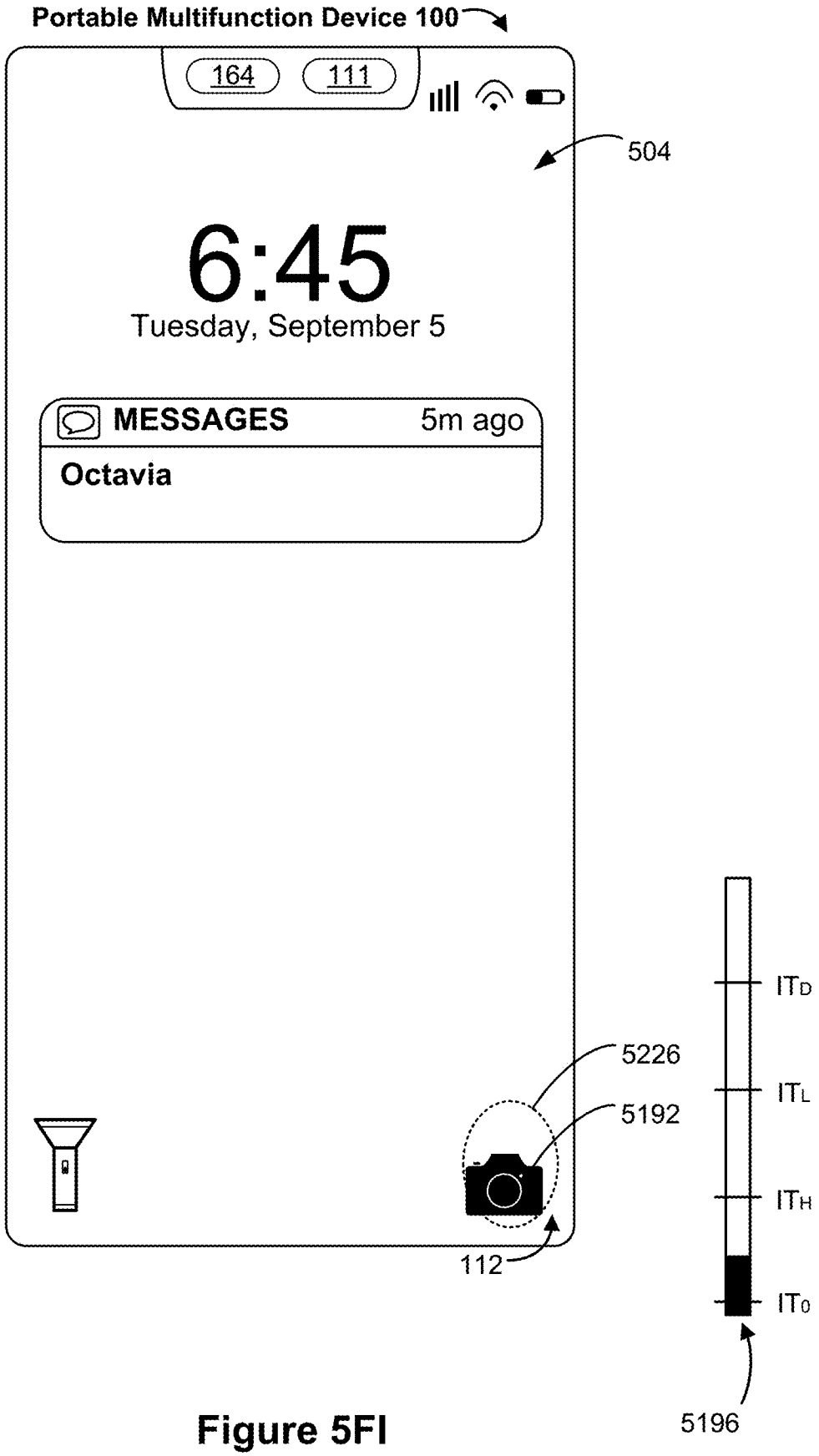

Portable Multifunction Device 100
164
111
504
6:45
Tuesday, September 5
MESSAGES
5m ago
Octavia
5226
5192
112
ITD
ITL
ITH
IT0
5196

Figure 5FI

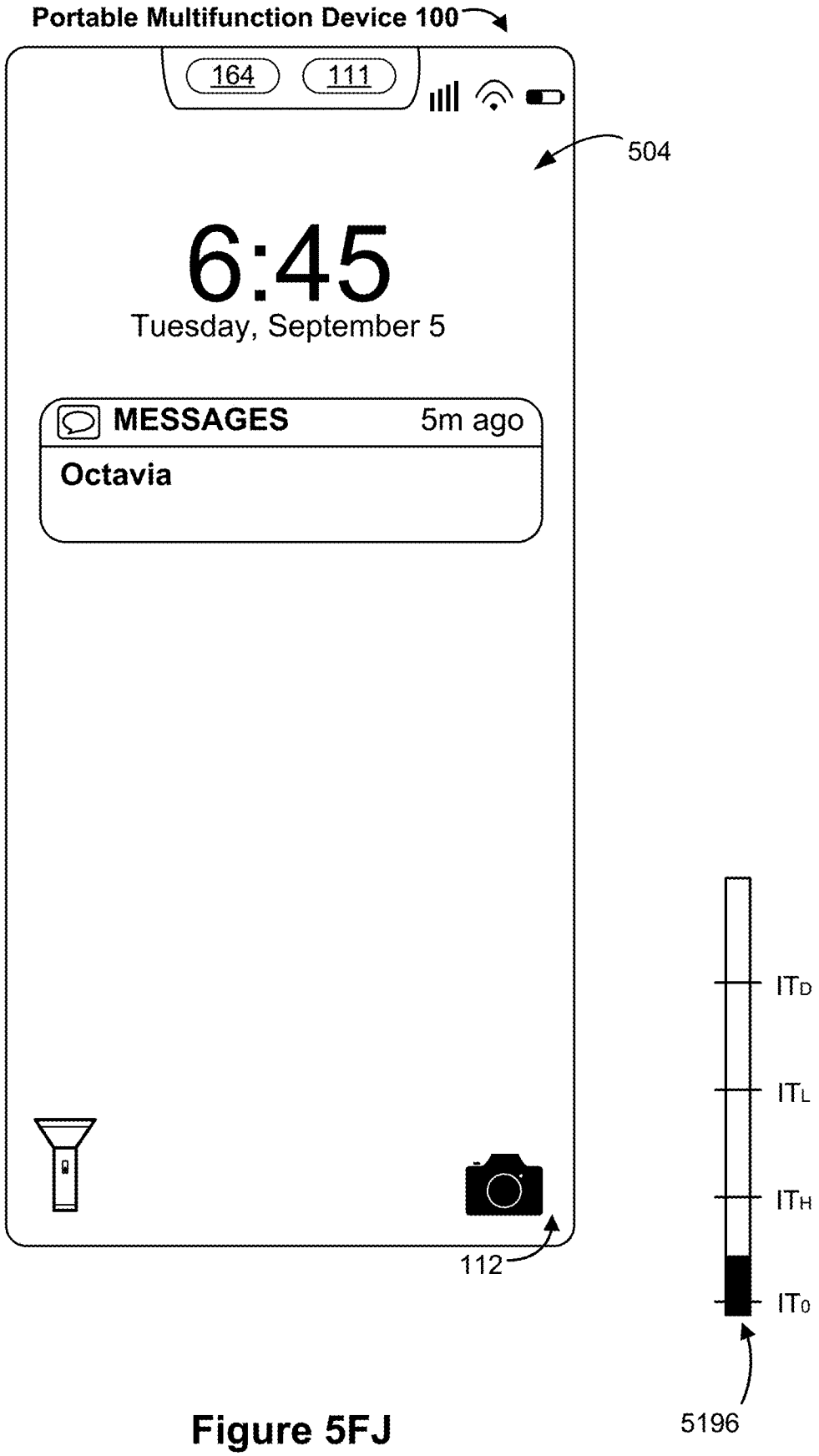


Figure 5FJ

Masimo Ex. 1001
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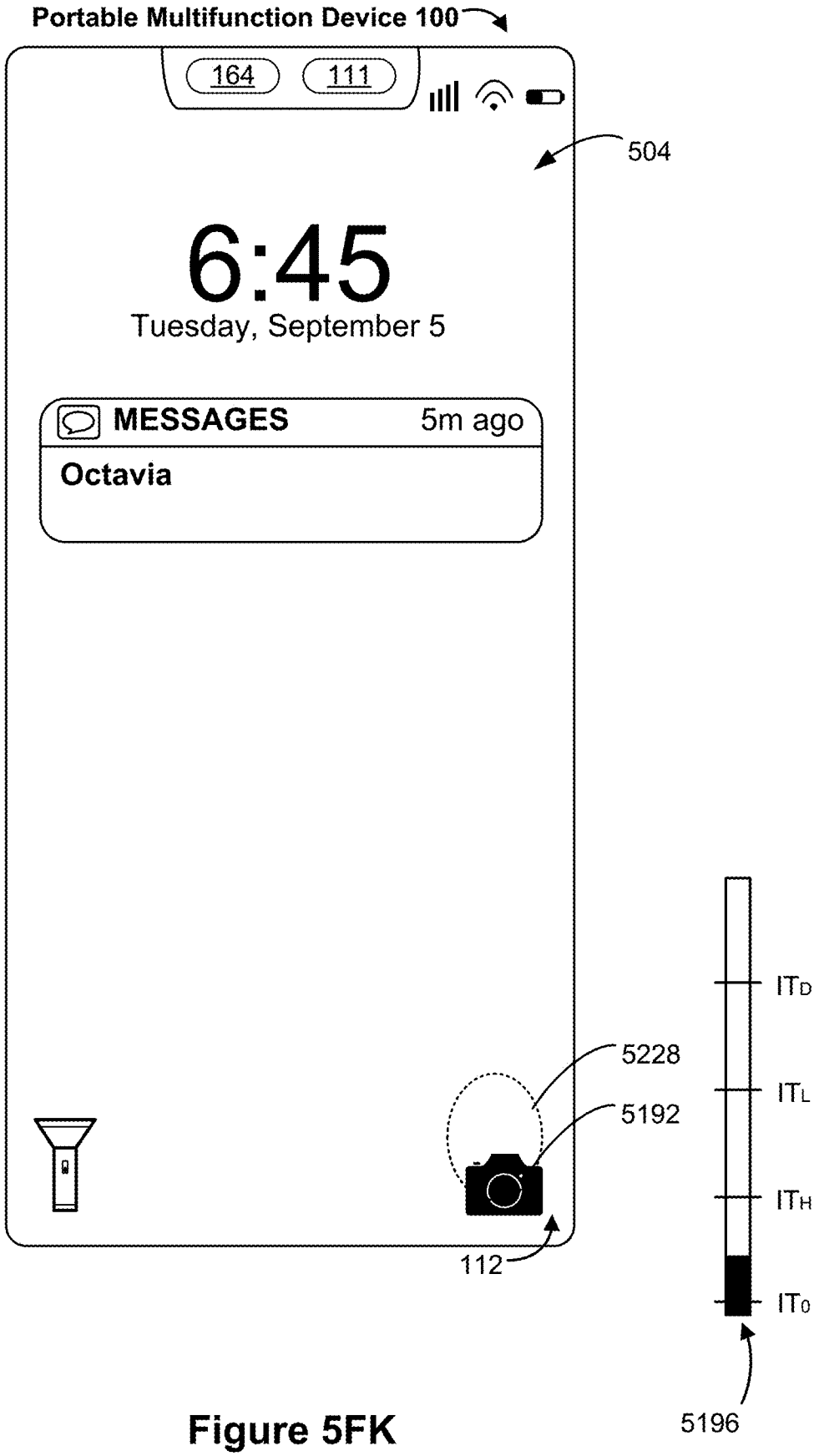

Portable Multifunction Device 100
164
111
504
6:45
Tuesday, September 5
MESSAGES
5m ago
Octavia
5228
5192
112
ITD
ITL
ITH
IT0
5196

Figure 5FK

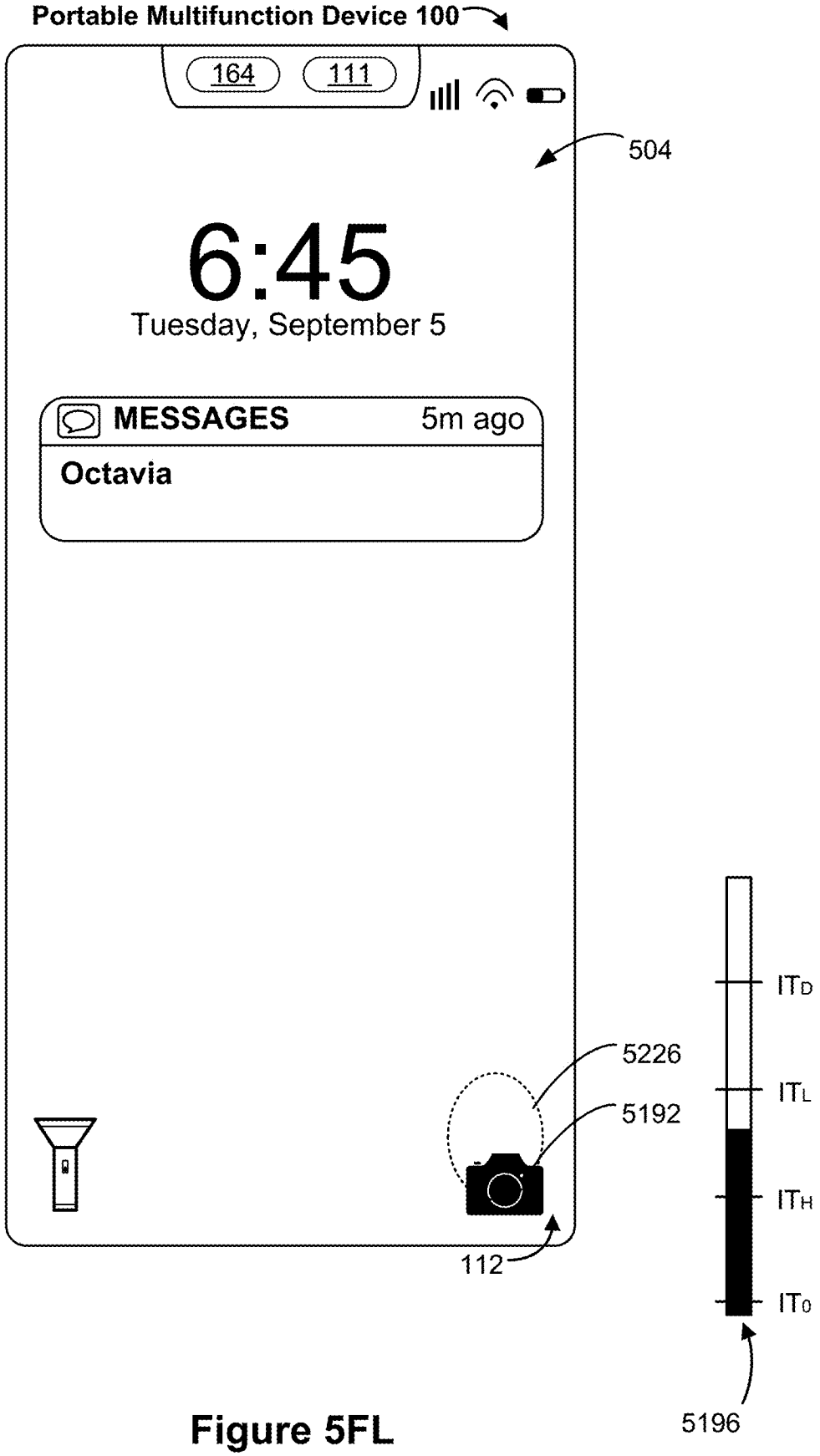

Portable Multifunction Device 100
164
111
504
6:45
Tuesday, September 5
MESSAGES
5m ago
Octavia
5226
5192
112
ITD
ITL
ITH
IT0
5196

Figure 5FL

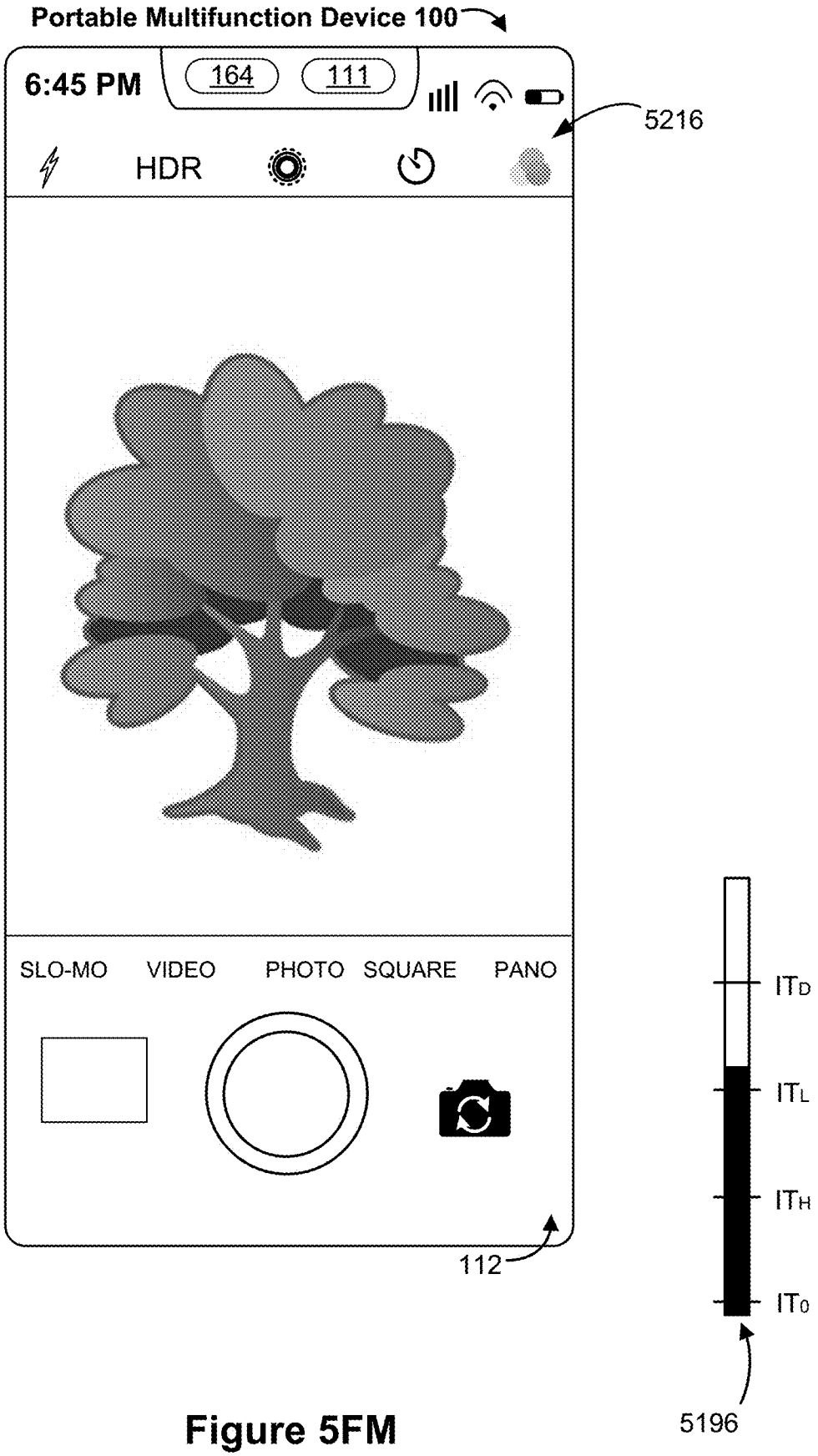


Figure 5FM

Masimo Ex. 1001
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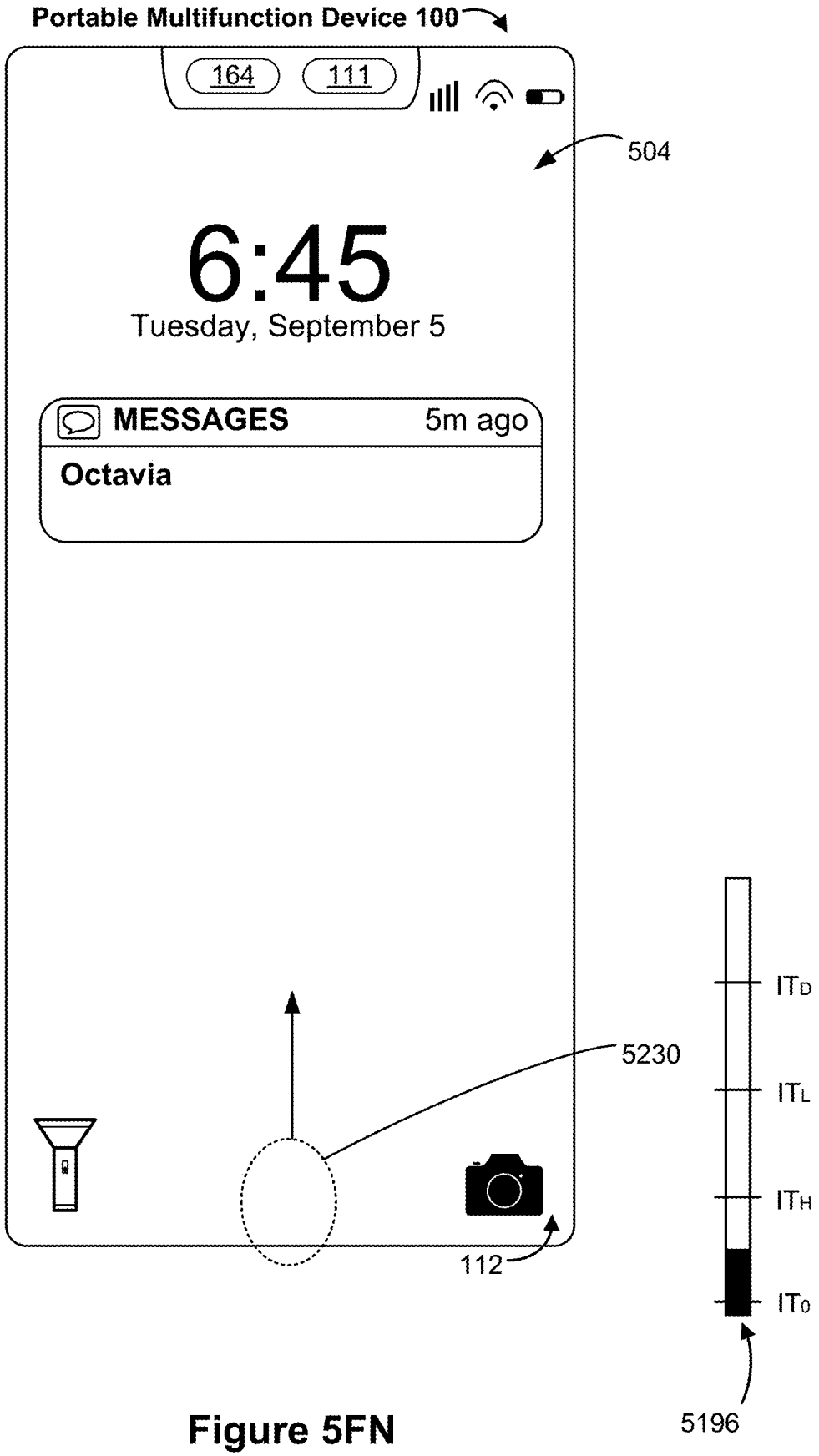


Figure 5FN

Masimo Ex. 1001
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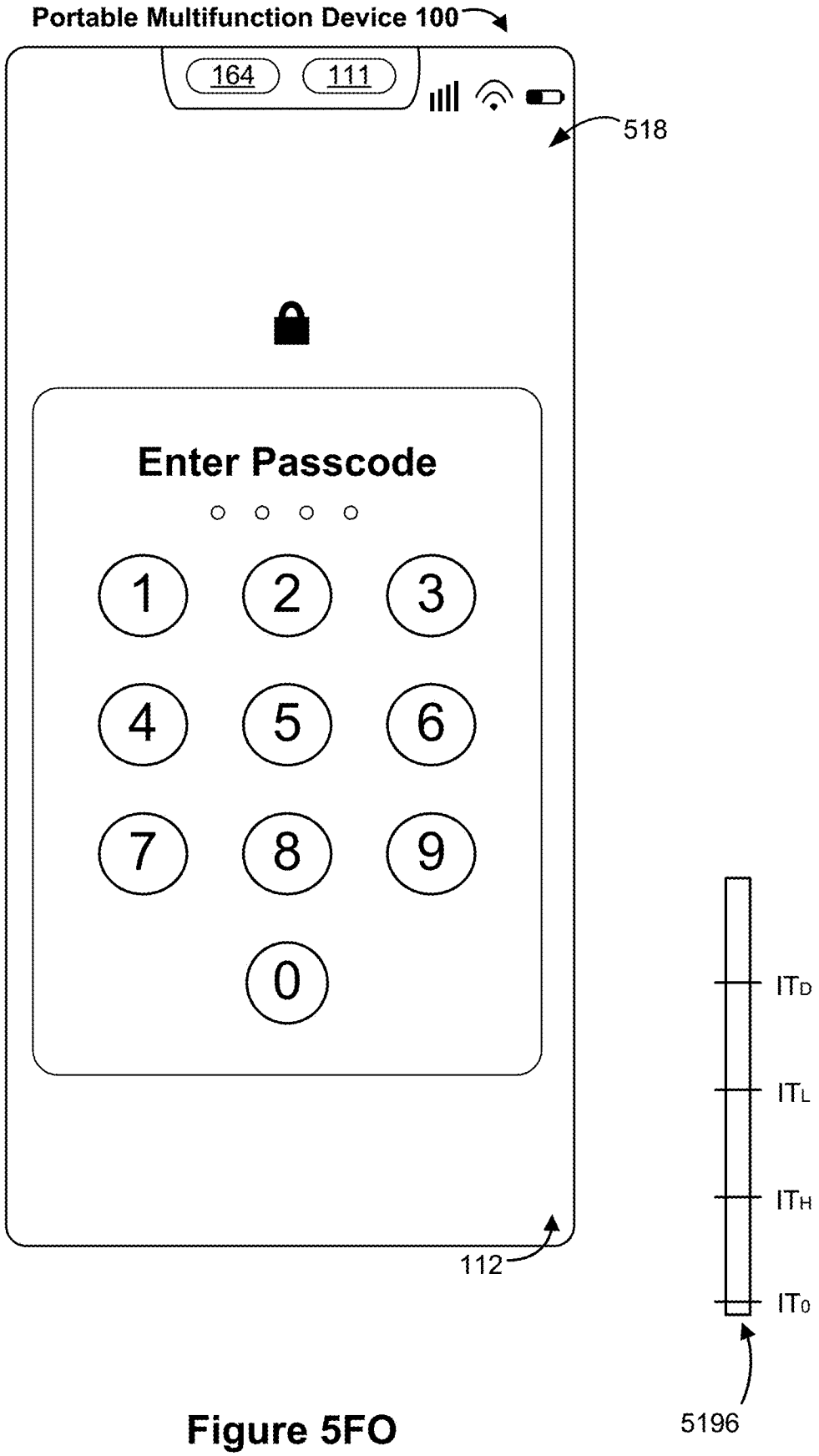

Portable Multifunction Device 100
164
111
518
Enter Passcode
1
2
3
4
5
6
7
8
9
0
112
ITD
ITL
ITH
IT0
5196

Figure 5FO

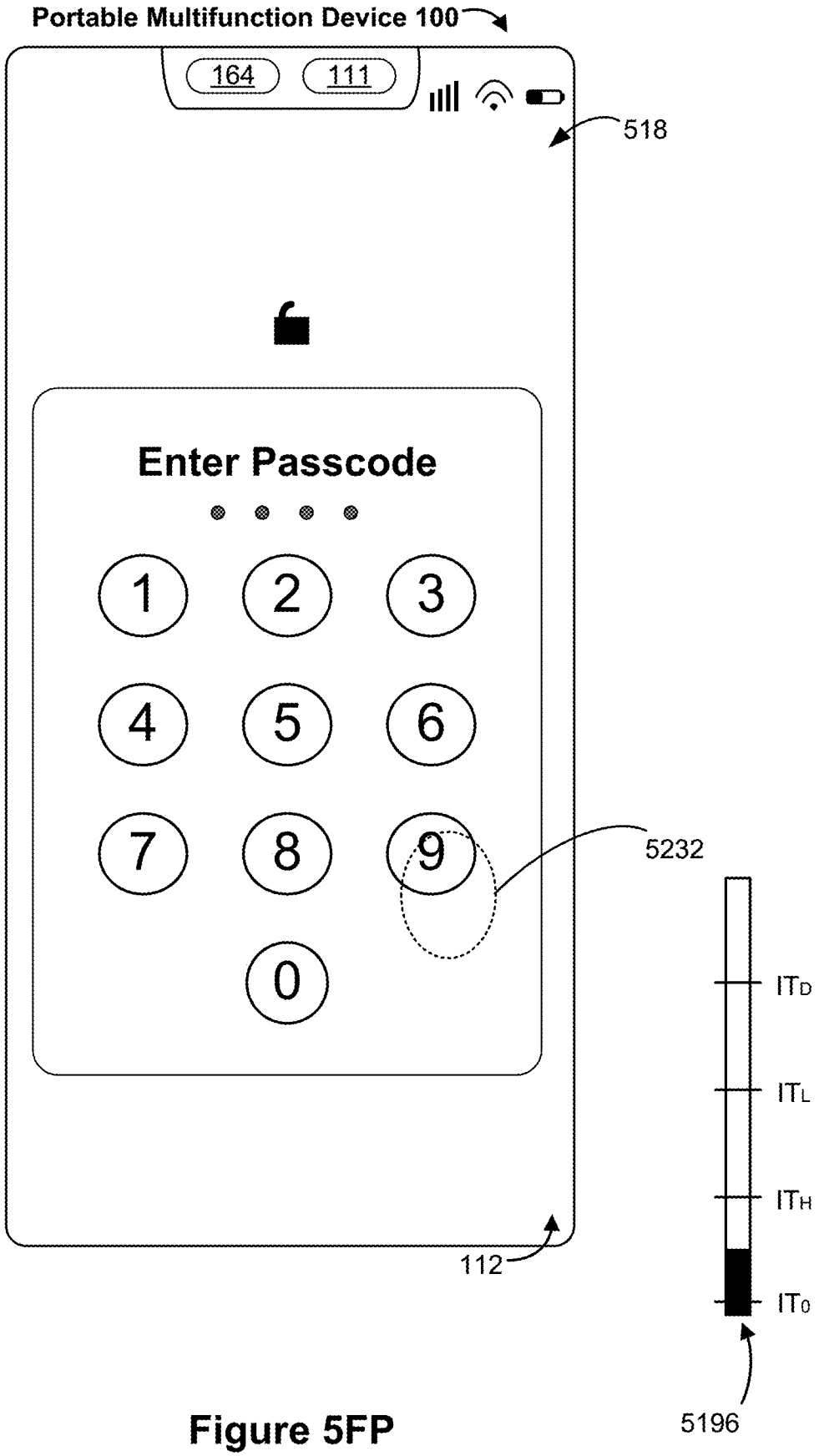

Portable Multifunction Device 100
164
111
518
Enter Passcode
1
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5
6
7
8
9
0
5232
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ITL
ITH
IT0
112
5196

Figure 5FP

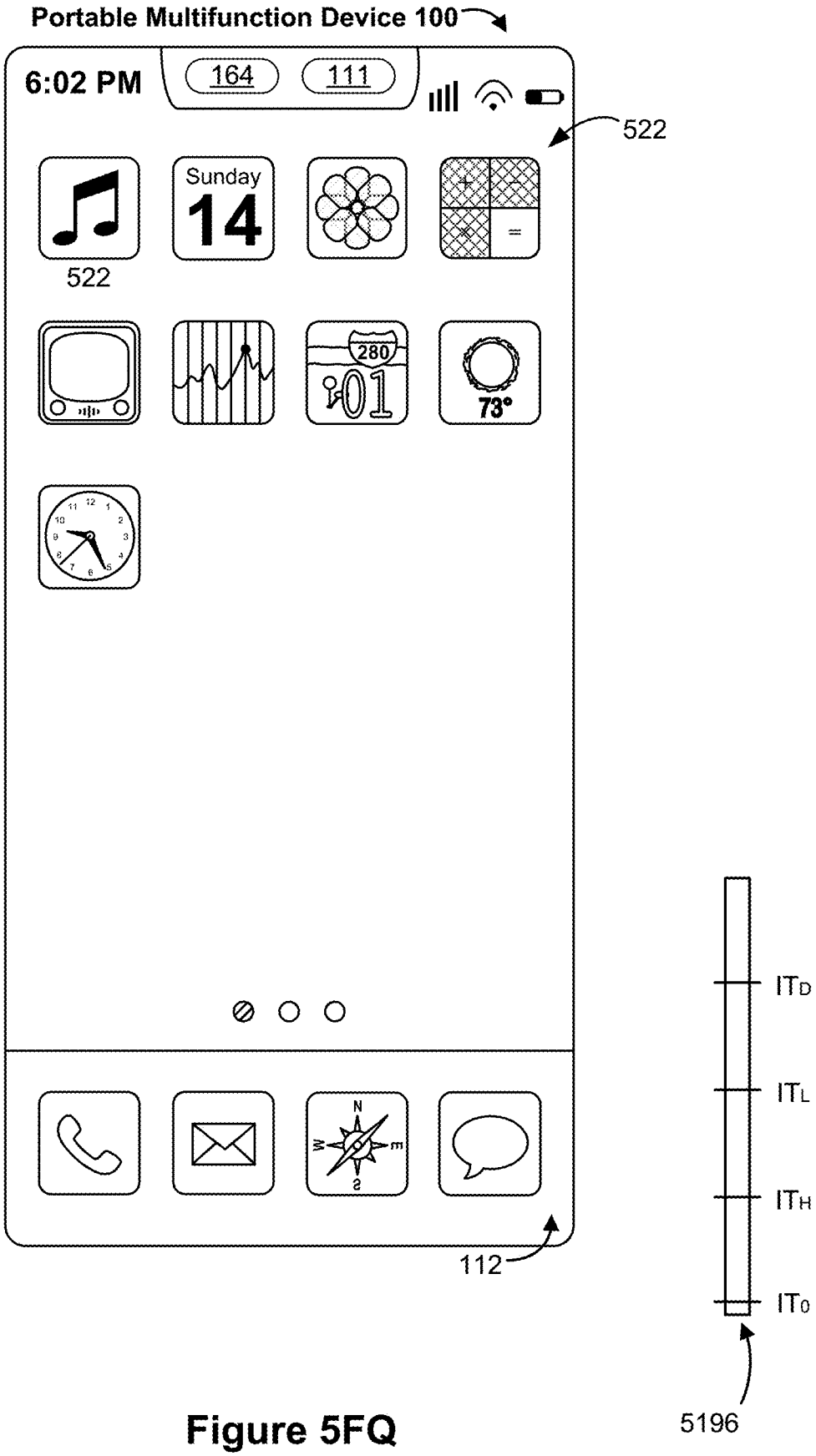


Figure 5FQ

Masimo Ex. 1001
IPR Petition - USP 11,106,352

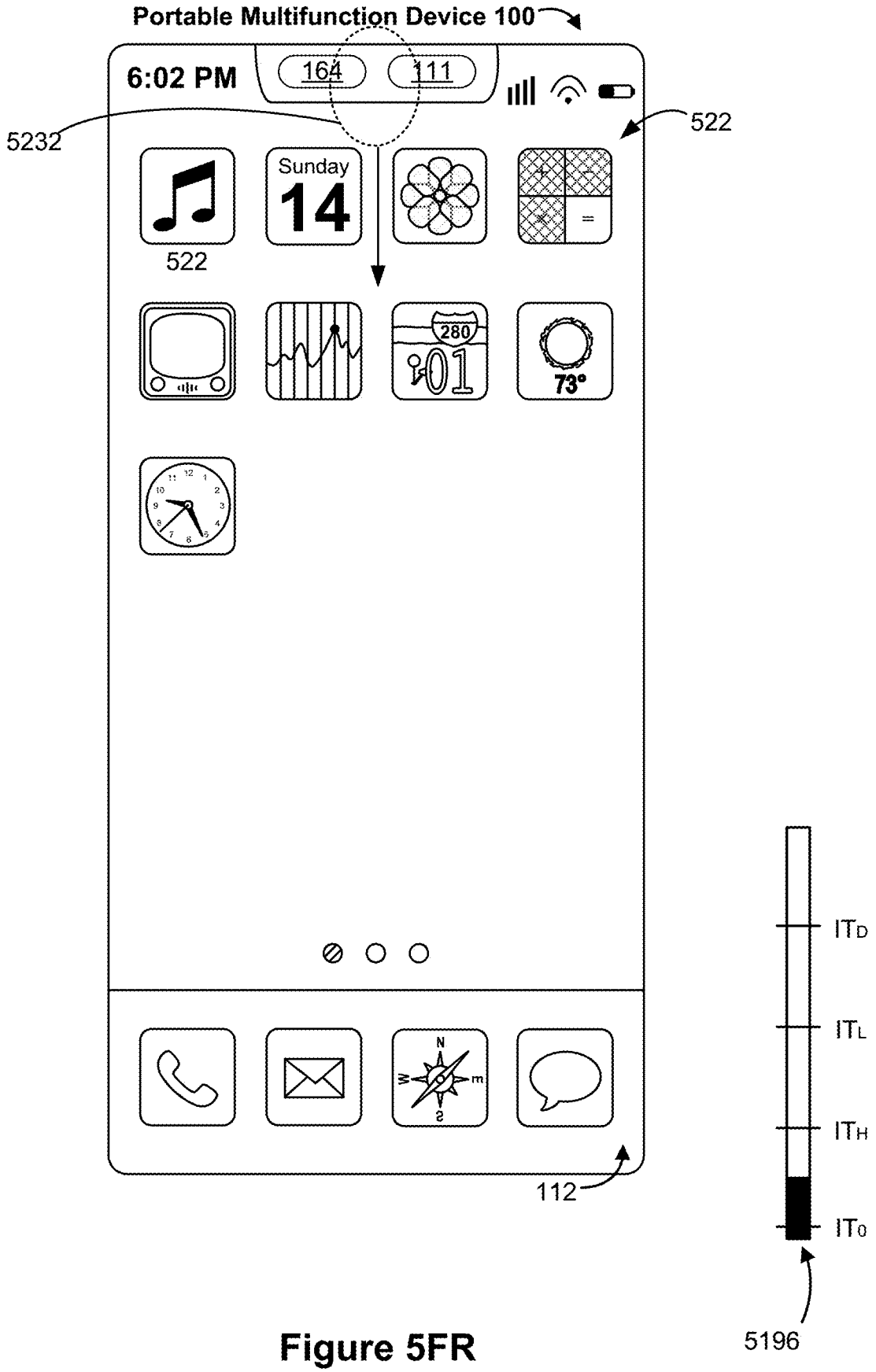


Figure 5FR

Masimo Ex. 1001
IPR Petition - USP 11,106,352

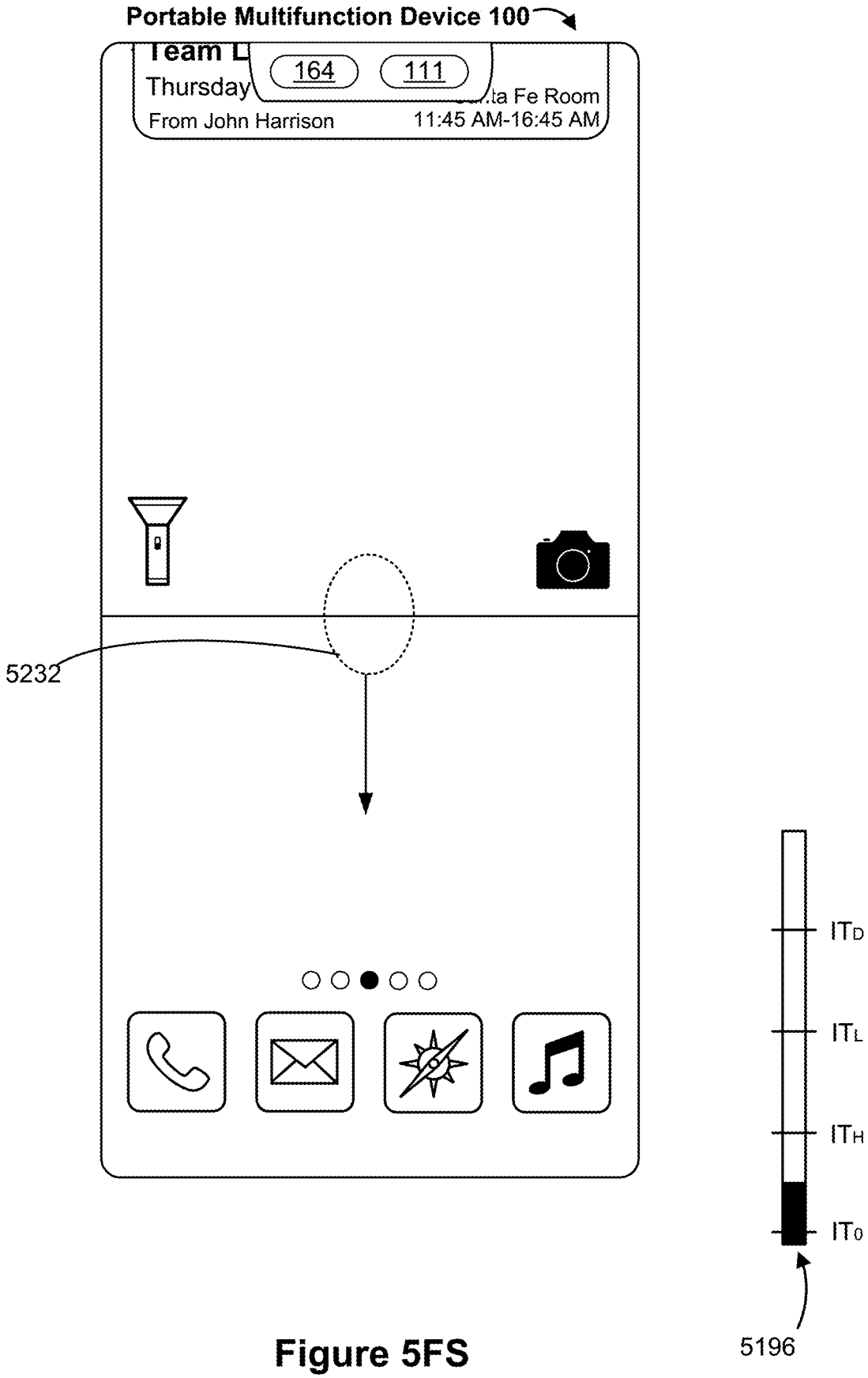


Figure 5FS

Masimo Ex. 1001
IPR Petition - USP 11,106,352

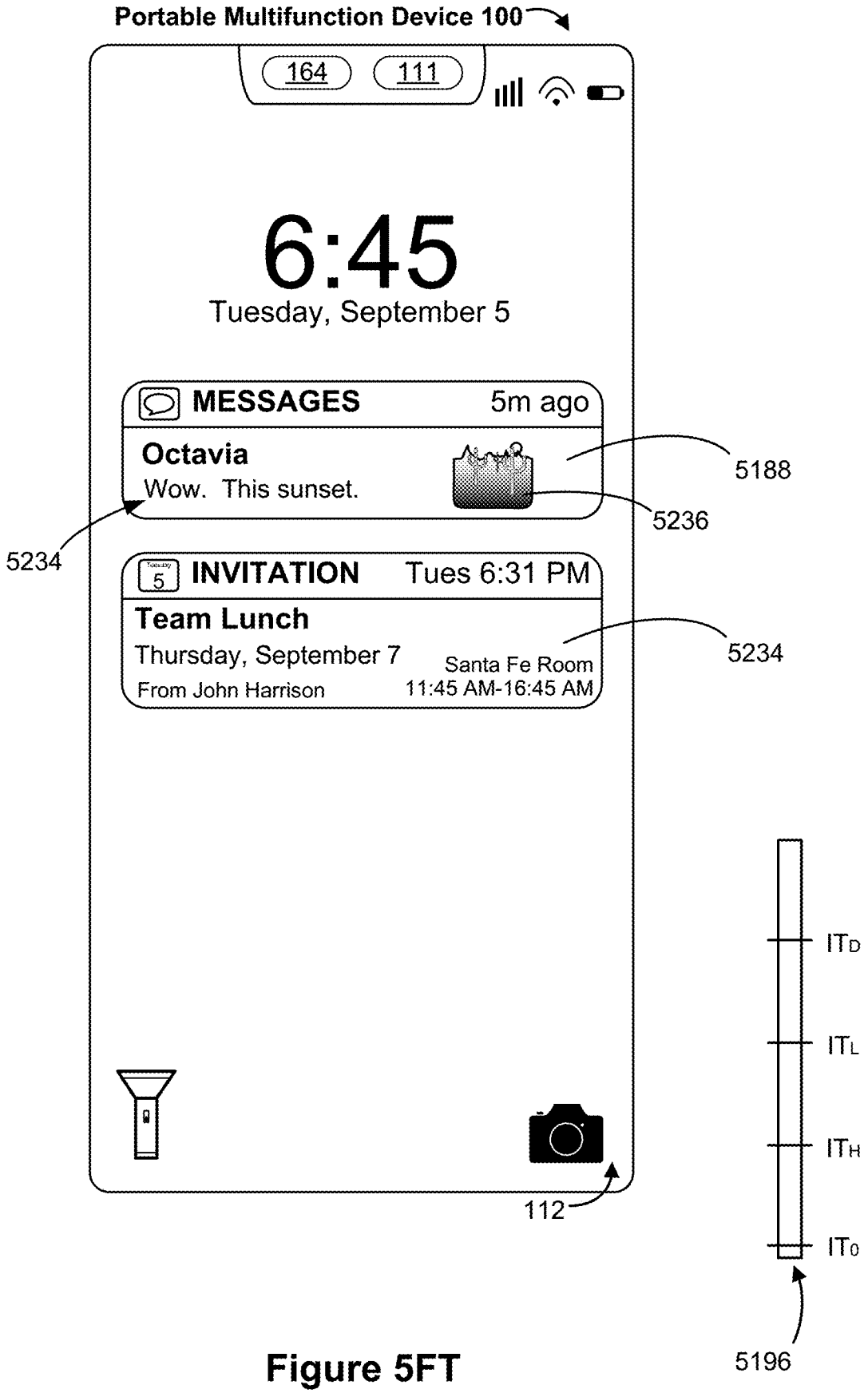


Figure 5FT

Masimo Ex. 1001
IPR Petition - USP 11,106,352

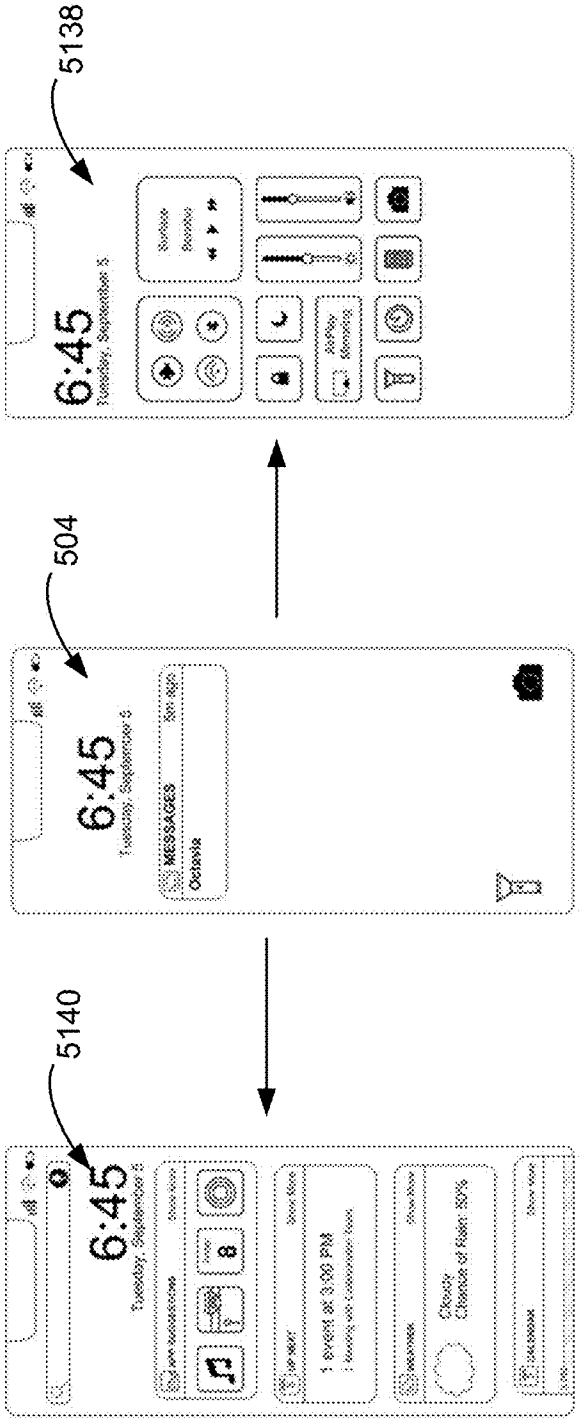


Figure 5FU

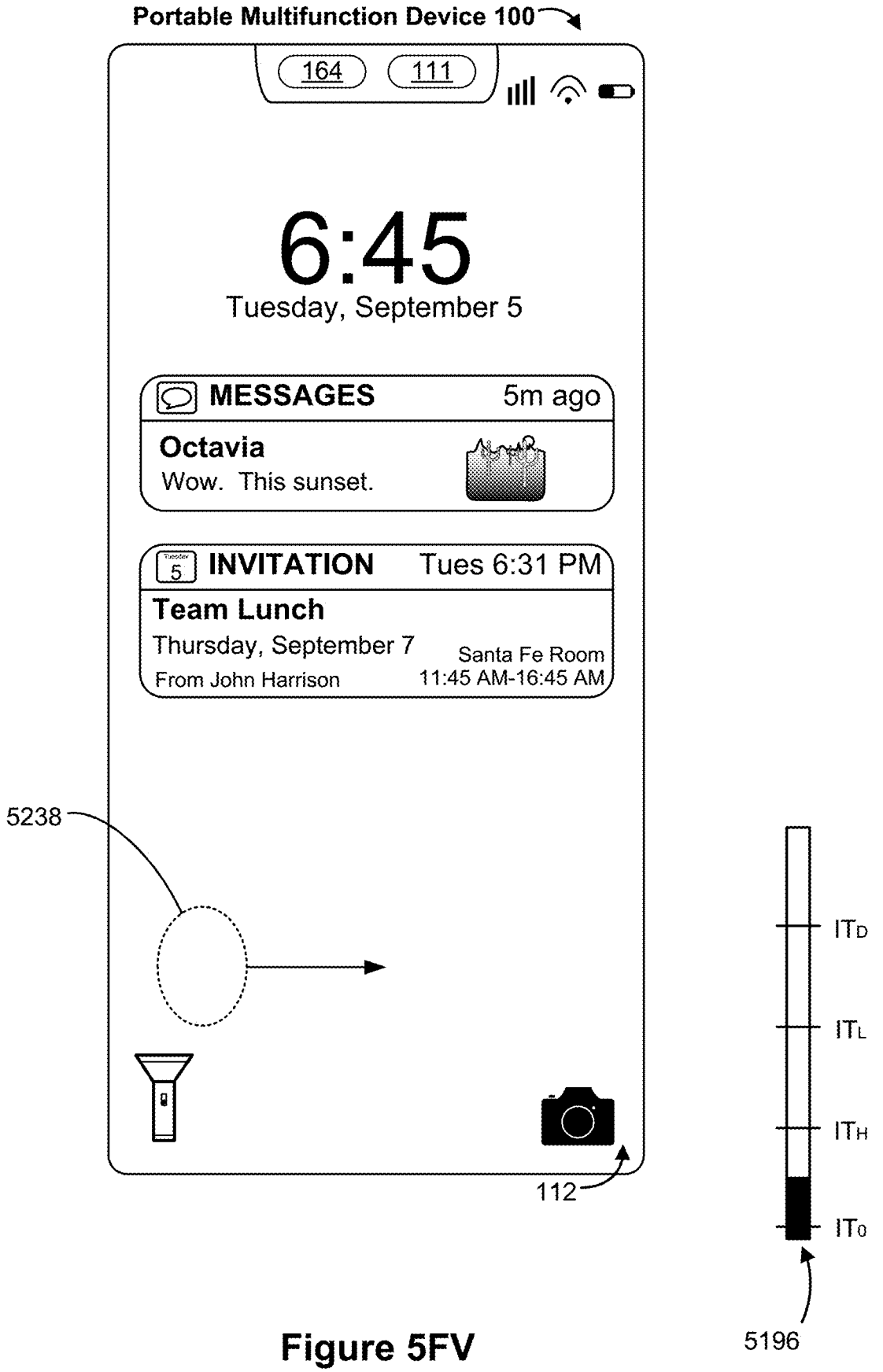


Figure 5FV

Masimo Ex. 1001
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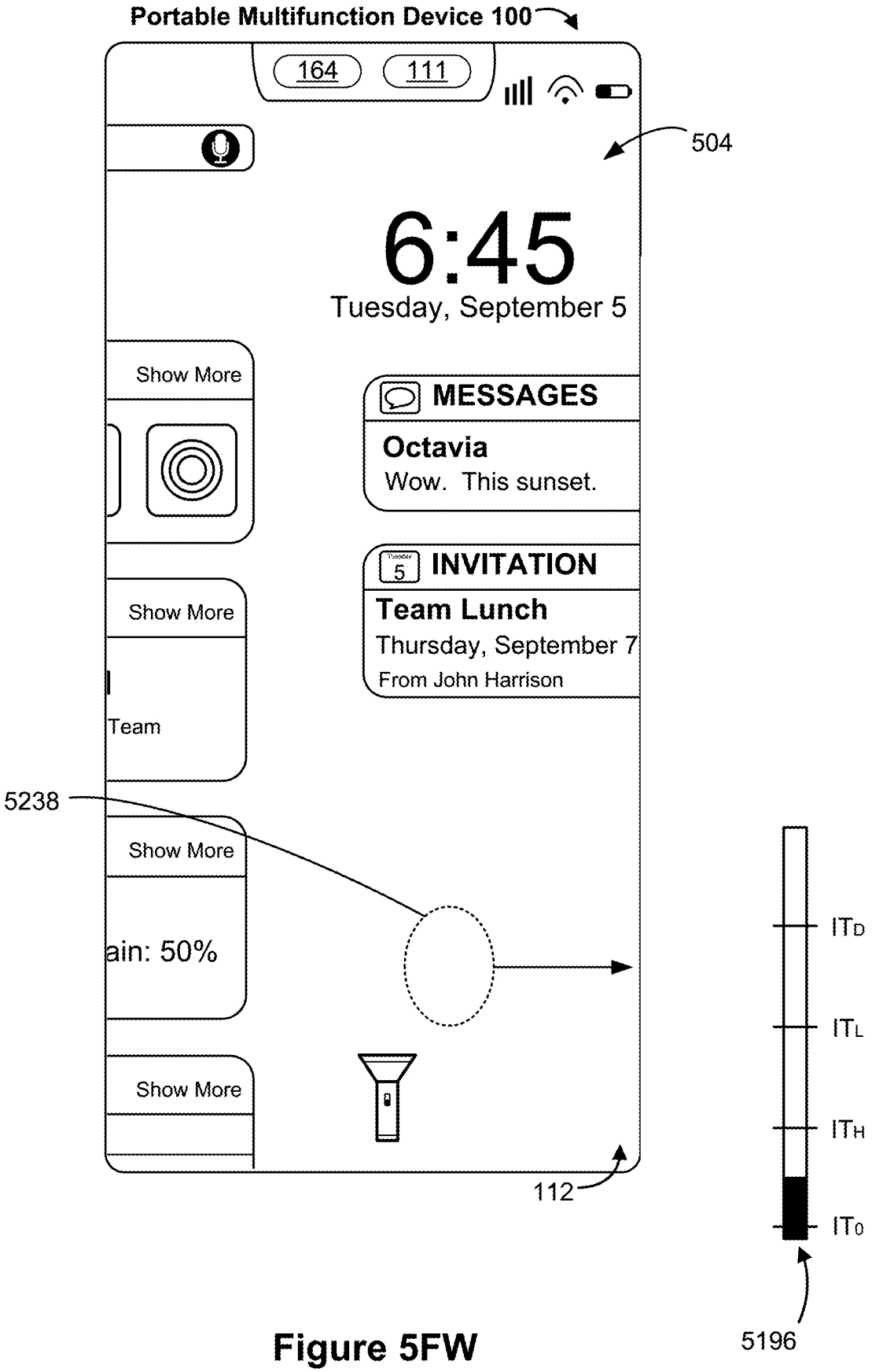


Figure 5FW

Masimo Ex. 1001
IPR Petition - USP 11,106,352

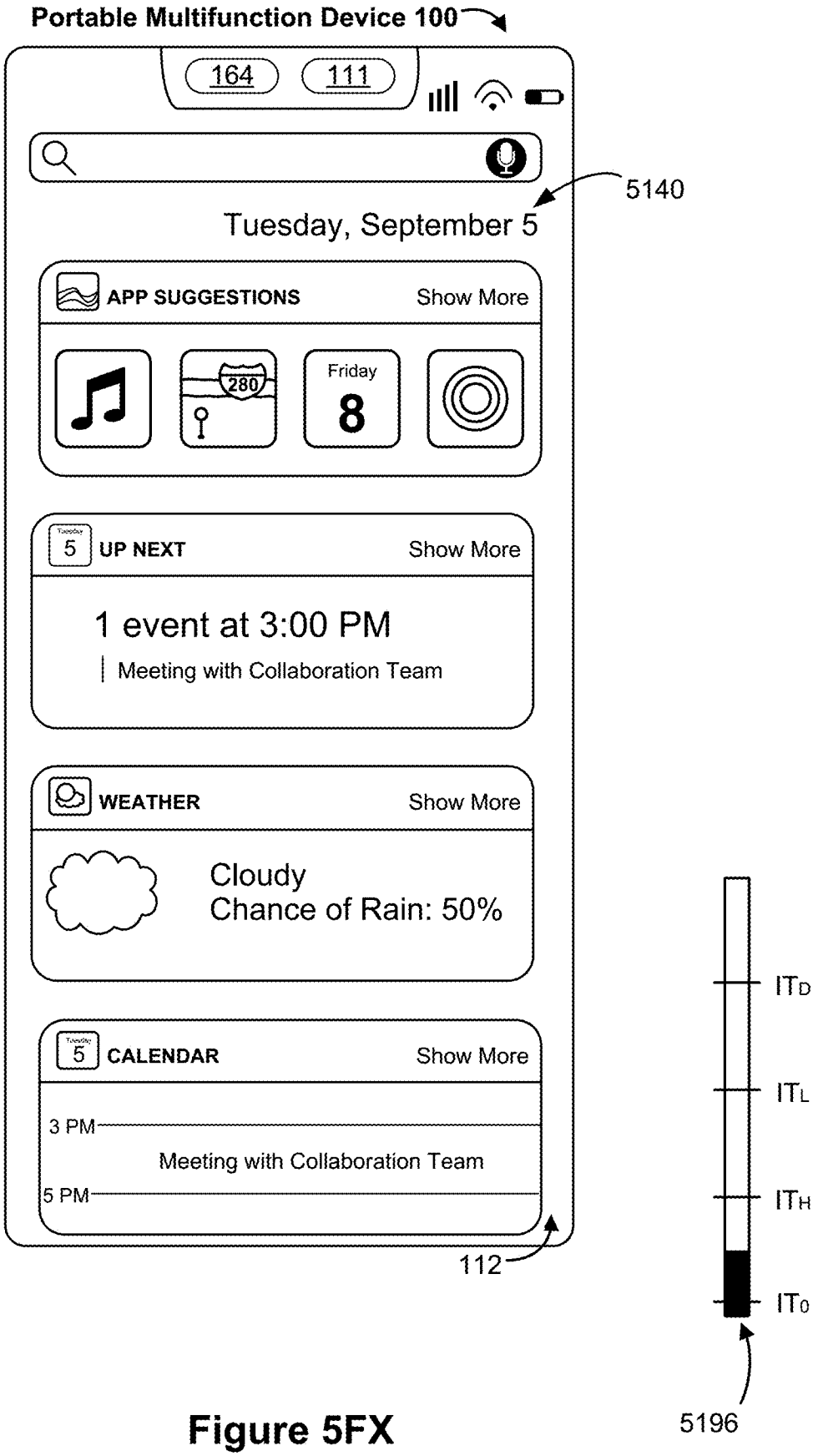


Figure 5FX

Masimo Ex. 1001
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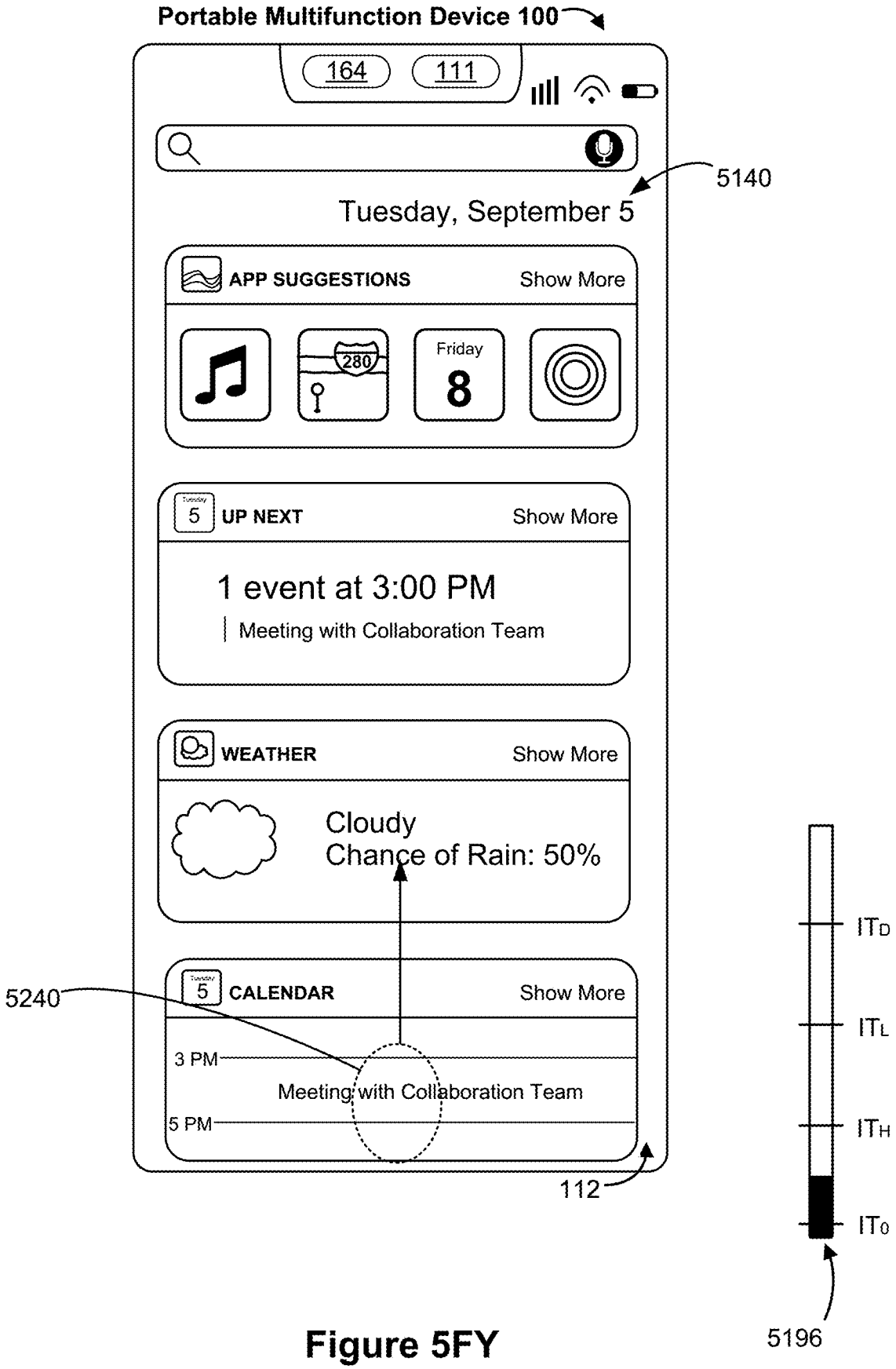


Figure 5FY

Masimo Ex. 1001
IPR Petition - USP 11,106,352

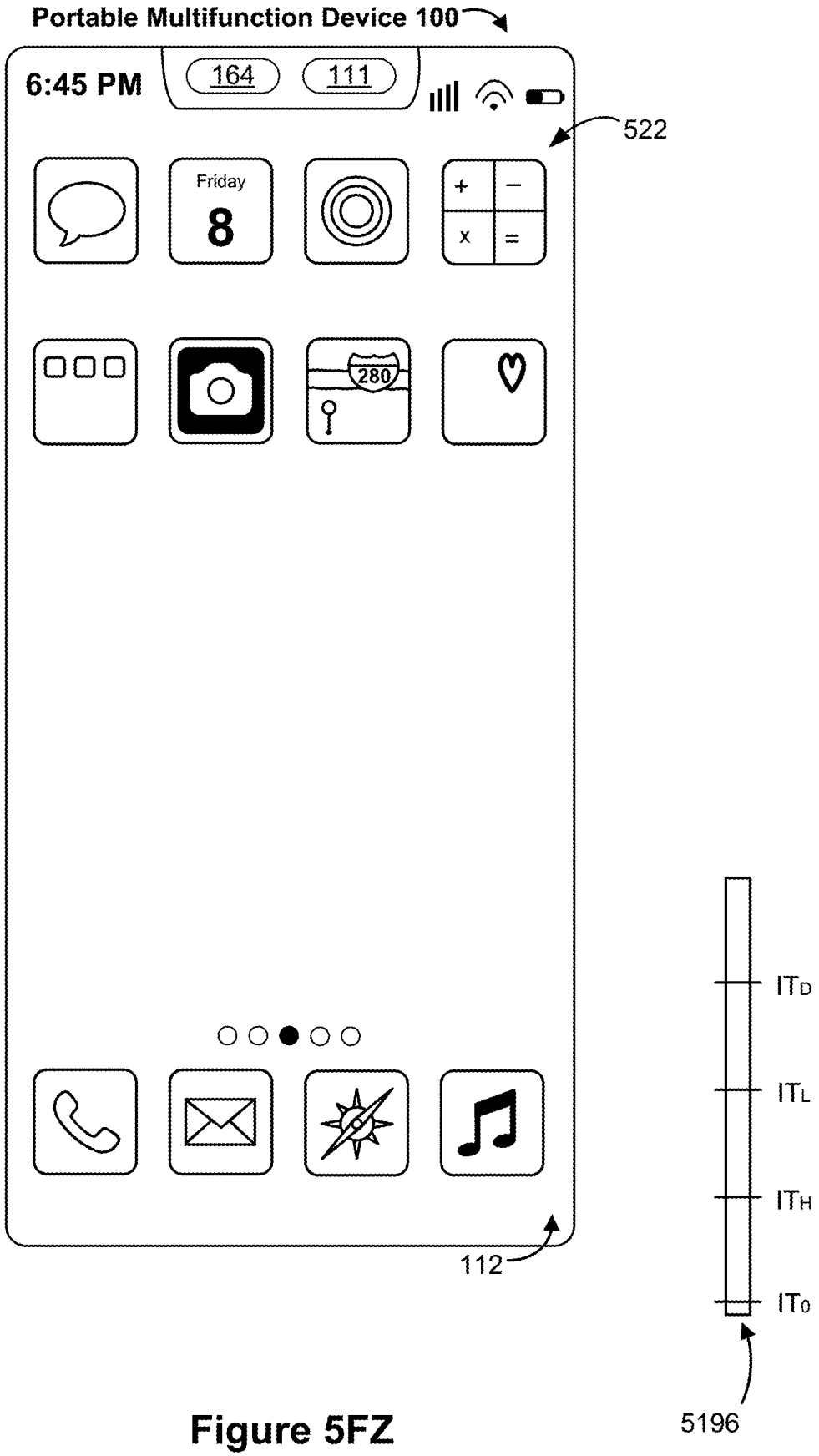

Portable Multifunction Device 100
6:45 PM
164
111
522
Friday
8
280
112
ITD
ITL
ITH
IT0
5196

Figure 5FZ

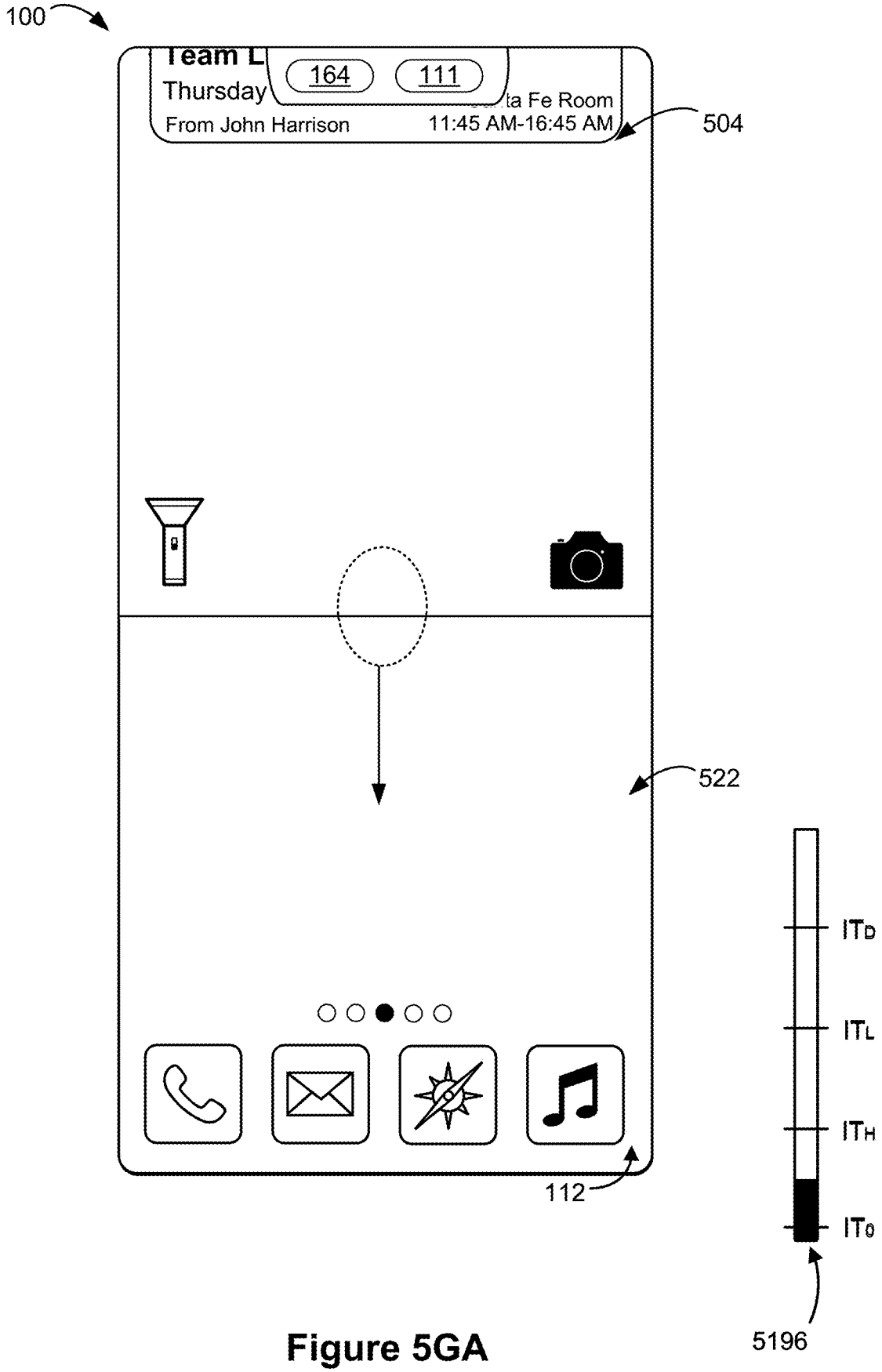

100
Team L
164
111
Thursday
ta Fe Room
From John Harrison
11:45 AM-16:45 AM
504
522
112
ITD
ITL
ITH
ITO
5196

Figure 5GA

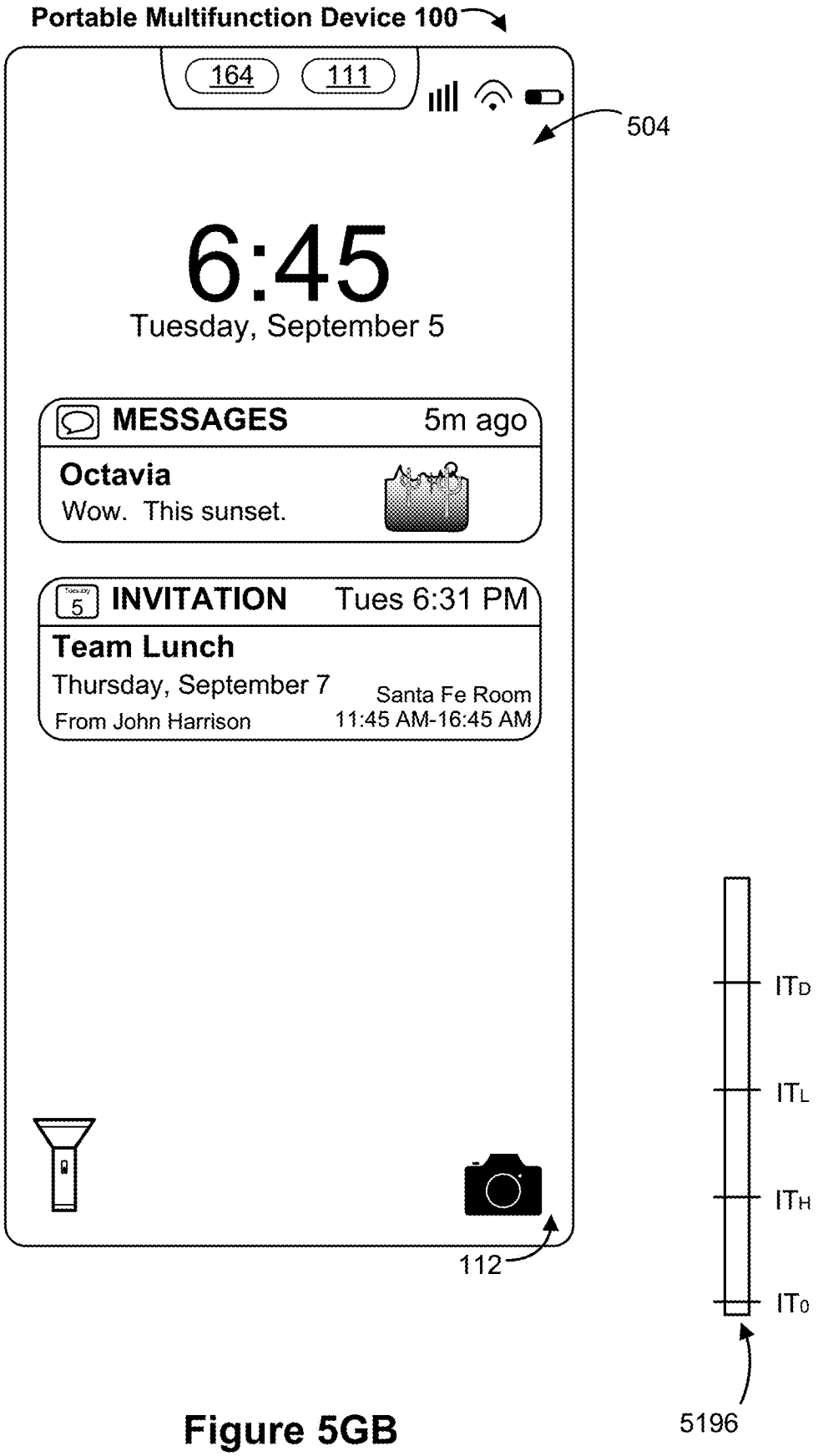


Figure 5GB

Masimo Ex. 1001
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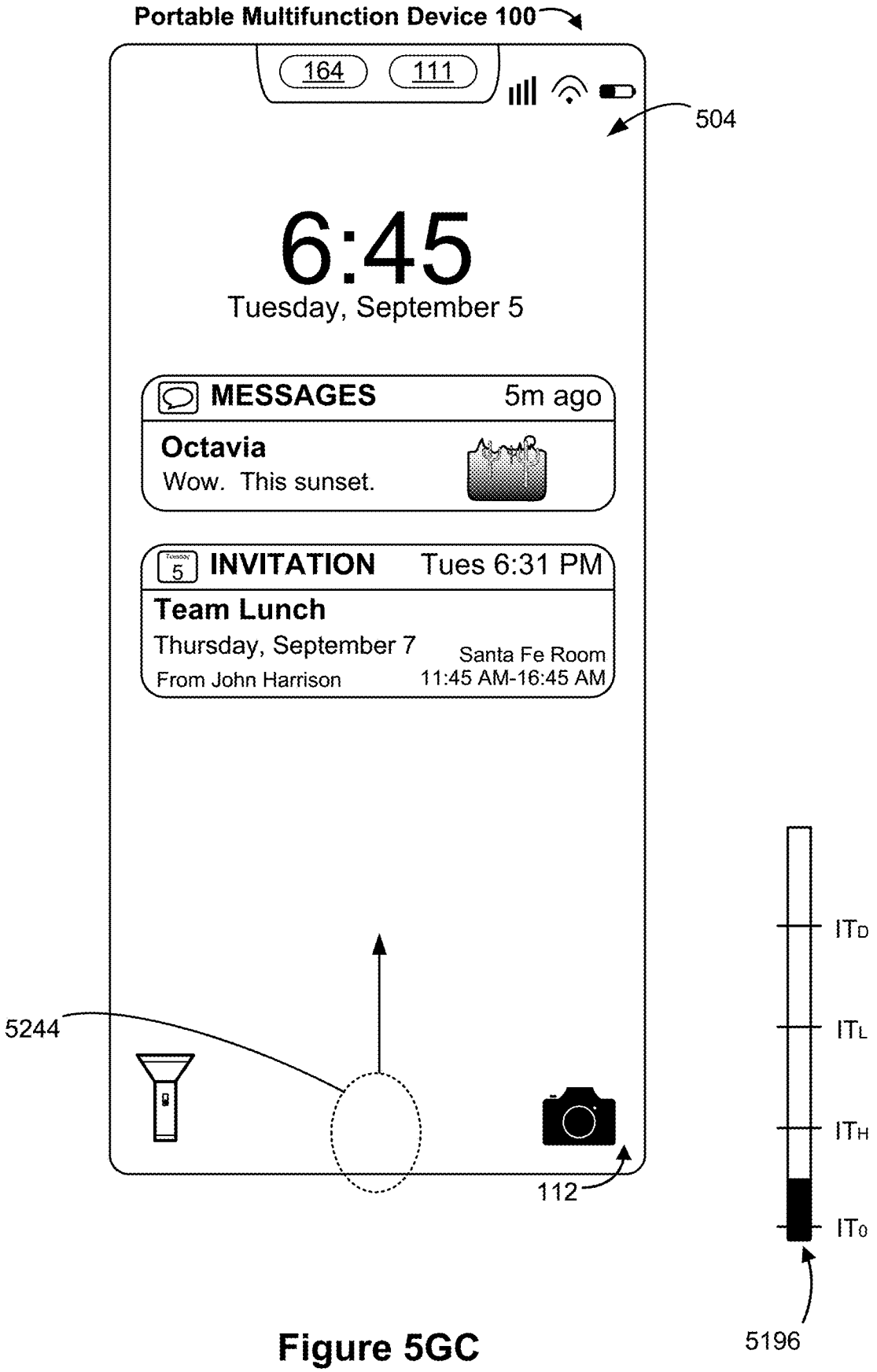


Figure 5GC

Masimo Ex. 1001
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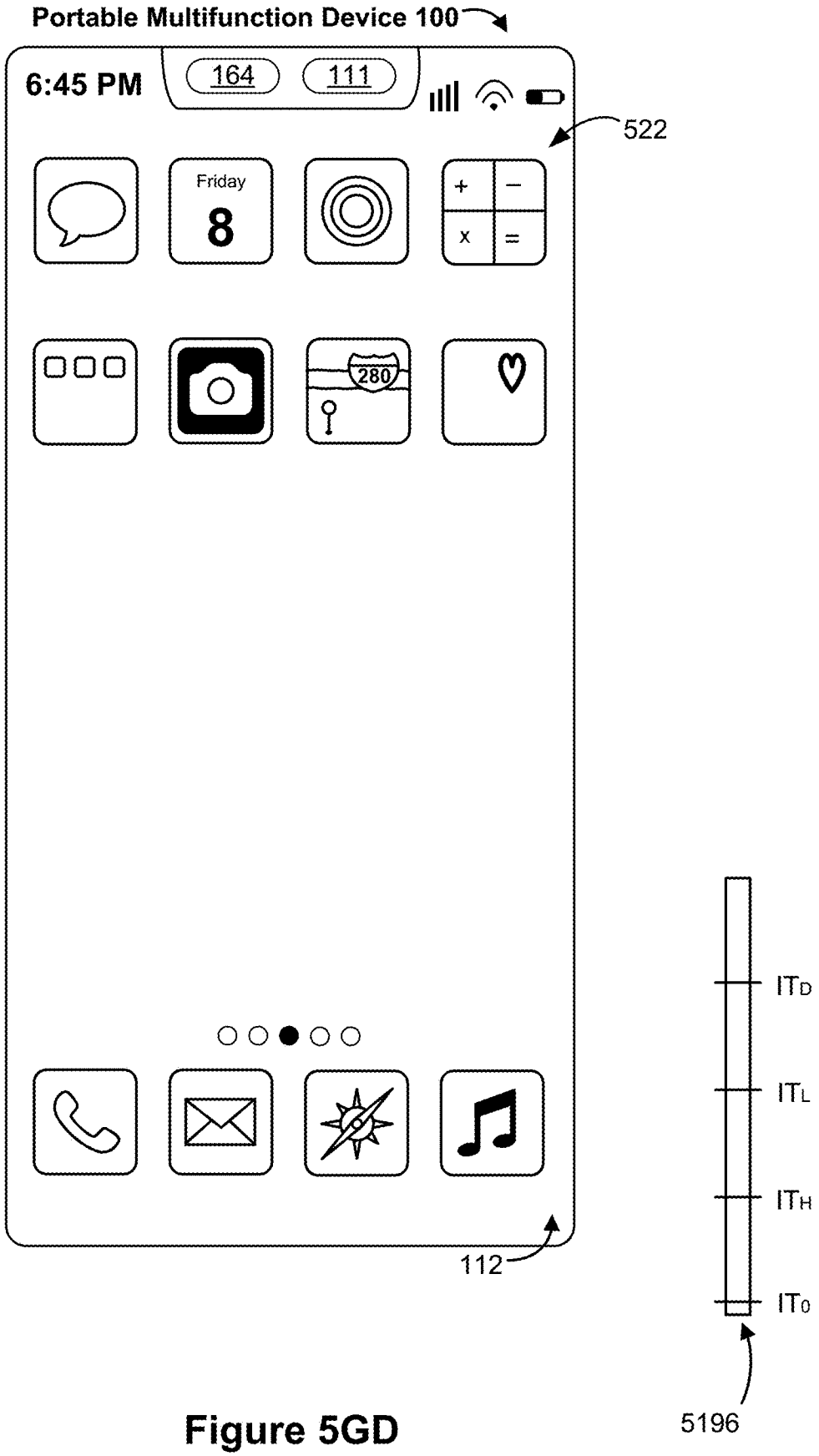

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6:45 PM
164
111
522
Friday
8
280
112
ITD
ITL
ITH
IT0
5196

Figure 5GD

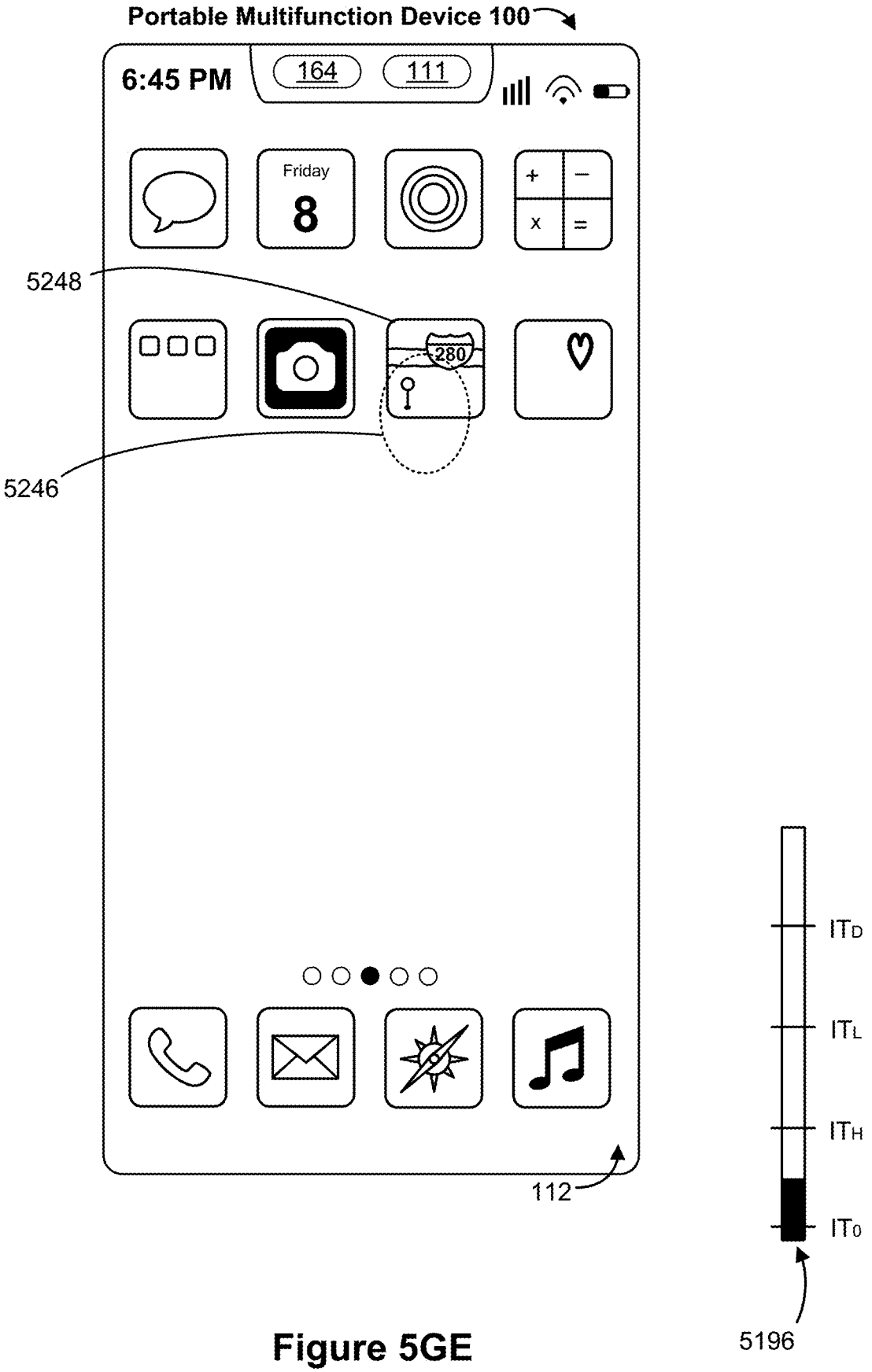

Portable Multifunction Device 100
6:45 PM
164
111
Friday
8
280
5248
5246
112
ITD
ITL
ITH
ITO
5196

Figure 5GE

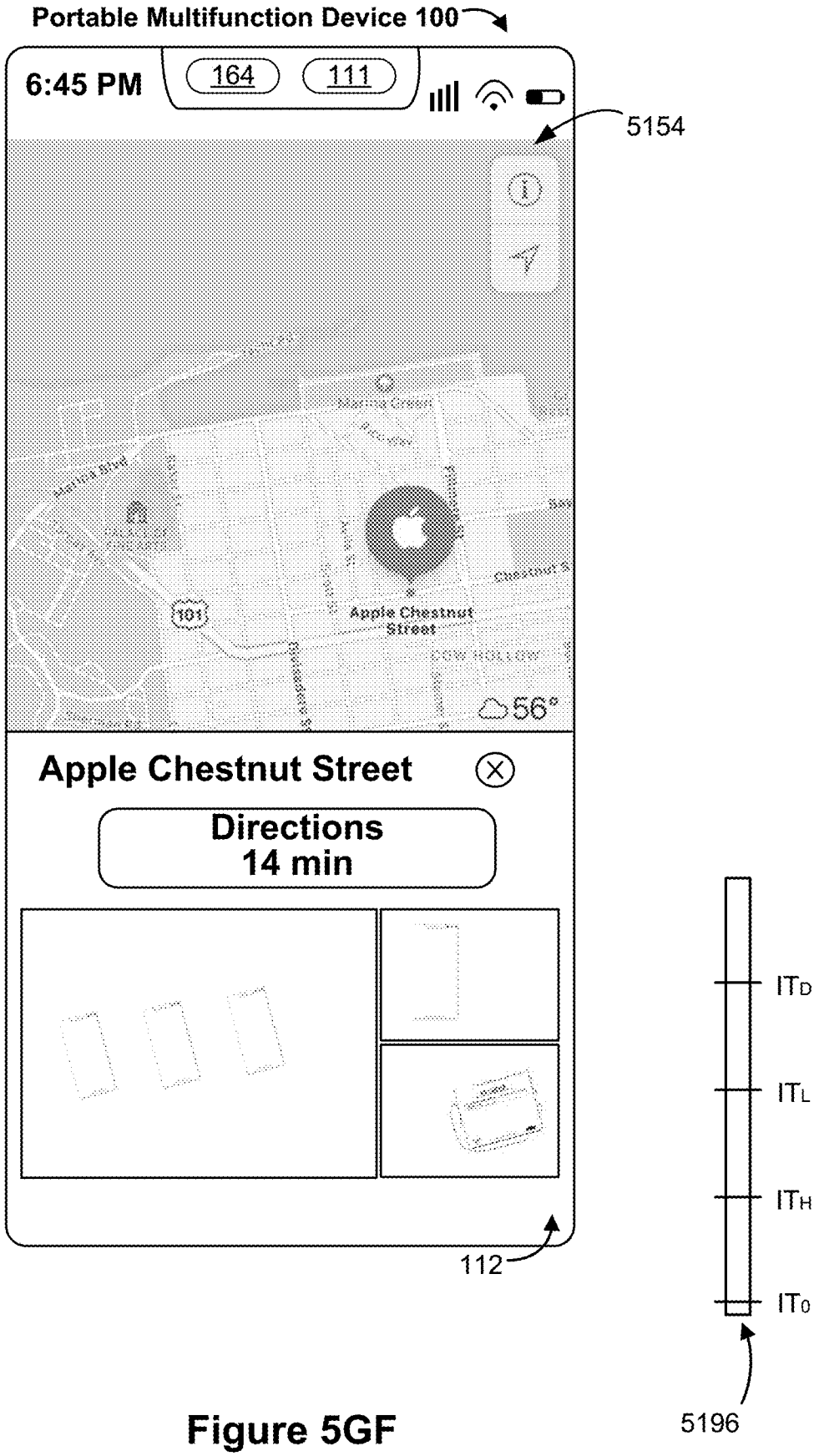

Portable Multifunction Device 100
6:45 PM
164
111
5154
Apple Chestnut Street
101
56°
Apple Chestnut Street
Directions
14 min
112
ITD
ITL
ITH
IT0
5196

Figure 5GF

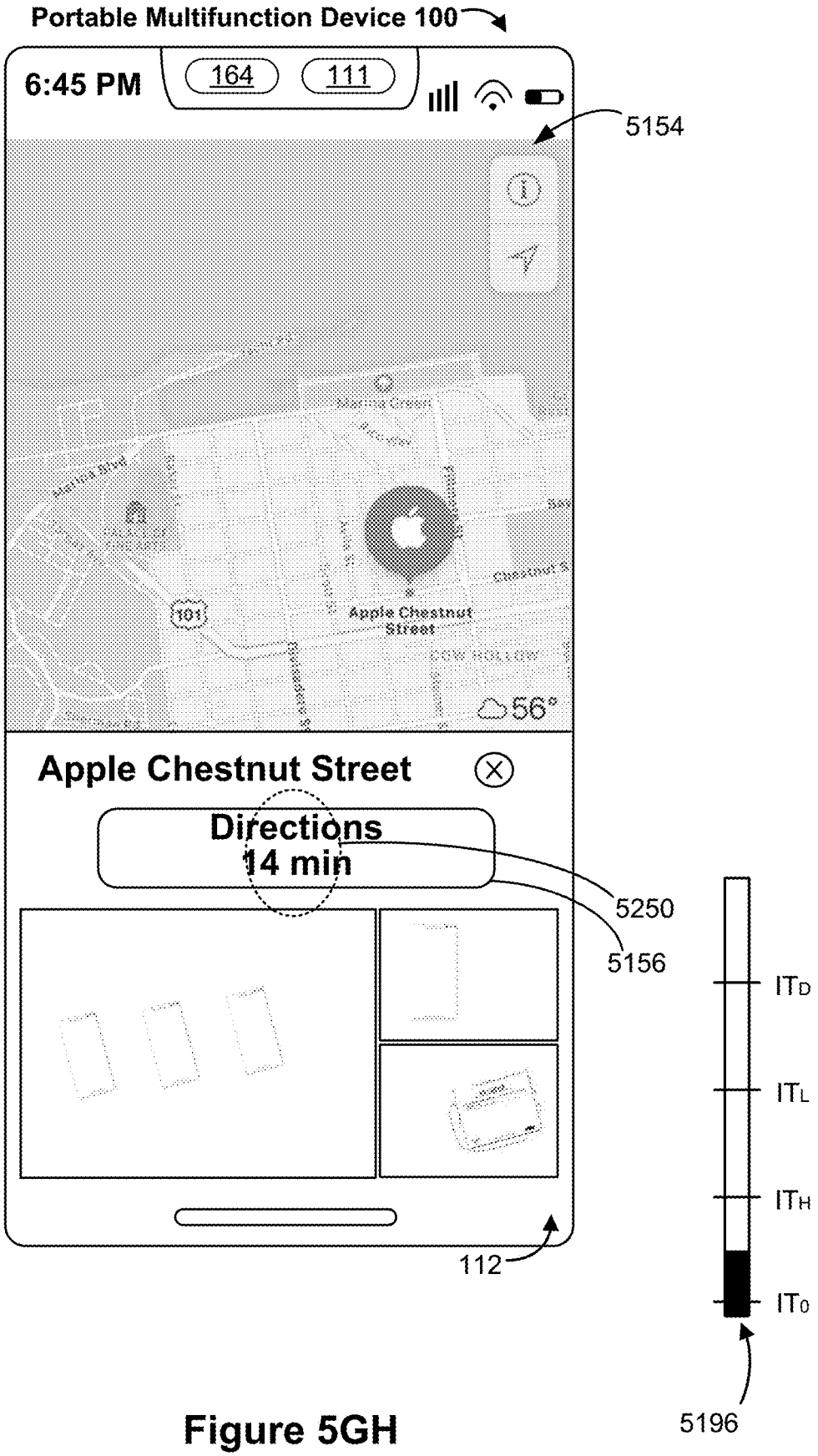


Figure 5GH

Masimo Ex. 1001
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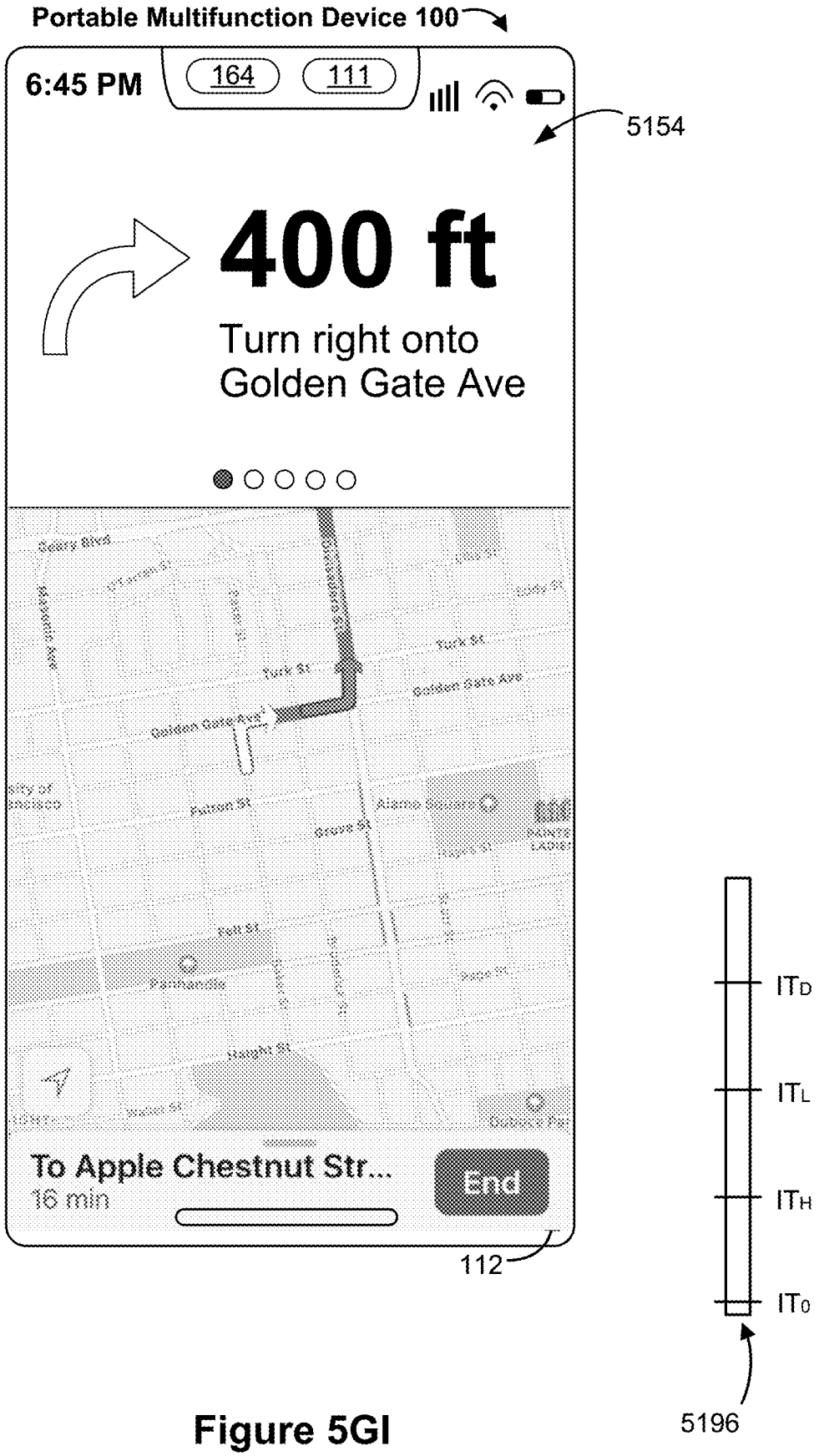


Figure 5GI

Masimo Ex. 1001
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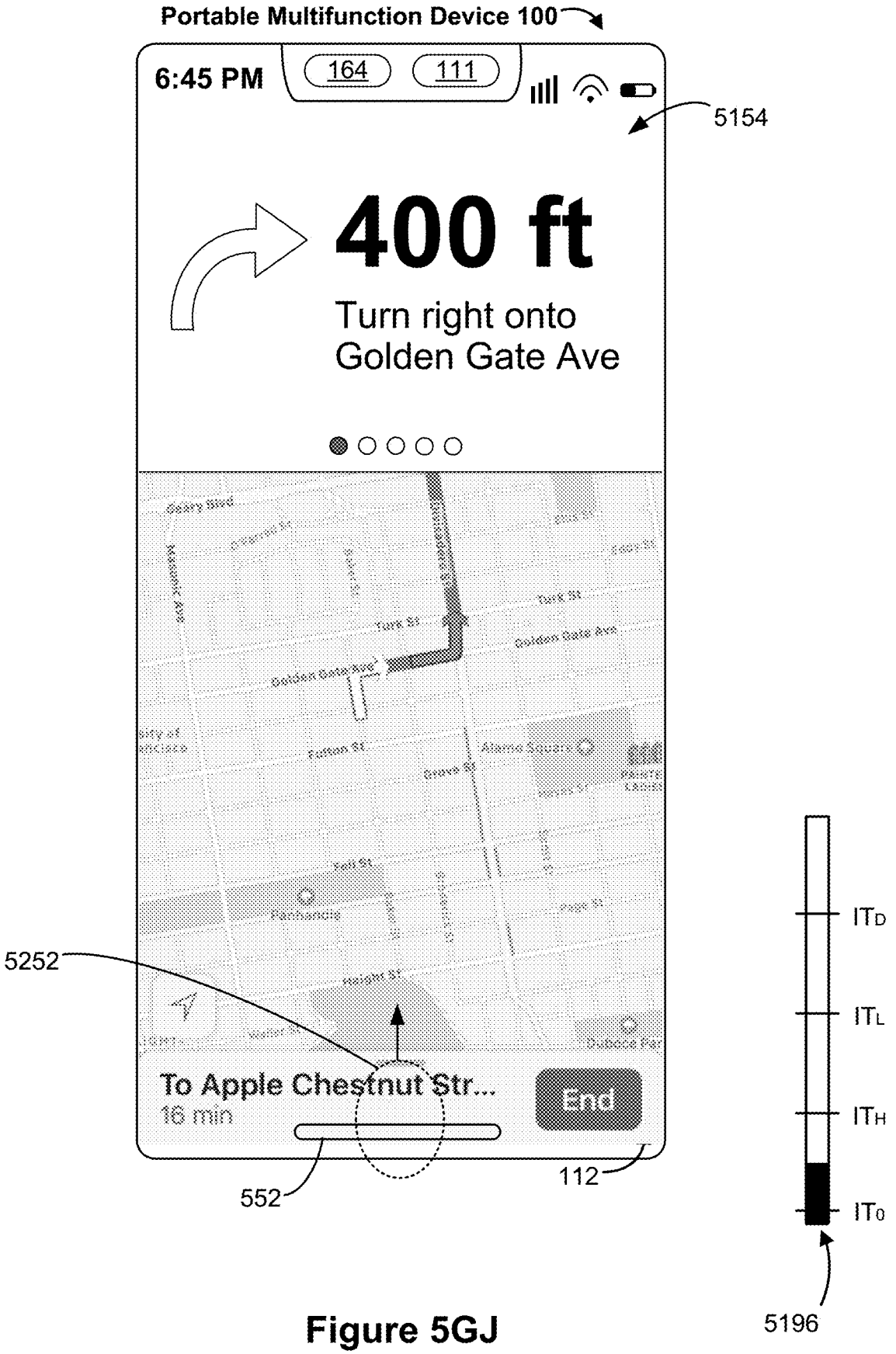

Portable Multifunction Device 100
6:45 PM
164
111
5154
400 ft
Turn right onto
Golden Gate Ave
To Apple Chestnut Str...
16 min
End
5252
552
112
ITD
ITL
ITH
ITO
5196

Figure 5GJ

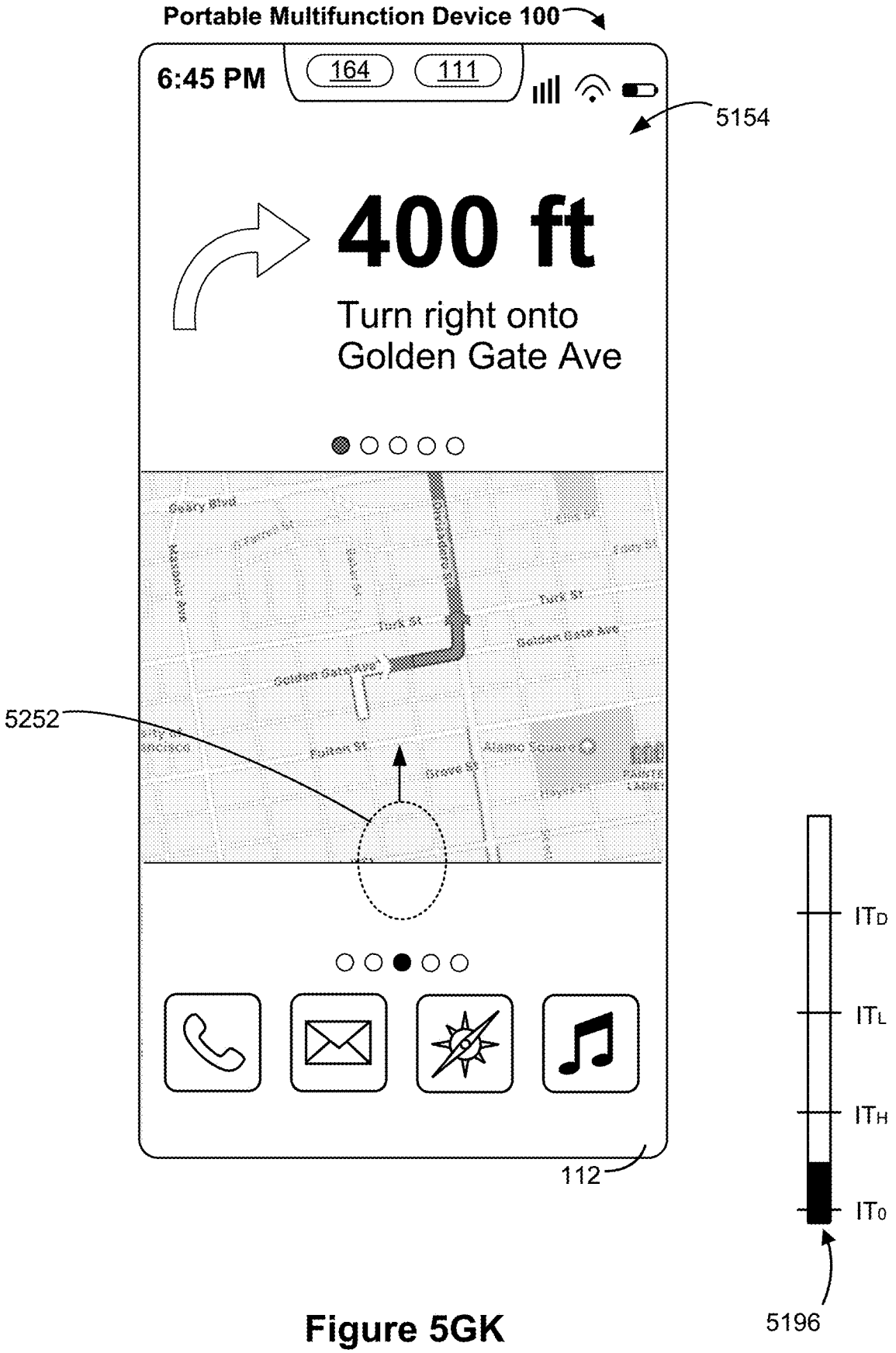


Figure 5GK

Masimo Ex. 1001
IPR Petition - USP 11,106,352

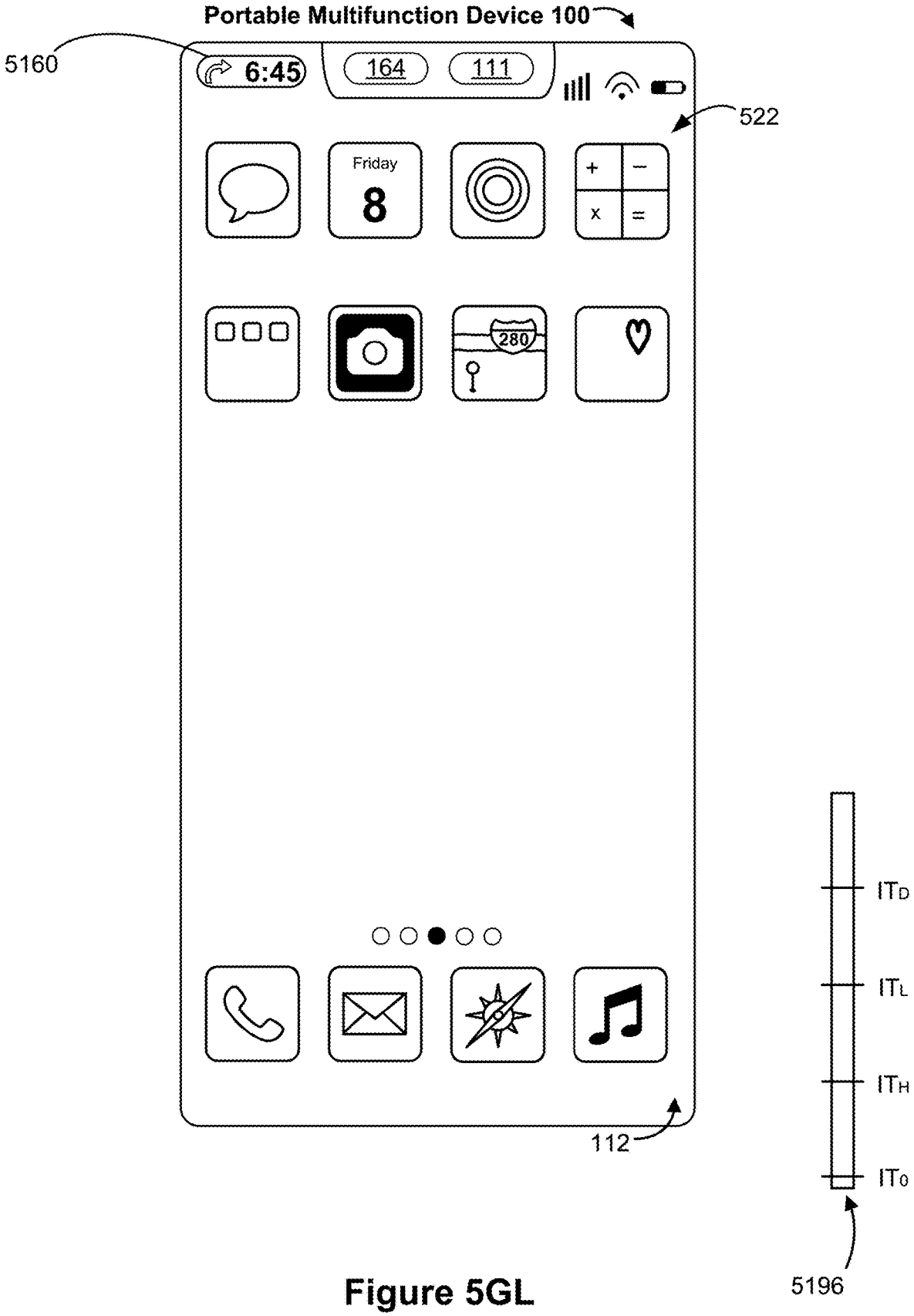

Portable Multifunction Device 100
5160
6:45
164
111
522
Friday
8
280
112
ITD
ITL
ITH
ITO
5196

Figure 5GL

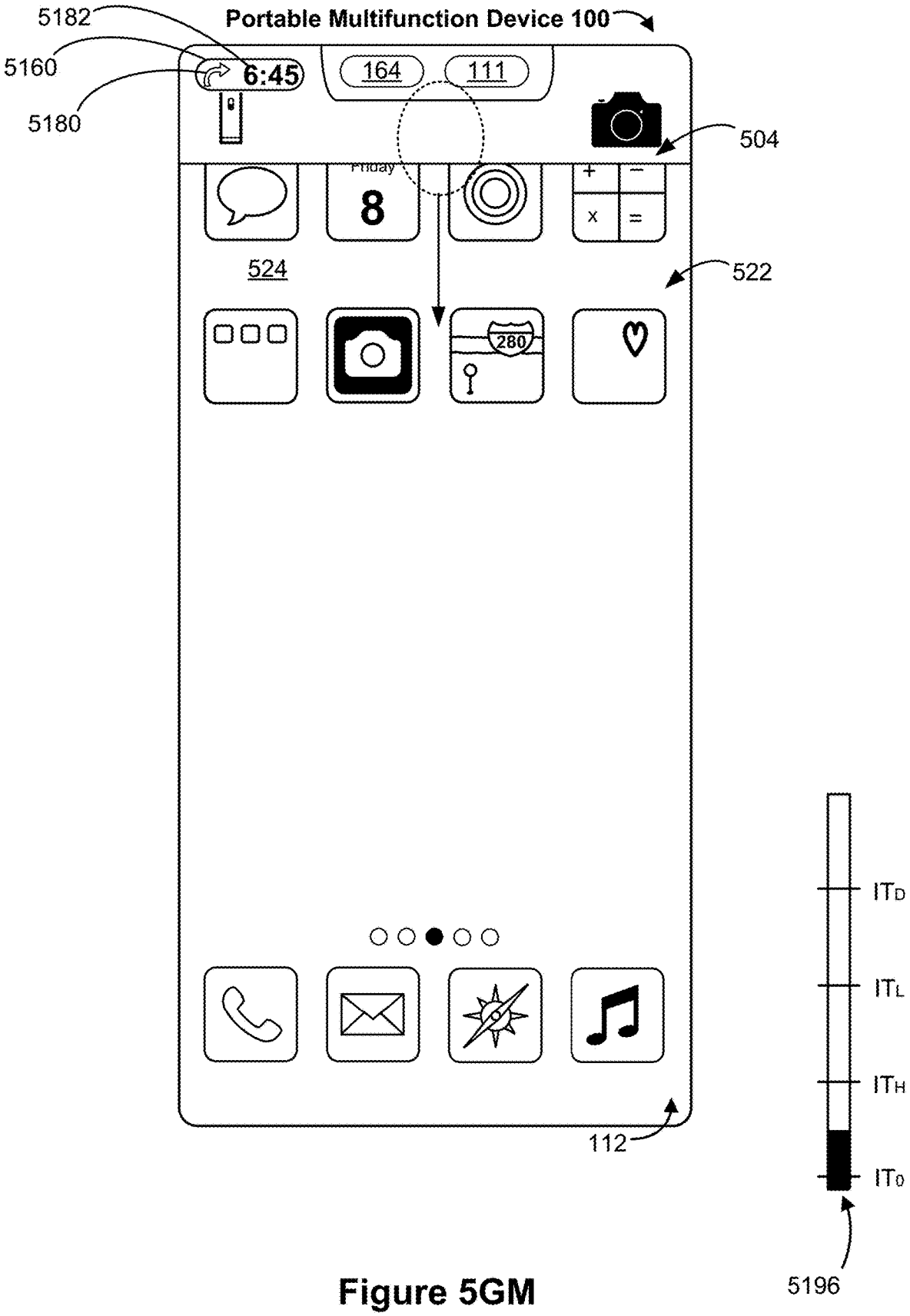

5182
Portable Multifunction Device 100
5160
6:45
164
111
5180
504
Friday
8
524
522
280
112
ITD
ITL
ITH
IT0
5196

Figure 5GM

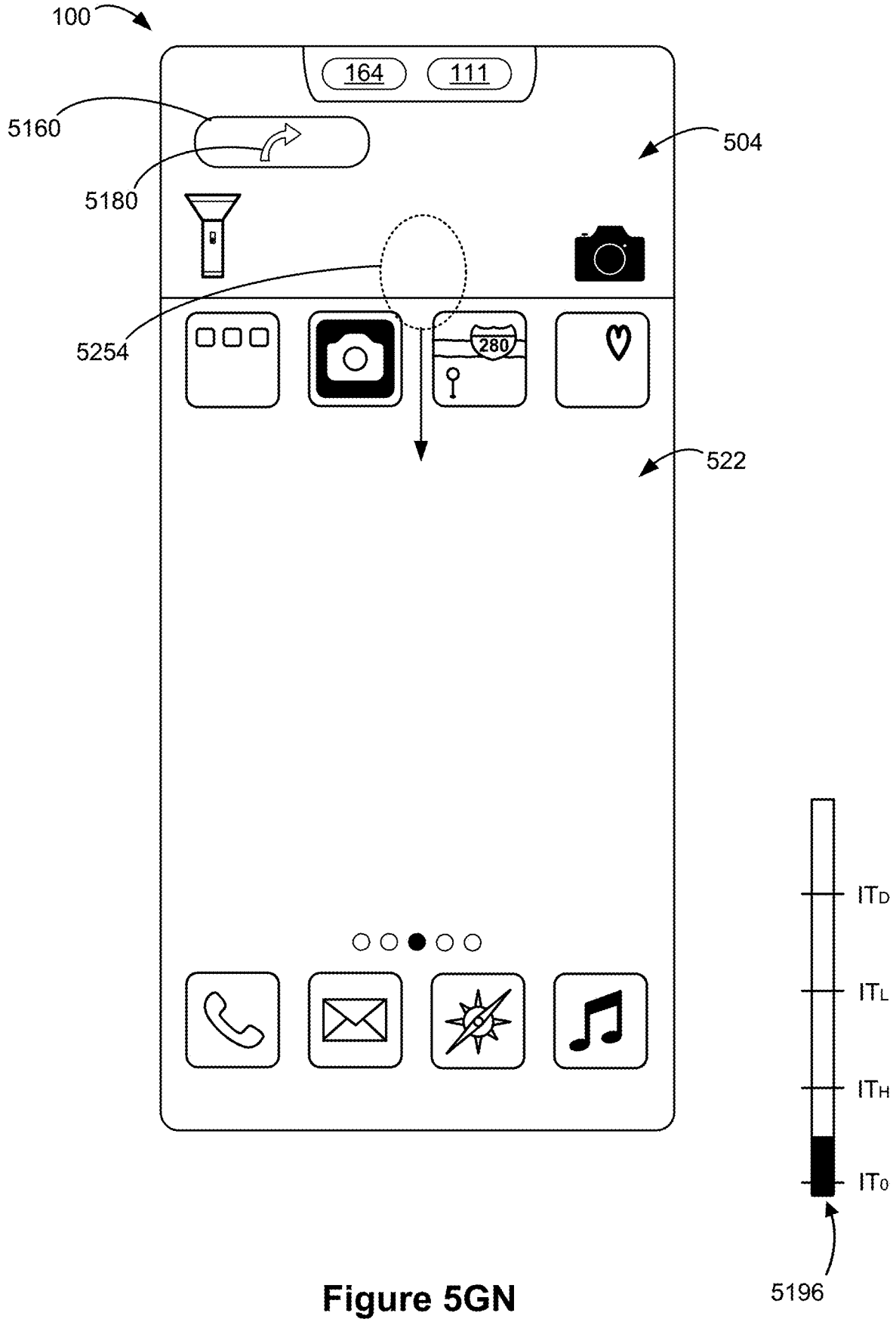


Figure 5GN

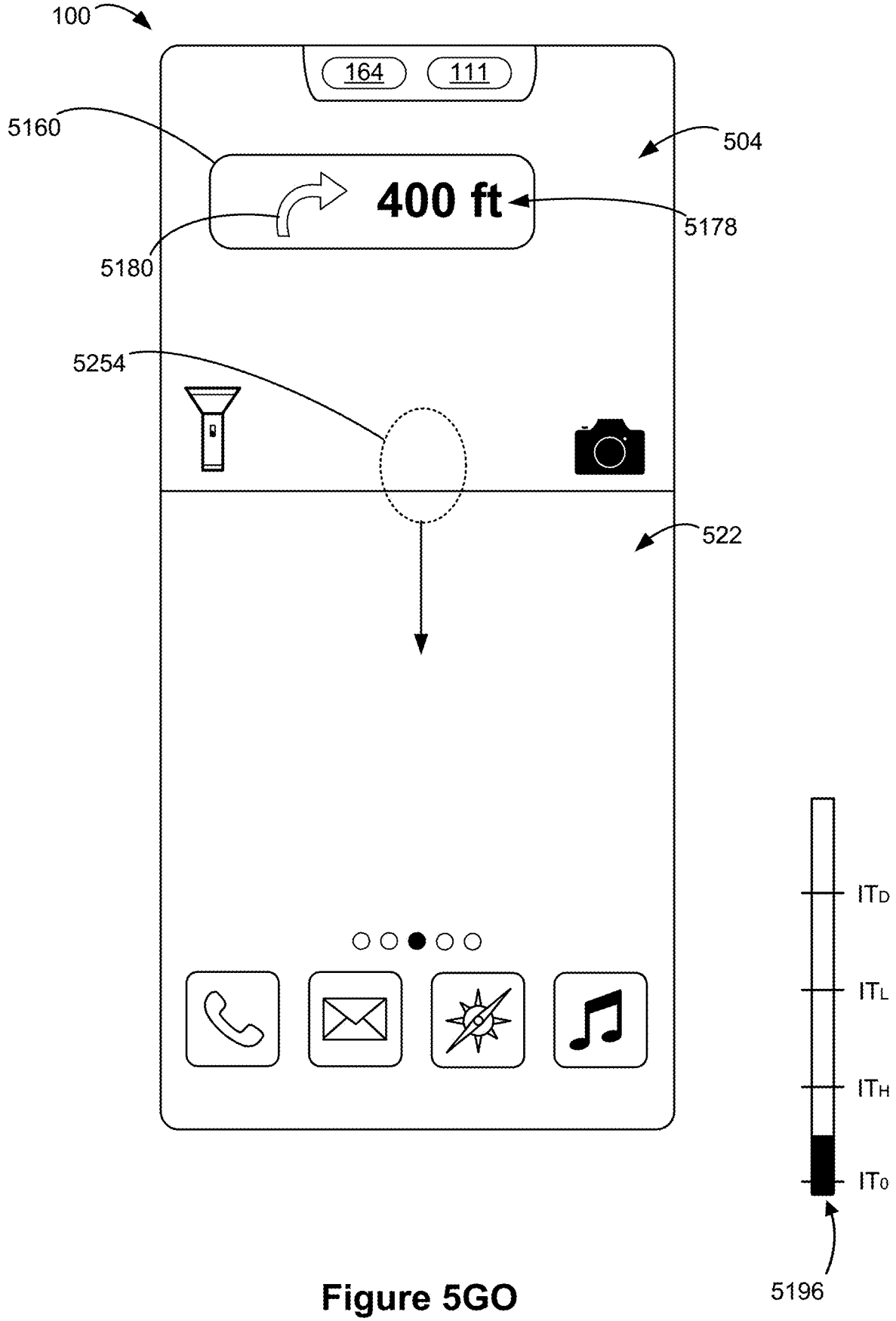

100
164
111
5160
504
400 ft
5178
5180
5254
522
ITD
ITL
ITH
ITO
5196

Figure 5GO

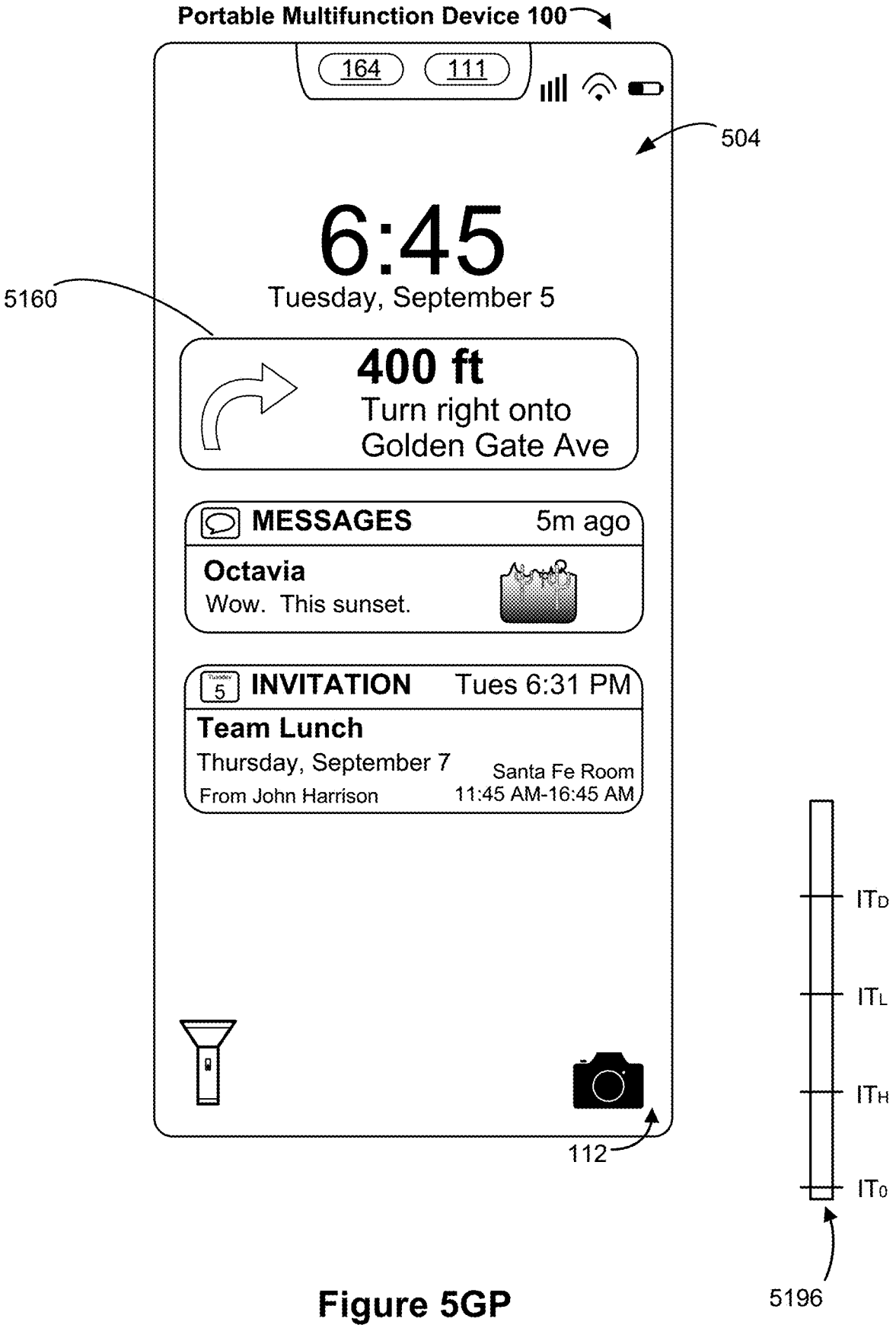


Figure 5GP

Masimo Ex. 1001
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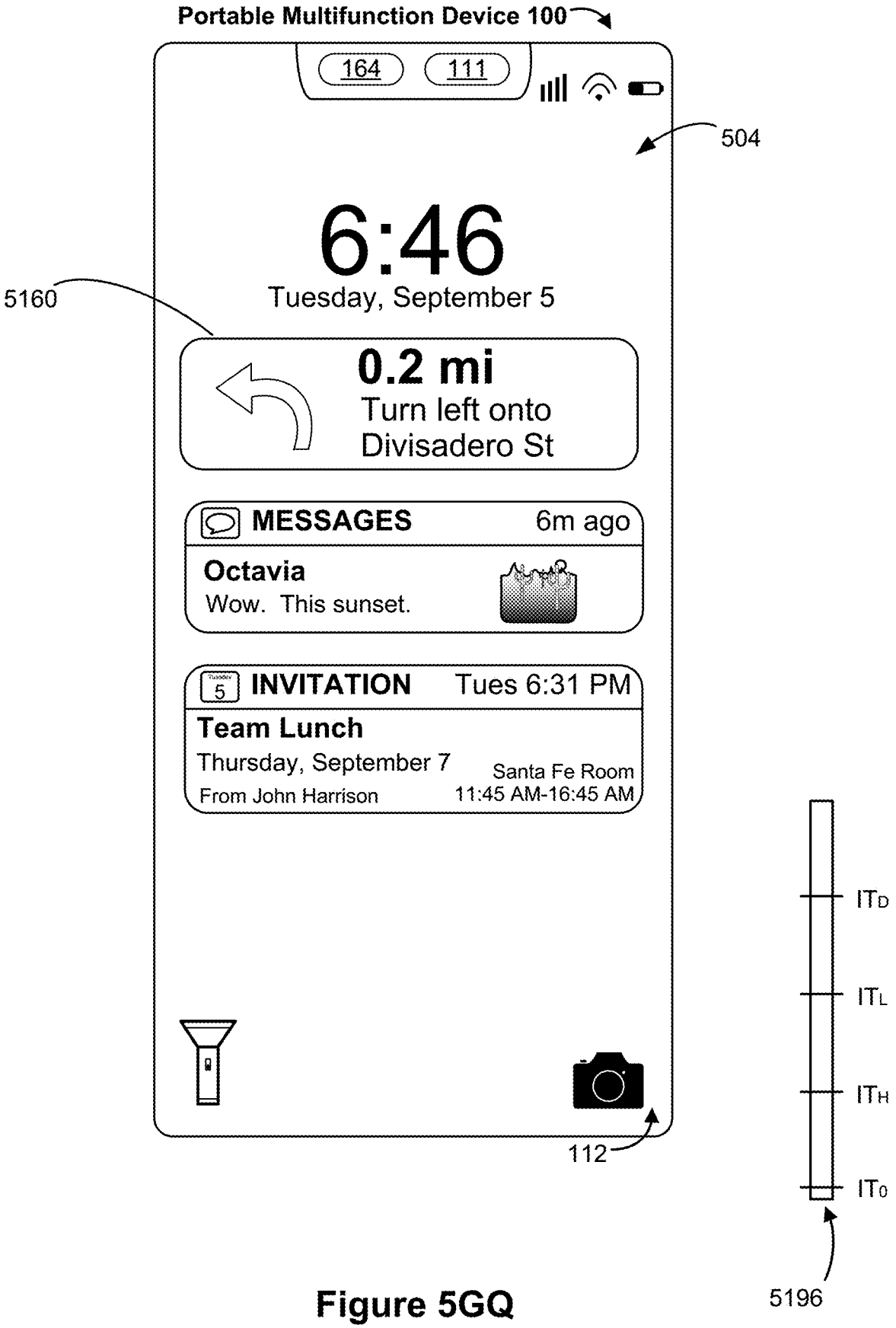


Figure 5GQ

Masimo Ex. 1001
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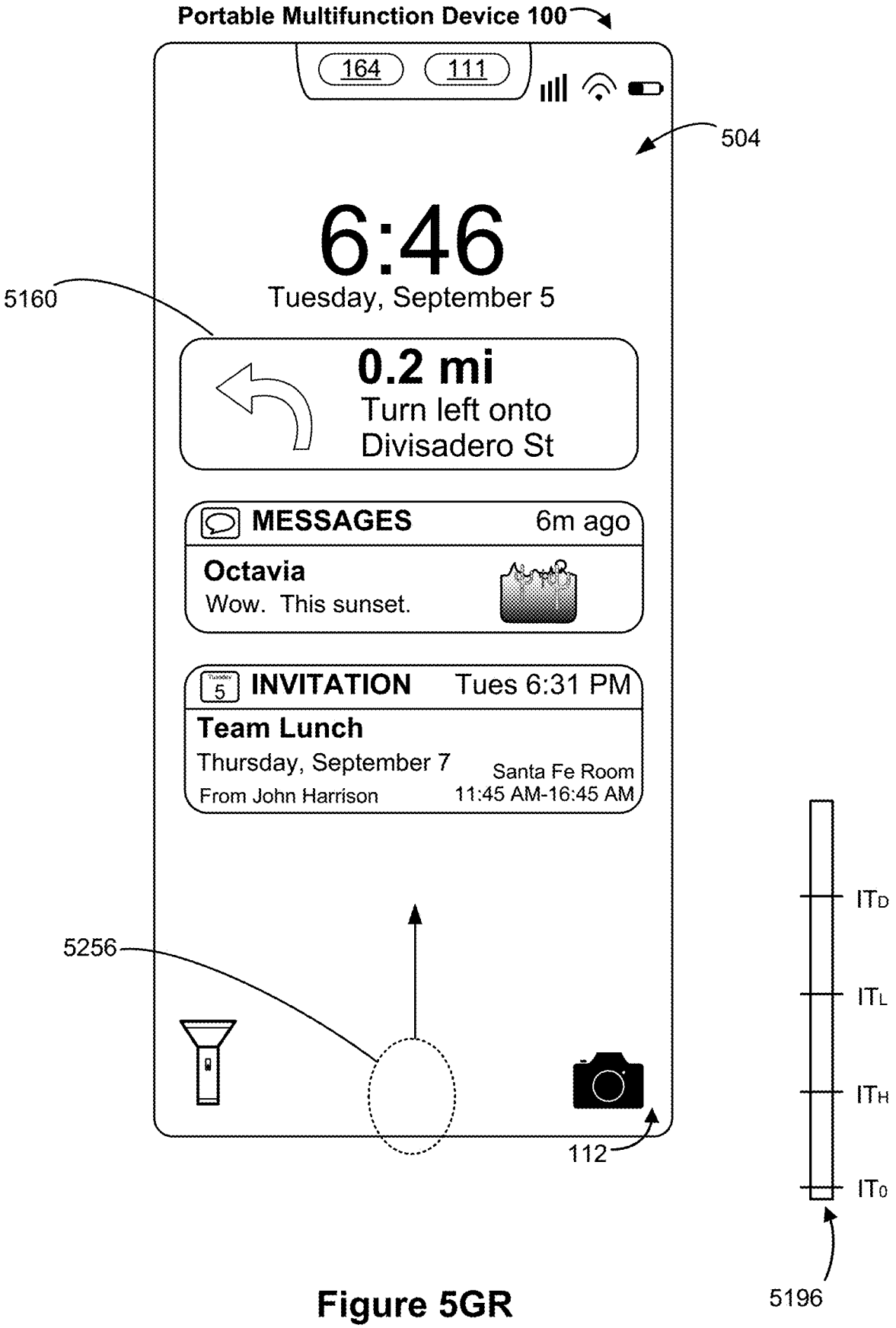


Figure 5GR

Masimo Ex. 1001
IPR Petition - USP 11,106,352

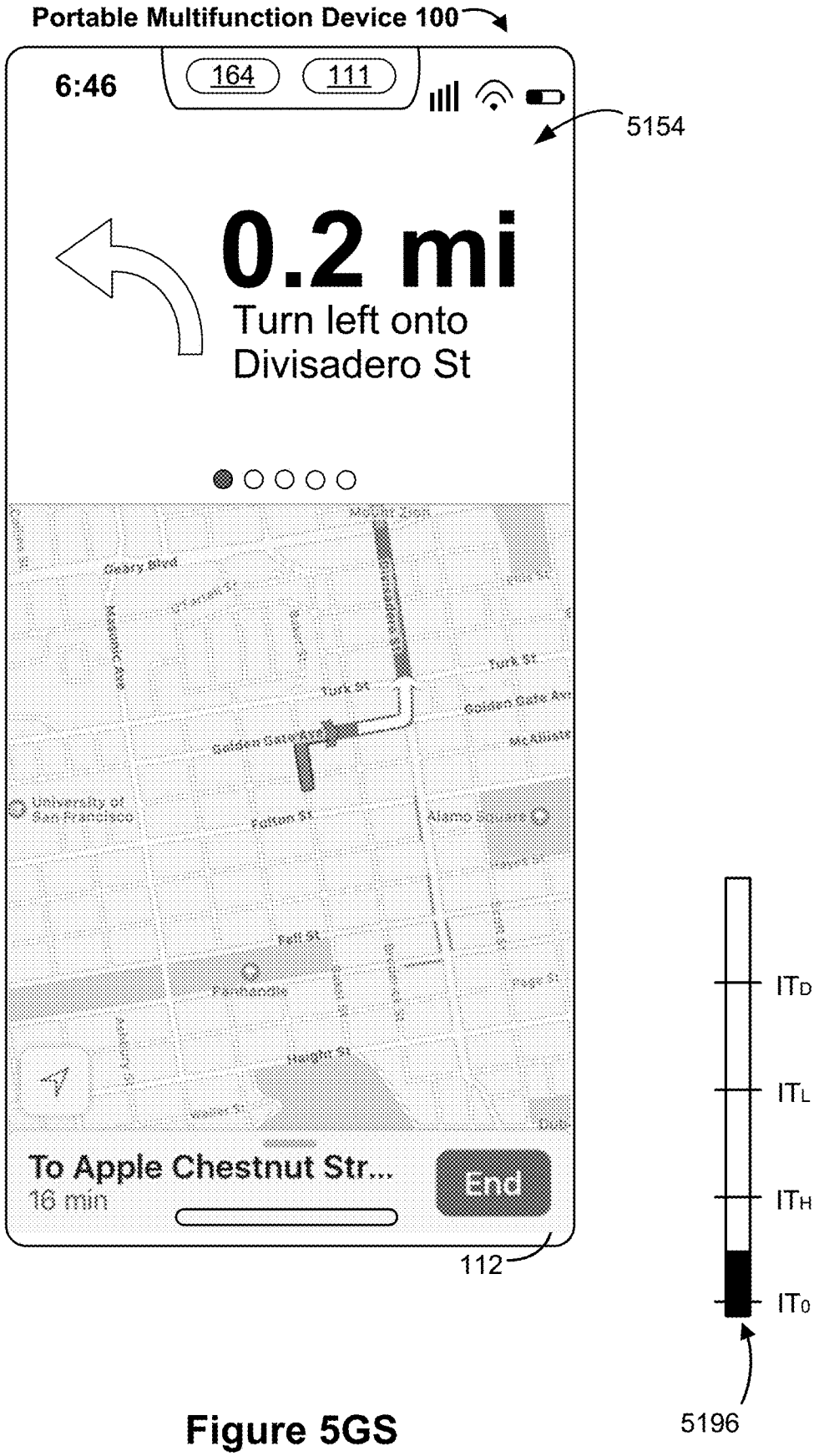


Figure 5GS

Masimo Ex. 1001
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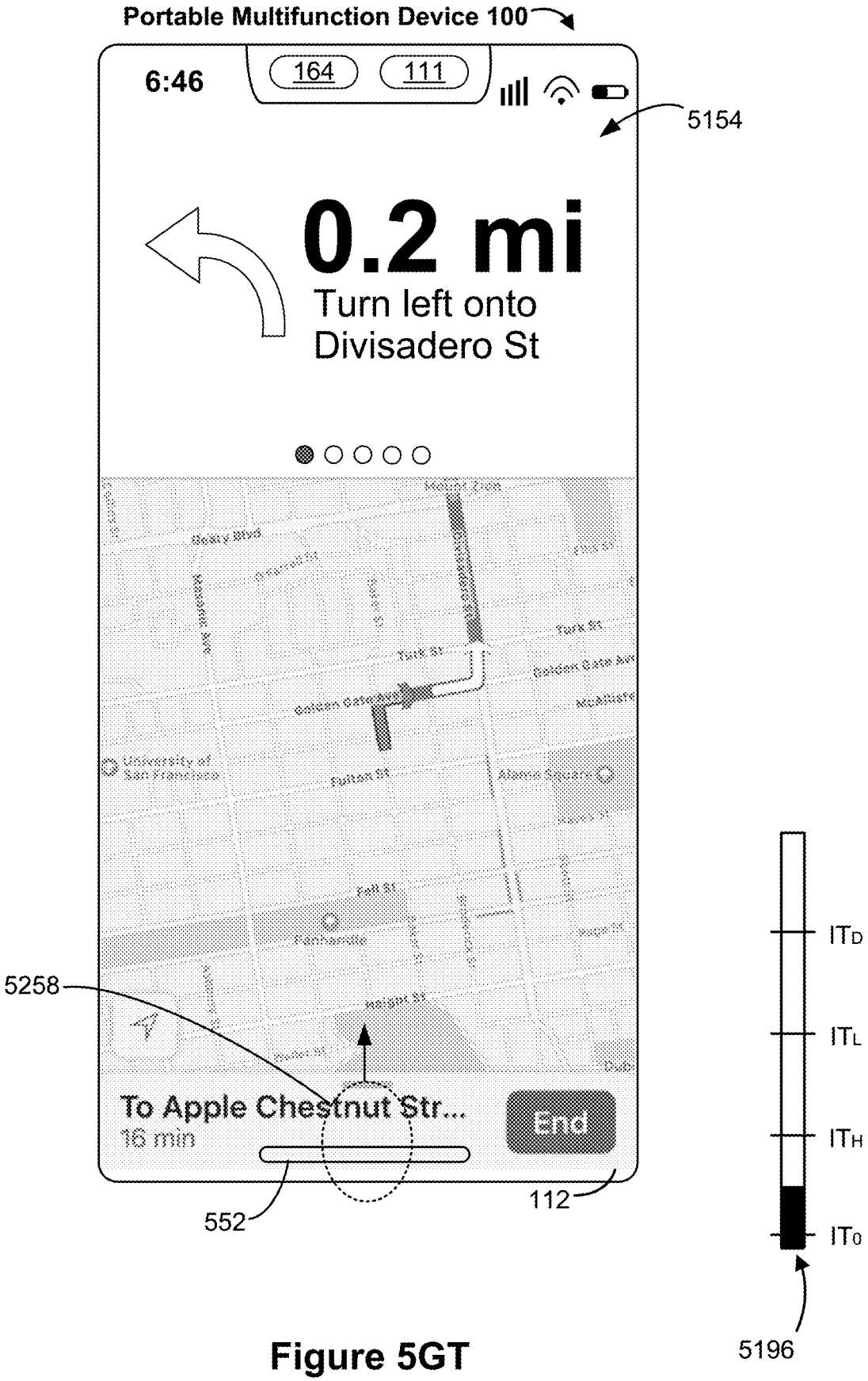


Figure 5GT

Masimo Ex. 1001
IPR Petition - USP 11,106,352

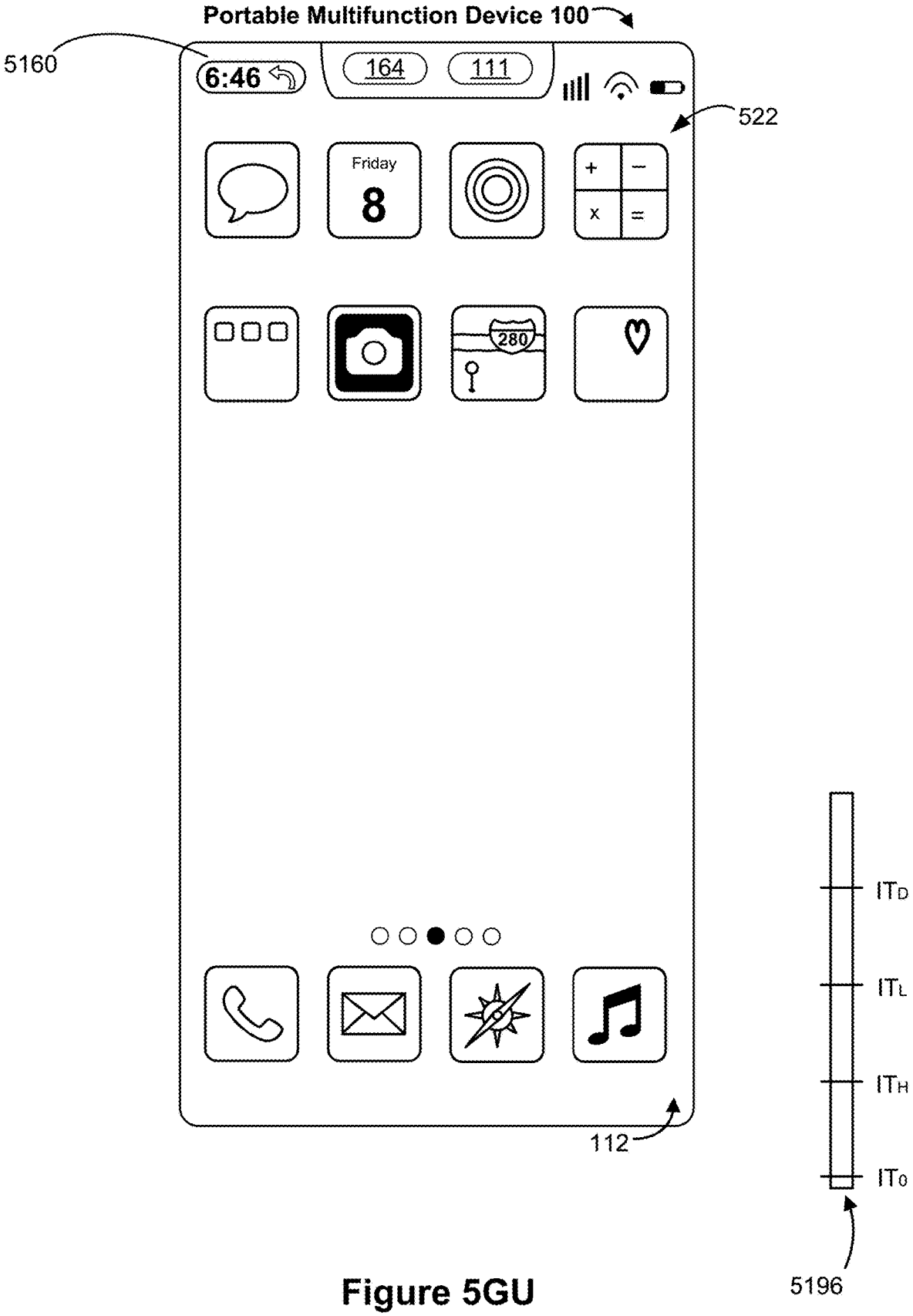

Portable Multifunction Device 100
5160
6:46
164
111
522
Friday
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280
112
ITD
ITL
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IT0
5196

Figure 5GU

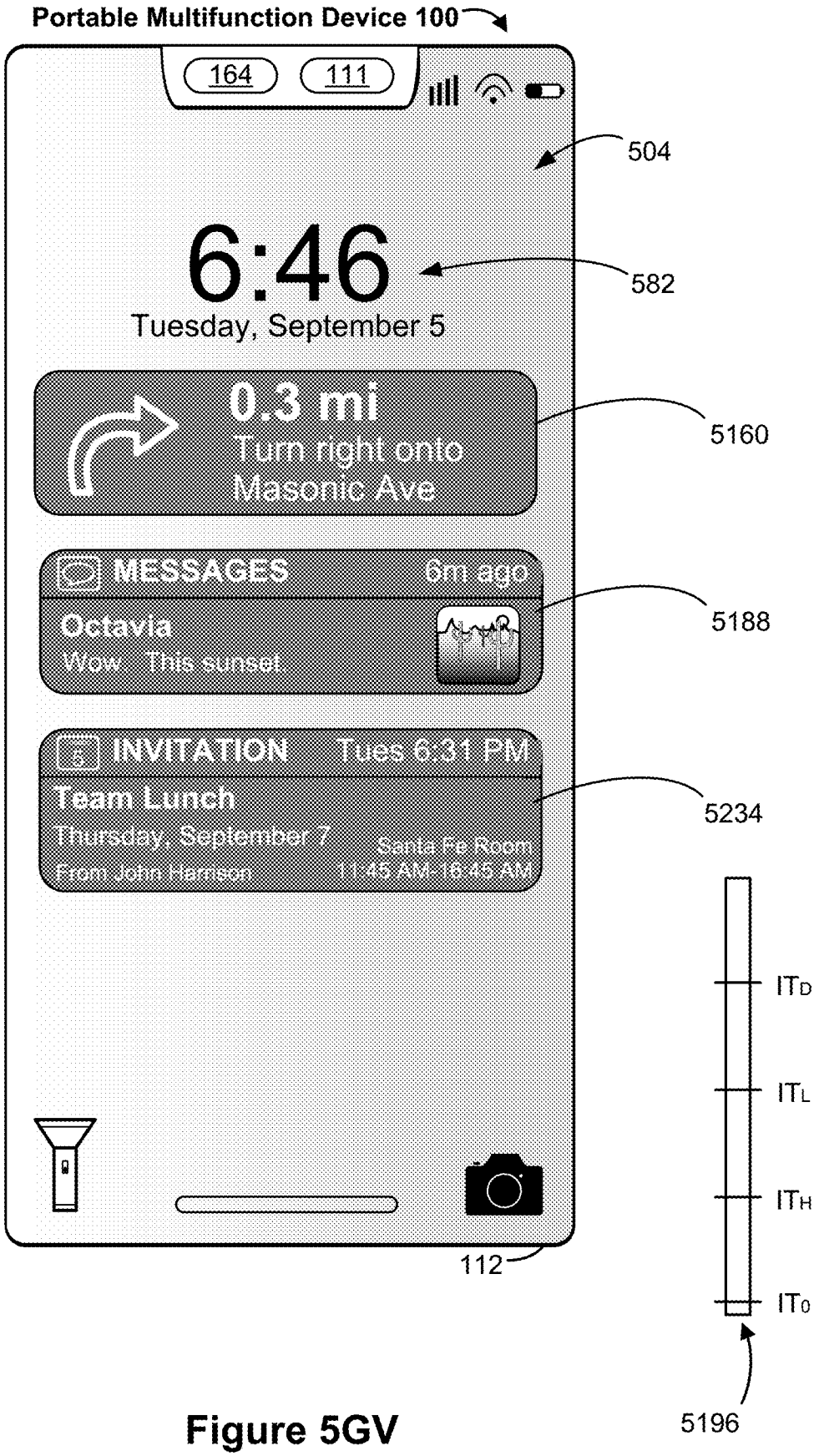


Figure 5GV

Masimo Ex. 1001
IPR Petition - USP 11,106,352

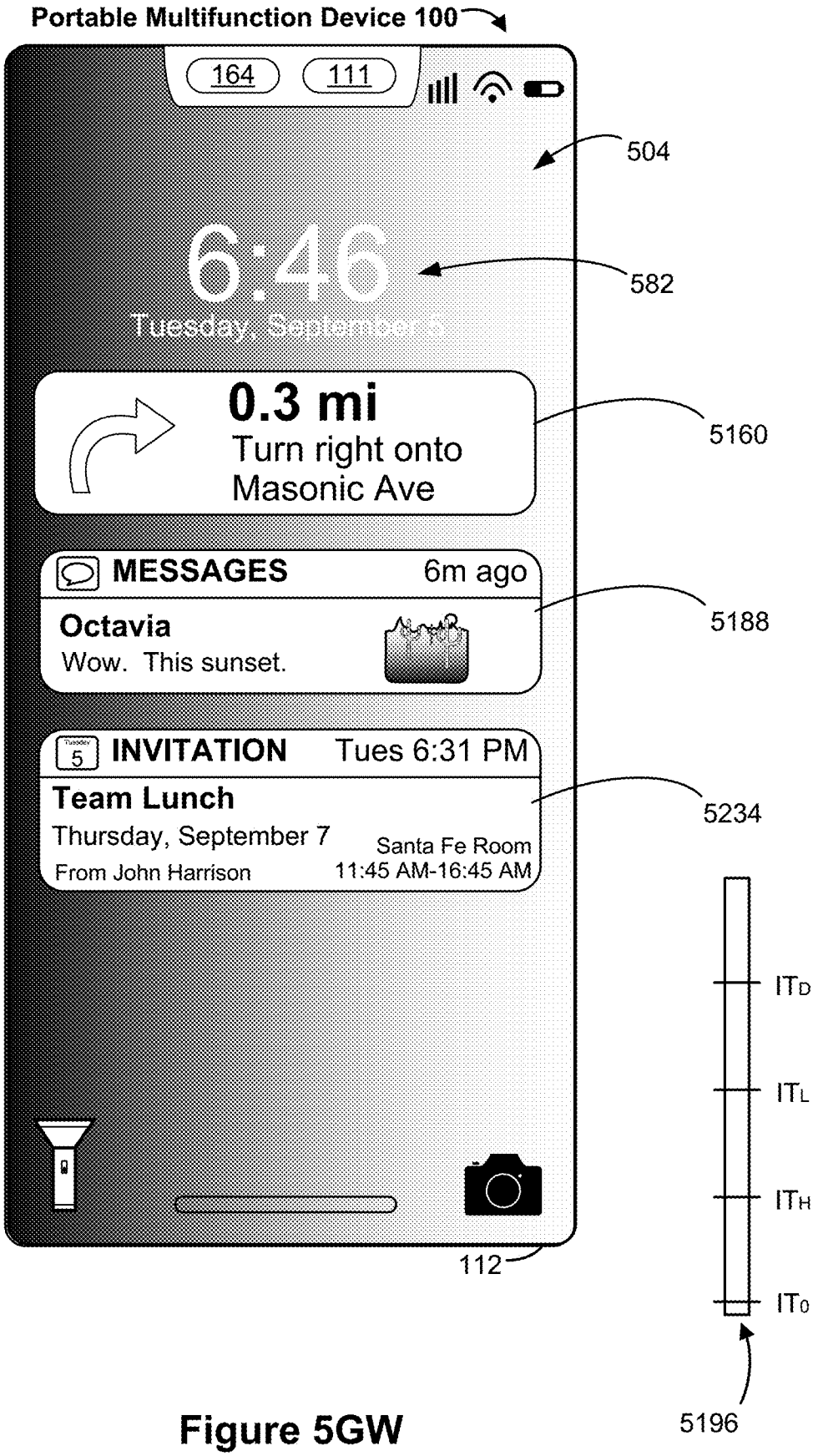


Figure 5GW

Masimo Ex. 1001
IPR Petition - USP 11,106,352

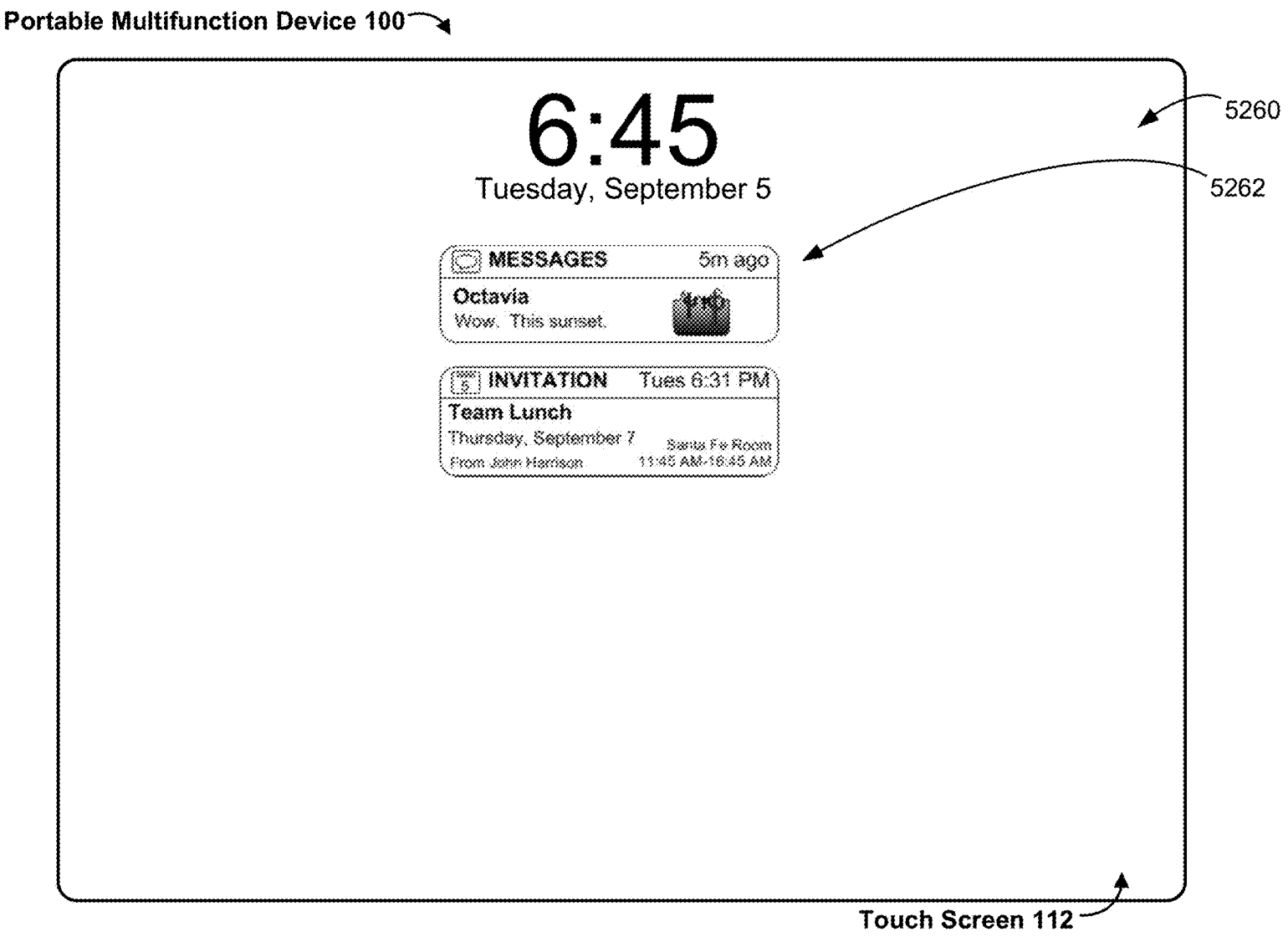

Portable Multifunction Device 100
6:45
Tuesday, September 5
5260
5262
MESSAGES 5m ago
Octavia
Wow. This sunset.
INVITATION Tues 6:31 PM
Team Lunch
Thursday, September 7 Santa Fe Room
From John Harrison 11:45 AM-16:45 AM
Touch Screen 112

Figure 5GX

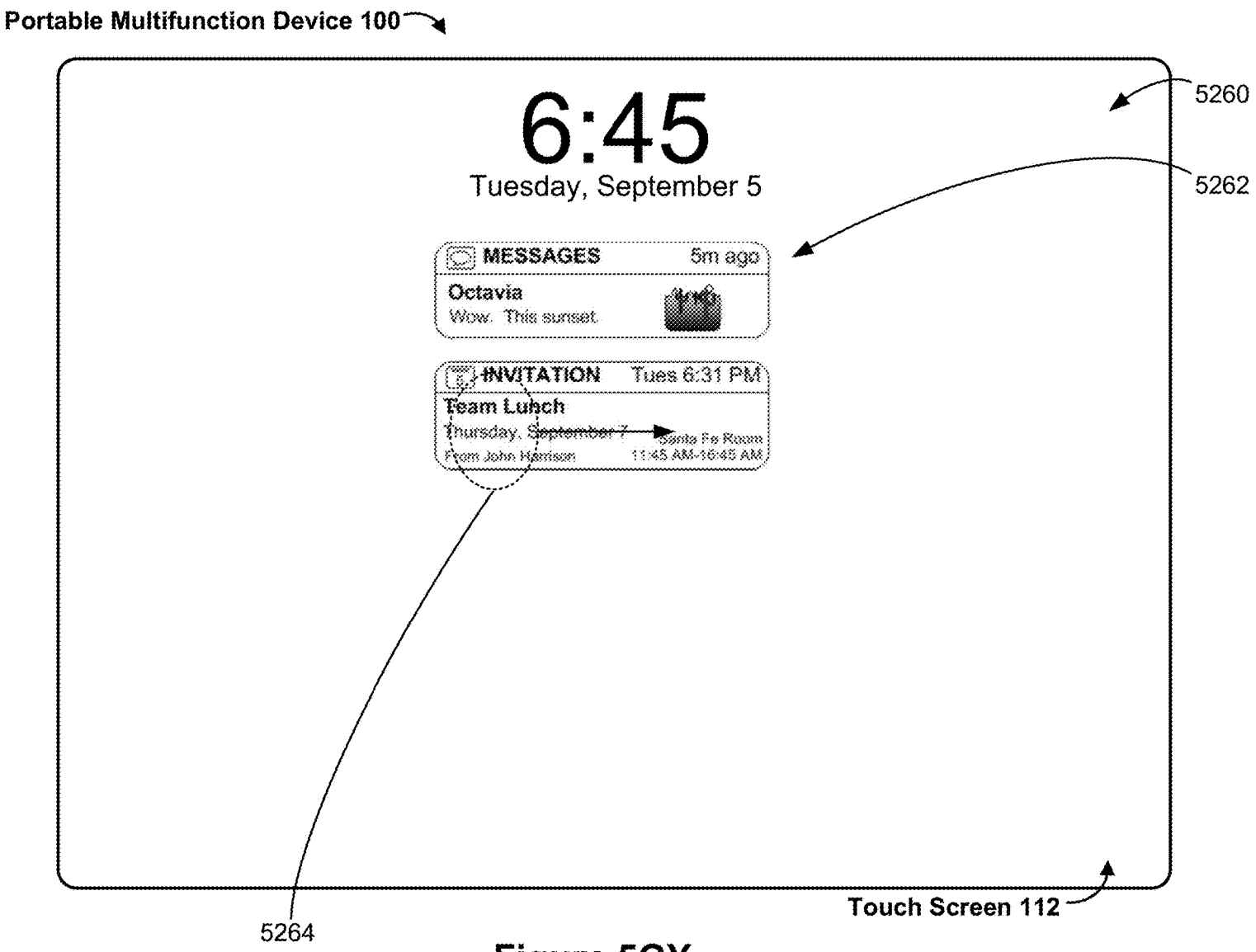

Portable Multifunction Device 100
6:45
Tuesday, September 5
5260
5262
MESSAGES 5m ago
Octavia
Wow. This sunset.
INVITATION Tues 6:31 PM
Team Lunch
Thursday, September 7
Santa Fe Room
From John Harrison
11:45 AM-10:45 AM
5264
Touch Screen 112

Figure 5GY

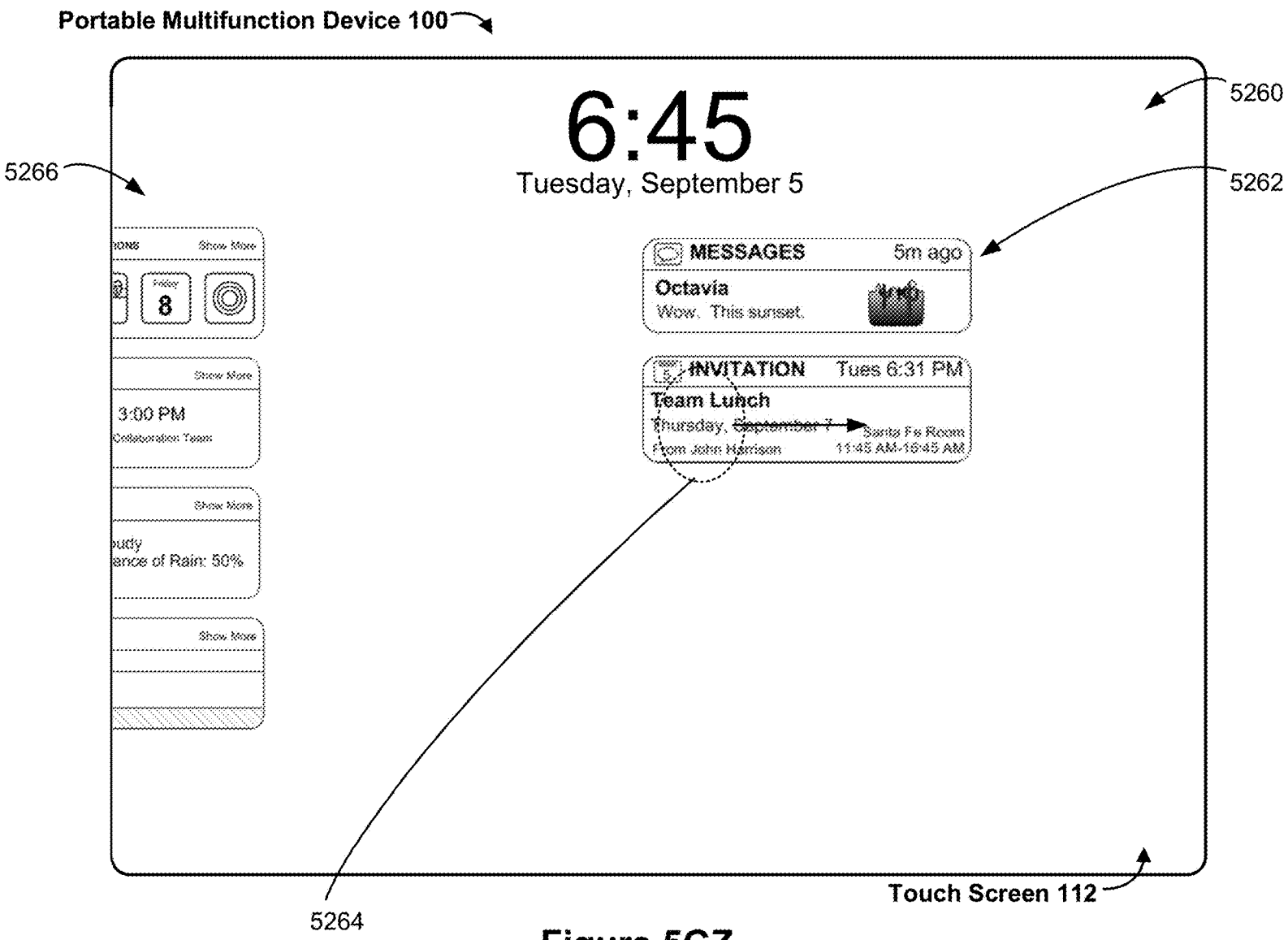

Portable Multifunction Device 100
6:45
Tuesday, September 5
5260
5262
5266
MESSAGES
5m ago
Octavia
Wow. This sunset.
INVITATION
Tues 6:31 PM
Team Lunch
Santa Fe Room
11:45 AM-12:45 AM
3:00 PM
Show More
5264
Touch Screen 112

Figure 5GZ

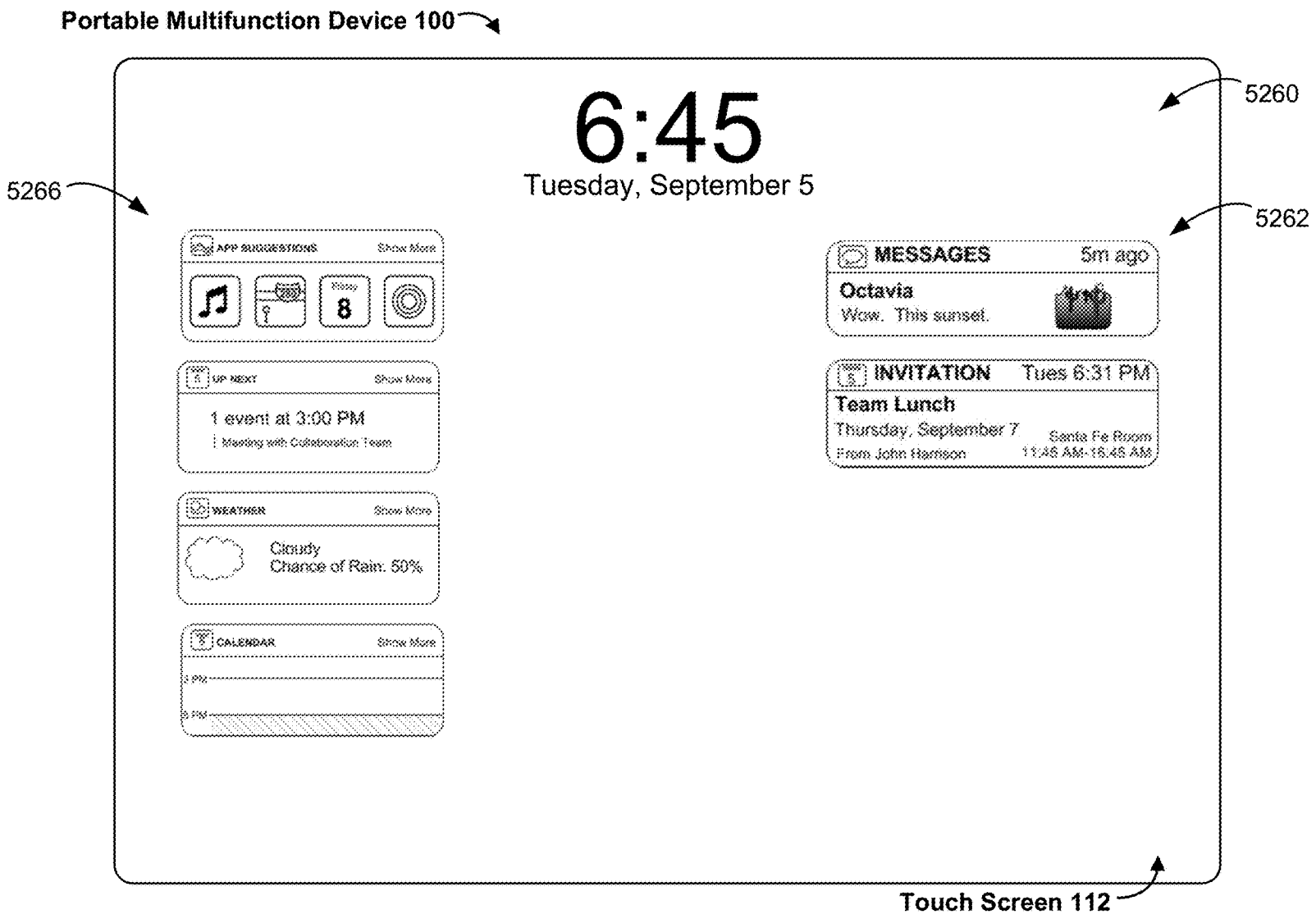

Portable Multifunction Device 100
6:45
Tuesday, September 5
5260
5262
5266
APP SUGGESTIONS
Show More
MESSAGES
5m ago
Octavia
Wow. This sunset.
UP NEXT
Show More
1 event at 3:00 PM
INVITATION
Tues 6:31 PM
Team Lunch
Thursday, September 7
Santa Fe Room
From John Hanson
11:45 AM-12:45 AM
WEATHER
Show More
Cloudy
Chance of Rain: 50%
CALENDAR
Show More
Touch Screen 112

Figure 5HA

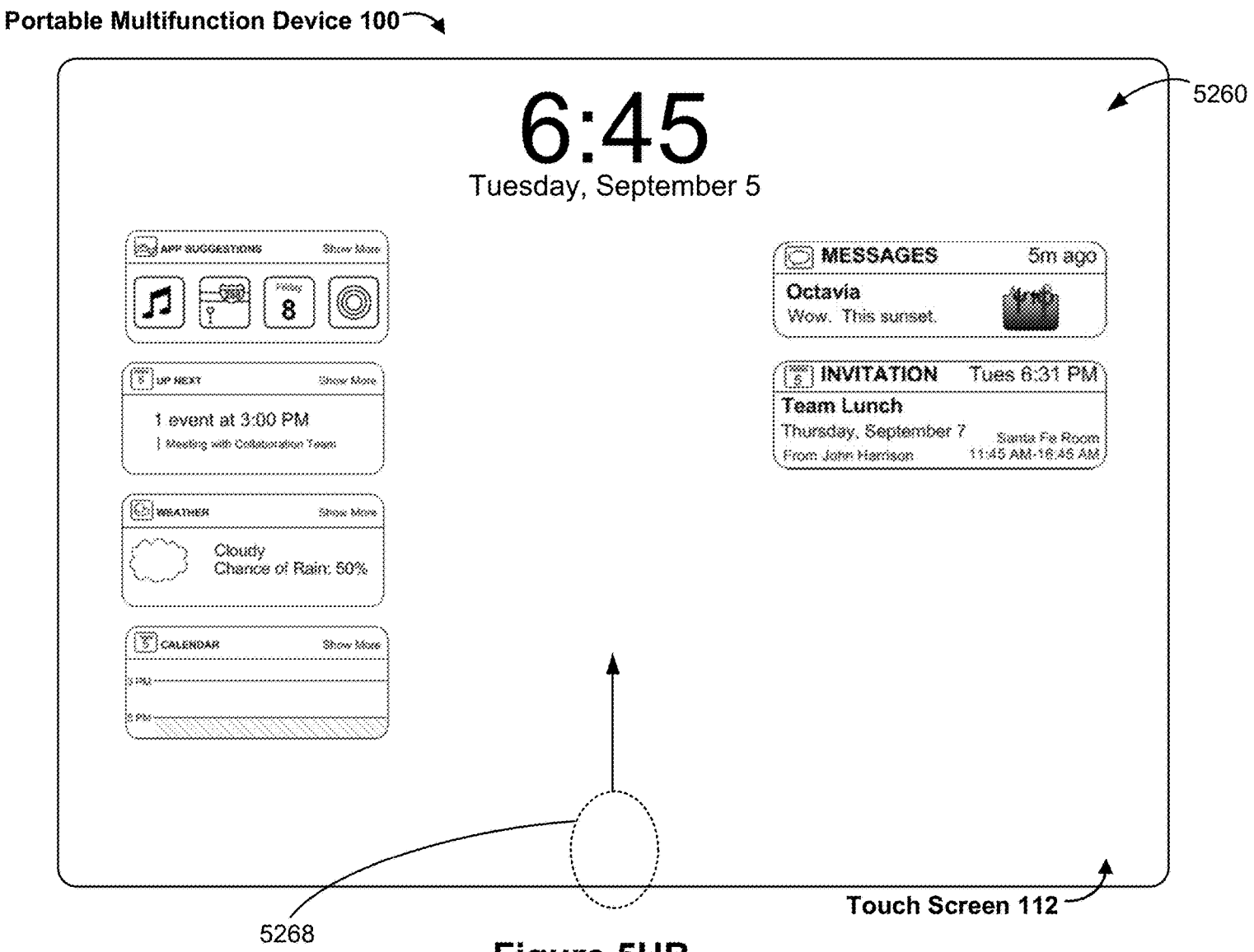

Portable Multifunction Device 100
6:45
Tuesday, September 5
5260
MESSAGES
5m ago
Octavia
Wow. This sunset.
INVITATION
Tues 6:31 PM
Team Lunch
Thursday, September 7
Santa Fe Room
From John Harrison
11:45 AM-12:45 AM
1 event at 3:00 PM
Cloudy
Chance of Rain: 50%
5268
Touch Screen 112

Figure 5HB

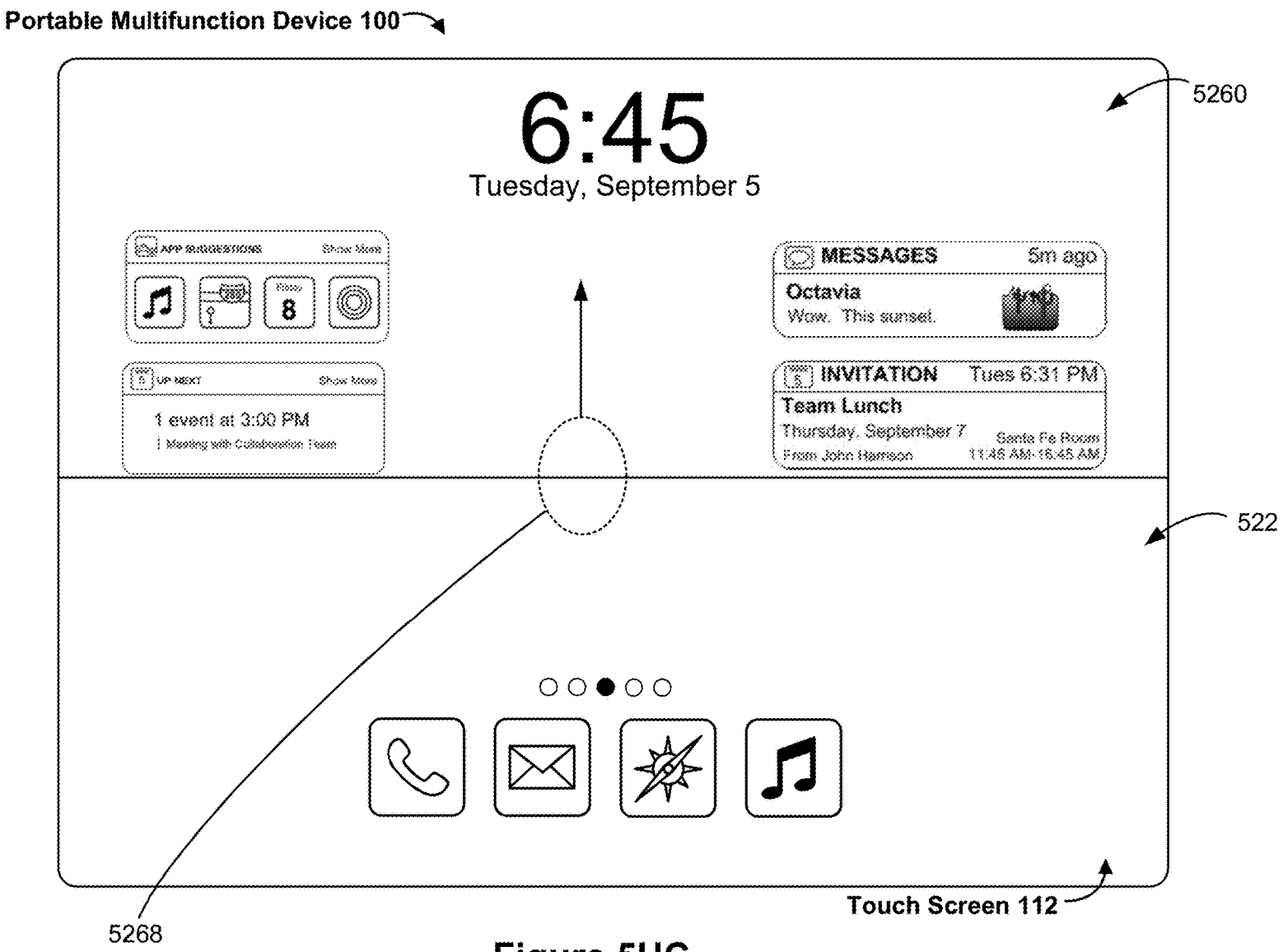

Portable Multifunction Device 100
6:45
Tuesday, September 5
5260
MESSAGES 5m ago
Octavia
Wow. This sunset.
INVITATION Tues 6:31 PM
Team Lunch
Thursday, September 7
Santa Fe Room
From John Harrison
11:45 AM-12:45 AM
1 event at 3:00 PM
522
5268
Touch Screen 112

Figure 5HC

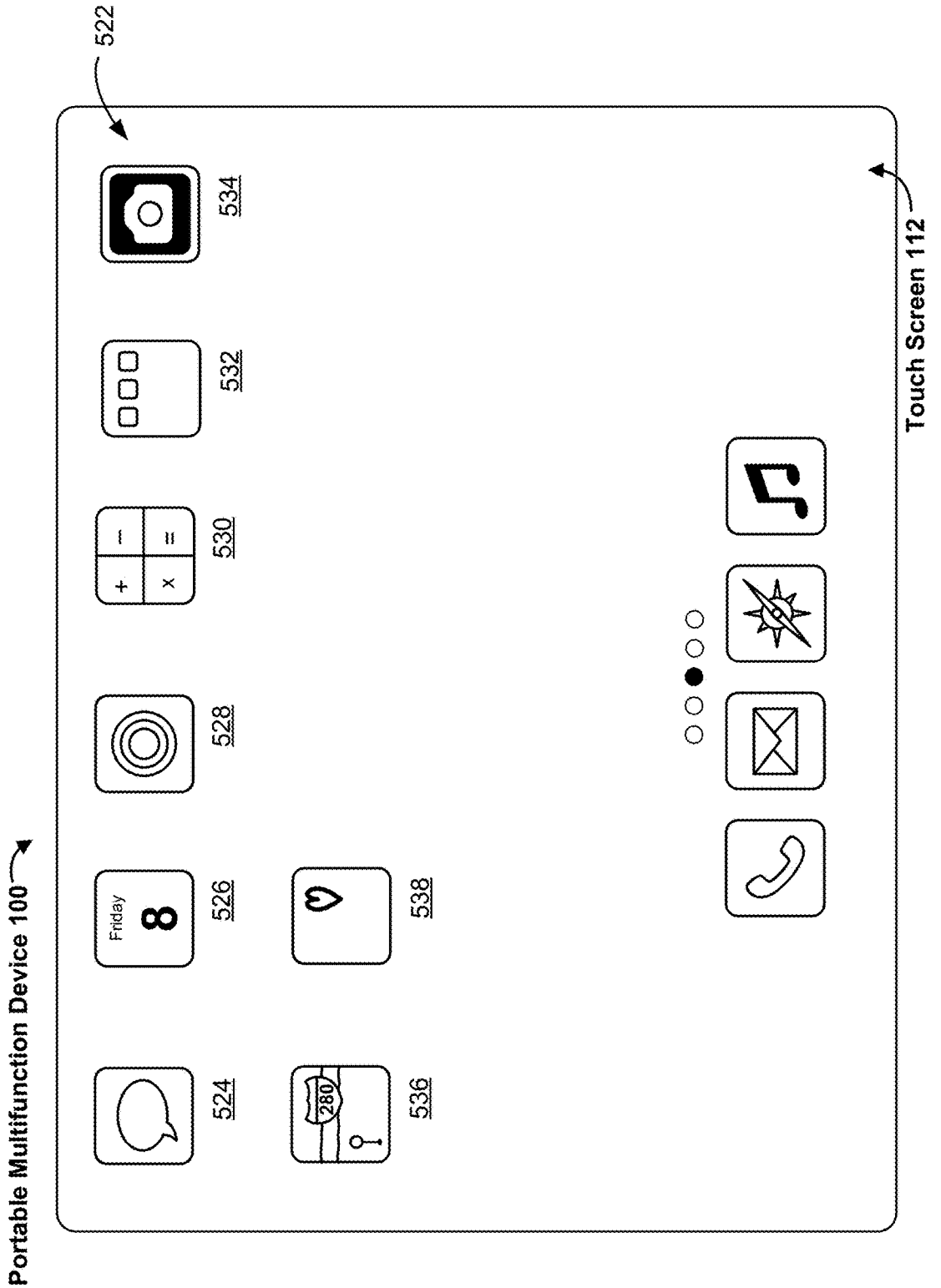


Figure 5HD

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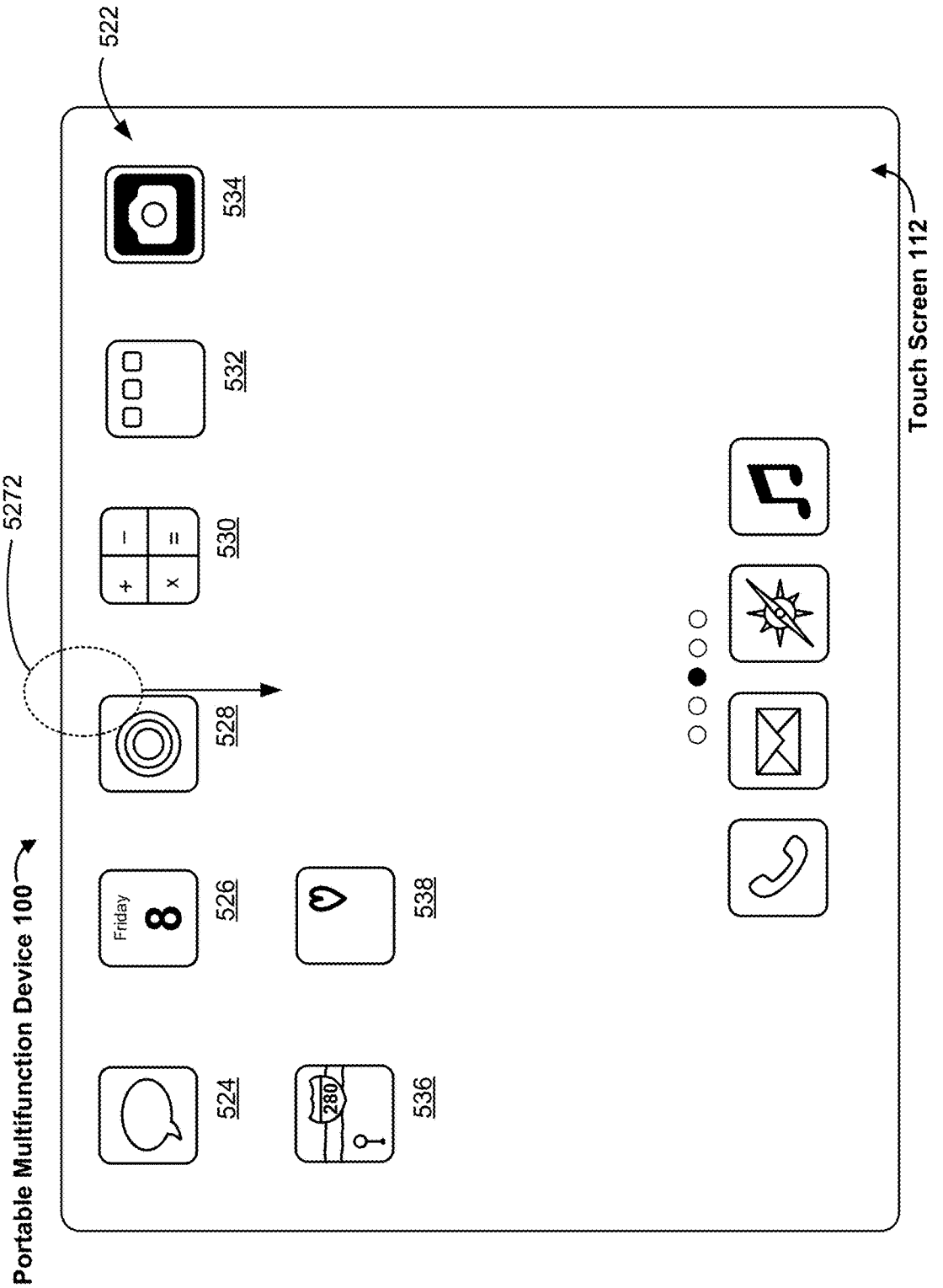

Portable Multifunction Device 100
5272
522
Touch Screen 112
524
526
528
530
532
534
536
538
Friday
8
280

Figure 5HE

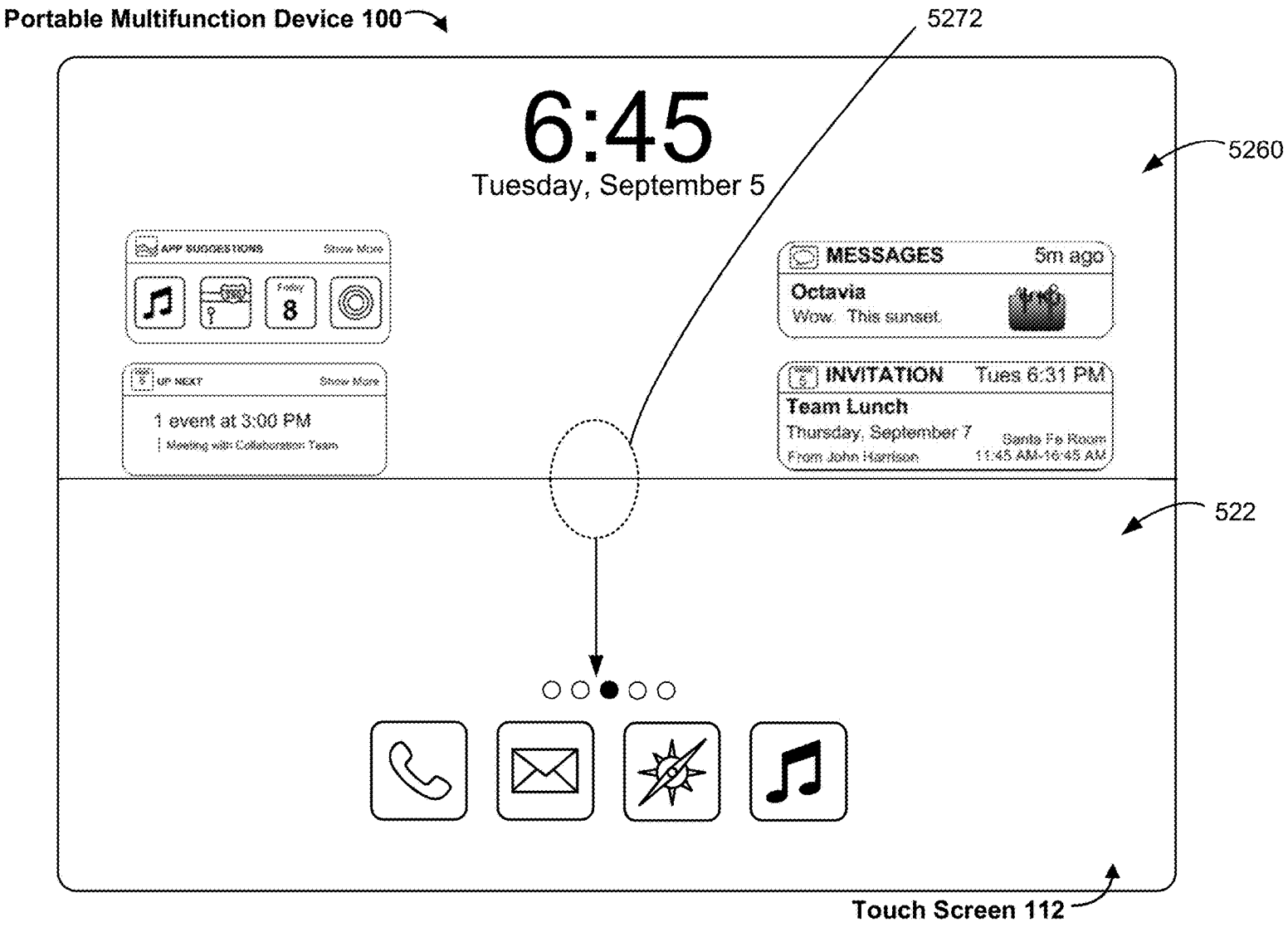

Portable Multifunction Device 100
5272
6:45
Tuesday, September 5
5260
MESSAGES
5m ago
Octavia
Wow. This sunset.
INVITATION
Tues 6:31 PM
Team Lunch
Thursday, September 7
Santa Fe Room
From John Harrison
11:45 AM-10:45 AM
1 event at 3:00 PM
522
Touch Screen 112

Figure 5HF

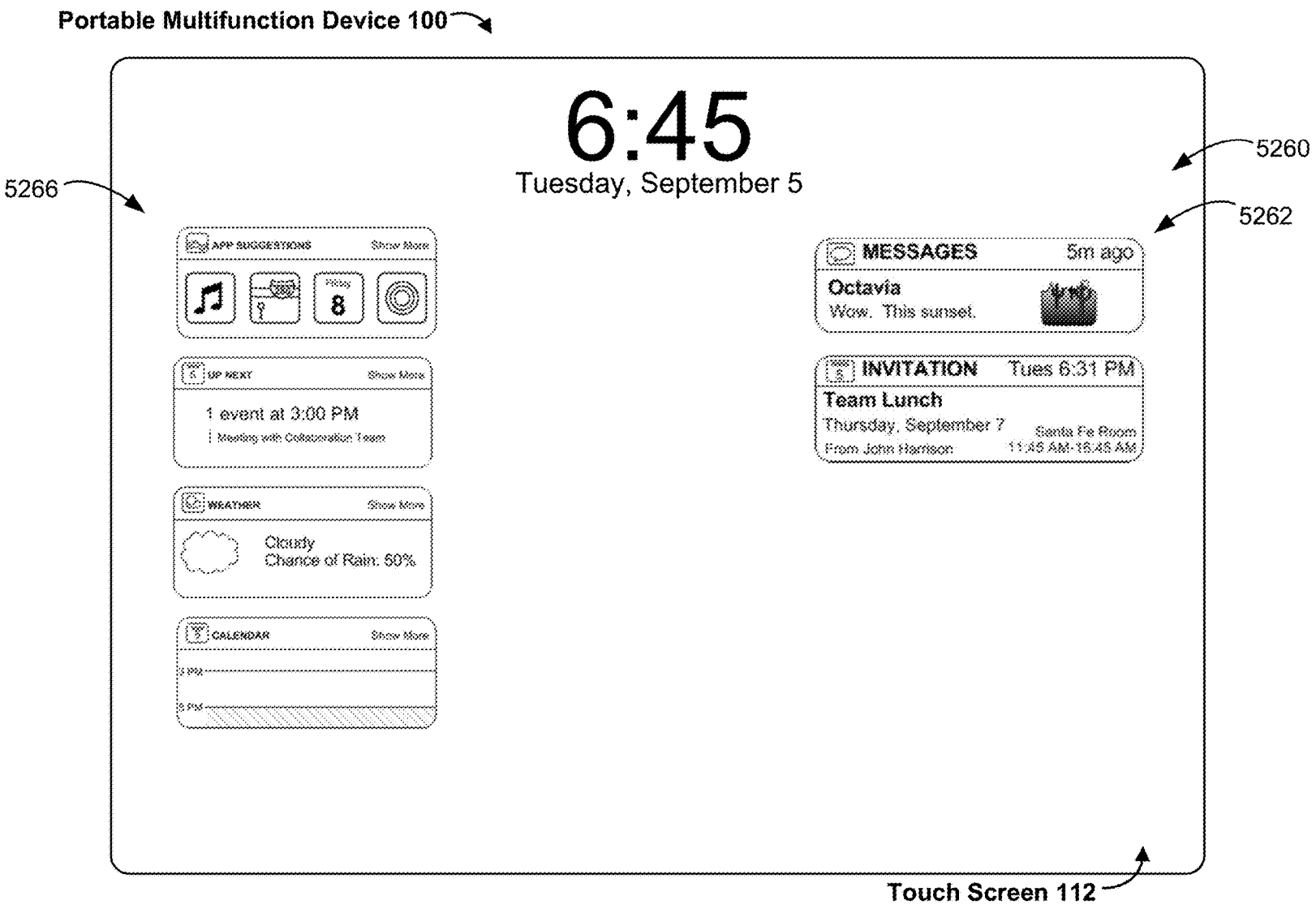

Portable Multifunction Device 100
6:45
Tuesday, September 5
5266
5260
5262
APP SUGGESTIONS
Show More
MESSAGES
5m ago
Octavia
Wow. This sunset.
UP NEXT
Show More
1 event at 3:00 PM
Meeting with Collaboration Team
INVITATION
Tues 6:31 PM
Team Lunch
Thursday, September 7
Santa Fe Room
From John Harrison
11:45 AM-12:45 AM
WEATHER
Show More
Cloudy
Chance of Rain: 60%
CALENDAR
Show More
Touch Screen 112

Figure 5HG

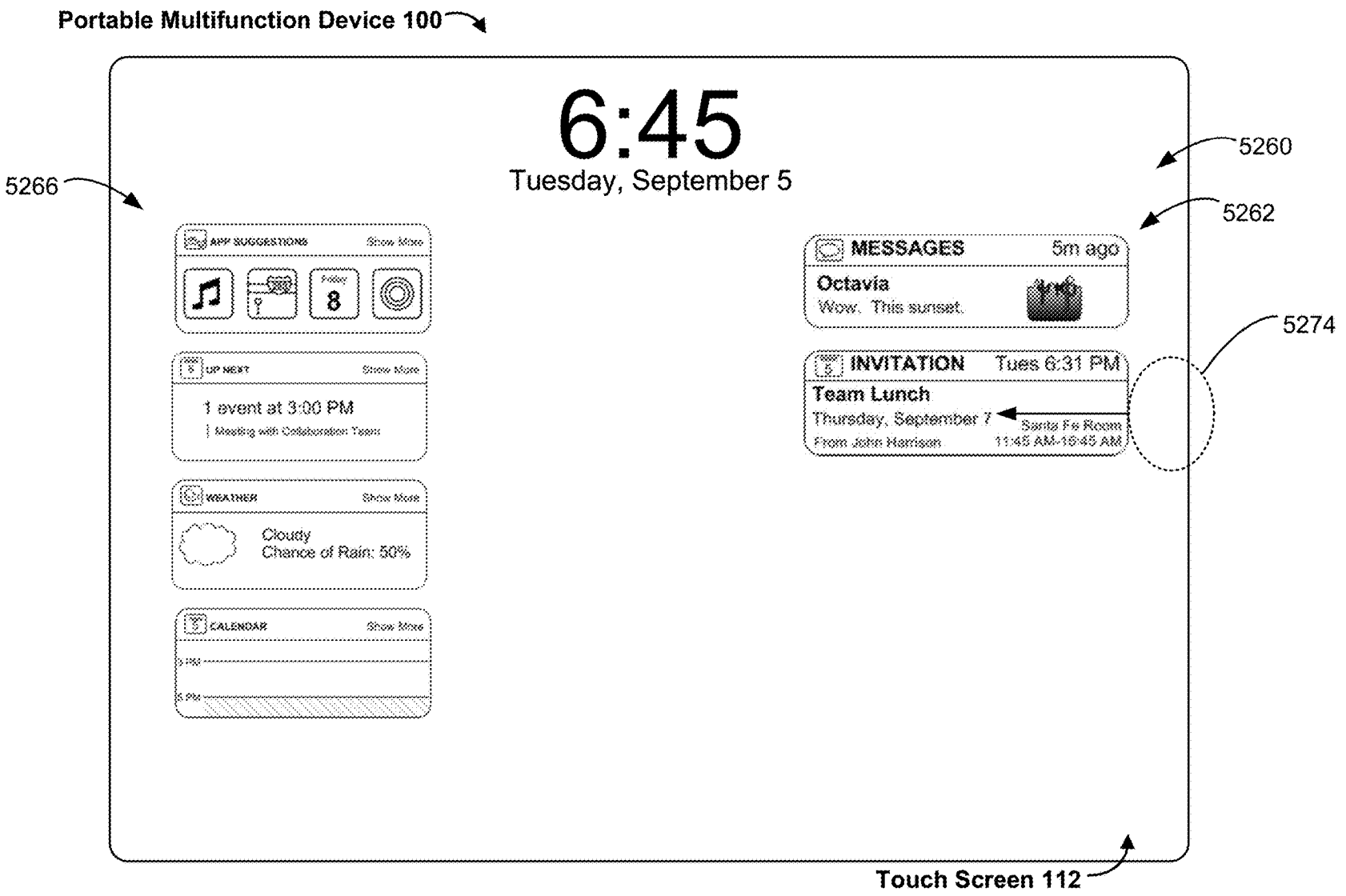

Portable Multifunction Device 100
6:45
Tuesday, September 5
5266
5260
5262
5274
MESSAGES 5m ago
Octavia
Wow. This sunset.
INVITATION Tues 6:31 PM
Team Lunch
Thursday, September 7
Santa Fe Room
From John Harrison
11:45 AM-10:45 AM
1 event at 3:00 PM
Cloudy
Chance of Rain: 50%
Touch Screen 112

Figure 5HH

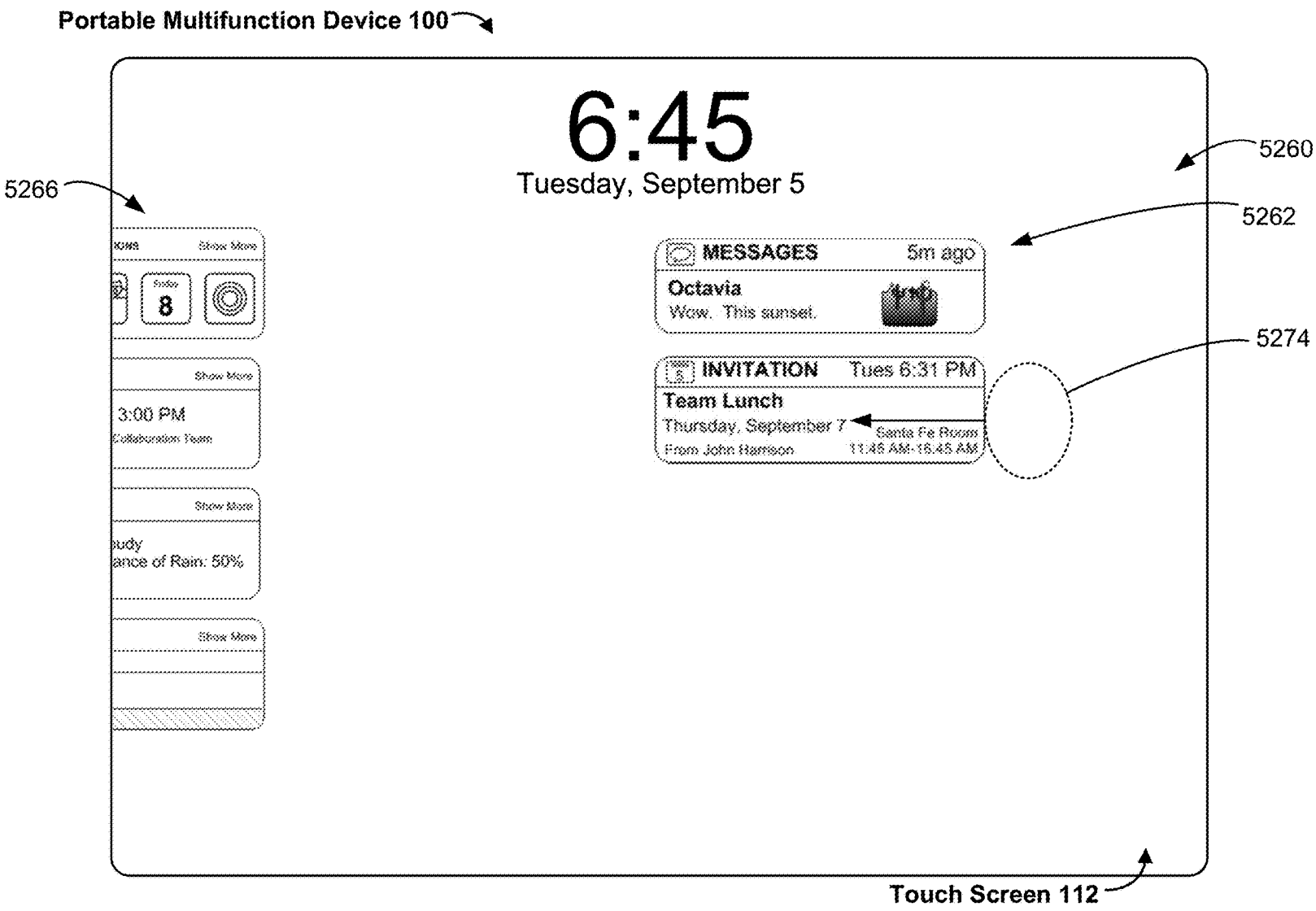

Portable Multifunction Device 100
6:45
Tuesday, September 5
5266
5260
5262
5274
MESSAGES
5m ago
Octavia
Wow. This sunset.
INVITATION
Tues 6:31 PM
Team Lunch
Thursday, September 7
Santa Fe Room
From John Harrison
11:45 AM-12:45 AM
3:00 PM
Show More
Touch Screen 112

Figure 5HI

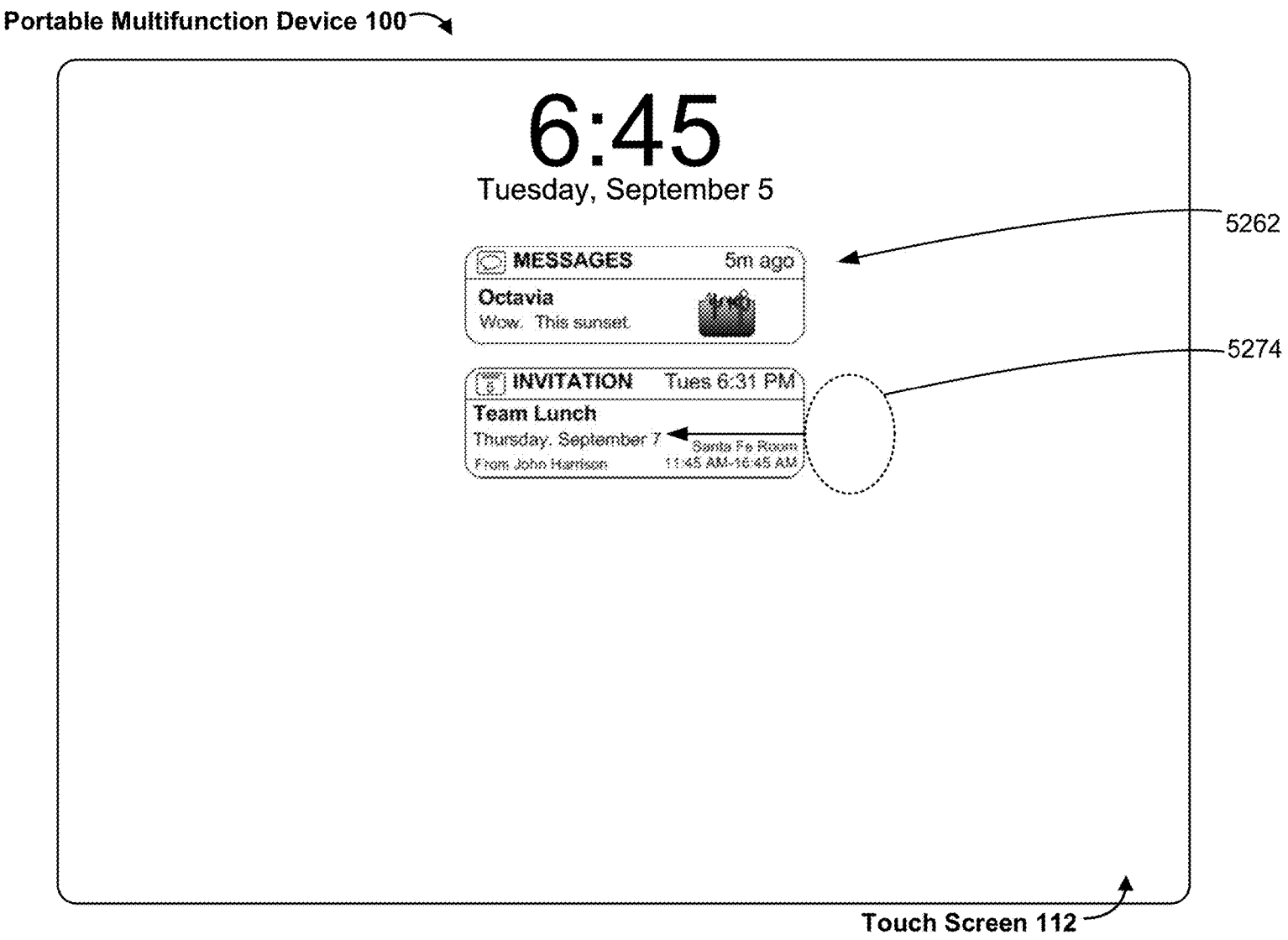

Portable Multifunction Device 100
6:45
Tuesday, September 5
MESSAGES 5m ago
Octavia
Wow. This sunset.
INVITATION Tues 6:31 PM
Team Lunch
Thursday, September 7
Santa Fe Room
From John Harrison
11:45 AM-12:45 AM
5262
5274
Touch Screen 112

Figure 5HJ

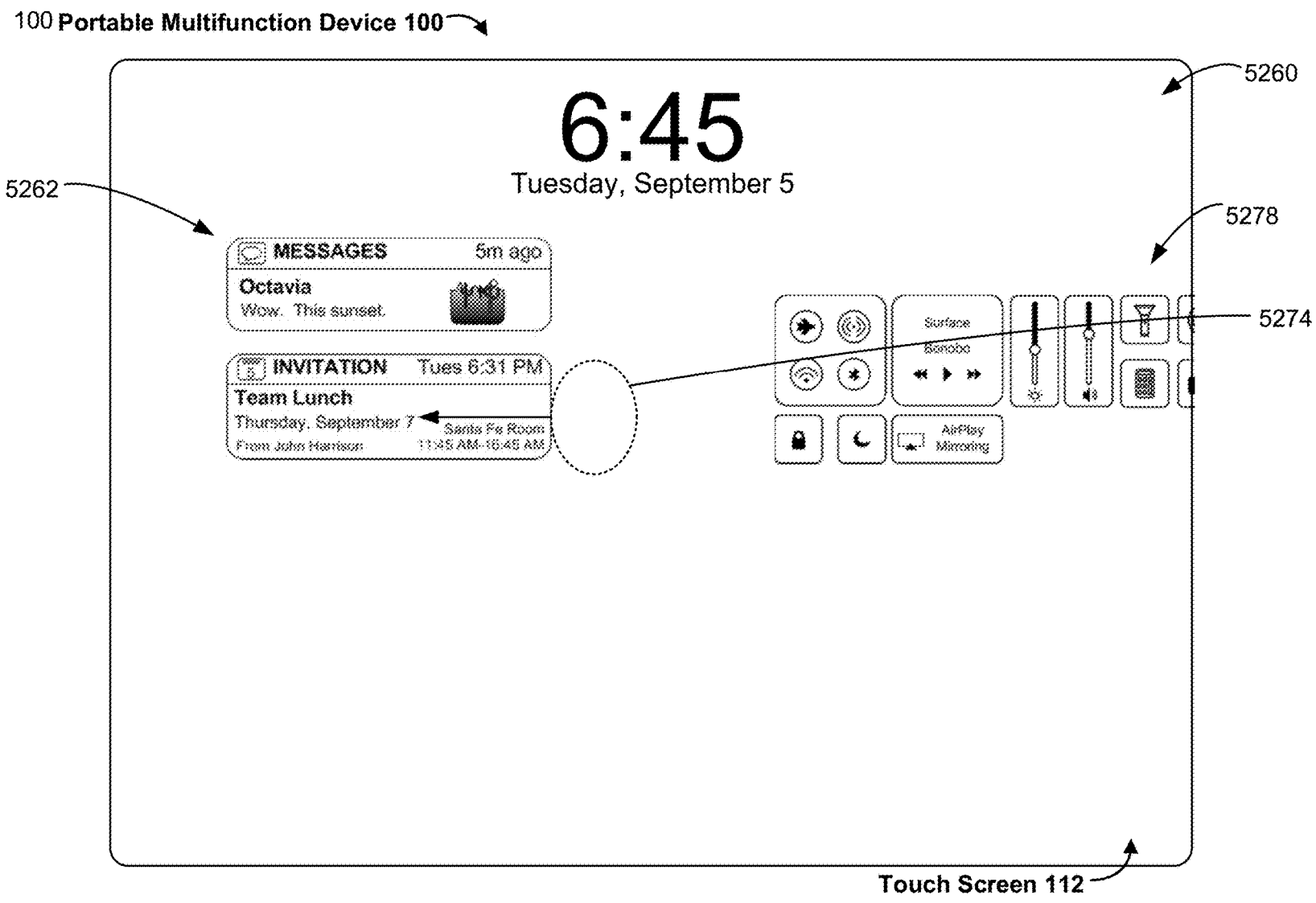

100 Portable Multifunction Device 100
6:45
Tuesday, September 5
5260
5262
5278
5274
MESSAGES 5m ago
Octavia
Wow. This sunset.
INVITATION Tues 6:31 PM
Team Lunch
Thursday, September 7
Santa Fe Room
From John Harrison
11:45 AM-12:45 AM
Surface
Bonobo
AirPlay
Mirroring
Touch Screen 112

Figure 5HK

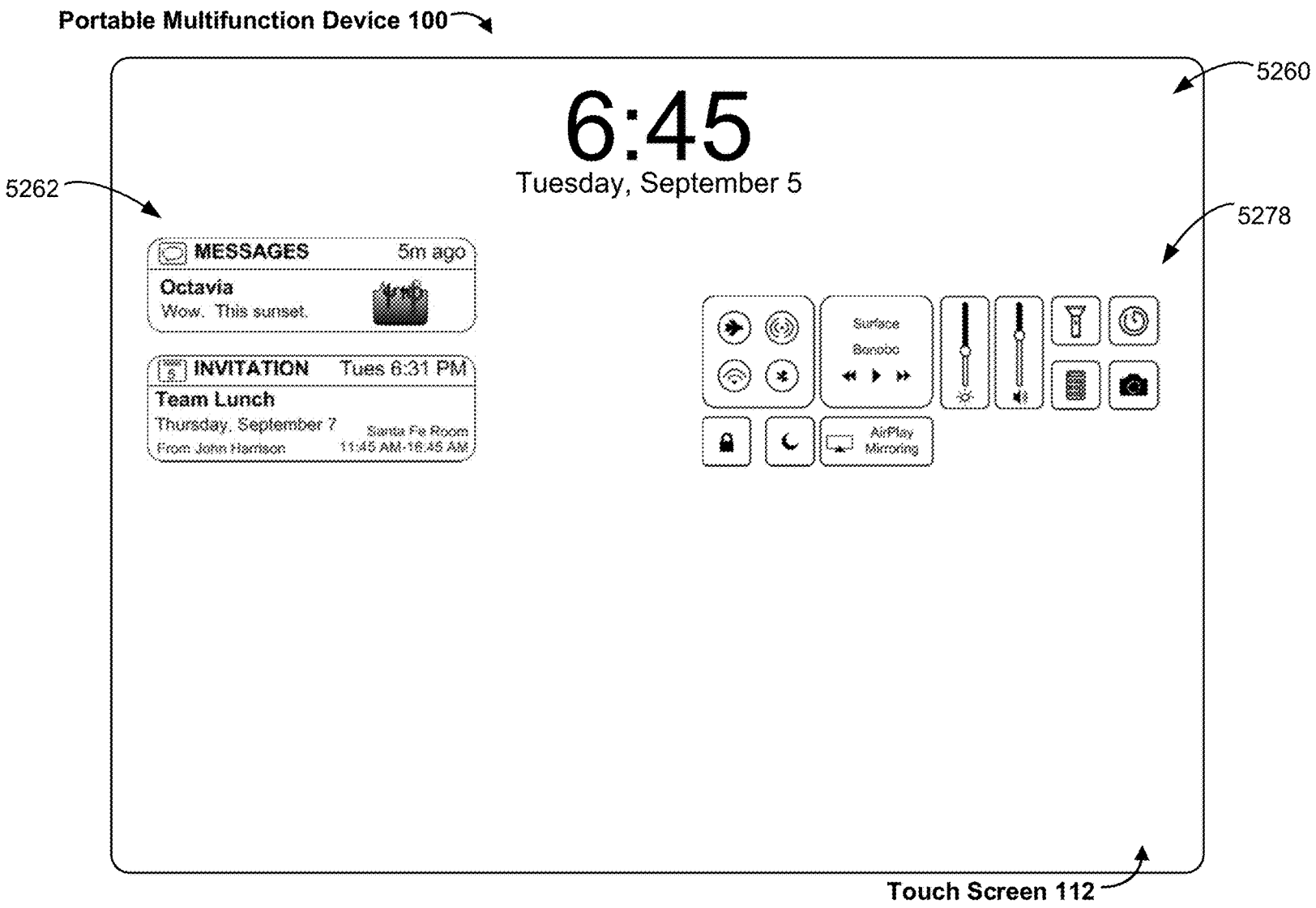

Portable Multifunction Device 100
5260
6:45
Tuesday, September 5
5262
5278
MESSAGES 5m ago
Octavia
Wow. This sunset.
INVITATION Tues 6:31 PM
Team Lunch
Thursday, September 7 Santa Fe Room
From John Harrison 11:45 AM-12:45 AM
Surface
Remote
AirPlay
Mirroring
Touch Screen 112

Figure 5HL

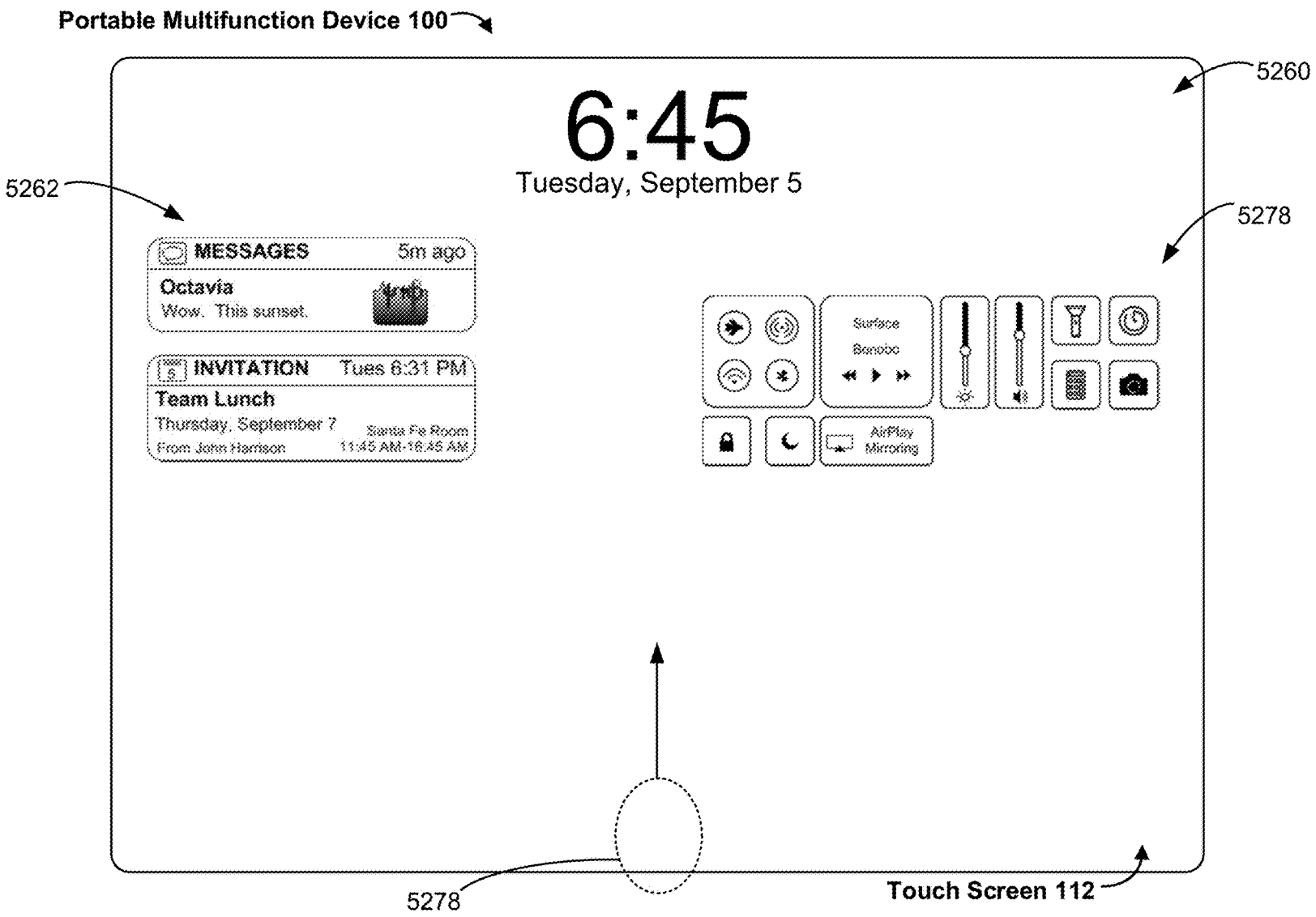

Portable Multifunction Device 100
5260
6:45
Tuesday, September 5
5262
MESSAGES 5m ago
Octavia
Wow. This sunset.
INVITATION Tues 6:31 PM
Team Lunch
Thursday, September 7 Santa Fe Room
From John Harrison 11:45 AM-12:45 AM
5278
Surface
Remote
AirPlay
Mirroring
5278
Touch Screen 112

Figure 5HM

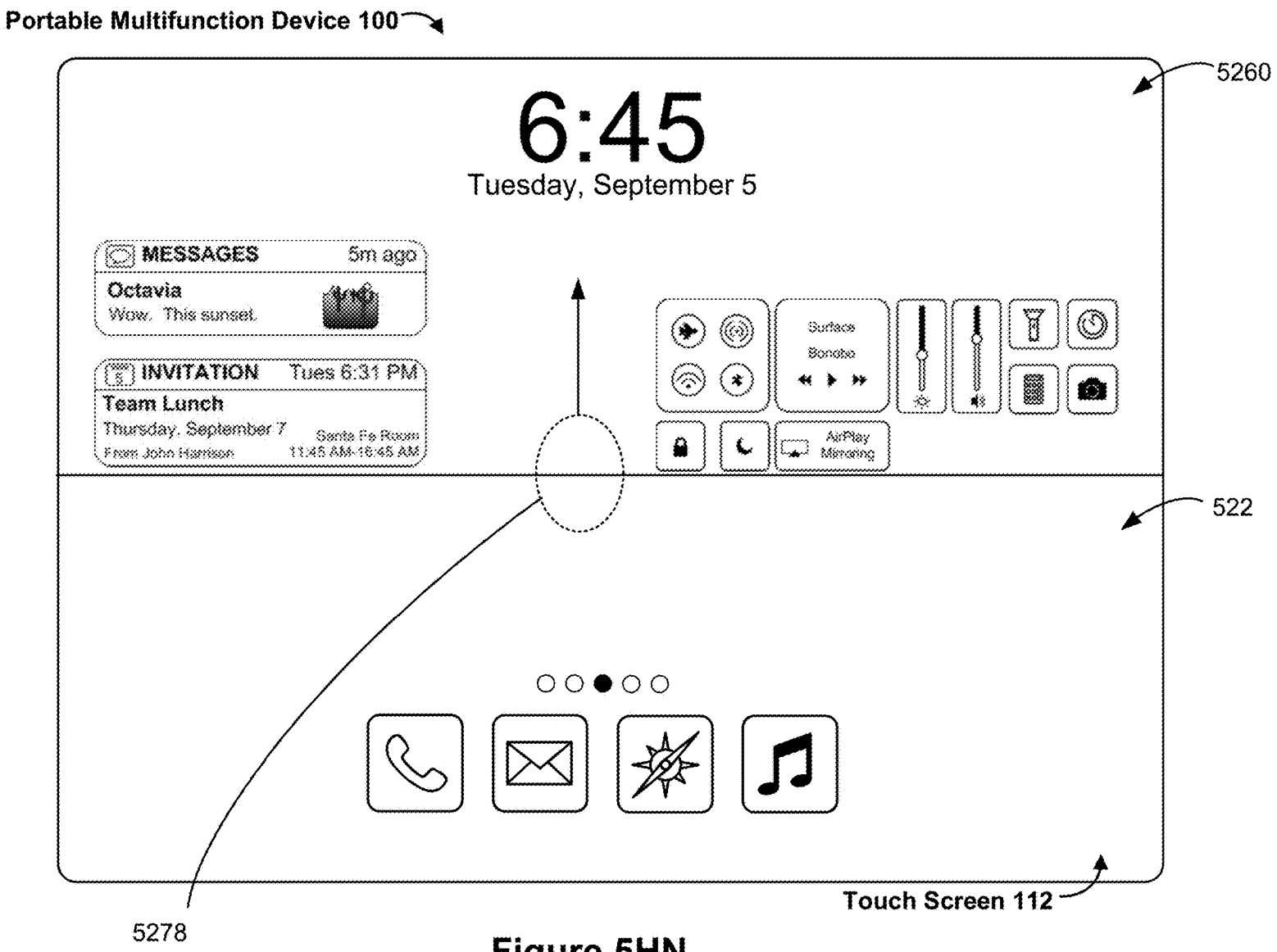

Portable Multifunction Device 100
6:45
Tuesday, September 5
MESSAGES 5m ago
Octavia
Wow. This sunset.
INVITATION Tues 6:31 PM
Team Lunch
Thursday, September 7 Santa Fe Room
From John Harrison 11:45 AM-12:45 AM
Surface
Sonatina
AirPlay
Mirroring
5260
522
5278
Touch Screen 112

Figure 5HN

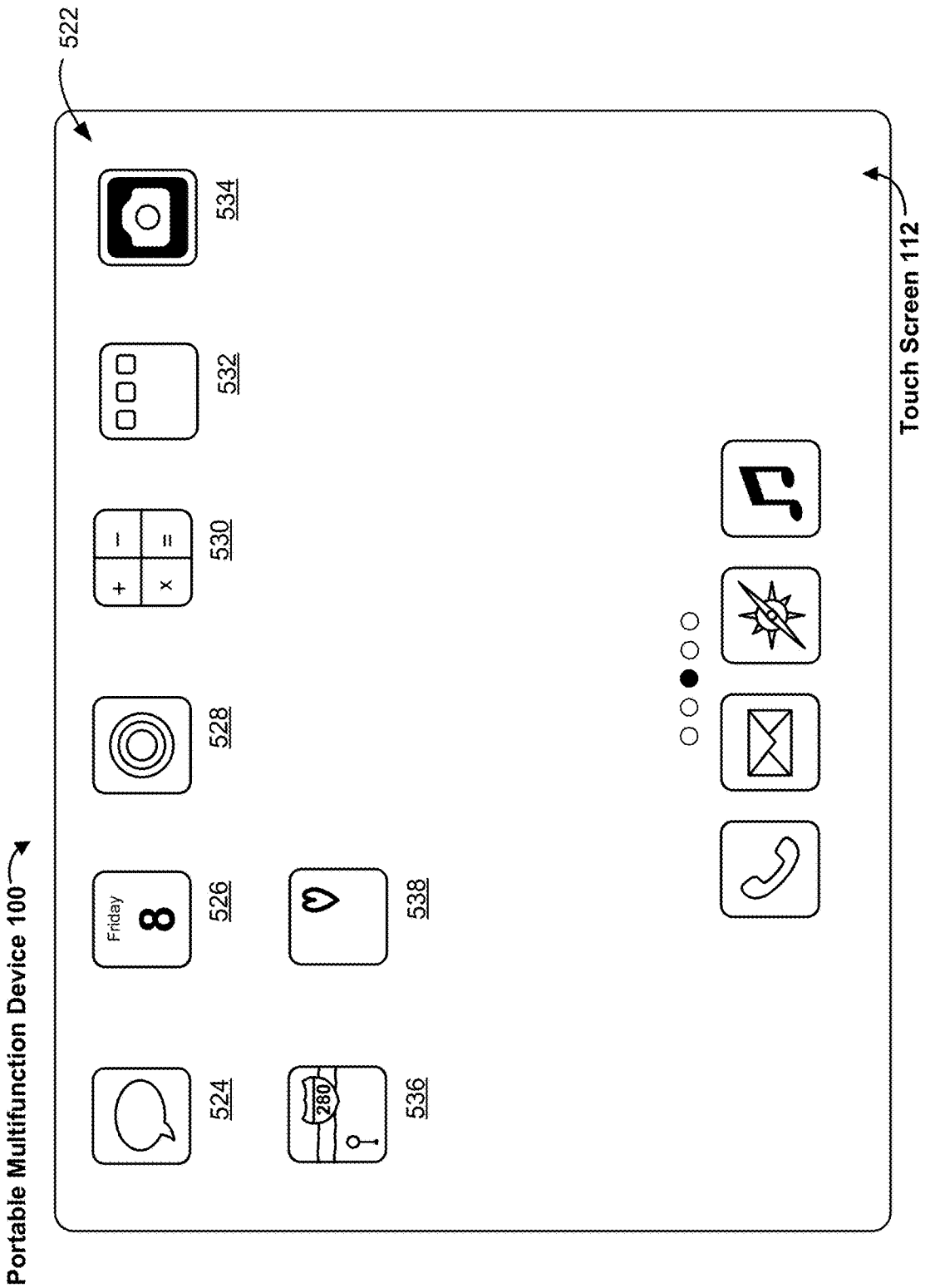


Figure 5HO

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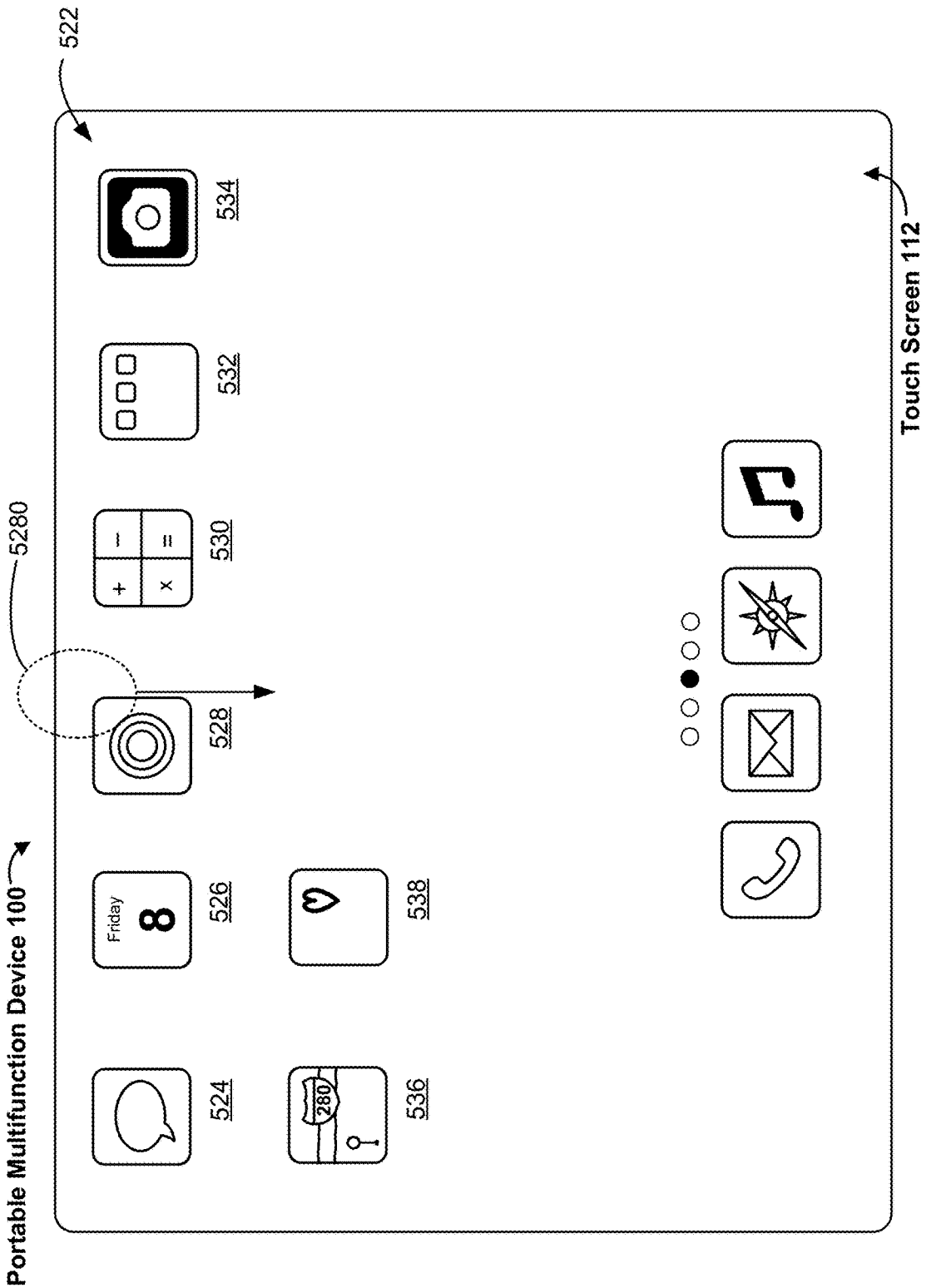

Portable Multifunction Device 100
5280
522
Touch Screen 112
524
526
528
530
532
534
536
538
Friday
8
280

Figure 5HP

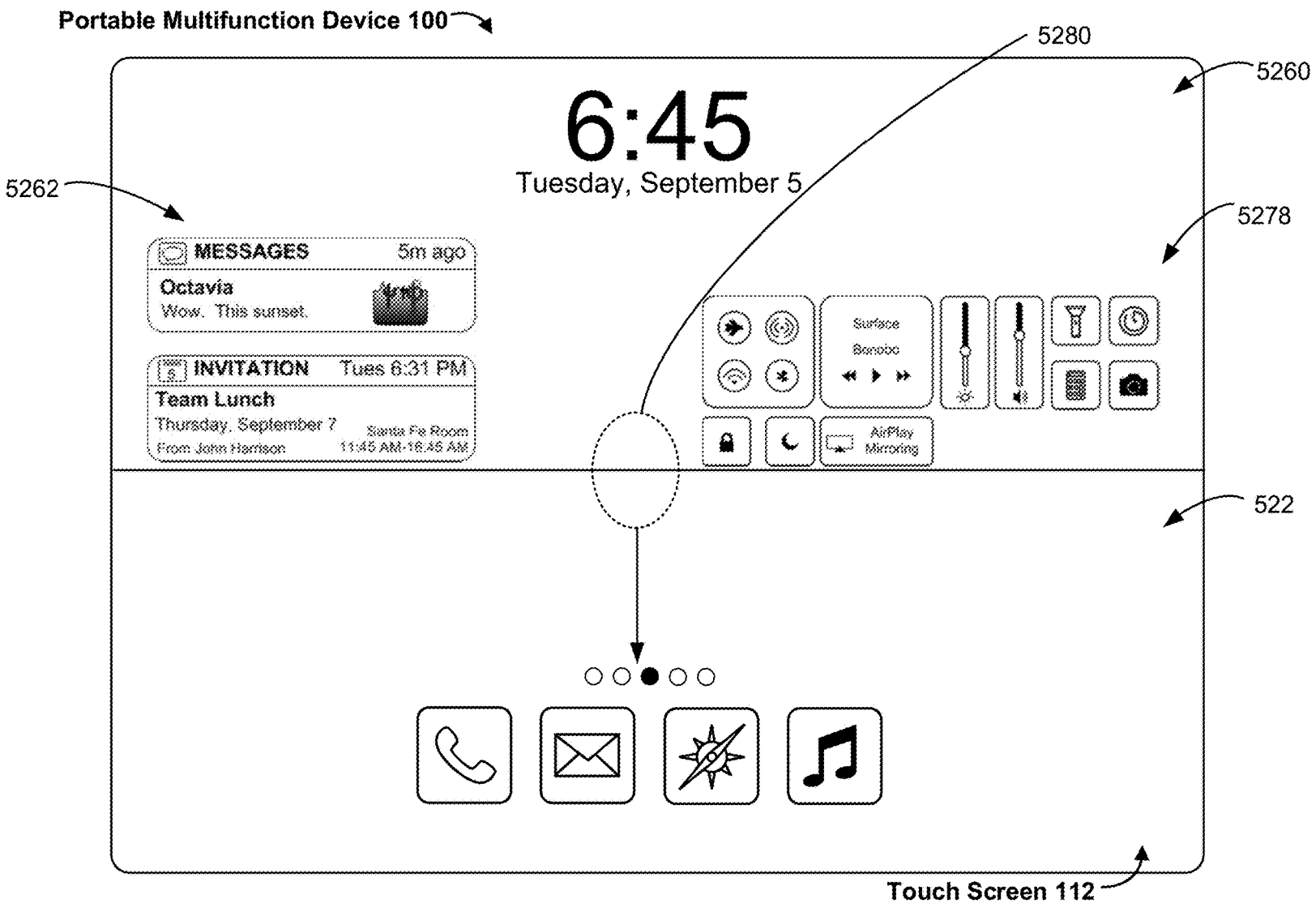

Portable Multifunction Device 100
5280
5260
6:45
Tuesday, September 5
5262
5278
MESSAGES 5m ago
Octavia
Wow. This sunset.
INVITATION Tues 6:31 PM
Team Lunch
Thursday, September 7 Santa Fe Room
From John Harrison 11:45 AM-12:45 AM
Surface
Remote
AirPlay
Mirroring
522
Touch Screen 112

Figure 5HQ

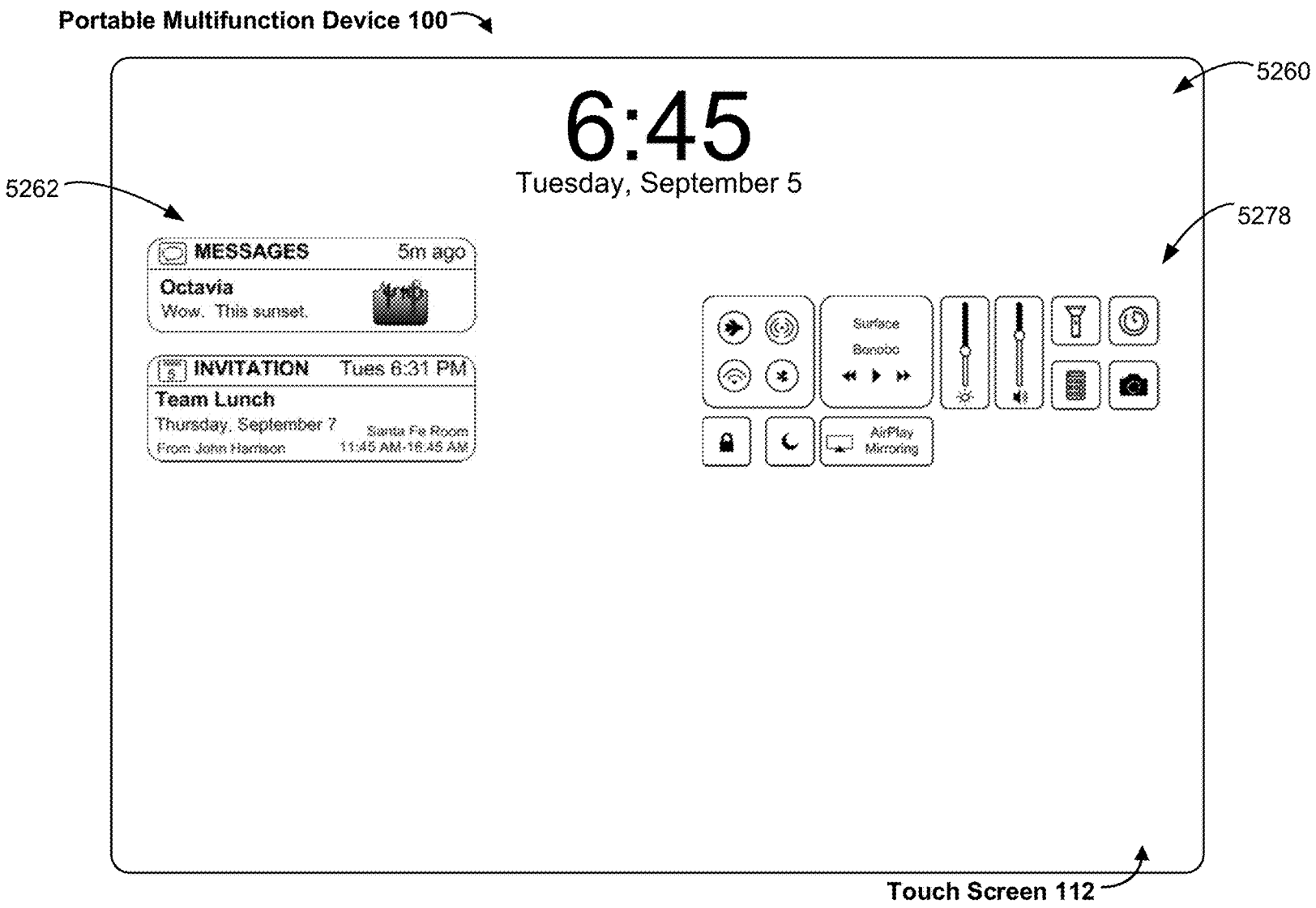

Portable Multifunction Device 100
5260
6:45
Tuesday, September 5
5262
5278
MESSAGES 5m ago
Octavia
Wow. This sunset.
INVITATION Tues 6:31 PM
Team Lunch
Thursday, September 7 Santa Fe Room
From John Harrison 11:45 AM-12:45 AM
Surface
Remote
AirPlay
Mirroring
Touch Screen 112

Figure 5HR

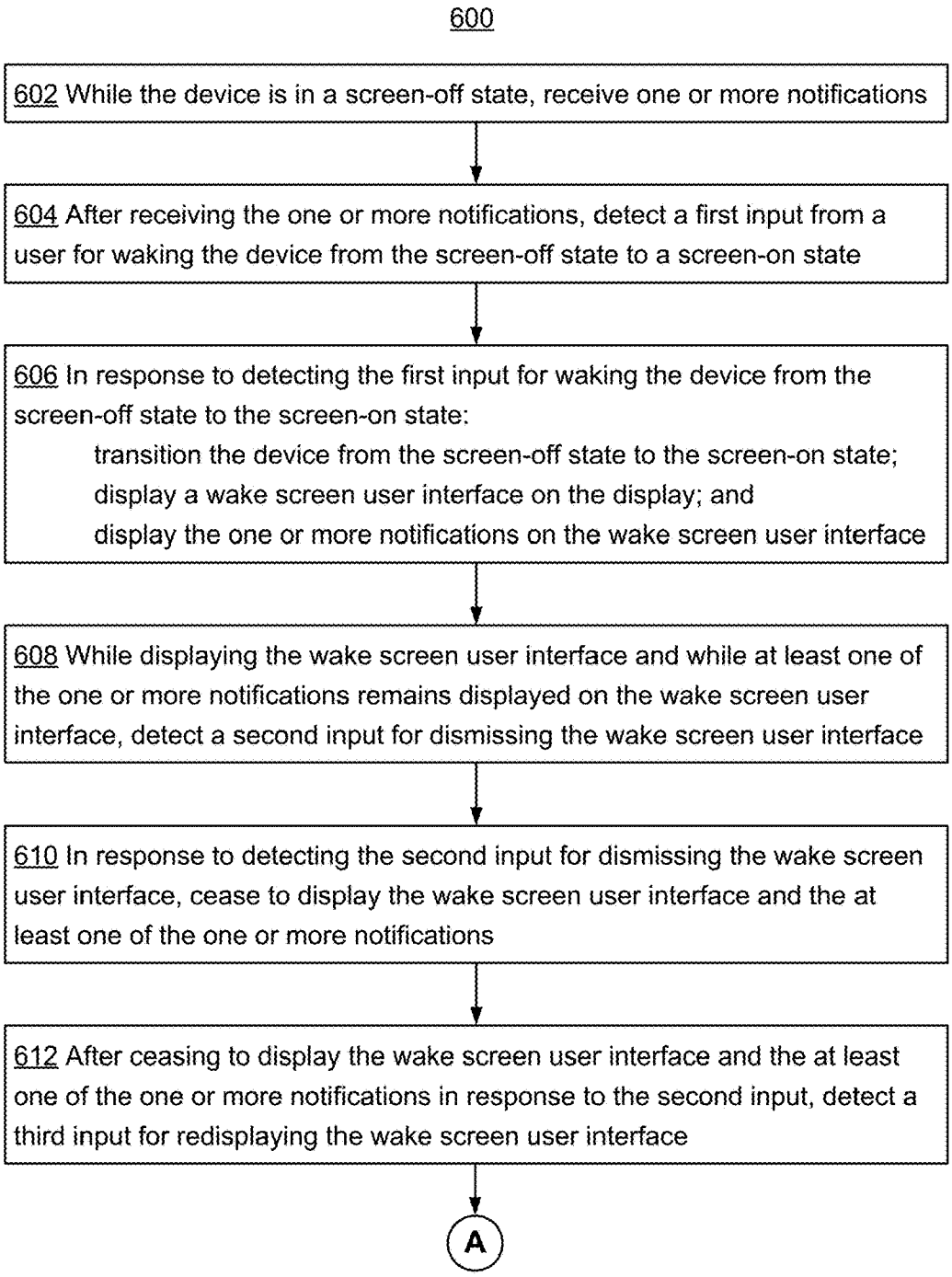


Figure 6A

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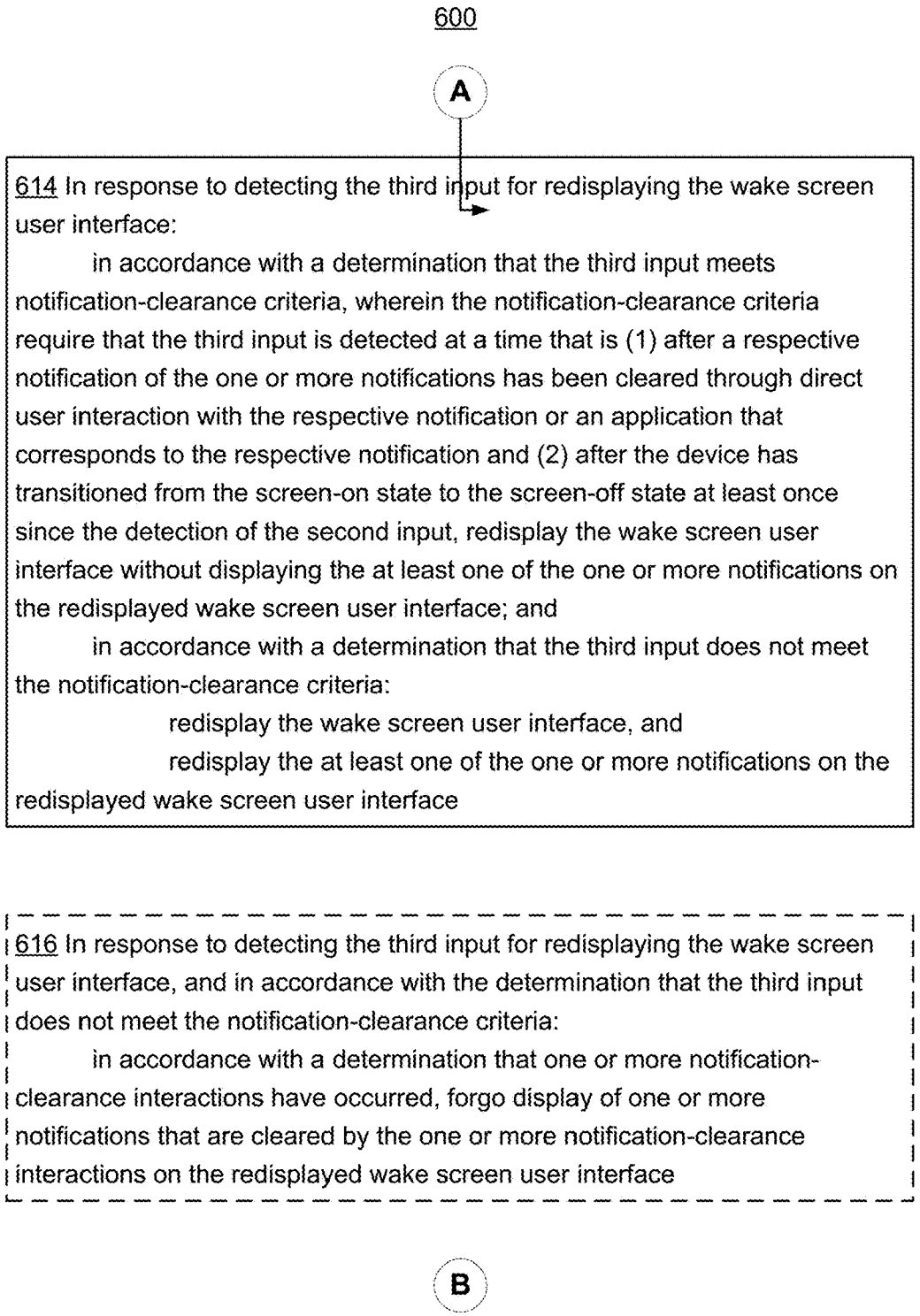


Figure 6B

Masimo Ex. 1001
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600

B

618 After detecting the first input for waking the device from the screen-off state to the screen-on state and prior to detecting the second input for dismissing the wake screen user interface:
detect a plurality of intermediate inputs, the plurality of intermediate inputs including:
a first intermediate input for dismissing the wake screen user interface, and
a second intermediate input for redisplaying the wake screen user interface

620 The second input for dismissing the wake screen user interface is an input for displaying a first user interface that is distinct from the wake screen user interface,
the first user interface is displayed in response to the second input, and
the third input for redisplaying the wake screen user interface was received while the first user interface is displayed

622 The third input for redisplaying the wake screen user interface is received while a content playback application is active, and
redisplaying the wake screen user interface includes displaying at least one media playback control in the wake screen user interface

624 While the wake screen user interface is displayed, detect a fourth input by a contact on the touch-sensitive surface, including detecting movement of the contact along the touch-sensitive surface in a first direction and detecting lift-off of the contact after the movement; and
in response to detecting the fourth input:
moving at least one object displayed on the wake screen user interface in accordance with the movement of the contact; and,
reversing the movement of the at least one object upon lift-off of the contact

C

Figure 6C

Masimo Ex. 1001
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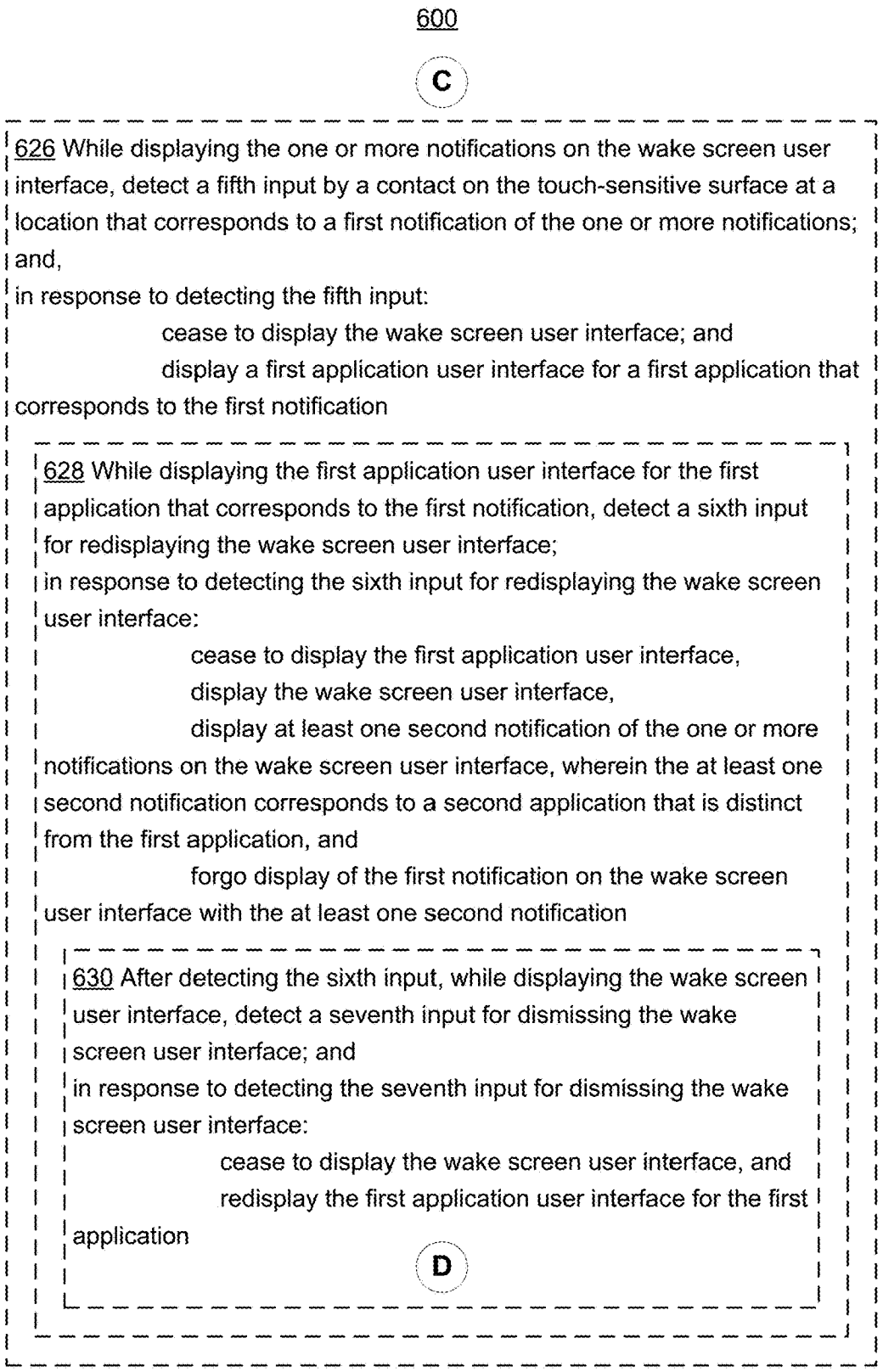


Figure 6D

Masimo Ex. 1001
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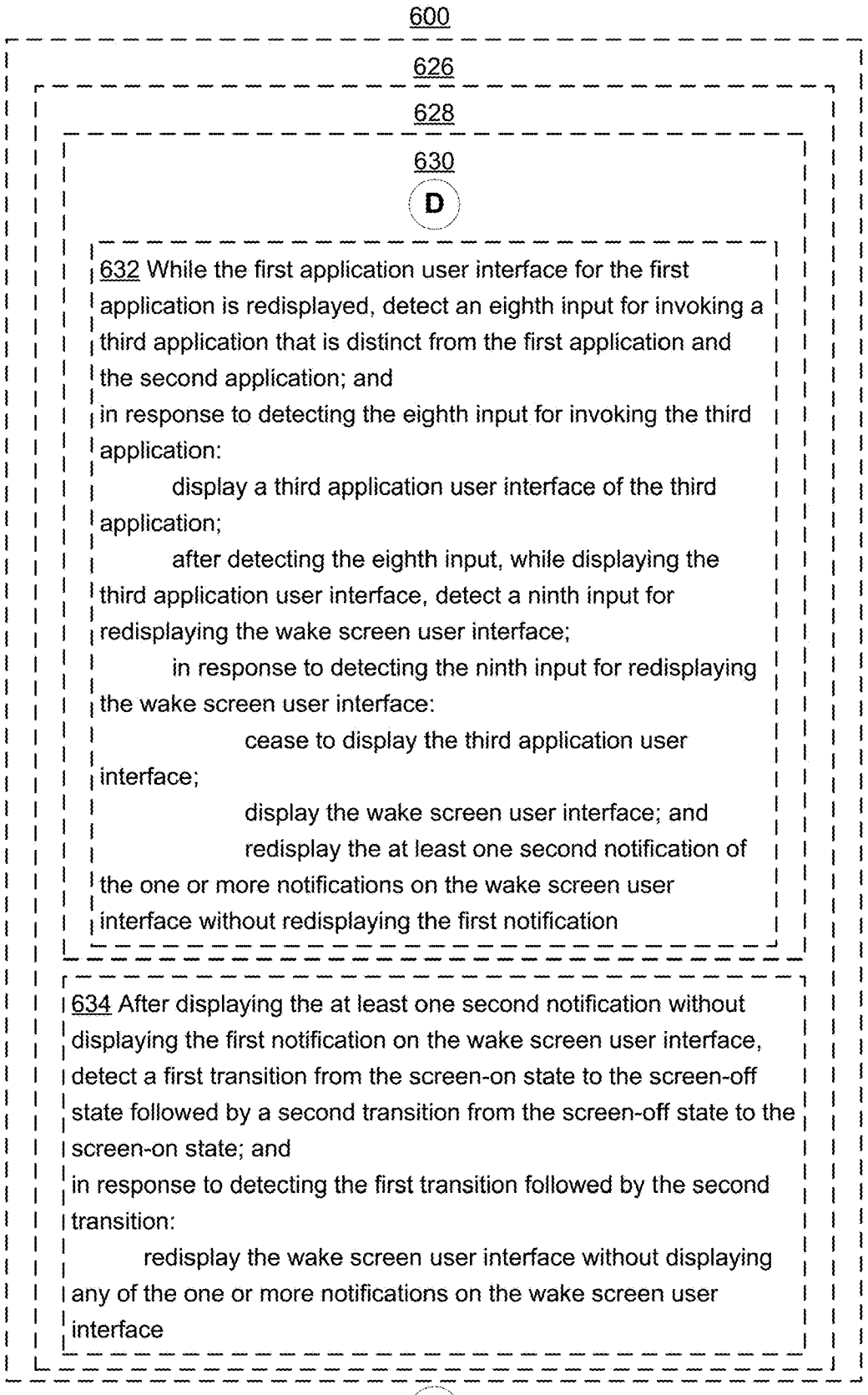


Figure 6E

Masimo Ex. 1001
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600

E

636 While displaying the wake screen user interface with all of the one or more notifications, detect a third transitioning from the screen-on state to the screen-off state followed by a fourth transition from the screen-off state to the screen-on state; and
in response to detecting the third transition followed by the fourth transition:
redisplay the wake screen user interface with the one or more notifications on the wake screen user interface

638 While displaying the wake screen user interface with the one or more notifications, detect a tenth input for displaying an authentication user interface;
in response to detecting the tenth input for displaying the authentication user interface:
cease to display the wake screen user interface; and
display the authentication user interface;
while the authentication user interface is displayed, detect an authorization input;
in accordance with a determination that the authorization input is valid, display a second user interface;
while displaying the second user interface, detect an eleventh input for redisplaying the wake screen user interface; and,
in response to detecting the eleventh input:
cease to display the second application user interface; and
redisplay the wake screen user interface with the one or more notifications

640 In accordance with the determination that the third input meets the notification-clearance criteria, add, to a set of recent notifications, one or more cleared notifications that correspond to the at least one of the one or more not displayed on the wake screen user interface

F

Figure 6F

Masimo Ex. 1001
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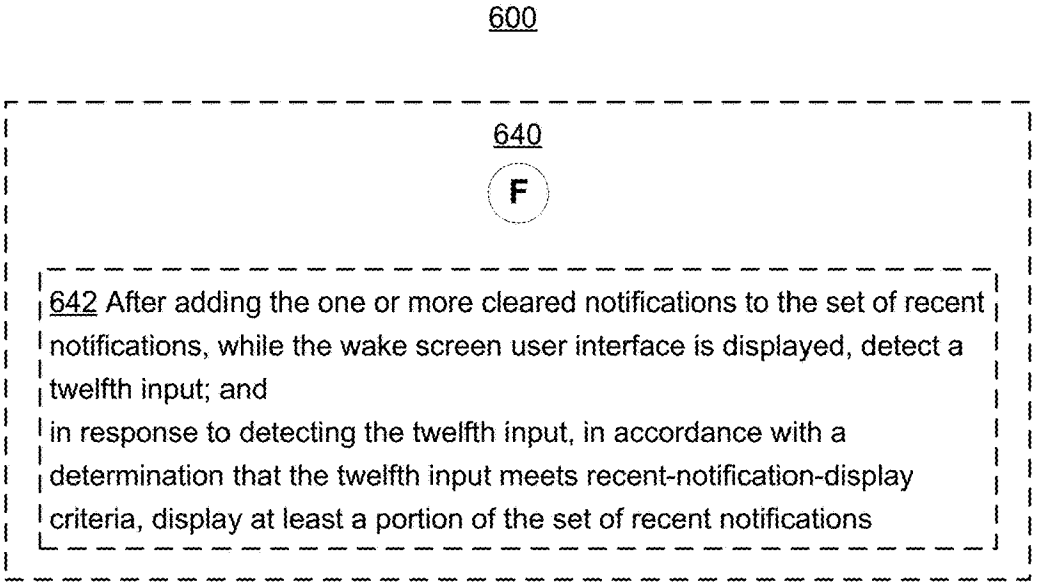


Figure 6G

Masimo Ex. 1001
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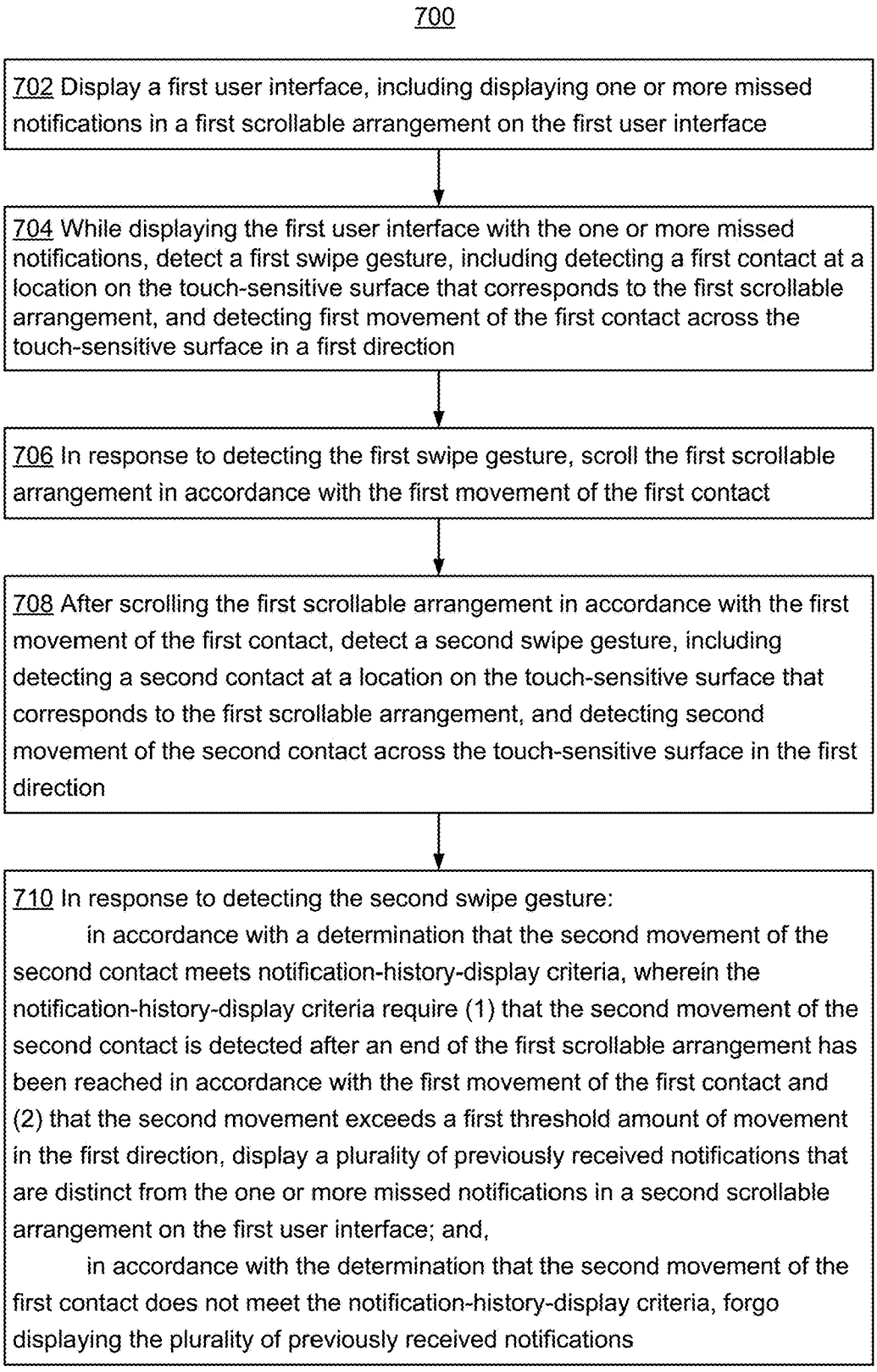


Figure 7A

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700

A

712 The first user interface is a wake screen user interface, and the first user interface is displayed immediately upon waking the device from the display-off state to the display-on state

714 While displaying the one or more missed notifications in the first scrollable arrangement on the first user interface, detect a missed notification dismissal input for dismissing a respective notification of the one or more missed notifications in the first scrollable arrangement;
after detecting the missed notification dismissal input for dismissing the respective notification:
cease to display the respective notification of the one or more notifications on the first user interface, and
add the respective notification to the plurality of previously received notifications

716 While the first user interface is displayed, detect a third swipe gesture, including detecting a third contact at a location on the touch-sensitive surface that corresponds the first scrollable arrangement and detecting third movement of the third contact across the touch-sensitive surface in a second direction that is distinct from the first direction;
in response to detecting the third swipe gesture, translate the first scrollable arrangement in accordance with the third movement of the third contact;
detect lift-off of the third contact from the touch-sensitive surface after detecting the third movement; and,
in response to detecting the liftoff of the third contact, reverse the translation of the first scrollable arrangement that was made in accordance with the third movement of the third contact

B

Figure 7B

Masimo Ex. 1001
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700

B

718 While displaying the plurality of previously received notifications in the second scrollable arrangement on the first user interface, detect a fourth swipe gesture, including detecting a fourth contact at a location on the touch-sensitive surface that corresponds to the second scrollable arrangement and detecting fourth movement of the fourth contact across the touch-sensitive surface in a second direction opposite the first direction; and,
in response to detecting the fourth swipe gesture:
in accordance with a determination that the fourth movement of the fourth contact meets notification-history-dismissal criteria, wherein the notification-history-dismissal criteria require (1) that the fourth movement of the fourth contact is detected after an end of the second scrollable arrangement has been reached and (2) that the fourth movement exceeds a second threshold amount of movement in the second direction opposite the first direction, cease to display the plurality of previously received notifications on the first user interface; and,
in accordance with the determination that the fourth movement of the fourth contact does not meet the notification-history-dismissal criteria, scroll the plurality of previously received notifications in the second scrollable arrangement in accordance with the fourth movement of the fourth contact

720 While displaying the first user interface, detect a first user interface dismissal input for input for dismissing the first user interface; and,
in response to detecting the first user interface dismissal input, cease to display the first user interface

722 The device includes one or more tactile output generators, and the method includes:
while the first user interface is displayed, in accordance with the determination that the second movement of the second contact meets the notification-history-display criteria, generating, with the one or more tactile output generators, a tactile output to indicate that the criteria for displaying the plurality of previously received notifications have been met

C

Figure 7C

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700

C

724 The first contact moves with a first rate of movement during the first swipe gesture;
scrolling the first scrollable arrangement occurs at a first scroll rate that corresponds to the first rate of movement by the first contact;
the second contact moves with a second rate of movement during the second swipe gesture; and
displaying the plurality of previously received notifications in the second scrollable arrangement includes scrolling a first previously received notification of the plurality of previously received notifications in the second scrollable arrangement at a second scroll rate that is greater than the second rate of movement by the second contact

726 Detect a fifth swipe gesture, including detecting a fifth contact at a first location on the touch-sensitive surface and detecting fifth movement of the fifth contact across the touch-sensitive surface in a third direction that is perpendicular to the first direction;
in response to detecting the fifth swipe gesture:
in accordance with a determination that the first location on the touch-sensitive surface corresponds to a first notification among the one or more missed notifications or the plurality of previously received notifications, dismiss the first notification; and
in accordance with a determination that the first location on the touch-sensitive surface corresponds to a location outside of the first scrollable arrangement and the second scrollable arrangement:
replace display of the first user interface with display of a second user interface

D

Figure 7D

Masimo Ex. 1001
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700

D

728 Detect that criteria for dismissing all of the one or more missed notifications in the first scrollable arrangement are met; and

in response to detecting that the criteria for dismissing all of the one or more missed notifications are met:

add, to the plurality of previously received notifications, all of the one or more missed notifications

730 While displaying the first user interface without any missed notifications, detect a sixth swipe gesture, including a sixth contact at a location on the touch-sensitive surface that corresponds to the location at which the first scrollable arrangement was previously displayed, and detecting sixth movement of the sixth contact across the touch-sensitive surface in the first direction;

in response to detecting the sixth swipe gesture:

in accordance with a determination that the sixth movement of the sixth contact exceeds the first threshold amount of movement in the first direction, display the plurality of previously received notifications; and

in accordance with the determination that the sixth movement of the sixth contact does not exceed the first threshold amount of movement in the first direction, forgo displaying the plurality of previously received notifications

732 While the first user interface is displayed without any missed notifications, detect a seventh swipe gesture, including detecting a seventh contact at a location on the touch-sensitive surface that corresponds to the location at which the first scrollable arrangement was previously displayed, detecting seventh movement of the seventh contact across the touch-sensitive surface in a second direction opposite the first direction; in response to detecting the seventh swipe gesture, translating at least one object displayed on the first user interface in the second direction in accordance with the seventh movement of the seventh contact;

after translating the at least one object, detect lift-off of the seventh contact; and

in response to detecting liftoff of the seventh contact from the touch-sensitive surface, reverse the translation of the at least one object that have been made in accordance with the seventh movement of the seventh contact

Figure 7E

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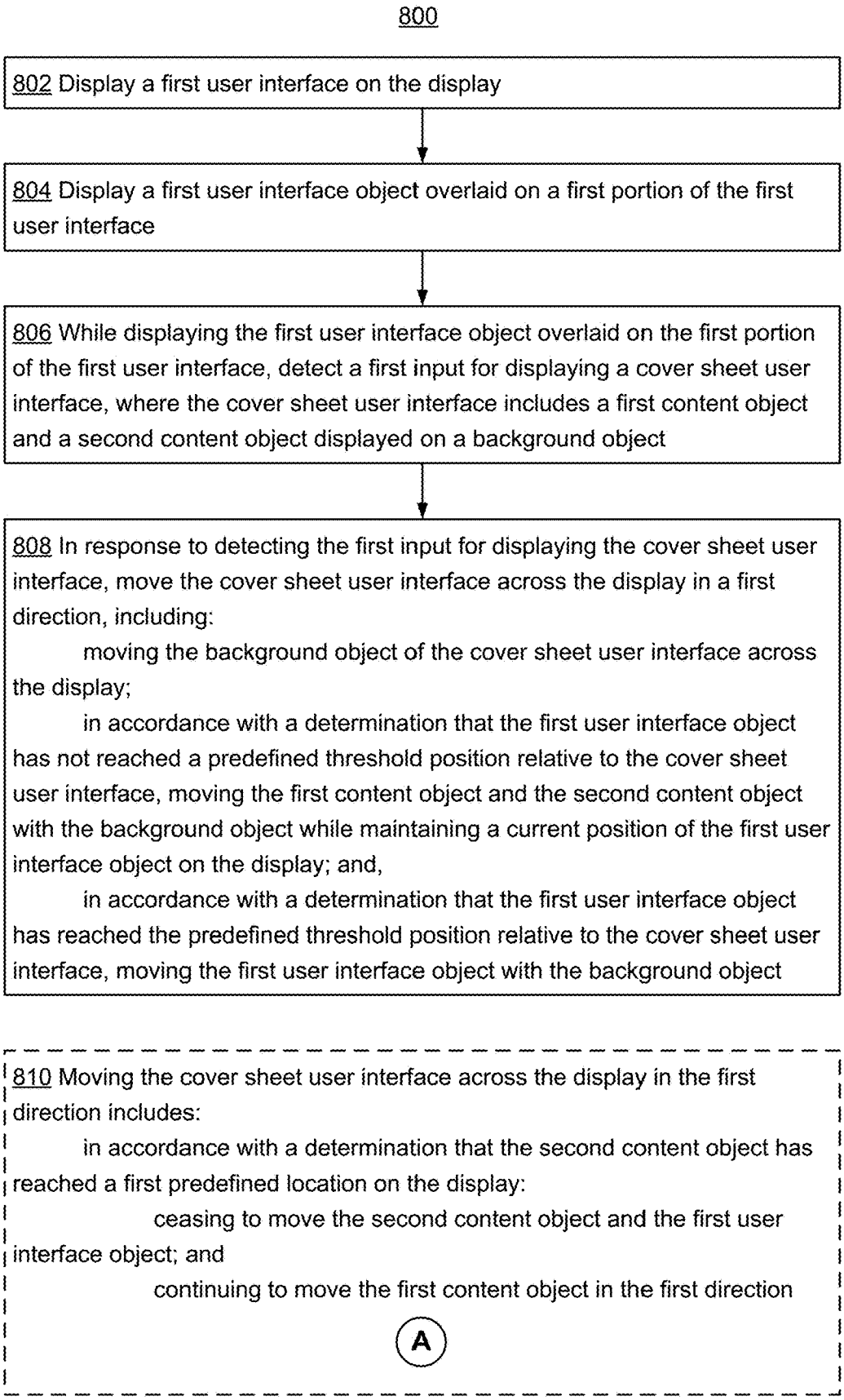


Figure 8A

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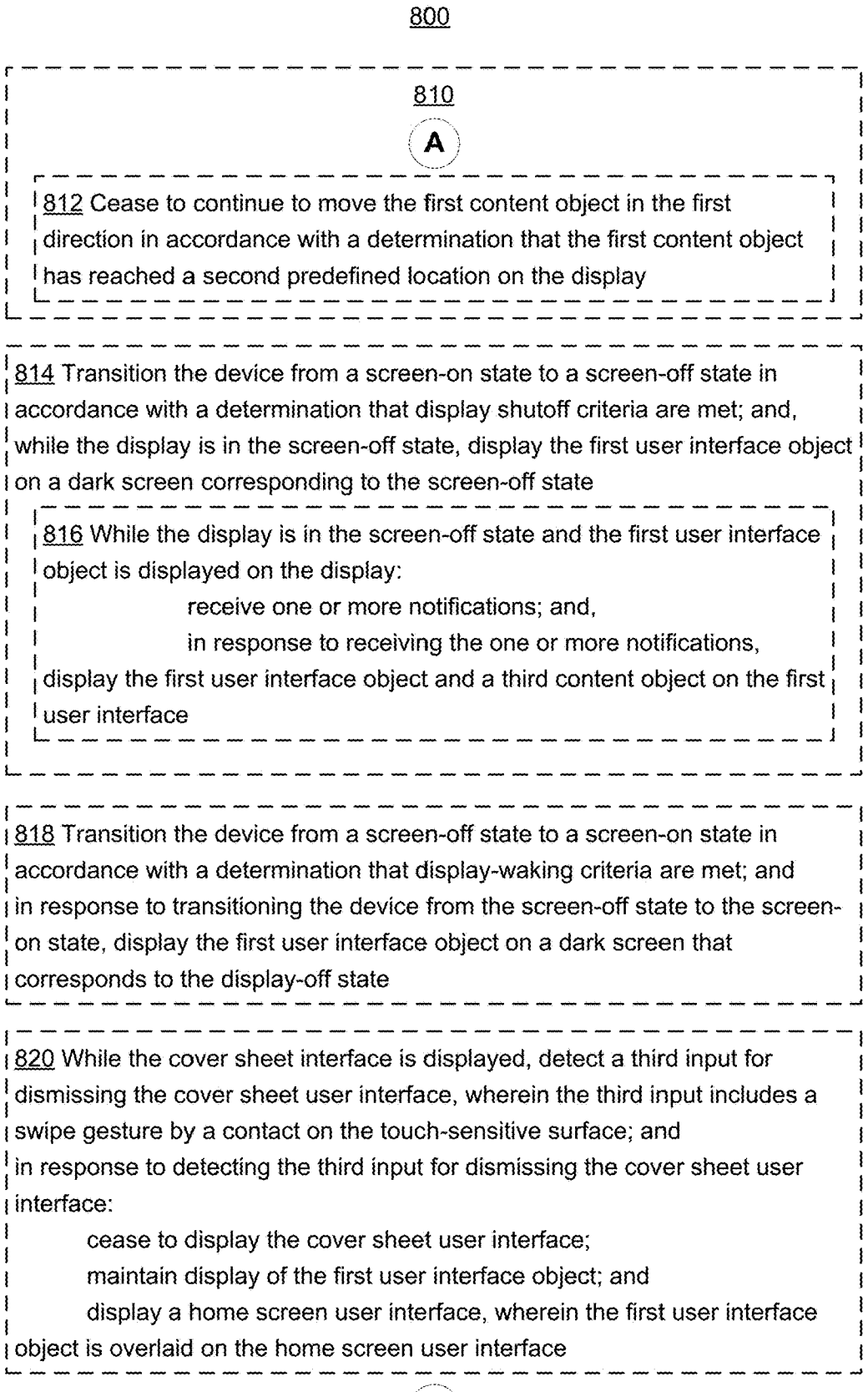


Figure 8B

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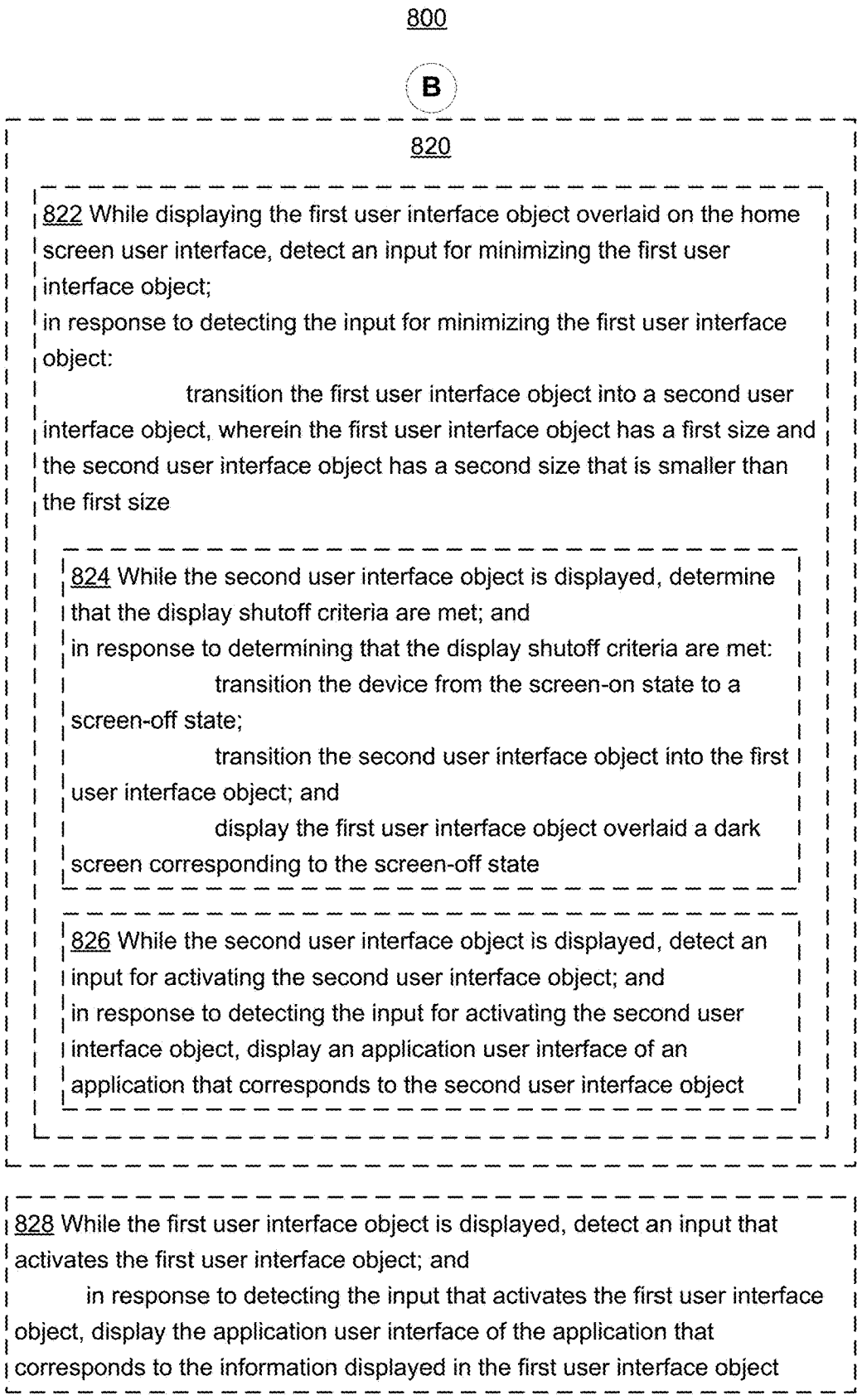


Figure 8C

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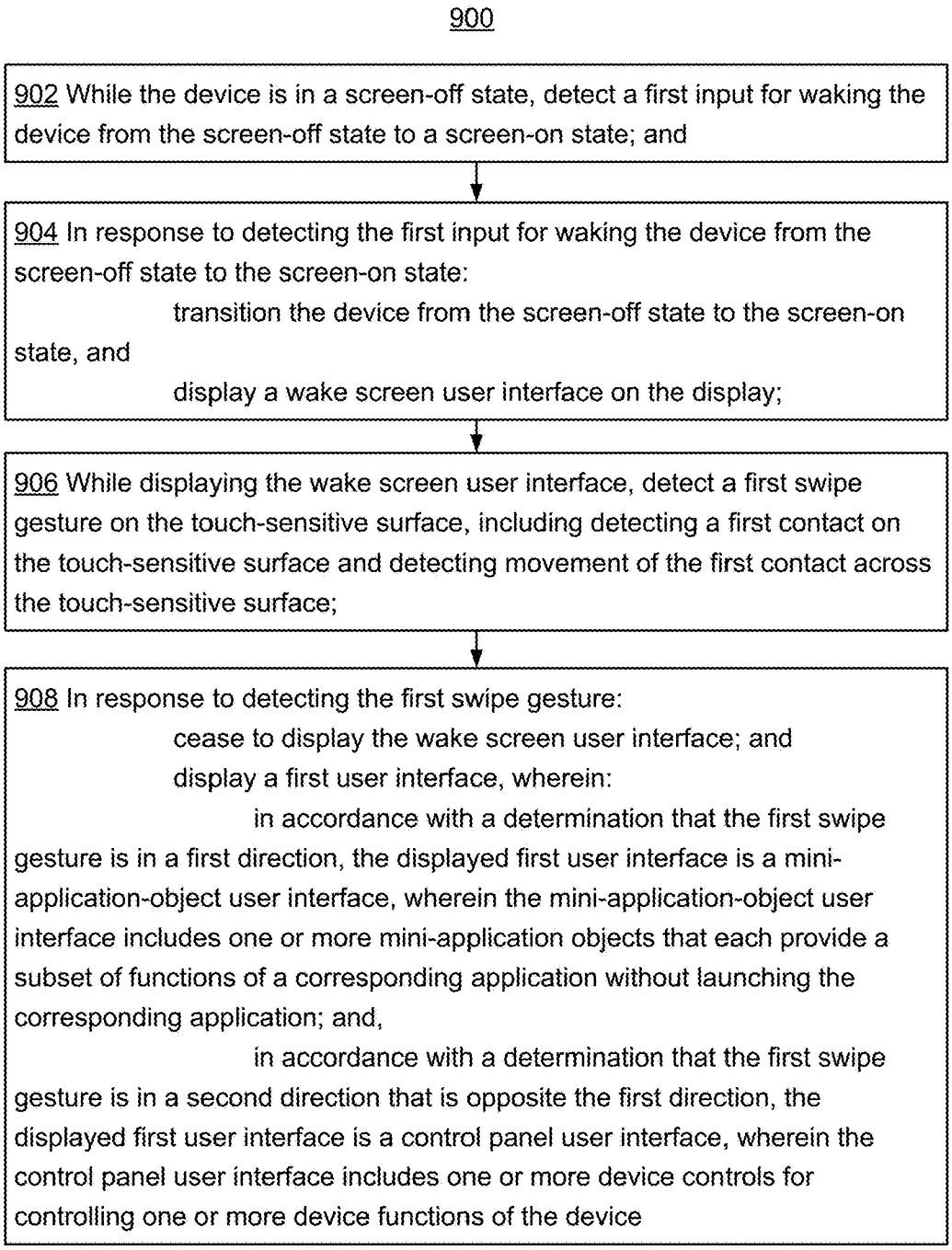


Figure 9A

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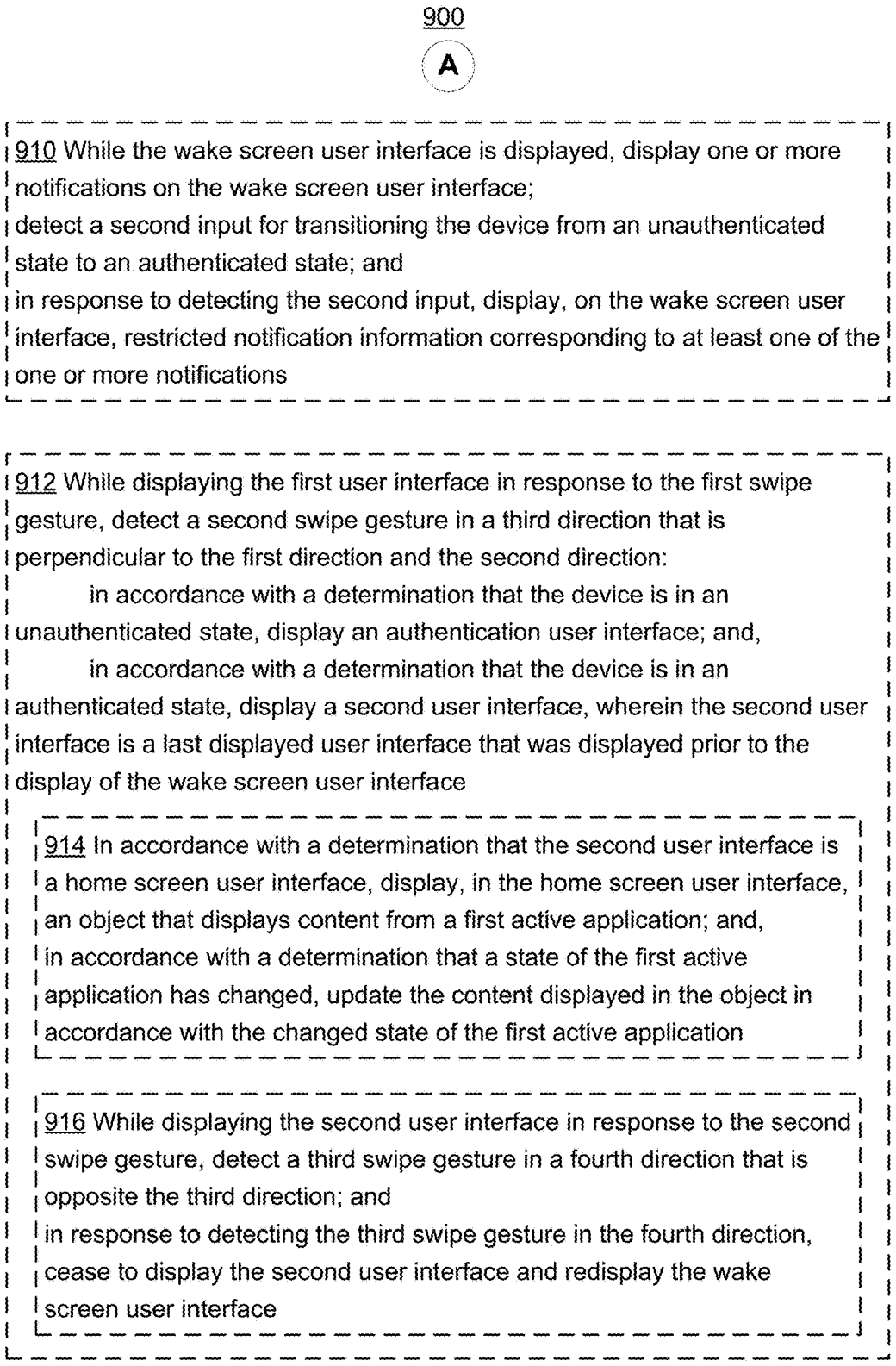


Figure 9B

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900

B

918 The wake screen user interface is displayed with an affordance that displays content from a second active application, the method including:

while displaying the wake screen user interface with the affordance, in accordance with a determination that a state of the second active application has changed, updating the content displayed in the affordance in accordance with the changed state of the second active application

920 The wake screen user interface includes a first control of the one or more device controls of the control panel user interface

922 The first control requires a first type of input to activate a first function while displayed on the wake screen user interface and the first control requires a second type of input to activate the first function while displayed on the control panel user interface

924 The first control is also displayed on the home screen user interface, and a press input directed to the first control while displayed on the home screen user interface causes display of a plurality of selectable options, and a press input directed to the first control while displayed on the wake screen user interface does not cause display of the plurality of selectable options

926 While displaying the wake screen user interface, display a first object at a first position on the display;

in accordance with the determination that the first swipe gesture is in the first direction, display the first object on the first user interface at a second position that is shifted in the first direction relative to the first position on the display; and,

in accordance with the determination that the first swipe gesture is in the second direction, display the at least one object at a third position that is shifted in the second direction relative to the first position on the display

Figure 9C

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DEVICES, METHODS, AND GRAPHICAL USER INTERFACES FOR ACCESSING NOTIFICATIONS

RELATED APPLICATIONS

This application is a continuation of U.S. application Ser. No. 16/354,012, filed Mar. 14, 2019, which is a continuation of U.S. application Ser. No. 15/715,005, filed Sep. 25, 2017, now U.S. Pat. No. 10,466,889, which claims priority to U.S. Provisional Application No. 62/507,181, filed May 16, 2017, which are hereby incorporated by reference in their entirety.

TECHNICAL FIELD

This relates generally to electronic devices with touch-sensitive surfaces, including but not limited to electronic devices with touch-sensitive surfaces that include user interfaces for displaying notifications.

BACKGROUND

The use of portable electronic devices has increased significantly in recent years, with many applications typically residing in the memory of such devices. Exemplary applications include messaging applications, calendar applications and social media applications. Electronic devices often receive communications for these applications, which contain information of importance to users. These electronic devices then often provide notifications that correspond to the received communications.

Exemplary communications include instant messages, calendar invitations, social media updates, microblog posts and news stories. Exemplary notifications associated with these communications may include digital images, video, text, icons, control elements (such as buttons) and/or other graphics to notify users of the receipt of these communications. Exemplary applications receiving communications and generating notifications include instant messaging applications (e.g., iMessage from Apple Inc. of Cupertino, Calif.), calendar applications (e.g., iCal or Calendar from Apple Inc. of Cupertino, Calif.), social networking applications, microblogging applications, and news applications.

But user interfaces for accessing notifications, and methods of navigating to and from such interfaces, are cumbersome and inefficient. For example, the notifications may be displayed in a confusing manner, and navigation to and from interfaces that contain notifications may also be confusing. These methods take longer than necessary, thereby wasting energy. This latter consideration is particularly important in battery-operated devices.

SUMMARY

Accordingly, there is a need for electronic devices with faster, more efficient methods and interfaces for accessing notifications. Such methods and interfaces optionally complement or replace conventional methods for accessing notifications. Such methods and interfaces reduce the number, extent, and/or nature of the inputs from a user and produce a more efficient human-machine interface. For battery-operated devices, such methods and interfaces conserve power and increase the time between battery charges.

The above deficiencies and other problems associated with user interfaces for electronic devices with touch-sensitive surfaces are reduced or eliminated by the disclosed devices. In some embodiments, the device is a desktop computer. In some embodiments, the device is portable (e.g., a notebook computer, tablet computer, or handheld device). In some embodiments, the device is a personal electronic device (e.g., a wearable electronic device, such as a watch). In some embodiments, the device has a touchpad. In some embodiments, the device has a touch-sensitive display (also known as a "touch screen" or "touch-screen display"). In some embodiments, the device has a graphical user interface (GUI), one or more processors, memory and one or more modules, programs or sets of instructions stored in the memory for performing multiple functions. In some embodiments, the user interacts with the GUI primarily through stylus and/or finger contacts and gestures on the touch-sensitive surface. In some embodiments, the functions optionally include image editing, drawing, presenting, word processing, spreadsheet making, game playing, telephoning, video conferencing, e-mailing, instant messaging, workout support, digital photographing, digital videoing, web browsing, digital music playing, note taking, and/or digital video playing. Executable instructions for performing these functions are, optionally, included in a non-transitory computer readable storage medium or other computer program product configured for execution by one or more processors.

In accordance with some embodiments, a method is performed at a device having a display and a touch-sensitive surface. The method includes: while the device is in a screen-off state, receiving one or more notifications; after receiving the one or more notifications, detecting a first input from a user for waking the device from the screen-off state to a screen-on state; in response to detecting the first input for waking the device from the screen-off state to the screen-on state: transitioning the device from the screen-off state to the screen-on state; displaying a wake screen user interface on the display; and displaying the one or more notifications on the wake screen user interface; while displaying the wake screen user interface and while at least one of the one or more notifications remains displayed on the wake screen user interface, detecting a second input for dismissing the wake screen user interface; in response to detecting the second input for dismissing the wake screen user interface, ceasing to display the wake screen user interface and the at least one of the one or more notifications; after ceasing to display the wake screen user interface and the at least one of the one or more notifications in response to the second input, detecting a third input for redisplaying the wake screen user interface; in response to detecting the third input for redisplaying the wake screen user interface: in accordance with a determination that the third input meets notification-clearance criteria, wherein the notification-clearance criteria require that the third input is detected at a time that is (1) after a respective notification of the one or more notifications has been cleared through direct user interaction with the respective notification or an application that corresponds to the respective notification and (2) after the device has transitioned from the screen-on state to the screen-off state at least once since the detection of the second input, redisplaying the wake screen user interface without displaying the at least one of the one or more notifications on the redisplayed wake screen user interface; and in accordance with a determination that the third input does not meet the notification-clearance criteria: redisplaying the wake screen user interface, and redisplaying the at least one of the one or more notifications on the redisplayed wake screen user interface.

In accordance with some embodiments, a method is performed at a device having a display and a touch-sensitive surface. The method includes: displaying a first user inter-

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face, including displaying one or more missed notifications in a first scrollable arrangement on the first user interface; while displaying the first user interface with the one or more missed notifications, detecting a first swipe gesture, including detecting a first contact at a location on the touch-sensitive surface that corresponds to the first scrollable arrangement, and detecting first movement of the first contact across the touch-sensitive surface in a first direction; in response to detecting the first swipe gesture, scrolling the first scrollable arrangement in accordance with the first movement of the first contact; after scrolling the first scrollable arrangement in accordance with the first movement of the first contact, detecting a second swipe gesture, including detecting a second contact at a location on the touch-sensitive surface that corresponds to the first scrollable arrangement, and detecting second movement of the second contact across the touch-sensitive surface in the first direction; in response to detecting the second swipe gesture: in accordance with a determination that the second movement of the second contact meets notification-history-display criteria, wherein the notification-history-display criteria require (1) that the second movement of the second contact is detected after an end of the first scrollable arrangement has been reached in accordance with the first movement of the first contact and (2) that the second movement exceeds a first threshold amount of movement in the first direction, displaying a plurality of previously received notifications that are distinct from the one or more missed notifications in a second scrollable arrangement on the first user interface; and, in accordance with the determination that the second movement of the first contact does not meet the notification-history-display criteria, forgoing displaying the plurality of previously received notifications.

In accordance with some embodiments, a method is performed at a device having a display and a touch-sensitive surface. The method includes: displaying a first user interface on the display; displaying a first user interface object overlaid on a first portion of the first user interface; while displaying the first user interface object overlaid on the first portion of the first user interface, detecting a first input for displaying a cover sheet user interface, where the cover sheet user interface includes a first content object and a second content object displayed on a background object; in response to detecting the first input for displaying the cover sheet user interface, moving the cover sheet user interface across the display in a first direction, including: moving the background object of the cover sheet user interface across the display; in accordance with a determination that the first user interface object has not reached a predefined threshold position relative to the cover sheet user interface, moving the first content object and the second content object with the background object while maintaining a current position of the first user interface object on the display; and, in accordance with a determination that the first user interface object has reached the predefined threshold position relative to the cover sheet user interface, moving the first user interface object with the background object.

In accordance with some embodiments, a method is performed at a device having a display and a touch-sensitive surface. The method includes: while the device is in a screen-off state, detecting a first input for waking the device from the screen-off state to a screen-on state; and in response to detecting the first input for waking the device from the screen-off state to the screen-on state: transitioning the device from the screen-off state to the screen-on state, and displaying a wake screen user interface on the display; while displaying the wake screen user interface, detecting a first swipe gesture on the touch-sensitive surface, including detecting a first contact on the touch-sensitive surface and detecting movement of the first contact across the touch-sensitive surface; in response to detecting the first swipe gesture: ceasing to display the wake screen user interface; and displaying a first user interface, wherein: in accordance with a determination that the first swipe gesture is in a first direction, the displayed first user interface is a mini-application-object user interface, wherein the mini-application-object user interface includes one or more mini-application objects that each provide a subset of functions of a corresponding application without launching the corresponding application; and, in accordance with a determination that the first swipe gesture is in a second direction that is opposite the first direction, the displayed first user interface is a control panel user interface, wherein the control panel user interface includes one or more device controls for controlling one or more device functions of the device.

In accordance with some embodiments, an electronic device includes a display, a touch-sensitive surface, optionally one or more sensors to detect intensities of contacts with the touch-sensitive surface, optionally one or more tactile output generators, one or more processors, and memory storing one or more programs; the one or more programs are configured to be executed by the one or more processors and the one or more programs include instructions for performing or causing performance of the operations of any of the methods described herein. In accordance with some embodiments, a computer readable storage medium has stored therein instructions, which, when executed by an electronic device with a display, a touch-sensitive surface, optionally one or more sensors to detect intensities of contacts with the touch-sensitive surface, and optionally one or more tactile output generators, cause the device to perform or cause performance of the operations of any of the methods described herein. In accordance with some embodiments, a graphical user interface on an electronic device with a display, a touch-sensitive surface, optionally one or more sensors to detect intensities of contacts with the touch-sensitive surface, optionally one or more tactile output generators, a memory, and one or more processors to execute one or more programs stored in the memory includes one or more of the elements displayed in any of the methods described herein, which are updated in response to inputs, as described in any of the methods described herein. In accordance with some embodiments, an electronic device includes: a display, a touch-sensitive surface, optionally one or more sensors to detect intensities of contacts with the touch-sensitive surface, and optionally one or more tactile output generators; and means for performing or causing performance of the operations of any of the methods described herein. In accordance with some embodiments, an information processing apparatus, for use in an electronic device with a display, a touch-sensitive surface, optionally one or more sensors to detect intensities of contacts with the touch-sensitive surface, and optionally one or more tactile output generators, includes means for performing or causing performance of the operations of any of the methods described herein.

Thus, electronic devices with displays, touch-sensitive surfaces, optionally one or more sensors to detect intensities of contacts with the touch-sensitive surface, optionally one or more tactile output generators, optionally one or more device orientation sensors, are provided with improved interfaces for accessing notifications and improved navigation to and from such interfaces, thereby increasing the effectiveness, efficiency, and user satisfaction with such

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devices. Such methods and interfaces may complement or replace conventional methods for providing accessing notifications.

BRIEF DESCRIPTION OF THE DRAWINGS

For a better understanding of the various described embodiments, reference should be made to the Description of Embodiments below, in conjunction with the following drawings in which like reference numerals refer to corresponding parts throughout the figures.

FIG. **1**A is a block diagram illustrating a portable multifunction device with a touch-sensitive display, in accordance with some embodiments.

FIG. **1**B is a block diagram illustrating example components for event handling, in accordance with some embodiments.

FIG. **1**C is a block diagram illustrating a tactile output module, in accordance with some embodiments.

FIG. **2** illustrates a portable multifunction device having a touch screen, in accordance with some embodiments.

FIG. **3** is a block diagram of an example multifunction device with a display and a touch-sensitive surface, in accordance with some embodiments.

FIG. **4**A illustrates an example user interface for a menu of applications on a portable multifunction device, in accordance with some embodiments.

FIG. **4**B illustrates an example user interface for a multifunction device with a touch-sensitive surface that is separate from the display, in accordance with some embodiments.

FIGS. **4**C-**4**E illustrate examples of dynamic intensity thresholds, in accordance with some embodiments.

FIGS. **5**A**1**-**5**A**4**, **5**B-**5**EB, **5**EC**1**-**5**EC**4**, **5**ED-**5**HR illustrate example user interfaces for providing access to notifications on a cover sheet user interface in accordance with some embodiments.

FIGS. **6**A-**6**G are flow diagrams of a process for clearing sets of notifications, in accordance with some embodiments.

FIGS. **7**A-**7**E are flow diagrams of a process for displaying notification history, in accordance with some embodiments.

FIGS. **8**A-**8**C are flow diagrams of a process for displaying updating information from an application in a floating banner, in accordance with some embodiments.

FIGS. **9**A-**9**C are flow diagrams of a process for navigation using a cover sheet, in accordance with some embodiments.

DESCRIPTION OF EMBODIMENTS

A number of different approaches for navigating to, displaying, and/or interacting with notification content and user interfaces that display notifications are described herein. Using one or more of these approaches (optionally in conjunction with each other) reduces the number, extent, and/or nature of the inputs from a user and provides a more efficient human-machine interface. For battery-operated devices, these improvements conserve power and increase the time between battery charges. These approaches describe improved methods for:

- clearing individual notifications and clearing sets of notifications;
- displaying notification history;
- displaying updating information from an application in a floating banner; and
- navigating from a user interface that displays notifications to adjacent user interfaces that display device controls and/or application controls.

The methods, devices, and GUIs described herein display notifications on a cover sheet to present recent information received and/or generated by applications installed on a device, which makes the user-device interface more efficient in multiple ways. For example, they provide more efficient ways to retain sets of notifications, clear sets of notifications, display missed notifications, display previously cleared notifications in a notification history, access information from an active mode of an application using a banner that is displayed in user interfaces other than the application user interface, and access additional user interfaces from a cover sheet user interface.

Below, FIGS. **1**A-**1**B, **2**, and **3** provide a description of example devices. FIGS. **4**A-**4**B and **5**A-**5**HR illustrate example user interfaces for providing access to notifications on a cover sheet user interface. FIGS. **6**A-**6**G illustrate a flow diagram of a method of clearing notifications in accordance with some embodiments. FIGS. **7**A-**7**E illustrate a flow diagram of a method of displaying notification history in accordance with some embodiments. FIGS. **8**A-**8**C illustrate a flow diagram of a method of displaying updating information from an application in a floating banner in accordance with some embodiments. FIGS. **9**A-**9**C illustrate a flow diagram of a method of navigation using a cover sheet in accordance with some embodiments. The user interfaces in FIGS. **5**A-**5**HR are used to illustrate the processes in FIGS. **6**A-**6**G, **7**A-**7**E, **8**A-**8**C, and **9**A-**9**C.

Example Devices

Reference will now be made in detail to embodiments, examples of which are illustrated in the accompanying drawings. In the following detailed description, numerous specific details are set forth in order to provide a thorough understanding of the various described embodiments. However, it will be apparent to one of ordinary skill in the art that the various described embodiments may be practiced without these specific details. In other instances, well-known methods, procedures, components, circuits, and networks have not been described in detail so as not to unnecessarily obscure aspects of the embodiments.

It will also be understood that, although the terms first, second, etc. are, in some instances, used herein to describe various elements, these elements should not be limited by these terms. These terms are only used to distinguish one element from another. For example, a first contact could be termed a second contact, and, similarly, a second contact could be termed a first contact, without departing from the scope of the various described embodiments. The first contact and the second contact are both contacts, but they are not the same contact, unless the context clearly indicates otherwise.

The terminology used in the description of the various described embodiments herein is for the purpose of describing particular embodiments only and is not intended to be limiting. As used in the description of the various described embodiments and the appended claims, the singular forms "a," "an," and "the" are intended to include the plural forms as well, unless the context clearly indicates otherwise. It will also be understood that the term "and/or" as used herein refers to and encompasses any and all possible combinations of one or more of the associated listed items. It will be further understood that the terms "includes," "including," "comprises," and/or "comprising," when used in this speci-

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fication, specify the presence of stated features, integers, steps, operations, elements, and/or components, but do not preclude the presence or addition of one or more other features, integers, steps, operations, elements, components, and/or groups thereof.

As used herein, the term "if" is, optionally, construed to mean "when" or "upon" or "in response to determining" or "in response to detecting," depending on the context. Similarly, the phrase "if it is determined" or "if [a stated condition or event] is detected" is, optionally, construed to mean "upon determining" or "in response to determining" or "upon detecting [the stated condition or event]" or "in response to detecting [the stated condition or event]," depending on the context.

Embodiments of electronic devices, user interfaces for such devices, and associated processes for using such devices are described. In some embodiments, the device is a portable communications device, such as a mobile telephone, that also contains other functions, such as PDA and/or music player functions. Example embodiments of portable multifunction devices include, without limitation, the iPhone®, iPod Touch®, and iPad® devices from Apple Inc. of Cupertino, Calif. Other portable electronic devices, such as laptops or tablet computers with touch-sensitive surfaces (e.g., touch-screen displays and/or touchpads), are, optionally, used. It should also be understood that, in some embodiments, the device is not a portable communications device, but is a desktop computer with a touch-sensitive surface (e.g., a touch-screen display and/or a touchpad).

In the discussion that follows, an electronic device that includes a display and a touch-sensitive surface is described. It should be understood, however, that the electronic device optionally includes one or more other physical user-interface devices, such as a physical keyboard, a mouse and/or a joystick.

The device typically supports a variety of applications, such as one or more of the following: a note taking application, a drawing application, a presentation application, a word processing application, a website creation application, a disk authoring application, a spreadsheet application, a gaming application, a telephone application, a video conferencing application, an e-mail application, an instant messaging application, a workout support 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.

The various applications that are executed on the device optionally use at least one common physical user-interface device, such as the touch-sensitive surface. One or more functions of the touch-sensitive surface as well as corresponding information displayed on the device are, optionally, adjusted and/or varied from one application to the next and/or within a respective application. In this way, a common physical architecture (such as the touch-sensitive surface) of the device optionally supports the variety of applications with user interfaces that are intuitive and transparent to the user.

Attention is now directed toward embodiments of portable devices with touch-sensitive displays. FIG. **1**A is a block diagram illustrating portable multifunction device **100** with touch-sensitive display system **112** in accordance with some embodiments. Touch-sensitive display system **112** is sometimes called a "touch screen" for convenience, and is sometimes simply called a touch-sensitive display. Device **100** includes memory **102** (which optionally includes one or more computer readable storage mediums), memory controller **122**, one or more processing units (CPUs) **120**, peripherals interface **118**, RF circuitry **108**, audio circuitry **110**, speaker **111**, microphone **113**, input/output (I/O) subsystem **106**, other input or control devices **116**, and external port **124**. Device **100** optionally includes one or more optical sensors **164**. Device **100** optionally includes one or more intensity sensors **165** for detecting intensities of contacts on device **100** (e.g., a touch-sensitive surface such as touch-sensitive display system **112** of device **100**). Device **100** optionally includes one or more tactile output generators **167** for generating tactile outputs on device **100** (e.g., generating tactile outputs on a touch-sensitive surface such as touch-sensitive display system **112** of device **100** or touchpad **355** of device **300**). These components optionally communicate over one or more communication buses or signal lines **103**.

As used in the specification and claims, the term "tactile output" refers to physical displacement of a device relative to a previous position of the device, physical displacement of a component (e.g., a touch-sensitive surface) of a device relative to another component (e.g., housing) of the device, or displacement of the component relative to a center of mass of the device that will be detected by a user with the user's sense of touch. For example, in situations where the device or the component of the device is in contact with a surface of a user that is sensitive to touch (e.g., a finger, palm, or other part of a user's hand), the tactile output generated by the physical displacement will be interpreted by the user as a tactile sensation corresponding to a perceived change in physical characteristics of the device or the component of the device. For example, movement of a touch-sensitive surface (e.g., a touch-sensitive display or trackpad) is, optionally, interpreted by the user as a "down click" or "up click" of a physical actuator button. In some cases, a user will feel a tactile sensation such as an "down click" or "up click" even when there is no movement of a physical actuator button associated with the touch-sensitive surface that is physically pressed (e.g., displaced) by the user's movements. As another example, movement of the touch-sensitive surface is, optionally, interpreted or sensed by the user as "roughness" of the touch-sensitive surface, even when there is no change in smoothness of the touch-sensitive surface. While such interpretations of touch by a user will be subject to the individualized sensory perceptions of the user, there are many sensory perceptions of touch that are common to a large majority of users. Thus, when a tactile output is described as corresponding to a particular sensory perception of a user (e.g., an "up click," a "down click," "roughness"), unless otherwise stated, the generated tactile output corresponds to physical displacement of the device or a component thereof that will generate the described sensory perception for a typical (or average) user. Using tactile outputs to provide haptic feedback to a user enhances the operability of the device and makes the user-device interface more efficient (e.g., by helping the user to provide proper inputs and reducing user mistakes when operating/interacting with the device) which, additionally, reduces power usage and improves battery life of the device by enabling the user to use the device more quickly and efficiently.

In some embodiments, a tactile output pattern specifies characteristics of a tactile output, such as the amplitude of the tactile output, the shape of a movement waveform of the tactile output, the frequency of the tactile output, and/or the duration of the tactile output.

When tactile outputs with different tactile output patterns are generated by a device (e.g., via one or more tactile output generators that move a moveable mass to generate tactile outputs), the tactile outputs may invoke different haptic

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sensations in a user holding or touching the device. While the sensation of the user is based on the user's perception of the tactile output, most users will be able to identify changes in waveform, frequency, and amplitude of tactile outputs generated by the device. Thus, the waveform, frequency and amplitude can be adjusted to indicate to the user that different operations have been performed. As such, tactile outputs with tactile output patterns that are designed, selected, and/or engineered to simulate characteristics (e.g., size, material, weight, stiffness, smoothness, etc.); behaviors (e.g., oscillation, displacement, acceleration, rotation, expansion, etc.); and/or interactions (e.g., collision, adhesion, repulsion, attraction, friction, etc.) of objects in a given environment (e.g., a user interface that includes graphical features and objects, a simulated physical environment with virtual boundaries and virtual objects, a real physical environment with physical boundaries and physical objects, and/or a combination of any of the above) will, in some circumstances, provide helpful feedback to users that reduces input errors and increases the efficiency of the user's operation of the device. Additionally, tactile outputs are, optionally, generated to correspond to feedback that is unrelated to a simulated physical characteristic, such as an input threshold or a selection of an object. Such tactile outputs will, in some circumstances, provide helpful feedback to users that reduces input errors and increases the efficiency of the user's operation of the device.

In some embodiments, a tactile output with a suitable tactile output pattern serves as a cue for the occurrence of an event of interest in a user interface or behind the scenes in a device. Examples of the events of interest include activation of an affordance (e.g., a real or virtual button, or toggle switch) provided on the device or in a user interface, success or failure of a requested operation, reaching or crossing a boundary in a user interface, entry into a new state, switching of input focus between objects, activation of a new mode, reaching or crossing an input threshold, detection or recognition of a type of input or gesture, etc. In some embodiments, tactile outputs are provided to serve as a warning or an alert for an impending event or outcome that would occur unless a redirection or interruption input is timely detected. Tactile outputs are also used in other contexts to enrich the user experience, improve the accessibility of the device to users with visual or motor difficulties or other accessibility needs, and/or improve efficiency and functionality of the user interface and/or the device. Tactile outputs are optionally accompanied with audio outputs and/or visible user interface changes, which further enhance a user's experience when the user interacts with a user interface and/or the device, and facilitate better conveyance of information regarding the state of the user interface and/or the device, and which reduce input errors and increase the efficiency of the user's operation of the device.

It should be appreciated that device **100** is only one example of a portable multifunction device, and that device **100** optionally has more or fewer components than shown, optionally combines two or more components, or optionally has a different configuration or arrangement of the components. The various components shown in FIG. **1**A are implemented in hardware, software, firmware, or a combination thereof, including one or more signal processing and/or application specific integrated circuits.

Memory **102** optionally includes high-speed random access memory and optionally also includes non-volatile memory, such as one or more magnetic disk storage devices, flash memory devices, or other non-volatile solid-state memory devices. Access to memory **102** by other components of device **100**, such as CPU(s) **120** and the peripherals interface **118**, is, optionally, controlled by memory controller **122**.

Peripherals interface **118** can be used to couple input and output peripherals of the device to CPU(s) **120** and memory **102**. The one or more processors **120** run or execute various software programs and/or sets of instructions stored in memory **102** to perform various functions for device **100** and to process data.

In some embodiments, peripherals interface **118**, CPU(s) **120**, and memory controller **122** are, optionally, implemented on a single chip, such as chip **104**. In some other embodiments, they are, optionally, implemented on separate chips.

RF (radio frequency) circuitry **108** receives and sends RF signals, also called electromagnetic signals. RF circuitry **108** converts electrical signals to/from electromagnetic signals and communicates with communications networks and other communications devices via the electromagnetic signals. RF circuitry **108** optionally includes well-known circuitry for performing these functions, including but not limited to an antenna system, an RF transceiver, one or more amplifiers, a tuner, one or more oscillators, a digital signal processor, a CODEC chipset, a subscriber identity module (SIM) card, memory, and so forth. RF circuitry **108** optionally communicates with networks, such as the Internet, also referred to as the World Wide Web (WWW), an intranet and/or a wireless network, such as a cellular telephone network, a wireless local area network (LAN) and/or a metropolitan area network (MAN), and other devices by wireless communication. The wireless communication optionally uses any of a plurality of communications standards, protocols and technologies, including but not limited to Global System for Mobile Communications (GSM), Enhanced Data GSM Environment (EDGE), high-speed downlink packet access (HSDPA), high-speed uplink packet access (HSDPA), Evolution, Data-Only (EV-DO), HSPA, HSPA+, Dual-Cell HSPA (DC-HSPA), long term evolution (LTE), near field communication (NFC), wideband code division multiple access (W-CDMA), code division multiple access (CDMA), time division multiple access (TDMA), Bluetooth, Wireless Fidelity (Wi-Fi) (e.g., IEEE 802.11a, IEEE 802.11ac, IEEE 802.11ax, IEEE 802.11b, IEEE 802.11g and/or IEEE 802.11n), voice over Internet Protocol (VoIP), Wi-MAX, a protocol for e-mail (e.g., Internet message access protocol (IMAP) and/or post office protocol (POP)), instant messaging (e.g., extensible messaging and presence protocol (XMPP), Session Initiation Protocol for Instant Messaging and Presence Leveraging Extensions (SIMPLE), Instant Messaging and Presence Service (IMPS)), and/or Short Message Service (SMS), or any other suitable communication protocol, including communication protocols not yet developed as of the filing date of this document.

Audio circuitry **110**, speaker **111**, and microphone **113** provide an audio interface between a user and device **100**. Audio circuitry **110** receives audio data from peripherals interface **118**, converts the audio data to an electrical signal, and transmits the electrical signal to speaker **111**. Speaker **111** converts the electrical signal to human-audible sound waves. Audio circuitry **110** also receives electrical signals converted by microphone **113** from sound waves. Audio circuitry **110** converts the electrical signal to audio data and transmits the audio data to peripherals interface **118** for processing. Audio data is, optionally, retrieved from and/or transmitted to memory **102** and/or RF circuitry **108** by peripherals interface **118**. In some embodiments, audio circuitry **110** also includes a headset jack (e.g., **212**, FIG. **2**).

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The headset jack provides an interface between audio circuitry **110** and removable audio input/output peripherals, such as output-only headphones or a headset with both output (e.g., a headphone for one or both ears) and input (e.g., a microphone).

I/O subsystem **106** couples input/output peripherals on device **100**, such as touch-sensitive display system **112** and other input or control devices **116**, with peripherals interface **118**. I/O subsystem **106** optionally includes display controller **156**, optical sensor controller **158**, intensity sensor controller **159**, haptic feedback controller **161**, and one or more input controllers **160** for other input or control devices. The one or more input controllers **160** receive/send electrical signals from/to other input or control devices **116**. The other input or control devices **116** optionally include physical buttons (e.g., push buttons, rocker buttons, etc.), dials, slider switches, joysticks, click wheels, and so forth. In some alternate embodiments, input controller(s) **160** are, optionally, coupled with any (or none) of the following: a keyboard, infrared port, USB port, stylus, and/or a pointer device such as a mouse. The one or more buttons (e.g., **208**, FIG. **2**) optionally include an up/down button for volume control of speaker **111** and/or microphone **113**. The one or more buttons optionally include a push button (e.g., **206**, FIG. **2**).

Touch-sensitive display system **112** provides an input interface and an output interface between the device and a user. Display controller **156** receives and/or sends electrical signals from/to touch-sensitive display system **112**. Touch-sensitive display system **112** displays visual output to the user. The visual output optionally includes graphics, text, icons, video, and any combination thereof (collectively termed "graphics"). In some embodiments, some or all of the visual output corresponds to user interface objects. As used herein, the term "affordance" refers to a user-interactive graphical user interface object (e.g., a graphical user interface object that is configured to respond to inputs directed toward the graphical user interface object). Examples of user-interactive graphical user interface objects include, without limitation, a button, slider, icon, selectable menu item, switch, hyperlink, or other user interface control.

Touch-sensitive display system **112** has a touch-sensitive surface, sensor or set of sensors that accepts input from the user based on haptic and/or tactile contact. Touch-sensitive display system **112** and display controller **156** (along with any associated modules and/or sets of instructions in memory **102**) detect contact (and any movement or breaking of the contact) on touch-sensitive display system **112** and converts the detected contact into interaction with user-interface objects (e.g., one or more soft keys, icons, web pages or images) that are displayed on touch-sensitive display system **112**. In some embodiments, a point of contact between touch-sensitive display system **112** and the user corresponds to a finger of the user or a stylus.

Touch-sensitive display system **112** optionally uses LCD (liquid crystal display) technology, LPD (light emitting polymer display) technology, or LED (light emitting diode) technology, although other display technologies are used in other embodiments. Touch-sensitive display system **112** and display controller **156** optionally detect contact and any movement or breaking thereof using any of a plurality of touch sensing technologies now known or later developed, including but not limited to capacitive, resistive, infrared, and surface acoustic wave technologies, as well as other proximity sensor arrays or other elements for determining one or more points of contact with touch-sensitive display system **112**. In some embodiments, projected mutual capacitance sensing technology is used, such as that found in the iPhone®, iPod Touch®, and iPad® from Apple Inc. of Cupertino, Calif.

Touch-sensitive display system **112** optionally has a video resolution in excess of 100 dpi. In some embodiments, the touch screen video resolution is in excess of 400 dpi (e.g., 500 dpi, 800 dpi, or greater). The user optionally makes contact with touch-sensitive display system **112** using any suitable object or appendage, such as a stylus, a finger, and so forth. In some embodiments, the user interface is designed to work with finger-based contacts and gestures, which can be less precise than stylus-based input due to the larger area of contact of a finger on the touch screen. In some embodiments, the device translates the rough finger-based input into a precise pointer/cursor position or command for performing the actions desired by the user.

In some embodiments, in addition to the touch screen, device **100** optionally includes a touchpad (not shown) for activating or deactivating particular functions. In some embodiments, the touchpad is a touch-sensitive area of the device that, unlike the touch screen, does not display visual output. The touchpad is, optionally, a touch-sensitive surface that is separate from touch-sensitive display system **112** or an extension of the touch-sensitive surface formed by the touch screen.

Device **100** also includes power system **162** for powering the various components. Power system **162** optionally includes a power management system, one or more power sources (e.g., battery, alternating current (AC)), a recharging system, a power failure detection circuit, a power converter or inverter, a power status indicator (e.g., a light-emitting diode (LED)) and any other components associated with the generation, management and distribution of power in portable devices.

Device **100** optionally also includes one or more optical sensors **164**. FIG. **1A** shows an optical sensor coupled with optical sensor controller **158** in I/O subsystem **106**. Optical sensor(s) **164** optionally include charge-coupled device (CCD) or complementary metal-oxide semiconductor (CMOS) phototransistors. Optical sensor(s) **164** receive light from the environment, projected through one or more lens, and converts the light to data representing an image. In conjunction with imaging module **143** (also called a camera module), optical sensor(s) **164** optionally capture still images and/or video. In some embodiments, an optical sensor is located on the back of device **100**, opposite touch-sensitive display system **112** on the front of the device, so that the touch screen is enabled for use as a viewfinder for still and/or video image acquisition. In some embodiments, another optical sensor is located on the front of the device so that the user's image is obtained (e.g., for selfies, for videoconferencing while the user views the other video conference participants on the touch screen, etc.).

Device **100** optionally also includes one or more contact intensity sensors **165**. FIG. **1A** shows a contact intensity sensor coupled with intensity sensor controller **159** in I/O subsystem **106**. Contact intensity sensor(s) **165** optionally include one or more piezoresistive strain gauges, capacitive force sensors, electric force sensors, piezoelectric force sensors, optical force sensors, capacitive touch-sensitive surfaces, or other intensity sensors (e.g., sensors used to measure the force (or pressure) of a contact on a touch-sensitive surface). Contact intensity sensor(s) **165** receive contact intensity information (e.g., pressure information or a proxy for pressure information) from the environment. In some embodiments, at least one contact intensity sensor is collocated with, or proximate to, a touch-sensitive surface

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(e.g., touch-sensitive display system **112**). In some embodiments, at least one contact intensity sensor is located on the back of device **100**, opposite touch-screen display system **112** which is located on the front of device **100**.

Device **100** optionally also includes one or more proximity sensors **166**. FIG. **1**A shows proximity sensor **166** coupled with peripherals interface **118**. Alternately, proximity sensor **166** is coupled with input controller **160** in I/O subsystem **106**. In some embodiments, the proximity sensor turns off and disables touch-sensitive display system **112** when the multifunction device is placed near the user's ear (e.g., when the user is making a phone call).

Device **100** optionally also includes one or more tactile output generators **167**. FIG. **1**A shows a tactile output generator coupled with haptic feedback controller **161** in I/O subsystem **106**. In some embodiments, tactile output generator(s) **167** include one or more electroacoustic devices such as speakers or other audio components and/or electromechanical devices that convert energy into linear motion such as a motor, solenoid, electroactive polymer, piezoelectric actuator, electrostatic actuator, or other tactile output generating component (e.g., a component that converts electrical signals into tactile outputs on the device). Tactile output generator(s) **167** receive tactile feedback generation instructions from haptic feedback module **133** and generates tactile outputs on device **100** that are capable of being sensed by a user of device **100**. In some embodiments, at least one tactile output generator is collocated with, or proximate to, a touch-sensitive surface (e.g., touch-sensitive display system **112**) and, optionally, generates a tactile output by moving the touch-sensitive surface vertically (e.g., in/out of a surface of device **100**) or laterally (e.g., back and forth in the same plane as a surface of device **100**). In some embodiments, at least one tactile output generator sensor is located on the back of device **100**, opposite touch-sensitive display system **112**, which is located on the front of device **100**.

Device **100** optionally also includes one or more accelerometers **168**. FIG. **1**A shows accelerometer **168** coupled with peripherals interface **118**. Alternately, accelerometer **168** is, optionally, coupled with an input controller **160** in I/O subsystem **106**. In some embodiments, information is displayed on the touch-screen display in a portrait view or a landscape view based on an analysis of data received from the one or more accelerometers. Device **100** optionally includes, in addition to accelerometer(s) **168**, a magnetometer (not shown) and a GPS (or GLONASS or other global navigation system) receiver (not shown) for obtaining information concerning the location and orientation (e.g., portrait or landscape) of device **100**.

In some embodiments, the software components stored in memory **102** include operating system **126**, communication module (or set of instructions) **128**, contact/motion module (or set of instructions) **130**, graphics module (or set of instructions) **132**, haptic feedback module (or set of instructions) **133**, text input module (or set of instructions) **134**, Global Positioning System (GPS) module (or set of instructions) **135**, and applications (or sets of instructions) **136**. Furthermore, in some embodiments, memory **102** stores device/global internal state **157**, as shown in FIGS. **1**A and **3**. Device/global internal state **157** includes one or more of: active application state, indicating which applications, if any, are currently active; display state, indicating what applications, views or other information occupy various regions of touch-sensitive display system **112**; sensor state, including information obtained from the device's various sensors and other input or control devices **116**; and location and/or positional information concerning the device's location and/or attitude.

Operating system **126** (e.g., iOS, Darwin, RTXC, LINUX, UNIX, OS X, WINDOWS, or an embedded operating system such as VxWorks) includes various software components and/or drivers for controlling and managing general system tasks (e.g., memory management, storage device control, power management, etc.) and facilitates communication between various hardware and software components.

Communication module **128** facilitates communication with other devices over one or more external ports **124** and also includes various software components for handling data received by RF circuitry **108** and/or external port **124**. External port **124** (e.g., Universal Serial Bus (USB), FIREWIRE, etc.) is adapted for coupling directly to other devices or indirectly over a network (e.g., the Internet, wireless LAN, etc.). In some embodiments, the external port is a multi-pin (e.g., 30-pin) connector that is the same as, or similar to and/or compatible with the 30-pin connector used in some iPhone®, iPod Touch®, and iPad® devices from Apple Inc. of Cupertino, Calif. In some embodiments, the external port is a Lightning connector that is the same as, or similar to and/or compatible with the Lightning connector used in some iPhone®, iPod Touch®, and iPad® devices from Apple Inc. of Cupertino, Calif.

Contact/motion module **130** optionally detects contact with touch-sensitive display system **112** (in conjunction with display controller **156**) and other touch-sensitive devices (e.g., a touchpad or physical click wheel). Contact/motion module **130** includes various software components for performing various operations related to detection of contact (e.g., by a finger or by a stylus), such as determining if contact has occurred (e.g., detecting a finger-down event), determining an intensity of the contact (e.g., the force or pressure of the contact or a substitute for the force or pressure of the contact), determining if there is movement of the contact and tracking the movement across the touch-sensitive surface (e.g., detecting one or more finger-dragging events), and determining if the contact has ceased (e.g., detecting a finger-up event or a break in contact). Contact/motion module **130** receives contact data from the touch-sensitive surface. Determining movement of the point of contact, which is represented by a series of contact data, optionally includes determining speed (magnitude), velocity (magnitude and direction), and/or an acceleration (a change in magnitude and/or direction) of the point of contact. These operations are, optionally, applied to single contacts (e.g., one finger contacts or stylus contacts) or to multiple simultaneous contacts (e.g., "multitouch"/multiple finger contacts). In some embodiments, contact/motion module **130** and display controller **156** detect contact on a touchpad.

Contact/motion module **130** optionally detects a gesture input by a user. Different gestures on the touch-sensitive surface have different contact patterns (e.g., different motions, timings, and/or intensities of detected contacts). Thus, a gesture is, optionally, detected by detecting a particular contact pattern. For example, detecting a finger tap gesture includes detecting a finger-down event followed by detecting a finger-up (lift off) event at the same position (or substantially the same position) as the finger-down event (e.g., at the position of an icon). As another example, detecting a finger swipe gesture on the touch-sensitive surface includes detecting a finger-down event followed by detecting one or more finger-dragging events, and subsequently followed by detecting a finger-up (lift off) event.

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Similarly, tap, swipe, drag, and other gestures are optionally detected for a stylus by detecting a particular contact pattern for the stylus.

In some embodiments, detecting a finger tap gesture depends on the length of time between detecting the finger-down event and the finger-up event, but is independent of the intensity of the finger contact between detecting the finger-down event and the finger-up event. In some embodiments, a tap gesture is detected in accordance with a determination that the length of time between the finger-down event and the finger-up event is less than a predetermined value (e.g., less than 0.1, 0.2, 0.3, 0.4 or 0.5 seconds), independent of whether the intensity of the finger contact during the tap meets a given intensity threshold (greater than a nominal contact-detection intensity threshold), such as a light press or deep press intensity threshold. Thus, a finger tap gesture can satisfy particular input criteria that do not require that the characteristic intensity of a contact satisfy a given intensity threshold in order for the particular input criteria to be met. For clarity, the finger contact in a tap gesture typically needs to satisfy a nominal contact-detection intensity threshold, below which the contact is not detected, in order for the finger-down event to be detected. A similar analysis applies to detecting a tap gesture by a stylus or other contact. In cases where the device is capable of detecting a finger or stylus contact hovering over a touch sensitive surface, the nominal contact-detection intensity threshold optionally does not correspond to physical contact between the finger or stylus and the touch sensitive surface.

The same concepts apply in an analogous manner to other types of gestures. For example, a swipe gesture, a pinch gesture, a depinch gesture, and/or a long press gesture are optionally detected based on the satisfaction of criteria that are either independent of intensities of contacts included in the gesture, or do not require that contact(s) that perform the gesture reach intensity thresholds in order to be recognized. For example, a swipe gesture is detected based on an amount of movement of one or more contacts; a pinch gesture is detected based on movement of two or more contacts towards each other; a depinch gesture is detected based on movement of two or more contacts away from each other; and a long press gesture is detected based on a duration of the contact on the touch-sensitive surface with less than a threshold amount of movement. As such, the statement that particular gesture recognition criteria do not require that the intensity of the contact(s) meet a respective intensity threshold in order for the particular gesture recognition criteria to be met means that the particular gesture recognition criteria are capable of being satisfied if the contact(s) in the gesture do not reach the respective intensity threshold, and are also capable of being satisfied in circumstances where one or more of the contacts in the gesture do reach or exceed the respective intensity threshold. In some embodiments, a tap gesture is detected based on a determination that the finger-down and finger-up event are detected within a predefined time period, without regard to whether the contact is above or below the respective intensity threshold during the predefined time period, and a swipe gesture is detected based on a determination that the contact movement is greater than a predefined magnitude, even if the contact is above the respective intensity threshold at the end of the contact movement. Even in implementations where detection of a gesture is influenced by the intensity of contacts performing the gesture (e.g., the device detects a long press more quickly when the intensity of the contact is above an intensity threshold or delays detection of a tap input when the intensity of the contact is higher), the detection of those gestures does not require that the contacts reach a particular intensity threshold so long as the criteria for recognizing the gesture can be met in circumstances where the contact does not reach the particular intensity threshold (e.g., even if the amount of time that it takes to recognize the gesture changes).

Contact intensity thresholds, duration thresholds, and movement thresholds are, in some circumstances, combined in a variety of different combinations in order to create heuristics for distinguishing two or more different gestures directed to the same input element or region so that multiple different interactions with the same input element are enabled to provide a richer set of user interactions and responses. The statement that a particular set of gesture recognition criteria do not require that the intensity of the contact(s) meet a respective intensity threshold in order for the particular gesture recognition criteria to be met does not preclude the concurrent evaluation of other intensity-dependent gesture recognition criteria to identify other gestures that do have a criteria that is met when a gesture includes a contact with an intensity above the respective intensity threshold. For example, in some circumstances, first gesture recognition criteria for a first gesture—which do not require that the intensity of the contact(s) meet a respective intensity threshold in order for the first gesture recognition criteria to be met—are in competition with second gesture recognition criteria for a second gesture—which are dependent on the contact(s) reaching the respective intensity threshold. In such competitions, the gesture is, optionally, not recognized as meeting the first gesture recognition criteria for the first gesture if the second gesture recognition criteria for the second gesture are met first. For example, if a contact reaches the respective intensity threshold before the contact moves by a predefined amount of movement, a deep press gesture is detected rather than a swipe gesture. Conversely, if the contact moves by the predefined amount of movement before the contact reaches the respective intensity threshold, a swipe gesture is detected rather than a deep press gesture. Even in such circumstances, the first gesture recognition criteria for the first gesture still do not require that the intensity of the contact(s) meet a respective intensity threshold in order for the first gesture recognition criteria to be met because if the contact stayed below the respective intensity threshold until an end of the gesture (e.g., a swipe gesture with a contact that does not increase to an intensity above the respective intensity threshold), the gesture would have been recognized by the first gesture recognition criteria as a swipe gesture. As such, particular gesture recognition criteria that do not require that the intensity of the contact(s) meet a respective intensity threshold in order for the particular gesture recognition criteria to be met will (A) in some circumstances ignore the intensity of the contact with respect to the intensity threshold (e.g. for a tap gesture) and/or (B) in some circumstances still be dependent on the intensity of the contact with respect to the intensity threshold in the sense that the particular gesture recognition criteria (e.g., for a long press gesture) will fail if a competing set of intensity-dependent gesture recognition criteria (e.g., for a deep press gesture) recognize an input as corresponding to an intensity-dependent gesture before the particular gesture recognition criteria recognize a gesture corresponding to the input (e.g., for a long press gesture that is competing with a deep press gesture for recognition).

Graphics module **132** includes various known software components for rendering and displaying graphics on touch-sensitive display system **112** or other display, including components for changing the visual impact (e.g., brightness,

transparency, saturation, contrast or other visual property) of graphics that are displayed. As used herein, the term "graphics" includes any object that can be displayed to a user, including without limitation text, web pages, icons (such as user-interface objects including soft keys), digital images, videos, animations and the like.

In some embodiments, graphics module **132** stores data representing graphics to be used. Each graphic is, optionally, assigned a corresponding code. Graphics module **132** receives, from applications etc., one or more codes specifying graphics to be displayed along with, if necessary, coordinate data and other graphic property data, and then generates screen image data to output to display controller **156**.

Haptic feedback module **133** includes various software components for generating instructions (e.g., instructions used by haptic feedback controller **161**) to produce tactile outputs using tactile output generator(s) **167** at one or more locations on device **100** in response to user interactions with device **100**.

Text input module **134**, which is, optionally, a component of graphics module **132**, provides soft keyboards for entering text in various applications (e.g., contacts **137**, e-mail **140**, IM **141**, browser **147**, and any other application that needs text input).

GPS module **135** determines the location of the device and provides this information for use in various applications (e.g., to telephone **138** for use in location-based dialing, to camera **143** as picture/video metadata, and to applications that provide location-based services such as weather mini applications, local yellow page mini applications, and map/navigation mini applications).

Applications **136** optionally include the following modules (or sets of instructions), or a subset or superset thereof:

- contacts module **137** (sometimes called an address book or contact list);
- telephone module **138**;
- video conferencing module **139**;
- e-mail client module **140**;
- instant messaging (IM) module **141**;
- workout support module **142**;
- camera module **143** for still and/or video images;
- image management module **144**;
- browser module **147**;
- calendar module **148**;
- mini application modules **149**, which optionally include one or more of: weather mini application **149-1**, stocks mini application **149-2**, calculator mini application **149-3**, alarm clock mini application **149-4**, dictionary mini application **149-5**, and other mini applications obtained by the user, as well as user-created mini applications **149-6**;
- mini application creator module **150** for making user-created mini applications **149-6**;
- search module **151**;
- video and music player module **152**, which is, optionally, made up of a video player module and a music player module;
- notes module **153**;
- map module **154**; and/or
- online video module **155**.

Examples of other applications **136** that are, optionally, stored in memory **102** include other word processing applications, other image editing applications, drawing applications, presentation applications, JAVA-enabled applications, encryption, digital rights management, voice recognition, and voice replication.

In conjunction with touch-sensitive display system **112**, display controller **156**, contact module **130**, graphics module **132**, and text input module **134**, contacts module **137** includes executable instructions to manage an address book or contact list (e.g., stored in application internal state **192** of contacts module **137** in memory **102** or memory **370**), including: adding name(s) to the address book; deleting name(s) from the address book; associating telephone number(s), e-mail address(es), physical address(es) or other information with a name; associating an image with a name; categorizing and sorting names; providing telephone numbers and/or e-mail addresses to initiate and/or facilitate communications by telephone **138**, video conference **139**, e-mail **140**, or IM **141**; and so forth.

In conjunction with RF circuitry **108**, audio circuitry **110**, speaker **111**, microphone **113**, touch-sensitive display system **112**, display controller **156**, contact module **130**, graphics module **132**, and text input module **134**, telephone module **138** includes executable instructions to enter a sequence of characters corresponding to a telephone number, access one or more telephone numbers in address book **137**, modify a telephone number that has been entered, dial a respective telephone number, conduct a conversation and disconnect or hang up when the conversation is completed. As noted above, the wireless communication optionally uses any of a plurality of communications standards, protocols and technologies.

In conjunction with RF circuitry **108**, audio circuitry **110**, speaker **111**, microphone **113**, touch-sensitive display system **112**, display controller **156**, optical sensor(s) **164**, optical sensor controller **158**, contact module **130**, graphics module **132**, text input module **134**, contact list **137**, and telephone module **138**, videoconferencing module **139** includes executable instructions to initiate, conduct, and terminate a video conference between a user and one or more other participants in accordance with user instructions.

In conjunction with RF circuitry **108**, touch-sensitive display system **112**, display controller **156**, contact module **130**, graphics module **132**, and text input module **134**, e-mail client module **140** includes executable instructions to create, send, receive, and manage e-mail in response to user instructions. In conjunction with image management module **144**, e-mail client module **140** makes it very easy to create and send e-mails with still or video images taken with camera module **143**.

In conjunction with RF circuitry **108**, touch-sensitive display system **112**, display controller **156**, contact module **130**, graphics module **132**, and text input module **134**, the instant messaging module **141** includes executable instructions to enter a sequence of characters corresponding to an instant message, to modify previously entered characters, to transmit a respective instant message (for example, using a Short Message Service (SMS) or Multimedia Message Service (MMS) protocol for telephony-based instant messages or using XMPP, SIMPLE, Apple Push Notification Service (APNs) or IMPS for Internet-based instant messages), to receive instant messages, and to view received instant messages. In some embodiments, transmitted and/or received instant messages optionally include graphics, photos, audio files, video files and/or other attachments as are supported in a MMS and/or an Enhanced Messaging Service (EMS). As used herein, "instant messaging" refers to both telephony-based messages (e.g., messages sent using SMS or MMS) and Internet-based messages (e.g., messages sent using XMPP, SIMPLE, APNs, or IMPS).

In conjunction with RF circuitry **108**, touch-sensitive display system **112**, display controller **156**, contact module

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130, graphics module 132, text input module 134, GPS module 135, map module 154, and video and music player module 152, workout support module 142 includes executable instructions to create workouts (e.g., with time, distance, and/or calorie burning goals); communicate with workout sensors (in sports devices and smart watches); receive workout sensor data; calibrate sensors used to monitor a workout; select and play music for a workout; and display, store and transmit workout data.

In conjunction with touch-sensitive display system 112, display controller 156, optical sensor(s) 164, optical sensor controller 158, contact module 130, graphics module 132, and image management module 144, camera module 143 includes executable instructions to capture still images or video (including a video stream) and store them into memory 102, modify characteristics of a still image or video, and/or delete a still image or video from memory 102.

In conjunction with touch-sensitive display system 112, display controller 156, contact module 130, graphics module 132, text input module 134, and camera module 143, image management module 144 includes executable instructions to arrange, modify (e.g., edit), or otherwise manipulate, label, delete, present (e.g., in a digital slide show or album), and store still and/or video images.

In conjunction with RF circuitry 108, touch-sensitive display system 112, display system controller 156, contact module 130, graphics module 132, and text input module 134, browser module 147 includes executable instructions to browse the Internet in accordance with user instructions, including searching, linking to, receiving, and displaying web pages or portions thereof, as well as attachments and other files linked to web pages.

In conjunction with RF circuitry 108, touch-sensitive display system 112, display system controller 156, contact module 130, graphics module 132, text input module 134, e-mail client module 140, and browser module 147, calendar module 148 includes executable instructions to create, display, modify, and store calendars and data associated with calendars (e.g., calendar entries, to do lists, etc.) in accordance with user instructions.

In conjunction with RF circuitry 108, touch-sensitive display system 112, display system controller 156, contact module 130, graphics module 132, text input module 134, and browser module 147, mini application modules 149 are mini-applications that are, optionally, downloaded and used by a user (e.g., weather mini application 149-1, stocks mini application 149-2, calculator mini application 149-3, alarm clock mini application 149-4, and dictionary mini application 149-5) or created by the user (e.g., user-created mini application 149-6). In some embodiments, a mini application includes an HTML (Hypertext Markup Language) file, a CSS (Cascading Style Sheets) file, and a JavaScript file. In some embodiments, a mini application includes an XML (Extensible Markup Language) file and a JavaScript file (e.g., Yahoo! Mini applications).

In conjunction with RF circuitry 108, touch-sensitive display system 112, display system controller 156, contact module 130, graphics module 132, text input module 134, and browser module 147, the mini application creator module 150 includes executable instructions to create mini applications (e.g., turning a user-specified portion of a web page into a mini application).

In conjunction with touch-sensitive display system 112, display system controller 156, contact module 130, graphics module 132, and text input module 134, search module 151 includes executable instructions to search for text, music, sound, image, video, and/or other files in memory 102 that match one or more search criteria (e.g., one or more user-specified search terms) in accordance with user instructions.

In conjunction with touch-sensitive display system 112, display system controller 156, contact module 130, graphics module 132, audio circuitry 110, speaker 111, RF circuitry 108, and browser module 147, video and music player module 152 includes executable instructions that allow the user to download and play back recorded music and other sound files stored in one or more file formats, such as MP3 or AAC files, and executable instructions to display, present or otherwise play back videos (e.g., on touch-sensitive display system 112, or on an external display connected wirelessly or via external port 124). In some embodiments, device 100 optionally includes the functionality of an MP3 player, such as an iPod (trademark of Apple Inc.).

In conjunction with touch-sensitive display system 112, display controller 156, contact module 130, graphics module 132, and text input module 134, notes module 153 includes executable instructions to create and manage notes, to do lists, and the like in accordance with user instructions.

In conjunction with RF circuitry 108, touch-sensitive display system 112, display system controller 156, contact module 130, graphics module 132, text input module 134, GPS module 135, and browser module 147, map module 154 includes executable instructions to receive, display, modify, and store maps and data associated with maps (e.g., driving directions; data on stores and other points of interest at or near a particular location; and other location-based data) in accordance with user instructions.

In conjunction with touch-sensitive display system 112, display system controller 156, contact module 130, graphics module 132, audio circuitry 110, speaker 111, RF circuitry 108, text input module 134, e-mail client module 140, and browser module 147, online video module 155 includes executable instructions that allow the user to access, browse, receive (e.g., by streaming and/or download), play back (e.g., on the touch screen 112, or on an external display connected wirelessly or via external port 124), send an e-mail with a link to a particular online video, and otherwise manage online videos in one or more file formats, such as H.264. In some embodiments, instant messaging module 141, rather than e-mail client module 140, is used to send a link to a particular online video.

Each of the above identified modules and applications correspond to a set of executable instructions for performing one or more functions described above and the methods described in this application (e.g., the computer-implemented methods and other information processing methods described herein). These modules (i.e., sets of instructions) need not be implemented as separate software programs, procedures or modules, and thus various subsets of these modules are, optionally, combined or otherwise re-arranged in various embodiments. In some embodiments, memory 102 optionally stores a subset of the modules and data structures identified above. Furthermore, memory 102 optionally stores additional modules and data structures not described above.

In some embodiments, device 100 is a device where operation of a predefined set of functions on the device is performed exclusively through a touch screen and/or a touchpad. By using a touch screen and/or a touchpad as the primary input control device for operation of device 100, the number of physical input control devices (such as push buttons, dials, and the like) on device 100 is, optionally, reduced.

The predefined set of functions that are performed exclusively through a touch screen and/or a touchpad optionally

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include navigation between user interfaces. In some embodiments, the touchpad, when touched by the user, navigates device **100** to a main, home, or root menu from any user interface that is displayed on device **100**. In such embodiments, a "menu button" is implemented using a touchpad. In some other embodiments, the menu button is a physical push button or other physical input control device instead of a touchpad.

FIG. **1**B is a block diagram illustrating example components for event handling in accordance with some embodiments. In some embodiments, memory **102** (in FIG. **1**A) or **370** (FIG. **3**) includes event sorter **170** (e.g., in operating system **126**) and a respective application **136-1** (e.g., any of the aforementioned applications **136**, **137-155**, **380-390**).

Event sorter **170** receives event information and determines the application **136-1** and application view **191** of application **136-1** to which to deliver the event information. Event sorter **170** includes event monitor **171** and event dispatcher module **174**. In some embodiments, application **136-1** includes application internal state **192**, which indicates the current application view(s) displayed on touch-sensitive display system **112** when the application is active or executing. In some embodiments, device/global internal state **157** is used by event sorter **170** to determine which application(s) is (are) currently active, and application internal state **192** is used by event sorter **170** to determine application views **191** to which to deliver event information.

In some embodiments, application internal state **192** includes additional information, such as one or more of: resume information to be used when application **136-1** resumes execution, user interface state information that indicates information being displayed or that is ready for display by application **136-1**, a state queue for enabling the user to go back to a prior state or view of application **136-1**, and a redo/undo queue of previous actions taken by the user.

Event monitor **171** receives event information from peripherals interface **118**. Event information includes information about a sub-event (e.g., a user touch on touch-sensitive display system **112**, as part of a multi-touch gesture). Peripherals interface **118** transmits information it receives from I/O subsystem **106** or a sensor, such as proximity sensor **166**, accelerometer(s) **168**, and/or microphone **113** (through audio circuitry **110**). Information that peripherals interface **118** receives from I/O subsystem **106** includes information from touch-sensitive display system **112** or a touch-sensitive surface.

In some embodiments, event monitor **171** sends requests to the peripherals interface **118** at predetermined intervals. In response, peripherals interface **118** transmits event information. In other embodiments, peripheral interface **118** transmits event information only when there is a significant event (e.g., receiving an input above a predetermined noise threshold and/or for more than a predetermined duration).

In some embodiments, event sorter **170** also includes a hit view determination module **172** and/or an active event recognizer determination module **173**.

Hit view determination module **172** provides software procedures for determining where a sub-event has taken place within one or more views, when touch-sensitive display system **112** displays more than one view. Views are made up of controls and other elements that a user can see on the display.

Another aspect of the user interface associated with an application is a set of views, sometimes herein called application views or user interface windows, in which information is displayed and touch-based gestures occur. The application views (of a respective application) in which a touch is detected optionally correspond to programmatic levels within a programmatic or view hierarchy of the application. For example, the lowest level view in which a touch is detected is, optionally, called the hit view, and the set of events that are recognized as proper inputs are, optionally, determined based, at least in part, on the hit view of the initial touch that begins a touch-based gesture.

Hit view determination module **172** receives information related to sub-events of a touch-based gesture. When an application has multiple views organized in a hierarchy, hit view determination module **172** identifies a hit view as the lowest view in the hierarchy which should handle the sub-event. In most circumstances, the hit view is the lowest level view in which an initiating sub-event occurs (i.e., the first sub-event in the sequence of sub-events that form an event or potential event). Once the hit view is identified by the hit view determination module, the hit view typically receives all sub-events related to the same touch or input source for which it was identified as the hit view.

Active event recognizer determination module **173** determines which view or views within a view hierarchy should receive a particular sequence of sub-events. In some embodiments, active event recognizer determination module **173** determines that only the hit view should receive a particular sequence of sub-events. In other embodiments, active event recognizer determination module **173** determines that all views that include the physical location of a sub-event are actively involved views, and therefore determines that all actively involved views should receive a particular sequence of sub-events. In other embodiments, even if touch sub-events were entirely confined to the area associated with one particular view, views higher in the hierarchy would still remain as actively involved views.

Event dispatcher module **174** dispatches the event information to an event recognizer (e.g., event recognizer **180**). In embodiments including active event recognizer determination module **173**, event dispatcher module **174** delivers the event information to an event recognizer determined by active event recognizer determination module **173**. In some embodiments, event dispatcher module **174** stores in an event queue the event information, which is retrieved by a respective event receiver module **182**.

In some embodiments, operating system **126** includes event sorter **170**. Alternatively, application **136-1** includes event sorter **170**. In yet other embodiments, event sorter **170** is a stand-alone module, or a part of another module stored in memory **102**, such as contact/motion module **130**.

In some embodiments, application **136-1** includes a plurality of event handlers **190** and one or more application views **191**, each of which includes instructions for handling touch events that occur within a respective view of the application's user interface. Each application view **191** of the application **136-1** includes one or more event recognizers **180**. Typically, a respective application view **191** includes a plurality of event recognizers **180**. In other embodiments, one or more of event recognizers **180** are part of a separate module, such as a user interface kit (not shown) or a higher level object from which application **136-1** inherits methods and other properties. In some embodiments, a respective event handler **190** includes one or more of: data updater **176**, object updater **177**, GUI updater **178**, and/or event data **179** received from event sorter **170**. Event handler **190** optionally utilizes or calls data updater **176**, object updater **177** or GUI updater **178** to update the application internal state **192**. Alternatively, one or more of the application views **191** includes one or more respective event handlers **190**. Also, in some embodiments, one or

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more of data updater **176**, object updater **177**, and GUI updater **178** are included in a respective application view **191**.

A respective event recognizer **180** receives event information (e.g., event data **179**) from event sorter **170**, and identifies an event from the event information. Event recognizer **180** includes event receiver **182** and event comparator **184**. In some embodiments, event recognizer **180** also includes at least a subset of: metadata **183**, and event delivery instructions **188** (which optionally include sub-event delivery instructions).

Event receiver **182** receives event information from event sorter **170**. The event information includes information about a sub-event, for example, a touch or a touch movement. Depending on the sub-event, the event information also includes additional information, such as location of the sub-event. When the sub-event concerns motion of a touch, the event information optionally also includes speed and direction of the sub-event. In some embodiments, events include rotation of the device from one orientation to another (e.g., from a portrait orientation to a landscape orientation, or vice versa), and the event information includes corresponding information about the current orientation (also called device attitude) of the device.

Event comparator **184** compares the event information to predefined event or sub-event definitions and, based on the comparison, determines an event or sub-event, or determines or updates the state of an event or sub-event. In some embodiments, event comparator **184** includes event definitions **186**. Event definitions **186** contain definitions of events (e.g., predefined sequences of sub-events), for example, event **1** (**187-1**), event **2** (**187-2**), and others. In some embodiments, sub-events in an event **187** include, for example, touch begin, touch end, touch movement, touch cancellation, and multiple touching. In one example, the definition for event **1** (**187-1**) is a double tap on a displayed object. The double tap, for example, comprises a first touch (touch begin) on the displayed object for a predetermined phase, a first lift-off (touch end) for a predetermined phase, a second touch (touch begin) on the displayed object for a predetermined phase, and a second lift-off (touch end) for a predetermined phase. In another example, the definition for event **2** (**187-2**) is a dragging on a displayed object. The dragging, for example, comprises a touch (or contact) on the displayed object for a predetermined phase, a movement of the touch across touch-sensitive display system **112**, and lift-off of the touch (touch end). In some embodiments, the event also includes information for one or more associated event handlers **190**.

In some embodiments, event definition **187** includes a definition of an event for a respective user-interface object. In some embodiments, event comparator **184** performs a hit test to determine which user-interface object is associated with a sub-event. For example, in an application view in which three user-interface objects are displayed on touch-sensitive display system **112**, when a touch is detected on touch-sensitive display system **112**, event comparator **184** performs a hit test to determine which of the three user-interface objects is associated with the touch (sub-event). If each displayed object is associated with a respective event handler **190**, the event comparator uses the result of the hit test to determine which event handler **190** should be activated. For example, event comparator **184** selects an event handler associated with the sub-event and the object triggering the hit test.

In some embodiments, the definition for a respective event **187** also includes delayed actions that delay delivery of the event information until after it has been determined whether the sequence of sub-events does or does not correspond to the event recognizer's event type.

When a respective event recognizer **180** determines that the series of sub-events do not match any of the events in event definitions **186**, the respective event recognizer **180** enters an event impossible, event failed, or event ended state, after which it disregards subsequent sub-events of the touch-based gesture. In this situation, other event recognizers, if any, that remain active for the hit view continue to track and process sub-events of an ongoing touch-based gesture.

In some embodiments, a respective event recognizer **180** includes metadata **183** with configurable properties, flags, and/or lists that indicate how the event delivery system should perform sub-event delivery to actively involved event recognizers. In some embodiments, metadata **183** includes configurable properties, flags, and/or lists that indicate how event recognizers interact, or are enabled to interact, with one another. In some embodiments, metadata **183** includes configurable properties, flags, and/or lists that indicate whether sub-events are delivered to varying levels in the view or programmatic hierarchy.

In some embodiments, a respective event recognizer **180** activates event handler **190** associated with an event when one or more particular sub-events of an event are recognized. In some embodiments, a respective event recognizer **180** delivers event information associated with the event to event handler **190**. Activating an event handler **190** is distinct from sending (and deferred sending) sub-events to a respective hit view. In some embodiments, event recognizer **180** throws a flag associated with the recognized event, and event handler **190** associated with the flag catches the flag and performs a predefined process.

In some embodiments, event delivery instructions **188** include sub-event delivery instructions that deliver event information about a sub-event without activating an event handler. Instead, the sub-event delivery instructions deliver event information to event handlers associated with the series of sub-events or to actively involved views. Event handlers associated with the series of sub-events or with actively involved views receive the event information and perform a predetermined process.

In some embodiments, data updater **176** creates and updates data used in application **136-1**. For example, data updater **176** updates the telephone number used in contacts module **137**, or stores a video file used in video and music player module **152**. In some embodiments, object updater **177** creates and updates objects used in application **136-1**. For example, object updater **177** creates a new user-interface object or updates the position of a user-interface object. GUI updater **178** updates the GUI. For example, GUI updater **178** prepares display information and sends it to graphics module **132** for display on a touch-sensitive display.

In some embodiments, event handler(s) **190** includes or has access to data updater **176**, object updater **177**, and GUI updater **178**. In some embodiments, data updater **176**, object updater **177**, and GUI updater **178** are included in a single module of a respective application **136-1** or application view **191**. In other embodiments, they are included in two or more software modules.

It shall be understood that the foregoing discussion regarding event handling of user touches on touch-sensitive displays also applies to other forms of user inputs to operate multifunction devices **100** with input-devices, not all of which are initiated on touch screens. For example, mouse movement and mouse button presses, optionally coordinated

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with single or multiple keyboard presses or holds; contact movements such as taps, drags, scrolls, etc., on touch-pads; pen stylus inputs; movement of the device; oral instructions; detected eye movements; biometric inputs; and/or any combination thereof are optionally utilized as inputs corresponding to sub-events which define an event to be recognized.

FIG. **1**C is a block diagram illustrating a tactile output module in accordance with some embodiments. In some embodiments, I/O subsystem **106** (e.g., haptic feedback controller **161** (FIG. **1**A) and/or other input controller(s) **160** (FIG. **1**A)) includes at least some of the example components shown in FIG. **1**C. In some embodiments, peripherals interface **118** includes at least some of the example components shown in FIG. **1**C.

In some embodiments, the tactile output module includes haptic feedback module **133**. In some embodiments, haptic feedback module **133** aggregates and combines tactile outputs for user interface feedback from software applications on the electronic device (e.g., feedback that is responsive to user inputs that correspond to displayed user interfaces and alerts and other notifications that indicate the performance of operations or occurrence of events in user interfaces of the electronic device). Haptic feedback module **133** includes one or more of: waveform module **123** (for providing waveforms used for generating tactile outputs), mixer **125** (for mixing waveforms, such as waveforms in different channels), compressor **127** (for reducing or compressing a dynamic range of the waveforms), low-pass filter **129** (for filtering out high frequency signal components in the waveforms), and thermal controller **131** (for adjusting the waveforms in accordance with thermal conditions). In some embodiments, haptic feedback module **133** is included in haptic feedback controller **161** (FIG. **1**A). In some embodiments, a separate unit of haptic feedback module **133** (or a separate implementation of haptic feedback module **133**) is also included in an audio controller (e.g., audio circuitry **110**, FIG. **1**A) and used for generating audio signals. In some embodiments, a single haptic feedback module **133** is used for generating audio signals and generating waveforms for tactile outputs.

In some embodiments, haptic feedback module **133** also includes trigger module **121** (e.g., a software application, operating system, or other software module that determines a tactile output is to be generated and initiates the process for generating the corresponding tactile output). In some embodiments, trigger module **121** generates trigger signals for initiating generation of waveforms (e.g., by waveform module **123**). For example, trigger module **121** generates trigger signals based on preset timing criteria. In some embodiments, trigger module **121** receives trigger signals from outside haptic feedback module **133** (e.g., in some embodiments, haptic feedback module **133** receives trigger signals from hardware input processing module **146** located outside haptic feedback module **133**) and relays the trigger signals to other components within haptic feedback module **133** (e.g., waveform module **123**) or software applications that trigger operations (e.g., with trigger module **121**) based on activation of a user interface element (e.g., an application icon or an affordance within an application) or a hardware input device (e.g., a home button or an intensity-sensitive input surface, such as an intensity-sensitive touch screen). In some embodiments, trigger module **121** also receives tactile feedback generation instructions (e.g., from haptic feedback module **133**, FIGS. **1**A and **3**). In some embodiments, trigger module **121** generates trigger signals in response to haptic feedback module **133** (or trigger module **121** in haptic feedback module **133**) receiving tactile feedback instructions (e.g., from haptic feedback module **133**, FIGS. **1**A and **3**).

Waveform module **123** receives trigger signals (e.g., from trigger module **121**) as an input, and in response to receiving trigger signals, provides waveforms for generation of one or more tactile outputs (e.g., waveforms selected from a predefined set of waveforms designated for use by waveform module **123**, such as the waveforms described in greater detail below with reference to FIGS. **4**F-**4**G).

Mixer **125** receives waveforms (e.g., from waveform module **123**) as an input, and mixes together the waveforms. For example, when mixer **125** receives two or more waveforms (e.g., a first waveform in a first channel and a second waveform that at least partially overlaps with the first waveform in a second channel) mixer **125** outputs a combined waveform that corresponds to a sum of the two or more waveforms. In some embodiments, mixer **125** also modifies one or more waveforms of the two or more waveforms to emphasize particular waveform(s) over the rest of the two or more waveforms (e.g., by increasing a scale of the particular waveform(s) and/or decreasing a scale of the rest of the waveforms). In some circumstances, mixer **125** selects one or more waveforms to remove from the combined waveform (e.g., the waveform from the oldest source is dropped when there are waveforms from more than three sources that have been requested to be output concurrently by tactile output generator **167**).

Compressor **127** receives waveforms (e.g., a combined waveform from mixer **125**) as an input, and modifies the waveforms. In some embodiments, compressor **127** reduces the waveforms (e.g., in accordance with physical specifications of tactile output generators **167** (FIG. **1**A) or **357** (FIG. **3**)) so that tactile outputs corresponding to the waveforms are reduced. In some embodiments, compressor **127** limits the waveforms, such as by enforcing a predefined maximum amplitude for the waveforms. For example, compressor **127** reduces amplitudes of portions of waveforms that exceed a predefined amplitude threshold while maintaining amplitudes of portions of waveforms that do not exceed the predefined amplitude threshold. In some embodiments, compressor **127** reduces a dynamic range of the waveforms. In some embodiments, compressor **127** dynamically reduces the dynamic range of the waveforms so that the combined waveforms remain within performance specifications of the tactile output generator **167** (e.g., force and/or moveable mass displacement limits).

Low-pass filter **129** receives waveforms (e.g., compressed waveforms from compressor **127**) as an input, and filters (e.g., smooths) the waveforms (e.g., removes or reduces high frequency signal components in the waveforms). For example, in some instances, compressor **127** includes, in compressed waveforms, extraneous signals (e.g., high frequency signal components) that interfere with the generation of tactile outputs and/or exceed performance specifications of tactile output generator **167** when the tactile outputs are generated in accordance with the compressed waveforms. Low-pass filter **129** reduces or removes such extraneous signals in the waveforms.

Thermal controller **131** receives waveforms (e.g., filtered waveforms from low-pass filter **129**) as an input, and adjusts the waveforms in accordance with thermal conditions of device **100** (e.g., based on internal temperatures detected within device **100**, such as the temperature of haptic feedback controller **161**, and/or external temperatures detected by device **100**). For example, in some cases, the output of haptic feedback controller **161** varies depending on the

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temperature (e.g. haptic feedback controller **161**, in response to receiving same waveforms, generates a first tactile output when haptic feedback controller **161** is at a first temperature and generates a second tactile output when haptic feedback controller **161** is at a second temperature that is distinct from the first temperature). For example, the magnitude (or the amplitude) of the tactile outputs may vary depending on the temperature. To reduce the effect of the temperature variations, the waveforms are modified (e.g., an amplitude of the waveforms is increased or decreased based on the temperature).

In some embodiments, haptic feedback module **133** (e.g., trigger module **121**) is coupled to hardware input processing module **146**. In some embodiments, other input controller(s) **160** in FIG. **1**A includes hardware input processing module **146**. In some embodiments, hardware input processing module **146** receives inputs from hardware input device **145** (e.g., other input or control devices **116** in FIG. **1**A, such as a home button or an intensity-sensitive input surface, such as an intensity-sensitive touch screen). In some embodiments, hardware input device **145** is any input device described herein, such as touch-sensitive display system **112** (FIG. **1**A), keyboard/mouse **350** (FIG. **3**), touchpad **355** (FIG. **3**), one of other input or control devices **116** (FIG. **1**A), or an intensity-sensitive home button. In some embodiments, hardware input device **145** consists of an intensity-sensitive home button, and not touch-sensitive display system **112** (FIG. **1**A), keyboard/mouse **350** (FIG. **3**), or touchpad **355** (FIG. **3**). In some embodiments, in response to inputs from hardware input device **145** (e.g., an intensity-sensitive home button or a touch screen), hardware input processing module **146** provides one or more trigger signals to haptic feedback module **133** to indicate that a user input satisfying predefined input criteria, such as an input corresponding to a "click" of a home button (e.g., a "down click" or an "up click"), has been detected. In some embodiments, haptic feedback module **133** provides waveforms that correspond to the "click" of a home button in response to the input corresponding to the "click" of a home button, simulating a haptic feedback of pressing a physical home button.

In some embodiments, the tactile output module includes haptic feedback controller **161** (e.g., haptic feedback controller **161** in FIG. **1**A), which controls the generation of tactile outputs. In some embodiments, haptic feedback controller **161** is coupled to a plurality of tactile output generators, and selects one or more tactile output generators of the plurality of tactile output generators and sends waveforms to the selected one or more tactile output generators for generating tactile outputs. In some embodiments, haptic feedback controller **161** coordinates tactile output requests that correspond to activation of hardware input device **145** and tactile output requests that correspond to software events (e.g., tactile output requests from haptic feedback module **133**) and modifies one or more waveforms of the two or more waveforms to emphasize particular waveform(s) over the rest of the two or more waveforms (e.g., by increasing a scale of the particular waveform(s) and/or decreasing a scale of the rest of the waveforms, such as to prioritize tactile outputs that correspond to activations of hardware input device **145** over tactile outputs that correspond to software events).

In some embodiments, as shown in FIG. **1**C, an output of haptic feedback controller **161** is coupled to audio circuitry of device **100** (e.g., audio circuitry **110**, FIG. **1**A), and provides audio signals to audio circuitry of device **100**. In some embodiments, haptic feedback controller **161** provides both waveforms used for generating tactile outputs and audio signals used for providing audio outputs in conjunction with generation of the tactile outputs. In some embodiments, haptic feedback controller **161** modifies audio signals and/or waveforms (used for generating tactile outputs) so that the audio outputs and the tactile outputs are synchronized (e.g., by delaying the audio signals and/or waveforms). In some embodiments, haptic feedback controller **161** includes a digital-to-analog converter used for converting digital waveforms into analog signals, which are received by amplifier **163** and/or tactile output generator **167**.

In some embodiments, the tactile output module includes amplifier **163**. In some embodiments, amplifier **163** receives waveforms (e.g., from haptic feedback controller **161**) and amplifies the waveforms prior to sending the amplified waveforms to tactile output generator **167** (e.g., any of tactile output generators **167** (FIG. **1**A) or **357** (FIG. **3**)). For example, amplifier **163** amplifies the received waveforms to signal levels that are in accordance with physical specifications of tactile output generator **167** (e.g., to a voltage and/or a current required by tactile output generator **167** for generating tactile outputs so that the signals sent to tactile output generator **167** produce tactile outputs that correspond to the waveforms received from haptic feedback controller **161**) and sends the amplified waveforms to tactile output generator **167**. In response, tactile output generator **167** generates tactile outputs (e.g., by shifting a moveable mass back and forth in one or more dimensions relative to a neutral position of the moveable mass).

In some embodiments, the tactile output module includes sensor **169**, which is coupled to tactile output generator **167**. Sensor **169** detects states or state changes (e.g., mechanical position, physical displacement, and/or movement) of tactile output generator **167** or one or more components of tactile output generator **167** (e.g., one or more moving parts, such as a membrane, used to generate tactile outputs). In some embodiments, sensor **169** is a magnetic field sensor (e.g., a Hall effect sensor) or other displacement and/or movement sensor. In some embodiments, sensor **169** provides information (e.g., a position, a displacement, and/or a movement of one or more parts in tactile output generator **167**) to haptic feedback controller **161** and, in accordance with the information provided by sensor **169** about the state of tactile output generator **167**, haptic feedback controller **161** adjusts the waveforms output from haptic feedback controller **161** (e.g., waveforms sent to tactile output generator **167**, optionally via amplifier **163**).

FIG. **2** illustrates a portable multifunction device **100** having a touch screen (e.g., touch-sensitive display system **112**, FIG. **1**A) in accordance with some embodiments. The touch screen optionally displays one or more graphics within user interface (UI) **200**. In these embodiments, as well as others described below, a user is enabled to select one or more of the graphics by making a gesture on the graphics, for example, with one or more fingers **202** (not drawn to scale in the figure) or one or more styluses **203** (not drawn to scale in the figure). In some embodiments, selection of one or more graphics occurs when the user breaks contact with the one or more graphics. In some embodiments, the gesture optionally includes one or more taps, one or more swipes (from left to right, right to left, upward and/or downward) and/or a rolling of a finger (from right to left, left to right, upward and/or downward) that has made contact with device **100**. In some implementations or circumstances, inadvertent contact with a graphic does not select the graphic. For example, a swipe gesture that sweeps over an

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application icon optionally does not select the corresponding application when the gesture corresponding to selection is a tap.

Device **100** optionally also includes one or more physical buttons, such as "home" or menu button **204**. As described previously, menu button **204** is, optionally, used to navigate to any application **136** in a set of applications that are, optionally executed on device **100**. Alternatively, in some embodiments, the menu button is implemented as a soft key in a GUI displayed on the touch-screen display.

In some embodiments, device **100** includes the touch-screen display, menu button **204** (sometimes called home button **204**), push button **206** for powering the device on/off and locking the device, volume adjustment button(s) **208**, Subscriber Identity Module (SIM) card slot **210**, head set jack **212**, and docking/charging external port **124**. Push button **206** is, optionally, used to turn the power on/off on the device by depressing the button and holding the button in the depressed state for a predefined time interval; to lock the device by depressing the button and releasing the button before the predefined time interval has elapsed; and/or to unlock the device or initiate an unlock process. In some embodiments, device **100** also accepts verbal input for activation or deactivation of some functions through microphone **113**. Device **100** also, optionally, includes one or more contact intensity sensors **165** for detecting intensities of contacts on touch-sensitive display system **112** and/or one or more tactile output generators **167** for generating tactile outputs for a user of device **100**.

FIG. **3** is a block diagram of an example multifunction device with a display and a touch-sensitive surface in accordance with some embodiments. Device **300** need not be portable. In some embodiments, device **300** is a laptop computer, a desktop computer, a tablet computer, a multimedia player device, a navigation device, an educational device (such as a child's learning toy), a gaming system, or a control device (e.g., a home or industrial controller). Device **300** typically includes one or more processing units (CPU's) **310**, one or more network or other communications interfaces **360**, memory **370**, and one or more communication buses **320** for interconnecting these components. Communication buses **320** optionally include circuitry (sometimes called a chipset) that interconnects and controls communications between system components. Device **300** includes input/output (I/O) interface **330** comprising display **340**, which is typically a touch-screen display. I/O interface **330** also optionally includes a keyboard and/or mouse (or other pointing device) **350** and touchpad **355**, tactile output generator **357** for generating tactile outputs on device **300** (e.g., similar to tactile output generator(s) **167** described above with reference to FIG. **1**A), sensors **359** (e.g., optical, acceleration, proximity, touch-sensitive, and/or contact intensity sensors similar to contact intensity sensor(s) **165** described above with reference to FIG. **1**A). Memory **370** includes high-speed random access memory, such as DRAM, SRAM, DDR RAM or other random access solid state memory devices; and optionally includes non-volatile memory, such as one or more magnetic disk storage devices, optical disk storage devices, flash memory devices, or other non-volatile solid state storage devices. Memory **370** optionally includes one or more storage devices remotely located from CPU(s) **310**. In some embodiments, memory **370** stores programs, modules, and data structures analogous to the programs, modules, and data structures stored in memory **102** of portable multifunction device **100** (FIG. **1**A), or a subset thereof. Furthermore, memory **370** optionally stores additional programs, modules, and data structures not present in memory **102** of portable multifunction device **100**. For example, memory **370** of device **300** optionally stores drawing module **380**, presentation module **382**, word processing module **384**, website creation module **386**, disk authoring module **388**, and/or spreadsheet module **390**, while memory **102** of portable multifunction device **100** (FIG. **1**A) optionally does not store these modules.

Each of the above identified elements in FIG. **3** are, optionally, stored in one or more of the previously mentioned memory devices. Each of the above identified modules corresponds to a set of instructions for performing a function described above. The above identified modules or programs (i.e., sets of instructions) need not be implemented as separate software programs, procedures or modules, and thus various subsets of these modules are, optionally, combined or otherwise re-arranged in various embodiments. In some embodiments, memory **370** optionally stores a subset of the modules and data structures identified above. Furthermore, memory **370** optionally stores additional modules and data structures not described above.

Attention is now directed towards embodiments of user interfaces ("UI") that are, optionally, implemented on portable multifunction device **100**.

FIG. **4**A illustrates an example user interface for a menu of applications on portable multifunction device **100** in accordance with some embodiments. Similar user interfaces are, optionally, implemented on device **300**. In some embodiments, user interface **400** includes the following elements, or a subset or superset thereof:

- Signal strength indicator(s) for wireless communication(s), such as cellular and Wi-Fi signals;
- Time;
- a Bluetooth indicator;
- a Battery status indicator;
- Tray **408** with icons for frequently used applications, such as:
  - Icon **416** for telephone module **138**, labeled "Phone," which optionally includes an indicator **414** of the number of missed calls or voicemail messages;
  - Icon **418** for e-mail client module **140**, labeled "Mail," which optionally includes an indicator **410** of the number of unread e-mails;
  - Icon **420** for browser module **147**, labeled "Browser;" and
  - Icon **422** for video and music player module **152**, labeled "Music;" and
- Icons for other applications, such as:
  - Icon **424** for IM module **141**, labeled "Messages;"
  - Icon **426** for calendar module **148**, labeled "Calendar;"
  - Icon **428** for image management module **144**, labeled "Photos;"
  - Icon **430** for camera module **143**, labeled "Camera;"
  - Icon **432** for online video module **155**, labeled "Online Video;"
  - Icon **434** for stocks mini application **149-2**, labeled "Stocks;"
  - Icon **436** for map module **154**, labeled "Maps;"
  - Icon **438** for weather mini application **149-1**, labeled "Weather;"
  - Icon **440** for alarm clock mini application **149-4**, labeled "Clock;"
  - Icon **442** for workout support module **142**, labeled "Workout Support;"
  - Icon **444** for notes module **153**, labeled "Notes;" and
  - Icon **446** for a settings application or module, which provides access to settings for device **100** and its various applications **136**.

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It should be noted that the icon labels illustrated in FIG. **4**A are merely examples. For example, other labels are, optionally, used for various application icons. In some embodiments, a label for a respective application icon includes a name of an application corresponding to the respective application icon. In some embodiments, a label for a particular application icon is distinct from a name of an application corresponding to the particular application icon.

FIG. **4**B illustrates an example user interface on a device (e.g., device **300**, FIG. **3**) with a touch-sensitive surface **451** (e.g., a tablet or touchpad **355**, FIG. **3**) that is separate from the display **450**. Although many of the examples that follow will be given with reference to inputs on touch screen display **112** (where the touch sensitive surface and the display are combined), in some embodiments, the device detects inputs on a touch-sensitive surface that is separate from the display, as shown in FIG. **4**B. In some embodiments, the touch-sensitive surface (e.g., **451** in FIG. **4**B) has a primary axis (e.g., **452** in FIG. **4**B) that corresponds to a primary axis (e.g., **453** in FIG. **4**B) on the display (e.g., **450**). In accordance with these embodiments, the device detects contacts (e.g., **460** and **462** in FIG. **4**B) with the touch-sensitive surface **451** at locations that correspond to respective locations on the display (e.g., in FIG. **4**B, **460** corresponds to **468** and **462** corresponds to **470**). In this way, user inputs (e.g., contacts **460** and **462**, and movements thereof) detected by the device on the touch-sensitive surface (e.g., **451** in FIG. **4**B) are used by the device to manipulate the user interface on the display (e.g., **450** in FIG. **4**B) of the multifunction device when the touch-sensitive surface is separate from the display. It should be understood that similar methods are, optionally, used for other user interfaces described herein.

Additionally, while the following examples are given primarily with reference to finger inputs (e.g., finger contacts, finger tap gestures, finger swipe gestures, etc.), it should be understood that, in some embodiments, one or more of the finger inputs are replaced with input from another input device (e.g., a mouse based input or a stylus input). For example, a swipe gesture is, optionally, replaced with a mouse click (e.g., instead of a contact) followed by movement of the cursor along the path of the swipe (e.g., instead of movement of the contact). As another example, a tap gesture is, optionally, replaced with a mouse click while the cursor is located over the location of the tap gesture (e.g., instead of detection of the contact followed by ceasing to detect the contact). Similarly, when multiple user inputs are simultaneously detected, it should be understood that multiple computer mice are, optionally, used simultaneously, or a mouse and finger contacts are, optionally, used simultaneously.

As used herein, the term "focus selector" refers to an input element that indicates a current part of a user interface with which a user is interacting. In some implementations that include a cursor or other location marker, the cursor acts as a "focus selector," so that when an input (e.g., a press input) is detected on a touch-sensitive surface (e.g., touchpad **355** in FIG. **3** or touch-sensitive surface **451** in FIG. **4**B) while the cursor is over a particular user interface element (e.g., a button, window, slider or other user interface element), the particular user interface element is adjusted in accordance with the detected input. In some implementations that include a touch-screen display (e.g., touch-sensitive display system **112** in FIG. **1**A or the touch screen in FIG. **4**A) that enables direct interaction with user interface elements on the touch-screen display, a detected contact on the touch-screen acts as a "focus selector," so that when an input (e.g., a press input by the contact) is detected on the touch-screen display at a location of a particular user interface element (e.g., a button, window, slider or other user interface element), the particular user interface element is adjusted in accordance with the detected input. In some implementations, focus is moved from one region of a user interface to another region of the user interface without corresponding movement of a cursor or movement of a contact on a touch-screen display (e.g., by using a tab key or arrow keys to move focus from one button to another button); in these implementations, the focus selector moves in accordance with movement of focus between different regions of the user interface. Without regard to the specific form taken by the focus selector, the focus selector is generally the user interface element (or contact on a touch-screen display) that is controlled by the user so as to communicate the user's intended interaction with the user interface (e.g., by indicating, to the device, the element of the user interface with which the user is intending to interact). For example, the location of a focus selector (e.g., a cursor, a contact, or a selection box) over a respective button while a press input is detected on the touch-sensitive surface (e.g., a touchpad or touch screen) will indicate that the user is intending to activate the respective button (as opposed to other user interface elements shown on a display of the device).

As used in the specification and claims, the term "intensity" of a contact on a touch-sensitive surface refers to the force or pressure (force per unit area) of a contact (e.g., a finger contact or a stylus contact) on the touch-sensitive surface, or to a substitute (proxy) for the force or pressure of a contact on the touch-sensitive surface. The intensity of a contact has a range of values that includes at least four distinct values and more typically includes hundreds of distinct values (e.g., at least 256). Intensity of a contact is, optionally, determined (or measured) using various approaches and various sensors or combinations of sensors. For example, one or more force sensors underneath or adjacent to the touch-sensitive surface are, optionally, used to measure force at various points on the touch-sensitive surface. In some implementations, force measurements from multiple force sensors are combined (e.g., a weighted average or a sum) to determine an estimated force of a contact. Similarly, a pressure-sensitive tip of a stylus is, optionally, used to determine a pressure of the stylus on the touch-sensitive surface. Alternatively, the size of the contact area detected on the touch-sensitive surface and/or changes thereto, the capacitance of the touch-sensitive surface proximate to the contact and/or changes thereto, and/or the resistance of the touch-sensitive surface proximate to the contact and/or changes thereto are, optionally, used as a substitute for the force or pressure of the contact on the touch-sensitive surface. In some implementations, the substitute measurements for contact force or pressure are used directly to determine whether an intensity threshold has been exceeded (e.g., the intensity threshold is described in units corresponding to the substitute measurements). In some implementations, the substitute measurements for contact force or pressure are converted to an estimated force or pressure and the estimated force or pressure is used to determine whether an intensity threshold has been exceeded (e.g., the intensity threshold is a pressure threshold measured in units of pressure). Using the intensity of a contact as an attribute of a user input allows for user access to additional device functionality that may otherwise not be readily accessible by the user on a reduced-size device with limited real estate for displaying affordances (e.g., on a touch-sensitive display) and/or receiving user input (e.g., via

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a touch-sensitive display, a touch-sensitive surface, or a physical/mechanical control such as a knob or a button).

In some embodiments, contact/motion module **130** uses a set of one or more intensity thresholds to determine whether an operation has been performed by a user (e.g., to determine whether a user has "clicked" on an icon). In some embodiments, at least a subset of the intensity thresholds are determined in accordance with software parameters (e.g., the intensity thresholds are not determined by the activation thresholds of particular physical actuators and can be adjusted without changing the physical hardware of device **100**). For example, a mouse "click" threshold of a trackpad or touch-screen display can be set to any of a large range of predefined thresholds values without changing the trackpad or touch-screen display hardware. Additionally, in some implementations a user of the device is provided with software settings for adjusting one or more of the set of intensity thresholds (e.g., by adjusting individual intensity thresholds and/or by adjusting a plurality of intensity thresholds at once with a system-level click "intensity" parameter).

As used in the specification and claims, the term "characteristic intensity" of a contact refers to a characteristic of the contact based on one or more intensities of the contact. In some embodiments, the characteristic intensity is based on multiple intensity samples. The characteristic intensity is, optionally, based on a predefined number of intensity samples, or a set of intensity samples collected during a predetermined time period (e.g., 0.05, 0.1, 0.2, 0.5, 1, 2, 5, 10 seconds) relative to a predefined event (e.g., after detecting the contact, prior to detecting liftoff of the contact, before or after detecting a start of movement of the contact, prior to detecting an end of the contact, before or after detecting an increase in intensity of the contact, and/or before or after detecting a decrease in intensity of the contact). A characteristic intensity of a contact is, optionally based on one or more of: a maximum value of the intensities of the contact, a mean value of the intensities of the contact, an average value of the intensities of the contact, a top 10 percentile value of the intensities of the contact, a value at the half maximum of the intensities of the contact, a value at the 90 percent maximum of the intensities of the contact, a value produced by low-pass filtering the intensity of the contact over a predefined period or starting at a predefined time, or the like. In some embodiments, the duration of the contact is used in determining the characteristic intensity (e.g., when the characteristic intensity is an average of the intensity of the contact over time). In some embodiments, the characteristic intensity is compared to a set of one or more intensity thresholds to determine whether an operation has been performed by a user. For example, the set of one or more intensity thresholds may include a first intensity threshold and a second intensity threshold. In this example, a contact with a characteristic intensity that does not exceed the first intensity threshold results in a first operation, a contact with a characteristic intensity that exceeds the first intensity threshold and does not exceed the second intensity threshold results in a second operation, and a contact with a characteristic intensity that exceeds the second intensity threshold results in a third operation. In some embodiments, a comparison between the characteristic intensity and one or more intensity thresholds is used to determine whether or not to perform one or more operations (e.g., whether to perform a respective option or forgo performing the respective operation) rather than being used to determine whether to perform a first operation or a second operation.

In some embodiments, a portion of a gesture is identified for purposes of determining a characteristic intensity. For example, a touch-sensitive surface may receive a continuous swipe contact transitioning from a start location and reaching an end location (e.g., a drag gesture), at which point the intensity of the contact increases. In this example, the characteristic intensity of the contact at the end location may be based on only a portion of the continuous swipe contact, and not the entire swipe contact (e.g., only the portion of the swipe contact at the end location). In some embodiments, a smoothing algorithm may be applied to the intensities of the swipe contact prior to determining the characteristic intensity of the contact. For example, the smoothing algorithm optionally includes one or more of: an unweighted sliding-average smoothing algorithm, a triangular smoothing algorithm, a median filter smoothing algorithm, and/or an exponential smoothing algorithm. In some circumstances, these smoothing algorithms eliminate narrow spikes or dips in the intensities of the swipe contact for purposes of determining a characteristic intensity.

The user interface figures described herein optionally include various intensity diagrams that show the current intensity of the contact on the touch-sensitive surface relative to one or more intensity thresholds (e.g., a contact detection intensity threshold IT_0, a light press intensity threshold IT_L, a deep press intensity threshold IT_D (e.g., that is at least initially higher than IT_L), and/or one or more other intensity thresholds (e.g., an intensity threshold IT_H that is lower than IT_L)). This intensity diagram is typically not part of the displayed user interface, but is provided to aid in the interpretation of the figures. In some embodiments, the light press intensity threshold corresponds to an intensity at which the device will perform operations typically associated with clicking a button of a physical mouse or a trackpad. In some embodiments, the deep press intensity threshold corresponds to an intensity at which the device will perform operations that are different from operations typically associated with clicking a button of a physical mouse or a trackpad. In some embodiments, when a contact is detected with a characteristic intensity below the light press intensity threshold (e.g., and above a nominal contact-detection intensity threshold IT_0 below which the contact is no longer detected), the device will move a focus selector in accordance with movement of the contact on the touch-sensitive surface without performing an operation associated with the light press intensity threshold or the deep press intensity threshold. Generally, unless otherwise stated, these intensity thresholds are consistent between different sets of user interface figures.

In some embodiments, the response of the device to inputs detected by the device depends on criteria based on the contact intensity during the input. For example, for some "light press" inputs, the intensity of a contact exceeding a first intensity threshold during the input triggers a first response. In some embodiments, the response of the device to inputs detected by the device depends on criteria that include both the contact intensity during the input and time-based criteria. For example, for some "deep press" inputs, the intensity of a contact exceeding a second intensity threshold during the input, greater than the first intensity threshold for a light press, triggers a second response only if a delay time has elapsed between meeting the first intensity threshold and meeting the second intensity threshold. This delay time is typically less than 200 ms (milliseconds) in duration (e.g., 40, 100, or 120 ms, depending on the magnitude of the second intensity threshold, with the delay time increasing as the second intensity threshold increases). This delay time helps to avoid accidental recognition of deep press inputs. As another example, for some "deep press" inputs, there is a reduced-sensitivity time period that occurs

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after the time at which the first intensity threshold is met. During the reduced-sensitivity time period, the second intensity threshold is increased. This temporary increase in the second intensity threshold also helps to avoid accidental deep press inputs. For other deep press inputs, the response to detection of a deep press input does not depend on time-based criteria.

In some embodiments, one or more of the input intensity thresholds and/or the corresponding outputs vary based on one or more factors, such as user settings, contact motion, input timing, application running, rate at which the intensity is applied, number of concurrent inputs, user history, environmental factors (e.g., ambient noise), focus selector position, and the like. Example factors are described in U.S. patent application Ser. Nos. 14/399,606 and 14/624,296, which are incorporated by reference herein in their entireties.

For example, FIG. **4**C illustrates a dynamic intensity threshold **480** that changes over time based in part on the intensity of touch input **476** over time. Dynamic intensity threshold **480** is a sum of two components, first component **474** that decays over time after a predefined delay time p**1** from when touch input **476** is initially detected, and second component **478** that trails the intensity of touch input **476** over time. The initial high intensity threshold of first component **474** reduces accidental triggering of a "deep press" response, while still allowing an immediate "deep press" response if touch input **476** provides sufficient intensity. Second component **478** reduces unintentional triggering of a "deep press" response by gradual intensity fluctuations of in a touch input. In some embodiments, when touch input **476** satisfies dynamic intensity threshold **480** (e.g., at point **481** in FIG. **4**C), the "deep press" response is triggered.

FIG. **4**D illustrates another dynamic intensity threshold **486** (e.g., intensity threshold I_D). FIG. **4**D also illustrates two other intensity thresholds: a first intensity threshold I_H and a second intensity threshold I_L. In FIG. **4**D, although touch input **484** satisfies the first intensity threshold I_H and the second intensity threshold I_L prior to time p**2**, no response is provided until delay time p**2** has elapsed at time **482**. Also in FIG. **4**D, dynamic intensity threshold **486** decays over time, with the decay starting at time **488** after a predefined delay time p**1** has elapsed from time **482** (when the response associated with the second intensity threshold I_L was triggered). This type of dynamic intensity threshold reduces accidental triggering of a response associated with the dynamic intensity threshold I_D immediately after, or concurrently with, triggering a response associated with a lower intensity threshold, such as the first intensity threshold I_H or the second intensity threshold I_L.

FIG. **4**E illustrate yet another dynamic intensity threshold **492** (e.g., intensity threshold I_D). In FIG. **4**E, a response associated with the intensity threshold I_L is triggered after the delay time p**2** has elapsed from when touch input **490** is initially detected. Concurrently, dynamic intensity threshold **492** decays after the predefined delay time p**1** has elapsed from when touch input **490** is initially detected. So a decrease in intensity of touch input **490** after triggering the response associated with the intensity threshold I_L, followed by an increase in the intensity of touch input **490**, without releasing touch input **490**, can trigger a response associated with the intensity threshold I_D (e.g., at time **494**) even when the intensity of touch input **490** is below another intensity threshold, for example, the intensity threshold I_L.

An increase of characteristic intensity of the contact from an intensity below the light press intensity threshold IT_L to an intensity between the light press intensity threshold IT_L and the deep press intensity threshold ITS is sometimes referred to as a "light press" input. An increase of characteristic intensity of the contact from an intensity below the deep press intensity threshold ITS to an intensity above the deep press intensity threshold ITS is sometimes referred to as a "deep press" input. An increase of characteristic intensity of the contact from an intensity below the contact-detection intensity threshold IT_0 to an intensity between the contact-detection intensity threshold IT_0 and the light press intensity threshold IT_L is sometimes referred to as detecting the contact on the touch-surface. A decrease of characteristic intensity of the contact from an intensity above the contact-detection intensity threshold IT_0 to an intensity below the contact-detection intensity threshold IT_0 is sometimes referred to as detecting liftoff of the contact from the touch-surface. In some embodiments IT_0 is zero. In some embodiments, IT_0 is greater than zero. In some illustrations a shaded circle or oval is used to represent intensity of a contact on the touch-sensitive surface. In some illustrations, a circle or oval without shading is used represent a respective contact on the touch-sensitive surface without specifying the intensity of the respective contact.

In some embodiments, described herein, one or more operations are performed in response to detecting a gesture that includes a respective press input or in response to detecting the respective press input performed with a respective contact (or a plurality of contacts), where the respective press input is detected based at least in part on detecting an increase in intensity of the contact (or plurality of contacts) above a press-input intensity threshold. In some embodiments, the respective operation is performed in response to detecting the increase in intensity of the respective contact above the press-input intensity threshold (e.g., the respective operation is performed on a "down stroke" of the respective press input). In some embodiments, the press input includes an increase in intensity of the respective contact above the press-input intensity threshold and a subsequent decrease in intensity of the contact below the press-input intensity threshold, and the respective operation is performed in response to detecting the subsequent decrease in intensity of the respective contact below the press-input threshold (e.g., the respective operation is performed on an "up stroke" of the respective press input).

In some embodiments, the device employs intensity hysteresis to avoid accidental inputs sometimes termed "jitter," where the device defines or selects a hysteresis intensity threshold with a predefined relationship to the press-input intensity threshold (e.g., the hysteresis intensity threshold is X intensity units lower than the press-input intensity threshold or the hysteresis intensity threshold is 75%, 90%, or some reasonable proportion of the press-input intensity threshold). Thus, in some embodiments, the press input includes an increase in intensity of the respective contact above the press-input intensity threshold and a subsequent decrease in intensity of the contact below the hysteresis intensity threshold that corresponds to the press-input intensity threshold, and the respective operation is performed in response to detecting the subsequent decrease in intensity of the respective contact below the hysteresis intensity threshold (e.g., the respective operation is performed on an "up stroke" of the respective press input). Similarly, in some embodiments, the press input is detected only when the device detects an increase in intensity of the contact from an intensity at or below the hysteresis intensity threshold to an intensity at or above the press-input intensity threshold and, optionally, a subsequent decrease in intensity of the contact to an intensity at or below the hysteresis intensity, and the

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respective operation is performed in response to detecting the press input (e.g., the increase in intensity of the contact or the decrease in intensity of the contact, depending on the circumstances).

For ease of explanation, the description of operations performed in response to a press input associated with a press-input intensity threshold or in response to a gesture including the press input are, optionally, triggered in response to detecting: an increase in intensity of a contact above the press-input intensity threshold, an increase in intensity of a contact from an intensity below the hysteresis intensity threshold to an intensity above the press-input intensity threshold, a decrease in intensity of the contact below the press-input intensity threshold, or a decrease in intensity of the contact below the hysteresis intensity threshold corresponding to the press-input intensity threshold. Additionally, in examples where an operation is described as being performed in response to detecting a decrease in intensity of a contact below the press-input intensity threshold, the operation is, optionally, performed in response to detecting a decrease in intensity of the contact below a hysteresis intensity threshold corresponding to, and lower than, the press-input intensity threshold. As described above, in some embodiments, the triggering of these responses also depends on time-based criteria being met (e.g., a delay time has elapsed between a first intensity threshold being met and a second intensity threshold being met).

User Interfaces and Associated Processes

Attention is now directed towards embodiments of user interfaces ("UI") and associated processes that may be implemented on an electronic device, such as portable multifunction device **100** or device **300**, with a display, a touch-sensitive surface, (optionally) one or more tactile output generators for generating tactile outputs, and (optionally) one or more sensors to detect intensities of contacts with the touch-sensitive surface.

FIGS. **5**A-**5**AZ illustrate example user interfaces for clearing sets of notifications in accordance with some embodiments. The user interfaces in these figures are used to illustrate the processes described below, including the processes in FIGS. **6**A-**6**G. For convenience of explanation, some of the embodiments will be discussed with reference to operations performed on a device with a touch-sensitive display system **112**. In such embodiments, the focus selector is, optionally: a respective finger or stylus contact, a representative point corresponding to a finger or stylus contact (e.g., a centroid of a respective contact or a point associated with a respective contact), or a centroid of two or more contacts detected on the touch-sensitive display system **112**. However, analogous operations are, optionally, performed on a device with a display **450** and a separate touch-sensitive surface **451** in response to detecting the contacts on the touch-sensitive surface **451** while displaying the user interfaces shown in the figures on the display **450**, along with a focus selector.

FIGS. **5**A**1** to **5**A**4** illustrate activation of a display (e.g., touch-sensitive display **112**) in response to changing an orientation of device **100**. When the display has been activated, notifications that were received while the device was in a screen-off state were received. These notifications are displayed when the device transitions to a screen-on state. In some embodiments, the device uses one or more sensors (e.g., accelerometer, gyro, audio sensor, heat sensor, and/or light sensor) to determine whether an orientation of the device has changed. For example, the device determines whether the device has been rotated by more than a threshold angle (e.g., rotated along an axis of the device, such as tilted from a position in which the device is substantially horizontal to a position in which the device is substantially vertical). In FIG. **5**A**1**, the device is in a screen-off state while it is held flat in a user's hand **502**, such that the device display is substantially horizontal. In FIG. **5**A**2**, the device is tilted such that the display is more vertical than in FIG. **5**A**1**. Because a tilt angle of the device has not increased above a threshold tilt angle in FIG. **5**A**2**, the display is not activated. In FIG. **5**A**3**, the device is tilted such that the display is more vertical than in FIG. **5**A**2**. Because a tilt angle of the device has increased above a threshold tilt angle in FIG. **5**A**3**, the display has transitioned from a screen-off state to a screen-on state and wake screen user interface **504** is displayed by the display **112**. In FIG. **5**A**4**, the display **112** is substantially vertical.

In some embodiments, wake screen user interface **504** is a user interface that is displayed when the device transitions from a screen-off state to a screen-on state (e.g., while the device **100** is in a locked state) and wake screen user interface **504** is available to be redisplayed (e.g., to allow a user to view notifications, access a mini application user interface and/or access a control center user interface, as described further below) after the device is unlocked. In some embodiments, when wake screen user interface **504** is accessed after the device is unlocked, wake screen user interface **504** is referred to as a cover sheet user interface. The terms "wake screen user interface" and "cover sheet user interface" are used interchangeably herein to refer to wake screen user interface **504**.

FIG. **5**B illustrates a wake screen user interface **504**, in accordance with some embodiments. Wake screen user interface **504** displays missed notifications **506**, **508**, **510**, and **512** that were received and/or generated by device **100** (e.g., while device **100** was in a screen-off state).

In some embodiments, the missed notifications that are displayed on the wake screen user interface **504** are cleared individually in response to user interaction with a notification (e.g., when a user accesses an application that corresponds to a notification, as illustrated at FIGS. **5**L-**5**M, or when a user provides input to delete a notification, as illustrated at FIGS. **5**Y-**5**AC). In some embodiments, a set of all missed notifications are collectively cleared when notification clearance criteria are satisfied, e.g., when input is received at a time that is (1) after a respective notification of the one or more notifications has been cleared through direct user interaction with the respective notification or an application that corresponds to the respective notification and (2) after the device has transitioned from the screen-on state to the screen-off state at least once since the last direct user interaction that dismissed a respective notification.

In FIGS. **5**B-**5**D, the device transitions from a screen-on state to a screen-off state. Since this transition has not occurred after a user interaction to dismiss a notification, the missed notifications remain displayed, as shown in FIG. **5**D.

After device **100** transitions from a screen-off state, as shown in FIG. **5**A, to a screen-on state, as shown in FIG. **5**B, the device **100** transitions from the screen-on state back to a screen-off state, as shown in FIG. **5**C. In some embodiments, a transition from a screen-on state to a screen-off state (and/or from a screen-off state to a screen-on state) occurs in response to an input detected at a control (e.g., a push button **206**) of device **100**. In some embodiments, a transition from a screen-on state to a screen-off state occurs when a time during which no input has been detected by the device increases beyond a threshold duration.

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In FIG. **5**D, the device has transitioned from the screen-off state shown in FIG. **5**C back to a screen-on state. Notifications **506**, **508**, **510**, and **512** continue to be displayed after the transition from a screen-on state (as shown in FIG. **5**B) to a screen-off state (as shown in FIG. **5**C) and back to a screen-on state (as shown in FIG. **5**D).

In FIGS. **5**E-**5**K, a set of missed notifications remains available on wake screen user interface **504** after user input is provided to unlock the device.

FIG. **5**E illustrates an input (e.g., an upward swipe) by a contact on touch screen **112** that is initiated at a lower edge of touch screen **112**, as indicated by focus selector **514**. In response to the input, in accordance with a determination that the device is locked, an authentication user interface **518** is displayed, as shown in FIG. **5**F.

In FIG. **5**G, an authentication input (e.g., a tap input) by a contact on touch screen **112** is detected at a location within authentication user interface **518**, as indicated by focus selector **520**. In response to the authentication input, the device is unlocked and home screen user interface **522** (e.g., a user interface for a menu of applications as described with regard to FIG. **4**A) is displayed, as shown in FIG. **5**H.

FIGS. **5**I-**5**J illustrate an input (e.g., a downward swipe) that is initiated by a contact at an upper edge of touch screen **112**, as indicated by focus selector **524**. In response to the input, wake screen user interface **504** slides down from the upper edge of display **112**, as shown in FIGS. **5**I-**5**K. As indicated in FIG. **5**K, notifications **506**, **508**, **510**, and **512** continue to be displayed on the wake screen user interface **504** when wake screen user interface **504** is revealed after the device is unlocked and home screen user interface **522** is displayed.

FIGS. **5**L-**5**M illustrate a user interaction with notification **510** that causes the notification to be dismissed (as shown in FIG. **5**P), while notifications **506**, **508**, and **512** remain displayed on wake screen user interface **504** (e.g., because no transition from the screen-on state to the screen-off state has occurred since the user interaction to dismiss notification **510**).

In FIG. **5**L, an input (e.g., a tap input) by a contact on touch screen **112** is detected at a location that corresponds to notification **510**, as indicated by focus selector **528**. In response to the input, wake screen user interface **504** ceases to be displayed and an application user interface (e.g., messages application user interface **530**) that corresponds to the notification **510** is displayed, as shown in FIG. **5**M.

FIGS. **5**N-**5**O illustrate an input (e.g., a downward swipe) that is initiated by a contact on touch screen **112** at an upper edge of touch screen **112**, as indicated by focus selector **532**. In response to the input, wake screen user interface **504** slides down from the upper edge of display **112**, as shown in FIGS. **5**N-**5**P. As indicated in FIG. **5**P, as a result of the interaction with notification **510** (e.g., the tap input on notification **510** that caused the messages application user interface **530** to be displayed) notification **510** is no longer displayed on wake screen user interface **504**. In FIG. **5**P, notifications **506**, **508**, and **512** continue to be displayed on the wake screen user interface **504**.

In FIGS. **5**Q-**5**X, after navigation to a first application user interface and from the first application user interface to a second application user interface, notifications **506**, **508**, and **512** continue to be displayed (as shown in FIG. **5**X).

FIG. **5**Q illustrates an input (e.g., a upward swipe) that is initiated by a contact at a location near the lower edge of touch screen **112**, as indicated by focus selector **534**. In response to the input, wake screen user interface **504** slides up from the lower edge of display **112** to redisplay the underlying messages application user interface **530** (that was previously covered by wake screen user interface **504**), as shown in FIGS. **5**Q-**5**R.

FIG. **5**S illustrates an input by a contact on touch screen **112** that is initiated by a contact at a location near the lower edge of touch screen **112**, as indicated by focus selector **536**. In response to the input, during which the focus selector moves along a path indicated by arrow **538**, messages application user interface **530** moves along the path indicated by arrow **538** to reveal web browser application user interface **540**, as shown in FIGS. **5**S-**5**U.

FIGS. **5**V-**5**W illustrate an input (e.g., a downward swipe) that is initiated by a contact at a location near the upper edge of touch screen **112**, as indicated by focus selector **542**. In response to the input, wake screen user interface **504** slides down from the lower edge of display **112**, as shown in FIGS. **5**V-**5**X.

FIGS. **5**Y-**5**AC illustrate a user interaction with notification **506** that causes notification **506** to be dismissed (as shown in FIG. **5**AC), while notifications **508** and **512** remain displayed on wake screen user interface **504** (e.g., because no transition from the screen-on state to the screen-off state has occurred since the user interaction to dismiss notification **510** and no transition from the screen-on state to the screen-off state has occurred since the user interaction to dismiss notification **506**).

FIGS. **5**AD-**5**AO illustrate user input to access a music application user interface **560** and to initiate an active playback mode of the music application. While the music application is in an active playback mode, a media banner **568** is displayed on wake screen user interface **504**, as shown in FIG. **5**AO. FIGS. **5**AP-**5**AU illustrate input to stop media playback. When music application is not in an active playback mode, media banner **568** is no longer displayed on wake screen user interface **504**, as shown in FIG. **5**AU.

FIGS. **5**Y-**5**Z illustrate an input (e.g., a horizontal drag input) by a contact on touch screen **112** at a location that corresponds to notification **506**, as indicated by focus selector **544**. In response to the input, deletion affordance **546** is revealed at a location that is adjacent to notification **506**, as shown in FIG. **5**Z. In FIG. **5**AA, the contact indicated by focus selector **544** has lifted off of touch screen **112**.

In FIG. **5**AB, an input (e.g., a tap input) is detected at a location that corresponds to deletion affordance **546**, as indicated by focus selector **548**. In response to the input, notification **506** ceases to be displayed on wake screen user interface **504**, as shown in FIG. **5**AC. In FIG. **5**AC, notifications **508** and **512** continue to be displayed on the wake screen user interface **504**.

FIGS. **5**AD-**5**AE illustrate an input (e.g., an upward swipe) that is initiated by a contact at a location near the upper edge of touch screen **112**, as indicated by focus selector **550**. In response to the input, wake screen user interface **504** slides up from the lower edge of display **112** to redisplay the underlying web browser application user interface **540** (that was previously covered by wake screen user interface **504**), as shown in FIGS. **5**AD-**5**AF.

FIG. **5**AG illustrates an input (e.g., an upward swipe) by a contact on touch screen **112** that is initiated by a contact at location that corresponds to home affordance **552**, as indicated by focus selector **554**. In response to the input, display of web browser application user interface **540** is replaced by display of home screen user interface **522**, as shown in FIGS. **5**AG-**5**AH.

In FIG. **5**AI, an input (e.g., a tap input) is detected at a location that corresponds to affordance **556** for displaying a music application interface, as indicated by focus selector

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558. In response to the input, a music application user interface 552 is displayed, as shown in FIG. 5AJ.

In FIG. 5AK, an input (e.g., a tap input) is detected at a location that corresponds to media playback control affordance 562, as indicated by focus selector 564. In response to the input, the music application transitions to an active playback mode (e.g., music playback is initiated) as shown in FIG. 5AL (e.g., as indicated by the changed state of media playback control affordance 562).

FIGS. 5AM-5AN illustrate an input (e.g., a downward swipe) that is initiated by a contact at a location near the upper edge of touch screen 112, as indicated by focus selector 566. In response to the input, wake screen user interface 504 slides down from the upper edge of display 112, as shown in FIGS. 5AM-5AO.

FIG. AO shows a wake screen user interface 504 that displays a media banner 568 that corresponds to the ongoing music playback initiated from the music application. As indicated in FIG. 5AP, media banner 568 includes media track information 570 and a banner playback control affordance 572.

In FIG. AP, an input (e.g., a tap input) is detected at a location that corresponds to banner playback control affordance 572, as indicated by focus selector 574. In response to the input, music playback is paused as shown in FIG. 5AQ (e.g., as indicated by the changed state of banner playback control affordance 572).

FIG. 5AR illustrates an input (e.g., a upward swipe) that is initiated by a contact near the lower edge of touch screen 112, as indicated by focus selector 576. In response to the input, wake screen user interface 504 slides up from the lower edge of display 112 to redisplay the underlying music user interface 522 (that was previously covered by wake screen user interface 504), as shown in FIGS. 5AR-5AS.

FIG. 5AT illustrates an input (e.g., a downward swipe) by a contact on touch screen 112, as indicated by focus selector 578. In response to the input, wake screen user interface 504 slides down from the upper edge of display 112, as shown in FIGS. 5AT-5AU.

In FIG. 5AU, media banner 568 is no longer displayed on wake screen user interface 504 (e.g., because the input to display wake screen user interface 504 was received while the music application was not in an active media playback mode).

FIGS. 5AV-5AW illustrate a transition from the screen-on state to the screen-off state that occurs after the user interaction to dismiss notification 510 (e.g., as described with regard to FIGS. 5L-5P) and after the user interaction to dismiss notification 606 (as described with regard to FIGS. 5Y-5AC). As shown in FIG. 5AW, because notification clearance criteria are satisfied (e.g., input (to transition the device from the screen-off state to the screen-on state) is received at a time that is (1) after a respective notification of the one or more notifications has been cleared through direct user interaction with the respective notification or an application that corresponds to the respective notification and (2) after the device has transitioned from the screen-on state to the screen-off state at least once since the last direct user interaction that dismissed a respective notification), all notifications have been cleared from wake screen 504.

In FIG. 5AV, device 100 has transitioned from the screen-on state, as shown in FIG. 5AU, to a screen-off state.

After the screen has transitioned from a screen-off state, as shown in FIG. 5AV, back to a screen-on state, as shown in FIG. AW (and after the user has interacted with at least one notification, e.g., as described with regard to FIGS. 5L-5P and/or as described with regard to FIGS. 5Y-5AC), wake screen user interface 504 is displayed with no notifications.

FIGS. 5AW-5AZ illustrate a "rubber band" effect that occurs when an input by a contact with touch screen 112 (as indicated by focus selector 580) drags a time/date indicator 582 downward, and then the time/date indicator moves back to its original position in response to lift off of the contact from the touch sensitive surface. As focus selector 580 moves across touch screen 112 along a path indicated by arrow 584, time/date indicator 582 moves in accordance with the movement of the focus selector 580, as shown in FIGS. 5AW-5AX. When focus selector 580 lifts off of touch screen 112, the time/date indicator 582 returns to its original position, as shown in FIGS. 5AY-5AZ.

FIGS. 5BA-5CX illustrate example user interfaces for displaying notification history, in accordance with some embodiments. The user interfaces in these figures are used to illustrate the processes described below, including the processes in FIGS. 7A-7E. For convenience of explanation, some of the embodiments will be discussed with reference to operations performed on a device with a touch-sensitive display system 112. In such embodiments, the focus selector is, optionally: a respective finger or stylus contact, a representative point corresponding to a finger or stylus contact (e.g., a centroid of a respective contact or a point associated with a respective contact), or a centroid of two or more contacts detected on the touch-sensitive display system 112. However, analogous operations are, optionally, performed on a device with a display 450 and a separate touch-sensitive surface 451 in response to detecting the contacts on the touch-sensitive surface 451 while displaying the user interfaces shown in the figures on the display 450, along with a focus selector.

FIG. 5BA displays wake screen user interface 504 (e.g., in response to an event that triggered a transition from a screen-off state to a screen-on state). Wake screen user interface 504 displays missed notifications 586, 588, 590, and 592.

FIGS. 5BB-5BE illustrate a "rubber band" effect that occurs when an input by a contact with touch screen 112 (as indicated by focus selector 594) drags missed notifications 586, 588, 590, and 592 and time/date indicator 582 downward, and then the missed notifications 586, 588, 590, and 592 and time/date indicator 582 move back to their original positions in response to lift off of the contact from the touch sensitive surface. As focus selector 594 moves across touch screen 112 along a path indicated by arrow 596, missed notifications 586, 588, 590, and 592 and time/date indicator 582 move in accordance with the movement of the focus selector 594, as shown in FIGS. 5BB-5BC. When focus selector 594 lifts off of touch screen 112, notifications 586, 588, 590, and 592 and time/date indicator 582 return to their original positions, as shown in FIGS. 5BD-5BE.

FIGS. 5BF-5BG illustrate an input (e.g., an upward swipe) that causes missed notifications to scroll upwards, but that does not meet criteria for displaying previously received notifications. In FIG. 5BF, an input is initiated by a contact with touch screen 112, as indicated by focus selector 598, within a region on wake screen interface 504 (e.g., a region delineated by dotted line 5100) in which notifications 586-592 are displayed. In response to the input, missed notifications 586-592 move upward, as shown in FIGS. 5BF-5BG, revealing an additional missed notification 5102 and a previously received notification indicator 5104, as shown in FIG. 5BH.

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FIGS. **5**BI-**5**BN illustrate an input that meets criteria for displaying previously received notifications. In FIG. **5**BI, an input (e.g., an upward swipe) is initiated by a contact with touch screen **112** (e.g., at a location that corresponds to previously received notification indicator **5102**), as indicated by focus selector **5106**. In response to the input, missed notifications **586**-**592** move upward, as shown in FIGS. **5**BJ-**5**BP. As shown in FIG. **5**BK, when movement of the focus selector **5106** across touch screen **112** has increased above a threshold distance (as indicated by **5108**), previously received notification **506** is displayed, and the device generates a tactile output (as indicated at **5112**). After the focus selector **5106** moves beyond the threshold distance, additional previously received notifications **508** and **510** are displayed, and the previously received notifications **506**, **508**, and **510** move at a faster rate than the rate of movement of focus selector **5106** and missed notifications **590**, **592** and **5102** (e.g., to provide a visual effect of the previously received notifications **506**, **508**, and **510** "rushing to catch up" with the missed notifications **590**, **592** and **5102**), as shown in FIGS. **5**BK-**5**BM. In FIGS. **5**BM-**5**BN, focus selector **5106** continues to move upward across touch screen **112**, and previously received notification **512** is revealed. In FIGS. **5**BO-**5**BP, after the contact indicated by focus selector **5106** has lifted off from touch screen **112**, previously received notifications **506**, **508**, **510**, and **512** continue to move upward.

FIGS. **5**BQ-**5**BR illustrate an input that displays additional previously received notifications. In FIG. **5**BQ, an input (e.g., an upward swipe) is initiated by a contact with touch screen **112**, as indicated by focus selector **5120**, within a region on wake screen interface **504** in which previously received notifications **506**-**512** are displayed. In response to the input, previously received notifications **506**-**512** move upward, as shown in FIGS. **5**BQ-**5**BR. In FIG. **5**BR, a second previously received notification indicator **5122** (e.g., for notifications received on the previous day) and a previously received notification **5124** (e.g., received on the previous day) are displayed on wake screen user interface **504**.

FIGS. **5**BS-**5**BT illustrate an input to redisplay missed notifications. In FIG. **5**BS, an input (e.g., a downward swipe) is initiated by a contact with touch screen **112**, as indicated by focus selector **5126**, within a region on wake screen interface **504** in which previously received notifications **506**-**512** and **5124** are displayed. In response to the input, previously received notifications **506**-**512** and **5124** scroll downwards and missed notifications **590**, **592**, and **5102** are redisplayed on wake screen user interface **504**, as shown in FIGS. **5**BS-**5**BU.

FIGS. **5**BV-**5**BZ illustrate a user interaction with notification **592** that causes the notification to be dismissed (as shown in FIG. **5**BZ), while missed notifications other than **592** and previously received notifications remain displayed on wake screen user interface **504** (e.g., because no transition from the screen-on state to the screen-off state has occurred since the user interaction to dismiss notification **592**).

FIGS. **5**BV-**5**BW illustrate an input (e.g., a horizontal drag input) by a contact on touch screen **112** at a location that corresponds to notification **592**, as indicated by focus selector **5128**. In response to the input, deletion affordance **5130** is revealed at a location that is adjacent to notification **592**, as shown in FIG. **5**BW. In FIG. **5**BX, the contact indicated by focus selector **5130** has lifted off of touch screen **112**.

In FIG. **5**BY, an input (e.g., a tap input) is detected at a location that corresponds to deletion affordance **5130**, as indicated by focus selector **5132**. In response to the input, notification **592** ceases to be displayed on wake screen user interface **504**, as shown in FIG. **5**BZ.

FIG. **5**CA illustrates an input that meets criteria for dismissing previously dismissed notifications. In response to the input, only missed notifications remain displayed on wake screen **504**, as shown in FIG. **5**CB.

FIGS. **5**CA-**5**CB illustrate an input (e.g., a downward swipe) that is initiated by a contact with touch screen **112**, as indicated by focus selector **5136**, within a region on wake screen interface **504** in which missed notifications (e.g., **592** and **5102**) and/or previously received notifications (e.g., **506**-**510**) are displayed. In response to the input, previously received notifications **506**-**510** scroll downwards and missed notifications **586**, **588**, **592**, and **5102** are redisplayed on wake screen user interface **504**, as shown in FIG. **5**CA-**5**CB.

FIGS. **5**CC-**5**CQ illustrate input for accessing a control center user interface **5138**, a mini application user interface **5140**, and a user interface underlying wake screen user interface (e.g., home screen user interface **522**) from wake screen user interface **504**.

FIGS. **5**CC-**5**CD illustrate an input (e.g., a leftward swipe) that is initiated by a contact on touch screen **112**, as indicated by focus selector **5136**. In response to the input, wake screen user interface **504** slides to the left and control center user interface **5138** is revealed, as shown in FIG. **5**CC-**5**CE.

FIGS. **5**CF-**5**CG illustrate an input (e.g., a rightward swipe) that is initiated by a contact on touch screen **112**, as indicated by focus selector **5142**. In response to the input, control center user interface **5138** slides to the right and wake screen user interface **504** is revealed, as shown in FIG. **5**CF-**5**CH.

FIGS. **5**CI-**5**CJ illustrate an input (e.g., a rightward swipe) that is initiated by a contact on touch screen **112**, as indicated by focus selector **5144**. In response to the input, wake screen user interface **504** slides to the right and mini application user interface **5140** is revealed, as shown in FIG. **5**CI-**5**CK.

FIGS. **5**CL-**5**CM illustrate an input (e.g., a leftward swipe) that is initiated by a contact on touch screen **112**, as indicated by focus selector **5146**. In response to the input, mini application user interface **5140** slides to the left and wake screen user interface **504** is revealed, as shown in FIG. **5**CL-**5**CN.

FIG. **5**CO illustrates an input by a contact on touch screen **112** that is initiated at a lower edge of touch screen **112**, as indicated by focus selector **5146**. In response to the input, display of wake screen user interface **504** is replaced by display of home screen user interface **522**, as shown in FIGS. **5**CO-**5**CQ.

FIGS. **5**CR-**5**CS illustrate a transition from the screen-on state to the screen-off state that occurs after the user interaction to dismiss notification **592** (e.g., as described with regard to FIGS. **5**BV-**5**BZ). As shown in FIG. **5**CS, because notification clearance criteria are satisfied (e.g., input (to transition the device from the screen-off state to the screen-on state) is received at a time that is (1) after a respective notification of the one or more notifications has been cleared through direct user interaction with the respective notification or an application that corresponds to the respective notification and (2) after the device has transitioned from the screen-on state to the screen-off state at least once since the last direct user interaction that dismissed a respective notification), all notifications have been cleared from wake screen **504**.

In FIG. **5**CR, device **100** has transitioned from the screen-on state, as shown in FIG. **5**CQ, to a screen-off state.

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After the screen has transitioned from a screen-off state, as shown in FIG. **5**CR, back to a screen-on state, as shown in FIG. **5**CS (and after the user has interacted with at least one notification, e.g., as described with regard to FIGS. **5**BV-**5**BZ), wake screen user interface **504** is displayed with no notifications.

FIGS. **5**CS-**5**CV illustrate a "rubber band" effect that occurs when an input by a contact with touch screen **112** (as indicated by focus selector **5150**) drags a time/date indicator **582** downward, and then the time/date indicator moves back to its original position in response to lift off of the contact from the touch sensitive surface.

After all notifications have been cleared, as shown at FIG. **5**CS, the cleared notifications can be recalled, as shown at FIGS. **5**CW-**5**CX. FIG. **5**CW illustrates an input (e.g., an upward swipe) that is initiated by a contact with touch screen **112** at a location on wake screen user interface **504**, as indicated by focus selector **5152**. In response to the input, the notifications that were displayed as missed notifications **586-592** and subsequently cleared (as described with regard to FIGS. **5**BA, **5**BV-**5**BZ, and **5**CR-**5**CS) move upward when movement of the focus selector **5152** across touch screen **112** has increased above a threshold distance. In FIG. **5**CX, the notifications that were displayed as missed notifications **586-592** are displayed as previously received notifications.

FIGS. **5**CY-**5**EB illustrate example user interfaces for displaying updating information from an application in a floating banner, in accordance with some embodiments. The user interfaces in these figures are used to illustrate the processes described below, including the processes in FIGS. **8**A-**8**C. For convenience of explanation, some of the embodiments will be discussed with reference to operations performed on a device with a touch-sensitive display system **112**. In such embodiments, the focus selector is, optionally: a respective finger or stylus contact, a representative point corresponding to a finger or stylus contact (e.g., a centroid of a respective contact or a point associated with a respective contact), or a centroid of two or more contacts detected on the touch-sensitive display system **112**. However, analogous operations are, optionally, performed on a device with a display **450** and a separate touch-sensitive surface **451** in response to detecting the contacts on the touch-sensitive surface **451** while displaying the user interfaces shown in the figures on the display **450**, along with a focus selector.

FIGS. **5**CY-**5**DA illustrate input for activating a navigation mode of a maps application and displaying a navigation banner **5160** that corresponds to the active navigation mode of the maps application.

FIG. **5**CY shows a maps application user interface **5154** displayed by display **112** of device **100**.

In FIG. **5**CZ, an input (e.g., a tap input) by a contact on touch screen **112** is detected at a location that corresponds to a control **5156** for activating a navigation mode of the maps application, as indicated by focus selector **5158**. In response to the input, the navigation mode of the maps application is initiated, and a navigation mode user interface is displayed in maps application user interface **5154**, as indicated at FIG. DA. A navigation banner **5160** (e.g., that includes navigation direction text and/or a navigation direction image, such as a direction arrow) is displayed on the navigation mode user interface of the maps application user interface **5154**.

In FIGS. **5**DB-**5**DF, the "floating" aspect of navigation banner **5160** is illustrated, as navigation banner **5160** continues to be displayed overlying cover sheet user interface **504** (referred to above as wake screen user interface **504**) as cover sheet user interface **504** slides down to cover maps application user interface **5154**. FIGS. **5**DD-**5**DE illustrate how navigation banner **5160** is anchored to time/date object **582** in cover sheet user interface **504**.

FIGS. **5**DB-**5**DF illustrate an input (e.g., a downward swipe) by a contact on touch screen **112** that is initiated at an upper edge of touch screen **112**, as indicated by focus selector **5162**. In response to the input, cover sheet user interface **504** slides down from the upper edge of display **112**, as shown in FIGS. **5**DC-**5**DF. As shown in FIGS. **5**DC-**5**DD, notifications **5164** and **5168** that are displayed on cover sheet user interface **504** descend as cover sheet user interface **504** slides down, while navigation banner **5160** remains at a fixed position on cover sheet **504** (e.g., cover sheet **504** and its notifications **5164** and **5168** appear to slide down behind navigation banner **5160**). As shown in FIGS. **5**DD-**5**DE, in accordance with a determination that cover sheet user interface **504** has descended a threshold distance relative to navigation banner **5160**, navigation banner **5160** becomes "attached" to the cover sheet user interface and begins to move downward while cover sheet user interface **504** moves downward. As shown in FIGS. **5**DD-**5**DF, a time/date object **582** that is displayed on cover sheet user interface **504** is gradually revealed as cover sheet user interface **504** moves downward. In accordance with a determination that the time/date object **582** has reached a predefined location on the display, time/date object **582** and navigation banner **5160** cease to move as the cover sheet user interface **504** continues its descent (and notifications **5164** and **5168** continue to move downward with the cover sheet user interface **504**).

In FIG. **5**DG, the contact indicated by focus selector **5162** has lifted off of cover sheet user interface **504**.

FIGS. **5**DH-**5**DI illustrate input at navigation banner **5160** to display the user interface **5154** of the corresponding maps application.

In FIG. **5**DH, an input (e.g., a tap input) by a contact on touch screen **112** is detected at a location that corresponds to navigation banner **5160**, as indicated by focus selector **5168**. In response to the input, cover sheet user interface **504** ceases to be displayed and maps application user interface **5154** is redisplayed, as indicated at FIG. **5**DI. In FIG. **5**DI, navigation banner **5160** is displayed on the navigation mode user interface of the maps application user interface **5154**.

FIGS. **5**DJ-**5**DS illustrate input to display a home screen user interface **522** (over which navigation banner **5160** continues to be displayed), to pull down cover sheet user interface **504** over home screen user interface **522**, and to show the continuous display of navigation banner **5160** as home screen user interface **522** is revealed from under cover sheet **522**.

FIG. **5**DJ illustrates an input by a contact on touch screen **112** that is initiated by a contact at location that corresponds to home affordance **552**, as indicated by focus selector **5170**. In response to the input, display of map application user interface **5154** is replaced by display of home screen user interface **522**, as shown in FIGS. **5**DJ-**5**DM. Navigation banner **5160** remains displayed at the same position during the transition from displaying map application user interface **5154** to displaying home screen user interface **522**. Navigation banner **5160** is displayed overlaying home screen user interface **522**.

FIGS. **5**DN-**5**DO illustrate an input (e.g., a downward swipe) that is initiated by a contact at a location near the upper edge of touch screen **112**, as indicated by focus selector **5172**. In response to the input, cover sheet user interface **504** slides down from the upper edge of display **112**, as shown in FIGS. **5**DN-**5**DP.

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FIG. 5DQ illustrates an input (e.g., an upward swipe input) by a contact on touch screen **112** that is initiated by a contact at location indicated by focus selector **5174**. In response to the input, display of cover sheet user interface **504** is replaced by display of home screen user interface **522**, as shown in FIGS. 5DQ-5DS.

FIG. 5DT-5DW illustrate input that causes transition of navigation banner **5160** from a banner form (as shown in FIG. 5DT) to pill form (as shown in FIG. 5DW).

FIGS. 5DT-5DU illustrate an input (e.g., an upward swipe) that is initiated by a contact at a location that corresponds to navigation banner **5160**, as indicated by focus selector **5176**. In response to the input, navigation banner **5160** gradually transitions from a banner format, as shown in FIG. 5DT, to a pill format, as shown in FIG. 5DW. For example, as navigation banner **5160** gradually transitions from a banner format to a pill format, an animation is displayed in which navigation text **5178** in navigation banner **5160** ceases to be displayed, navigation direction arrow **5180** shrinks, navigation banner **5160** gradually shrinks and moves leftward, and a time **5182** is displayed (e.g., adjacent to navigation direction arrow **5180**) in the pill format of navigation banner **5160**.

FIGS. 5DX-5DW illustrate input on navigation banner **5160** (in the pill format) that causes an application that corresponds to the banner to be displayed.

In FIG. 5DX, an input (e.g., a tap input) by a contact on touch screen **112** is detected at a location that corresponds to navigation banner **5160** (in the pill format), as indicated by focus selector **5184**. In response to the input, because the content of navigation banner **5160** (in the pill format) corresponds to the navigation mode of the map application, home screen user interface **522** ceases to be displayed and maps application user interface **5154** is redisplayed, as indicated at FIG. 5DY. In FIG. 5DY, navigation banner **5160** is displayed on the navigation mode user interface of the maps application user interface **5154**.

FIGS. 5DZ-5EA illustrate banners that are displayed on device **100** when device **100** is in a screen-off state.

In FIG. 5DZ, device **100** has transitioned from the screen-on state, as shown in FIG. 5DY, to a screen-off state. Because the navigation mode of the map application was active when the device **100** transitioned to the screen-off state, navigation banner **5160** is displayed on device **100** while the device is in the "screen-off" state (e.g., aside from displaying the navigation banner **5160**, the display **112** is blank).

In FIG. 5EA, while the device **100** is in the "screen-off" state, a notification **5186** is received. The received notification **5186** is displayed on display **112** of device **100** while the device **100** is in the "screen-off state" (e.g., aside from displaying the received notification **5186** and/or the navigation banner **5160**, the display **112** is blank).

In FIG. 5EB, device **100** has transitioned from the screen-off state, as shown in FIGS. 5DZ-5EA, to a screen-on state, and cover sheet user interface **504** is displayed on the display **112** of device **100**.

FIGS. 5EC-5GU illustrate example user interfaces for navigation using a cover sheet in accordance with some embodiments. The user interfaces in these figures are used to illustrate the processes described below, including the processes in FIGS. 9A-9C. For convenience of explanation, some of the embodiments will be discussed with reference to operations performed on a device with a touch-sensitive display system **112**. In such embodiments, the focus selector is, optionally: a respective finger or stylus contact, a representative point corresponding to a finger or stylus contact (e.g., a centroid of a respective contact or a point associated with a respective contact), or a centroid of two or more contacts detected on the touch-sensitive display system **112**. However, analogous operations are, optionally, performed on a device with a display **450** and a separate touch-sensitive surface **451** in response to detecting the contacts on the touch-sensitive surface **451** while displaying the user interfaces shown in the figures on the display **450**, along with a focus selector.

FIGS. 5EC1 to 5EC4 illustrate activation of a display (e.g., touch-sensitive display **112**) in response to changing an orientation of device **100**. When the display has been activated, notifications that were received while the device was in a screen-off state were received. These notifications are displayed when the device transitions to a screen-on state. In FIG. 5EC1, the device is in a screen-off state while it is held flat in a user's hand **502**, such that the device display is substantially horizontal. In FIG. 5EC2, the device is tilted such that the display is more vertical than in FIG. 5EC1. Because a tilt angle of the device has not increased above a threshold tilt angle in FIG. 5EC2, the display is not activated. In FIG. 5EC3, the device is tilted such that the display is more vertical than in FIG. 5EC2. Because a tilt angle of the device has increased above a threshold tilt angle in FIG. 5EC3, the display has transitioned from a screen-off state to a screen-on state and wake screen user interface **504** (also referred to herein as a cover sheet user interface **504**) is displayed by the display **112**. In FIG. 5EC4, the display **112** is substantially vertical.

FIG. 5ED illustrates a wake screen user interface **504**, in accordance with some embodiments. Wake screen user interface **504** displays missed notification **5188** that was received and/or generated by device **100** (e.g., while device **100** was in a screen-off state). In some embodiments, wake screen user interface **504** additionally displays controls, such as a subset of controls from a control center user interface **5138** (e.g., a flashlight control **5190** and a camera control **5192**).

In some embodiments, different input criteria must be met to activate a flashlight control **5190** when it is displayed on a wake screen user interface **504** and when it is displayed in a control center user interface **5138**, as illustrated in FIGS. 5EE-5EJ and 5ET-5EW. Because wake screen user interface **504** may be displayed (e.g., in response to tilting the device) at a time when the user does not wish to provide input, more stringent criteria are applied for operating controls displayed on the wake screen user interface to prevent unintentional operation of the controls.

In some embodiments, input that has one effect when it is applied to a control (e.g., camera control **5192**) when it is displayed in control center user interface **5138** has a different effect when the control is displayed in wake screen user interface **504**. For example, a light press input on camera control **5192** causes a menu **5220** to be displayed when camera control **5192** is displayed in control center user interface **5138**, and the light press input on camera control **5192** causes activation of a camera application when camera control **5192** is displayed in wake screen user interface **504**, as illustrated by FIGS. 5EX-5FN.

In some embodiments, a time/date object **582** shifts horizontally as input for navigating from wake screen user interface **504** to adjacent user interfaces (control center user interface **5138** and widget user interface **5140**) to indicate the direction of input needed to return to the wake screen user interface **504**, as illustrate at FIGS. 5EJ-5EP and FIGS. 5EQ-5ES and 5FF-5FH. An overview of the arrangement

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wake screen user interface **504** to adjacent user interfaces control center user interface **5138** and widget user interface **5140** is shown in FIG. **5**FR.

FIGS. **5**EE-**5**EG illustrate a first flashlight activation input (e.g., a light press input) by a contact with touch screen **112**, as indicated by focus selector **5194**, at a location that corresponds to a flashlight control **5190** that is displayed on wake screen user interface **504**. In FIG. **5**EE, a characteristic intensity of the contact is above a detection threshold IT_0, as indicated by intensity level meter **5196**, and below a light press intensity level IT_L. In FIG. **5**EF, in accordance with a determination that a characteristic intensity of the contact has increased above a light press intensity threshold, as indicated by IT_L on intensity level meter **5196**, a flashlight is activated, as indicated by flashlight beam **5198**. In FIG. **5**EG, the contact indicated by focus selector **5194** has lifted off of touch screen **112**.

FIGS. **5**EH-**5**EI illustrate a first flashlight deactivation input (e.g., a light press input) by a contact with touch screen **112** at a location that corresponds to flashlight control **5190**, as indicated by focus selector **5200**. In FIG. **5**EI, in accordance with a determination that a characteristic intensity of the contact has increased above a light press intensity threshold, as indicated by IT_L on intensity level meter **5196** while the flashlight is on, the flashlight is shut off. In FIG. **5**EJ, the contact indicated by focus selector **5200** has lifted off of touch screen **112**.

FIGS. **5**EK-**5**EL illustrate an input (e.g., a rightward swipe) that is initiated by a contact on touch screen **112**, as indicated by focus selector **5202**. In response to the input, wake screen user interface **504** slides to the right and mini application user interface **5140** is revealed, as shown in FIGS. **5**EK-**5**EM. Mini application user interface **5140** displays mini application objects **583**, **585**, **587**, and **589** that include a subset of content from application. As wake screen user interface **504** slides to the right, time/date object **582** moves from a position in the center of the display **112**, as shown in FIG. **5**EK, to a position at the right of the display **112**, as shown in FIG. **5**EM. Repositioning time/date object **582** provides a visual indication to the user of the direction of the swipe input needed to return to wake screen **504**.

In some embodiments, a mini application object (e.g., as illustrated by mini application objects **583**, **585**, **587**, and **589**) is configured to perform a subset, less than all, of the functions of a corresponding application. In some embodiments, a mini application object displays an identifier for the corresponding application. In some embodiments, a mini application object displays a portion of the content the corresponding application. In some embodiments, a predefined input on a mini application object launches the corresponding application. In some embodiments, a mini application object operates as a standalone application residing in memory of the device, distinct from an associated application also residing in the memory of the device. For example, a mini application object corresponding to a social networking application operates as a single-purpose or streamlined application with a subset, less than all, of the functionality of the corresponding application, but is associated with the full-featured social networking application. In this example, the mini application object operates independently of the social networking application, and in a scenario where the social networking application is not running, the mini application object continues to operate. In some embodiments, a mini application object operates as an extension or component of an associated application on the device.

FIGS. **5**EN-**5**EO illustrate an input (e.g., a leftward swipe) that is initiated by a contact on touch screen **112**, as indicated by focus selector **5204**. In response to the input, mini application user interface **5140** slides to the left and wake screen user interface **504** is revealed, as shown in FIG. **5**EN-**5**EP. As mini application user interface **5140** slides to the left, time/date object **582** moves from a position in at the right of the display **112**, as shown in FIG. **5**EN, to a position in the center of the display **112**, as shown in FIG. **5**EP. Repositioning time/date object **582** provides a visual indication to the user of the direction of the swipe input needed to return to wake screen **504**.

FIGS. **5**EQ-**5**ER illustrate an input (e.g., a leftward swipe) that is initiated by a contact on touch screen **112**, as indicated by focus selector **5206**. In response to the input, wake screen user interface **504** slides to the left and control center user interface **5138** is revealed, as shown in FIG. **5**EQ-**5**ES. As wake screen user interface **5140** slides to the left, time/date object **582** moves from a position in at the center of the display, as shown in FIG. **5**EQ, to a position at the left of the display, as shown in FIG. **5**ES. Repositioning time/date object **582** provides a visual indication to the user of the direction of the swipe input needed to return to wake screen **504**.

FIG. **5**ET illustrates a second flashlight activation input (e.g., a tap input) by a contact with touch screen **112**, as indicated by focus selector **5208**, at a location that corresponds to a flashlight control **5190** that is displayed on control center user interface **5138**. In response to the input, a flashlight is activated, as indicated by flashlight beam **5210** in FIG. EU. Because a wake screen user interface **504** is displayed on waking the device (e.g., when the device is tilted as described with regard to FIGS. **5**EC**1**-**5**EC**4**), input that meets threshold intensity criteria (e.g., light press intensity criteria) is needed to activate the flashlight using a flashlight control **5190** displayed in the wake screen user interface **504**. In this way, accidental activation of the flashlight is avoided. When the user has provided input to navigate to control center user interface **5138**, a tap input (as described with regard to FIGS. **5**ET-**5**EU) is sufficient to activate the flashlight.

FIG. **5**EV illustrates a second flashlight deactivation input (e.g., a tap input) by a contact with touch screen **112** at a location that corresponds to flashlight control **5190**, as indicated by focus selector **5212**. In response to the input, the flashlight is shut off, as indicated at FIG. **5**EW.

FIG. **5**EX illustrates a control center camera application activation input (e.g., a tap input) by a contact with touch screen **112**, as indicated by focus selector **5214**, at a location that corresponds to a camera control **5192** that is displayed on control center user interface **5138**. In response to the control center camera application activation input, display of the control center user interface **5138** is replaced by display of a camera application user interface **5216**, as shown in FIG. **5**EY.

FIGS. **5**EZ-**5**FB illustrate camera menu display input (e.g., a light press input) by a contact with touch screen **112**, as indicated by focus selector **5218**, at a location that corresponds to a camera control **5192** that is displayed on control center user interface **5138**. In FIG. **5**FA, a characteristic intensity of the contact is above a detection threshold IT_0, as indicated by intensity level meter **5196**, and below a light press intensity level IT_L. In FIG. **5**FB, in accordance with a determination that a characteristic intensity of the contact increases above a light press intensity threshold, as

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indicated by IT_L on intensity level meter **5196**, a camera menu **5220** is displayed overlaying control center user interface **5138**.

In FIG. **5**FC, the contact indicated by focus selector **5218** has lifted off from touch screen **112**.

In FIG. **5**FD, an input (e.g., a tap input) by a contact on touch screen **112** is detected at a location outside of camera menu **5220**, as indicated by focus selector **5222**. In response to the input, camera menu **5220** ceases to be displayed overlaying control center user interface **5138**, as shown in FIG. **5**FE.

FIGS. **5**FF-**5**FG illustrate an input (e.g., a rightward swipe) that is initiated by a contact on touch screen **112**, as indicated by focus selector **5224**. In response to the input, control center user interface **5138** slides to the right and wake screen user interface **504** is redisplayed, as shown in FIGS. **5**FG-**5**FH. As control center user interface **5138** slides to the right, time/date object **582** moves from a position in the left of the display, as shown in FIG. **5**FF, to a position at the center of the display, as shown in FIG. **5**FH.

FIG. **5**FI illustrates an input (e.g., a tap input) by a contact with touch screen **112**, as indicated by focus selector **5226**, at a location that corresponds to a camera control **5192** that is displayed on wake screen user interface **504**. As shown in FIGS. **5**FI-**5**FJ, a tap input on camera control **5192** that is displayed on wake screen user interface **504** has no effect (unlike a tap input on camera control **5192** displayed in control center user interface **5138**, which causes a camera application user interface **5216** to be displayed, as discussed with regard to FIGS. **5**EX-**5**EY).

Whereas a light press input on a camera control displayed in control center user interface **5138** causes a camera menu **5220** to be displayed, a light press input on a camera control displayed in wake screen user interface **504** causes a camera application user interface **5216** to be displayed. FIGS. **5**FK-**5**FL illustrate a wake screen camera activation input (e.g., a light press input) by a contact with touch screen **112**, as indicated by focus selector **5228**, at a location that corresponds to a camera control **5192** that is displayed on wake screen user interface **504**. In FIGS. **5**FK-**5**FL, a characteristic intensity of the contact is above a detection threshold IT_0, as indicated by intensity level meter **5196**, and below a light press intensity level IT_L. In FIG. **5**FM, in accordance with a determination that a characteristic intensity of the contact has increased above a light press intensity threshold, as indicated by IT_L on intensity level meter **5196**, display of the wake screen user interface **504** is replaced by display of a camera application user interface **5216**.

FIGS. **5**FN-**5**FT illustrate that, in response to authentication input (e.g., as shown in FIG. **5**FP, additional notification information is displayed on wake screen user interface **504**.

FIG. **5**FN illustrates an input (e.g., an upward swipe) by a contact on touch screen **112** that is initiated at a lower edge of touch screen **112**, as indicated by focus selector **5230**. In response to the input, in accordance with a determination that the device is locked, an authentication user interface **518** is displayed, as shown in FIG. **5**FO.

In FIG. **5**P, an authentication input (e.g., a tap input) by a contact on touch screen **112** is detected at a location within authentication user interface **518**, as indicated by focus selector **5232**. In response to the authentication input, the device is unlocked and home screen user interface **522** is displayed, as shown in FIG. **5**FQ.

FIG. **5**FR illustrates an input (e.g., a downward swipe) that is initiated by a contact at a location near the upper edge of touch screen **112**, as indicated by focus selector **5232**. In response to the input, wake screen user interface **504** slides down from the upper edge of display **112**, as shown in FIGS. **5**FR-**5**FT. When wake screen user interface **504** is displayed while device **100** is unlocked, as shown in FIG. **5**FT, notification **5188** is displayed with information (e.g., message text **5234** and an image **5236**) that were not displayed while device **100** was locked (see, e.g., FIG. **5**ED), and an additional notification **5190** is displayed.

FIG. **5**FU illustrates an arrangement of wake screen user interface **504** and adjacent user interfaces control center user interface **5138** and widget user interface **5140**. As discussed above with regard to FIGS. **5**EK-**5**EP, a rightward swipe on wake screen user interface **504** causes widget user interface **5140** to be displayed, and a leftward swipe on widget user interface **5140** causes wake screen user interface **504** to be displayed. As discussed above with regard to FIGS. **5**EQ-**5**ES and FIGS. **5**FF-**5**FH, a leftward swipe on wake screen user interface **504** causes control center user interface **5138** to be displayed, and a rightward swipe on control center user interface **5138** causes wake screen user interface **504** to be displayed. An upward swipe on wake screen user interface **504** causes a previously displayed user interface (e.g., home screen user interface **522**, an application user interface, or a settings user interface) to be displayed.

As illustrated in FIGS. **5**FV-**5**GB, when input to display widget user interface **5140** or control center user interface **5138** is received, the state of a user interface that is adjacent to wake screen user interface **504** being displayed is not "sticky," in that when widget user interface **5140** or control center user interface **513** are displayed and subsequently dismissed, a subsequent downward swipe input from the upper edge of display **112** will cause wake screen user interface **504** (and not widget user interface **5140** or control center user interface **513**) to be displayed.

FIGS. **5**FV-**5**FW illustrate an input (e.g., a rightward swipe) that is initiated by a contact on touch screen **112**, as indicated by focus selector **5238**. In response to the input, wake screen user interface **504** slides to the right and mini application user interface **5140** is revealed, as shown in FIGS. **5**FV-**5**FX.

FIG. **5**FY illustrates an input (e.g., an upward swipe) by a contact on touch screen **112** that is initiated at a lower edge of touchscreen **112** by a contact at location that is indicated by focus selector **5240**. In response to the input, display of mini application user interface **5140** is replaced by display of home screen user interface **522**, as shown in FIGS. **5**FY-**5**FZ.

In FIGS. **5**FZ-**5**GB, after an input is received for navigation to a user interface that is adjacent to wake screen user interface **504** (e.g., to navigate to mini application user interface **5140** or control center user interface **5138**) and a subsequent input is received to dismiss the user interface that is adjacent to wake screen user interface **504** (e.g., the input in FIG. **5**FY to reveal home screen **522**), a downward swipe reveals wake screen user interface **504** (and not the adjacent interface that was displayed prior to the dismissal input). For example, in FIG. **5**FZ, an input (e.g., a downward swipe) is initiated by a contact at a location near the upper edge of touch screen **112**, as indicated by focus selector **5242**. In response to the input, wake screen user interface **504** (and not mini application user interface **5140**) slides down from the upper edge of display **112**, as shown in FIGS. **5**FZ-**5**GB.

FIGS. **5**GC-**5**GP illustrate input to display a maps application, activate a navigation mode of the maps application and display a navigation banner **5160**, and transition the

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navigation banner **5160** from a pill form, as shown in FIG. **5**FM, to a banner form, as shown in FIG. **5**GP, in accordance with some embodiments.

FIG. **5**GC illustrates an input (e.g., an upward swipe) by a contact on touch screen **112** that is initiated by a contact at location that corresponds to home affordance **552**, as indicated by focus selector **5244**. In response to the input, display of wake screen user interface **504** is replaced by display of home screen user interface **522**, as shown in FIGS. **5**GC-**5**GD.

In FIG. **5**GE, an input (e.g., a tap input) is detected at a location that corresponds to affordance **5248** for displaying a maps application interface, as indicated by focus selector **5246**. In response to the input, a maps application user interface **5154** is displayed, as shown in FIG. **5**GF.

In FIG. **5**GH, an input (e.g., a tap input) by a contact on touch screen **112** is detected at a location that corresponds to a control **5156** for activating a navigation mode of the maps application, as indicated by focus selector **5250**. In response to the input, the navigation mode of the maps application is initiated, and a navigation mode user interface is displayed in maps application user interface **5154**, as indicated at FIG. **5**GI.

FIG. **5**GJ illustrates an input (e.g., an upward swipe) by a contact on touch screen **112** that is initiated by a contact at location that corresponds to home affordance **552**, as indicated by focus selector **5252**. In response to the input, display of wake screen user interface **504** is replaced by display of home screen user interface **522**, as shown in FIGS. **5**GK-**5**GL. In FIG. **5**GL, a navigation banner **5160** is displayed in a pill format within home screen user interface **522**.

FIGS. **5**GM-**5**GO illustrate an input (e.g., a downward swipe) that is initiated by a contact at a location near the upper edge of touch screen **112**, as indicated by focus selector **5254**. In response to the input, wake screen user interface **504** slides down from the upper edge of display **112**, as shown in FIGS. **5**GM-**5**GP. As wake screen user interface **504** slides down, navigation banner **5160** transitions from a pill format, as shown in FIG. **5**GM, to a banner format, as shown in FIG. **5**GP. For example, as navigation banner **5160** gradually transitions from a pill format to a banner format, an animation is displayed in which navigation text **5178** is displayed in navigation banner **5160**, navigation direction arrow **5180** grows, navigation banner **5160** gradually grows and moves toward the center of display **112**, and time **5182** ceases to be displayed.

From FIG. **5**GP to FIG. **5**GQ, the information displayed in navigation banner **5160** has updated (e.g., in accordance with a changed location of the phone as the user proceeds along the navigation route), indicating that the content of navigation banner **5160** updates (e.g., in real time) while navigation banner **5160** is displayed.

FIG. **5**GR illustrates an input (e.g., an upward swipe) by a contact on touch screen **112** that is initiated at a location near the lower edge of touch screen **112**, as indicated by focus selector **5256**. In response to the input, wake screen user interface **504** slides up from the lower edge of display **112** to redisplay the underlying maps user interface **5154** (that was previously covered by wake screen user interface **504**).

FIG. **5**GT illustrates an input (e.g., an upward swipe) by a contact on touch screen **112** that is initiated by a contact at location that corresponds to home affordance **552**, as indicated by focus selector **5258**. In response to the input, display of wake screen user interface **504** is replaced by display of home screen user interface **522**, as shown in FIGS. **5**GT-**5**GU. In FIG. **5**GU, because the navigation mode of maps application **5154** is still active, a navigation banner **5160** is displayed in a pill format within home screen user interface **522**.

From FIG. **5**GL to FIG. **5**GU, the information displayed in the pill format version of navigation banner **5160** has updated (e.g., in accordance with a changed location of the phone as the user proceeds along the navigation route), indicating that the content of the pill format version of navigation banner **5160** updates (e.g., in real time) while navigation banner **5160** is displayed.

In FIGS. **5**GV-**5**GW, the color of one or more objects on wake screen user interface **504** (e.g., time/date object **582**, navigation banner **5188**, notification **5188**, and/or notification **5234**) are altered in accordance with a change in a background color and/or image of wake screen user interface **504**.

FIGS. **5**GX-**5**HR illustrate a panel-based cover sheet user interface **5260** (e.g., a wake screen displayed on a device with a large format display, such as a tablet device). In some embodiments, when panel-based cover sheet user interface **5260** is dismissed and subsequently recalled, a state of the panel-based cover sheet user interface **5260** when panel-based cover sheet user interface **5260** is recalled is the same as the state of panel-based cover sheet user interface **5260** prior to the dismissal.

In FIG. **5**GX, panel-based cover sheet user interface **5260** is displayed on display **112**. A notification panel **5262** is displayed on panel-based cover sheet user interface **5260**.

FIGS. **5**GY-**5**GZ illustrate an input (e.g., a rightward swipe) that is initiated by a contact on touch screen **112**, as indicated by focus selector **5264**. In response to the input, notification panel **5262** slides to the right and a mini application panel **5266** is revealed, as shown in FIGS. **5**GZ-**5**HA. In FIG. **5**HA, notification panel **5262** and mini application panel **5266** are simultaneously displayed on panel-based cover sheet user interface **5260**.

FIGS. **5**HB-**5**HC illustrate an input (e.g., an upward swipe) by a contact on touch screen **112** that is initiated at a lower edge of touchscreen **112** by a contact at location that is indicated by focus selector **5268**. In response to the input, panel-based cover sheet user interface **5260** slides upward to reveal home screen user interface **522**, as shown in FIGS. **5**HB-**5**HD.

FIGS. **5**RE-**5**HF illustrate an input (e.g., a downward swipe) by a contact on touch screen **112** that is initiated at an upper edge of touchscreen **112** by a contact at location that is indicated by focus selector **5272**. In response to the input, panel-based cover sheet user interface **5272** slides downward over home screen user interface **522**, as shown in FIGS. **5**HE-**5**HG. Notification panel **5262** and mini application panel **5266**, which were simultaneously displayed on panel-based cover sheet user interface **5260** prior to dismissal of panel-based cover sheet user interface **5272**, continue to be displayed when panel-based cover sheet user interface **5260** is redisplayed.

FIGS. **5**HH-**5**HI illustrate an input (e.g., a leftward swipe) that is initiated by a contact on touch screen **112**, as indicated by focus selector **5274**. In response to the input, notification panel **5274** slides to the left, until notification panel **5274** ceases to be displayed, and a control center panel **5278** is revealed, as shown in FIGS. **5**HH-**5**HL. In FIG. **5**HL, notification panel **5262** and control center panel **5278** are simultaneously displayed on panel-based cover sheet user interface **5260**.

FIGS. **5**HM-**5**HN illustrate an input (e.g., an upward swipe) by a contact on touch screen **112** that is initiated at

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a lower edge of touchscreen **112** by a contact at location that is indicated by focus selector **5278**. In response to the input, panel-based cover sheet user interface **5260** slides upward to reveal home screen user interface **522**, as shown in FIGS. **5**HM-**5**HO.

FIGS. **5**HP-**5**HF illustrate an input (e.g., a downward swipe) by a contact on touch screen **112** that is initiated at an upper edge of touchscreen **112** by a contact at location that is indicated by focus selector **5280**. In response to the input, panel-based cover sheet user interface **5272** slides downward over home screen user interface **522**, as shown in FIGS. **5**HP-**5**HR. Notification panel **5262** and control center panel **5278**, which were simultaneously displayed on panel-based cover sheet user interface **5260** prior to dismissal of panel-based cover sheet user interface **5272**, continue to be displayed when panel-based cover sheet user interface **5260** is redisplayed.

FIGS. **6**A-**6**G are flow diagrams illustrating method **600** of clearing sets of notifications, in accordance with some embodiments. Method **600** is performed at an electronic device (e.g., device **300**, FIG. **3**, or portable multifunction device **100**, FIG. **1**A) with a display, a touch-sensitive surface, and one or more sensors to detect intensity of contacts with the touch-sensitive surface. In some embodiments, the display is a touch-screen display and the touch-sensitive surface is on or integrated with the display. In some embodiments, the display is separate from the touch-sensitive surface. Some operations in method **600** are, optionally, combined and/or the order of some operations is, optionally, changed.

As described below, method **600** provides an intuitive way to clear sets of notifications. The method reduces the number, extent, and/or nature of the inputs from a user when clearing sets of notifications, thereby creating a more efficient human-machine interface. For battery-operated electronic devices, enabling a user to clear sets of notifications faster and more efficiently conserves power and increases the time between battery charges.

While the device is in a screen-off state (e.g., as shown in FIGS. **5**A**1**-**5**A**2**), the device receives (**602**) one or more notifications.

After receiving the one or more notifications (e.g., while the device remains in the screen-off state, or while the one or more notifications are displayed on a dark screen of the screen-off state), the device detects (**604**) a first input from a user for waking the device from the screen-off state to a screen-on state (e.g., the device detects a state change indicating that the device has been picked up, as described with regard to FIGS. **5**A**1**-**5**A**4**, or the device detects an input at a control, such as push button **106**, for waking the device).

In response to detecting the first input for waking the device from the screen-off state to the screen-on state, the device (**606**): transitions the device from the screen-off state to the screen-on state (e.g., as shown at FIGS. **5**A**2**-**5**A**3**), displays a wake screen user interface **504** on the display **112** (as shown in FIGS. **5**A**3** and **5**B), and displays the one or more notifications (e.g., notifications **506**, **508**, **510**, and **512** shown in FIG. **5**B) on the wake screen user interface **504** (e.g., the notifications are displayed as a list of notification banners below a time-date object **582**). These notifications are sometimes also referred to as "missed notifications" because they were received while the device was in the screen-off state. In some embodiments, the wake screen user interface **504** is also a cover sheet user interface that is displayed to cover a currently displayed user interface when a downward edge swipe gesture (e.g., a downward swipe that starts from an upper edge of the touch-sensitive surface **112**) is detected on the display **112**. In some embodiments, the wake screen user interface **504** includes a time-date object **582** showing the current time and date, and/or one or more prompts or affordances for unlocking the device from a locked state to an unlocked state.

While displaying the wake screen user interface **504** and while at least one of the one or more notifications remains displayed on the wake screen user interface **504** (e.g., at a later time after the user has interacted with the device which may include interactions that cause the dismissal and then redisplay of the wake screen user interface one or more times), the device detects (**608**) a second input for dismissing the wake screen user interface (e.g., an upward swipe input to reveal an underlying user interface or an input (e.g., on a power button) to shut off the display).

In response to detecting the second input for dismissing the wake screen user interface, the device ceases (**610**) to display the wake screen user interface **504** and the at least one of the one or more notifications (e.g., notifications **506**, **508**, **510**, and **512** shown in FIG. **5**B). In some embodiments, the device reveals an underlying interface such as a home screen user interface **522**, a settings user interface, or an application user interface (e.g., messages user interface **530**, web browser user interface **540**, music user interface **560**, or maps user interface **5154**.

After ceasing to display the wake screen user interface **504** and the at least one of the one or more notifications in response to the second input, the device detects (**612**) a third input for redisplaying the wake screen user interface (e.g., the third input may be an input for waking the device again after the device has transitioned back to the screen-off state, or an input (e.g., a downward swipe from the top of the touch-screen) for redisplaying the wake screen user interface after the wake screen user interface has been dismissed while the device remains in the screen-on state).

In response to detecting the third input for redisplaying the wake screen user interface **504** (**614**), in accordance with a determination that the third input meets notification-clearance criteria (e.g., notification-clearance criteria are criteria for completely removing all remaining missed notifications from the wake screen user interface and, optionally, deleting the notifications or saving them to notification history), the device redisplays the wake screen user interface **504** without displaying the at least one of the one or more notifications on the redisplayed wake screen user interface **504** (e.g., all previously displayed missed notifications are cleared from the wake screen user interface). The notification-clearance criteria require that the third input is detected at a time that is (1) after a respective notification of the one or more notifications has been cleared through direct user interaction with the respective notification or an application that corresponds to the respective notification and (2) after the device has transitioned from the screen-on state to the screen-off state at least once since the detection of the second input (e.g., since the last input for dismissing the wake screen user interface was detected). Examples of user interaction with the respective notification include an input to activate a displayed deletion control, such as an "x" icon displayed adjacent to the notification (e.g., a tap gesture by a contact at a location that corresponds to the displayed control), an input (such as a deep press or swipe gesture) on the notification to dismiss or delete the notification or to reveal a control for dismissing the notification followed by an input to activate a control for dismissing the notification, or an input to open the notification in an application (e.g., a tap gesture by a contact at a location that corresponds to the notification). For example, the input described with regard to

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FIGS. **5**AV-**5**AW (e.g., the input to wake the device) is detected at a time that is detected at a time that is (1) after a respective notification of the one or more notifications has been cleared through direct user interaction with the respective notification or an application that corresponds to the respective notification (e.g., described with regard to FIGS. **5**L-**5**P and FIGS. **5**Y-**5**AC) and (2) after the device has transitioned from the screen-on state to the screen-off state at least once since the detection of the second input (e.g., as described with regard to FIGS. **5**AU-**5**AW). In accordance with a determination that the third input does not meet the notification-clearance criteria: the device redisplays the wake screen user interface, and redisplays the at least one of the one or more notifications on the redisplayed wake screen user interface (e.g., continuing to display all of the notifications that were not dismissed by the user through direct user interaction (e.g., all or a subset of all the missed notifications that were received during the screen-off state)).

This heuristic allows a device to either automatically clear a set of missed notifications or to redisplay a set of missed notifications displayed on a wake screen depending on whether notification-clearance criteria are met. Automatically clearing a set of missed notifications in accordance with a determination that notification-clearance criteria are met makes the user-device interface more efficient and enhances the operability of the device by providing the user with the ability to clear multiple notifications without requiring the user to manually dismiss each notification, while retaining the ability of the user to individually clear missed notifications in the set of multiple notifications (e.g., by maintaining the device in a screen-on session while interacting with the individual notifications). Enabling the user to use the device more quickly and efficiently reduces power usage and improves battery life of the device.

In some embodiments, in response to detecting the third input for redisplaying the wake screen user interface, and in accordance with the determination that the third input does not meet the notification-clearance criteria (**616**), in accordance with a determination that one or more notification-clearance interactions have occurred (e.g., through a direct user interaction with a notification or interaction with an application that corresponds to a notification), the device forgoes display of one or more notifications that are cleared by the one or more notification-clearance interactions on the redisplayed wake screen user interface **504**. For example, notification-clearance interactions are described with regard to to FIGS. **5**L-**5**P and FIGS. **5**Y-**5**AC. In FIG. **5**P, notification **510** is not displayed due to interaction with notification **510** that occurred in FIG. **5**L (to cause display of messages application **530**). In FIG. **5**AC, notification **506** is not displayed due to the interaction with notification **506** that occurred in Figure AB (to cause deletion of the notification). In some embodiments, in accordance with a determination that no notification-clearance interactions have occurred, all of the one or more notifications are redisplayed on the redisplayed wake screen user interface.

Forgoing display of one or more notifications that are cleared by the one or more notification-clearance interactions on the redisplayed wake screen user interface reduces the amount of information displayed on the redisplayed wake screen. Reducing the amount of information displayed on the redisplayed wake screen makes the user-device interface more efficient and enhances the operability of the device by allowing a user to access notification information that the user has not previously reviewed without having to navigate past information that the user has previously reviewed.

In some embodiments, after detecting the first input for waking the device from the screen-off state to the screen-on state and prior to detecting the second input for dismissing the wake screen user interface (**618**), the device detects a plurality of intermediate inputs, the plurality of intermediate inputs including: a first intermediate input for dismissing the wake screen user interface (in response to which the wake screen is dismissed and a background user interface is revealed, or in response to which the device goes into the screen-off state and the screen is dark with no interface displayed), and a second intermediate input for redisplaying the wake screen user interface (in response to which the wake screen is redisplayed over a currently displayed user interface, or in response to which the device is woken to the screen-on state and the wake-screen user interface is displayed as soon as the display is turned on). For example, in FIGS. **5**B-**5**C, the device transitions from a screen-on state to a screen-off state (e.g., in response to a user input to shut off the display), and at FIGS. **5**C-**5**D, the device transitions back to a screen-on state (e.g., in response to a user input to wake the display). In FIGS. **5**Q-**5**R, wake screen **504** is dismissed, and in FIGS. **5**V-**5**X, wake screen **504** is redisplayed.

Maintaining display of a set of missed notifications after detecting intermediate inputs for dismissing and redisplaying a wake screen user interface makes the user-device interface more efficient and enhances the operability of the device by allowing a user to display the wake screen repeatedly (e.g., to view the time or check for an incoming notification) while maintaining a list of missed notifications for the user to handle when the user is ready to interact with the notifications (without requiring the user to provide input for redisplaying the missed notifications while the wake screen is displayed).

In some embodiments (**620**), the second input for dismissing the wake screen user interface is an input for displaying a first user interface (e.g., an application user interface such as messages user interface **530** or music user interface **560**, a settings management user interface, a springboard user interface (home screen user interface **522**) that includes a plurality of application launch icons, etc.) that is distinct from the wake screen user interface, the first user interface is displayed in response to the second input (e.g., after the wake screen user interface is dismissed, the first user interface is revealed from underneath the wake screen user interface), and the third input for redisplaying the wake screen user interface was received while the first user interface is displayed. For example, in FIGS. **5**L-**5**M, an wake screen user interface **504** is dismissed in response to user input that causes messages user interface **530** to be displayed. While messages user interface **530** is displayed, input to redisplay wake screen user interface is received as described with regard to FIGS. **5**N-**5**P.

Redisplaying the wake screen in response to input received while a first user interface (such as an application user interface, a springboard user interface, or a settings management user interface) is displayed allows a user to access the wake screen (and any missed notifications displayed on the wake screen) at all times while using the device. This makes the user-device interface more efficient and enhances the operability of the device by allowing a user to access the wake screen without requiring the user to navigate through multiple interfaces to gain access to the wake screen).

In some embodiments (**622**), the third input for redisplaying the wake screen user interface **504** is received while a content playback application is active (e.g., in response to an

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activation input as described with regard to FIG. **5**AK), and redisplaying the wake screen user interface includes displaying (e.g., above the one or more missed notifications) at least one media playback control **572** (e.g., in a media playback control panel **568**) in the wake screen user interface **504**. In some embodiments, the playback controls are displayed on the wake screen user interface **504** whenever the wake screen user interface is displayed while the content playback application is active (e.g., media playback is ongoing).

Displaying at least one media playback control on the wake screen user interface (e.g., in addition to the time and/or missed notifications) while a content playback application is active allows a user to control playback via the displayed media playback control immediately upon waking the device, or by accessing the wake screen at any time while using the device. This makes the user-device interface more efficient and enhances the operability of the device by allowing a user to view the time and/or missed notifications while accessing the device to control media playback without needing to unlock the device and/or navigate through multiple interfaces.

In some embodiments, while the wake screen user interface **504** is displayed, the device detects (**624**) a fourth input by a contact on the touch-sensitive surface, including detecting movement of the contact along the touch-sensitive surface in a first direction (e.g., downwards) and detecting lift-off of the contact after the movement (e.g., as described with regard to FIGS. **5**AW-**5**AZ). In response to detecting the fourth input, the device: moves at least one object (e.g., an object **582** that displays a current time and/or date) displayed on the wake screen user interface **504** (e.g., in the first direction) in accordance with the movement of the contact, and reverses the movement of the at least one object (e.g., moving in a second direction opposite the first direction, e.g., upwards) upon lift-off of the contact.

Providing visual feedback, such as a "rubber band effect" simulated by moving at least one object in accordance with movement of a contact and reversing the movement of the at least one object upon lift-off of the contact, enhances operability of the device by providing an intuitive indication to the user that the wake screen is responsive to input such as a swipe input) to view additional notifications and thereby helping the user to provide proper inputs to achieve a desired outcome. The indication is intuitive because the user receives the information without the need to display additional instruction to the user for understanding the feature).

In some embodiments, while displaying the one or more notifications on the wake screen user interface, the device detects (**626**) a fifth input by a contact on the touch-sensitive surface (e.g., a tap input) at a location that corresponds to a first notification of the one or more notifications. In response to detecting the fifth input, the device ceases to display the wake screen user interface and displays a first application user interface for a first application that corresponds to the first notification. For example, in FIG. **5**L, an input at a location that corresponds to notification **510** is detected. In FIG. **5**M, in response to the detected input, messages application user interface **530** is displayed.

Displaying an application user interface for an application that corresponds to a notification in response to input detected at a location that corresponds to the notification makes the user-device interface more efficient and enhances the operability of the device by allowing a user to interact with an application with minimal input immediately upon waking the device or otherwise accessing a missed notification on the wake screen user interface.

In some embodiments, while displaying the first application user interface for the first application that corresponds to the first notification (e.g., messages application user interface **530**, as shown in FIGS. **5**M-**5**N), the device detects (**628**) a sixth input for redisplaying the wake screen user interface (e.g., an input as described with regard to FIGS. **5**N-**5**O). In response to detecting the sixth input for redisplaying the wake screen user interface, the device ceases to display the first application user interface (e.g., as shown in FIG. **5**O), displays the wake screen user interface (e.g., as shown in FIG. **5**P), displays at least one second notification of the one or more notifications on the wake screen user interface (e.g., notifications **506**, **508**, and **512**), wherein the at least one second notification corresponds to a second application that is distinct from the first application, and forgoes display of the first notification (and, optionally, any other notifications among the one or more missed notifications that correspond to the first application) on the wake screen user interface **504** with the at least one second notification. For example, in FIG. **5**P, notification **510** is no longer displayed.

Forgoing display of a notification on the wake screen user interface after displaying an application interface of an application that corresponds to the notification reduces the amount of information displayed on the redisplayed wake screen. Reducing the amount of information displayed on the redisplayed wake screen makes the user-device interface more efficient and enhances the operability of the device by allowing a user to access notification information that the user has not previously reviewed without having to navigate past information that the user has previously reviewed (e.g., when accessing an application interface for an application that corresponds to the notification).

In some embodiments, after detecting the sixth input, while displaying the wake screen user interface **504**, the device detects (**630**) a seventh input for dismissing the wake screen user interface (e.g., including detecting an upward swipe gesture on the touch-sensitive surface). In response to detecting the seventh input for dismissing the wake screen user interface, the device ceases to display the wake screen user interface (e.g., by pulling the wake screen user interface **504**, which is used as a "cover sheet" user interface, upward), and redisplays the first application user interface for the first application. For example, FIGS. **5**Q-**5**R show an input that causes wake screen user interface **504** to slide up to reveal the underlying messages application user interface **530**.

Redisplaying a last displayed user interface after dismissing the wake screen user interface allows the user to return to a previous operating context without requiring multiple inputs, thereby making the user-device interface more efficient (e.g., by reducing the number of inputs needed to return to a previously viewed user interface).

In some embodiments, while the first application user interface for the first application (e.g., messages user interface **530** for a messages application) is redisplayed, the device detects (**632**) an eighth input (e.g., as described with regard to FIGS. **5**S-**5**T) for invoking a third application that is distinct from the first application and the second application. In response to detecting the eighth input for invoking the third application, the device displays a third application user interface of the third application (e.g., browser application user interface **540** for a web browser application). After detecting the eighth input, while displaying the third application user interface, the device detects a ninth input (e.g., as described with regard to FIG. **5**V-**5**W) for redisplaying the wake screen user interface (e.g., including

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detecting a downward edge swipe gesture (e.g., a downward swipe that starts from an upper edge of the touch-sensitive surface **112**)). In response to detecting the ninth input for redisplaying the wake screen user interface **504**, the device ceases to display the third application user interface, displays the wake screen user interface **504** (e.g., pull down the wake screen user interface over the second application user interface), and redisplays the at least one second notification of the one or more notifications on the wake screen user interface without redisplaying the first notification (or, optionally, any missed notifications that correspond to the first application and the third application). For example, in FIG. **5**X, wake screen **504** is displayed with notifications **506**, **508**, and **512**.

Maintaining display of a set of missed notifications after detecting intermediate inputs for dismissing and redisplaying a wake screen user interface makes the user-device interface more efficient and enhances the operability of the device by allowing a user to display the wake screen repeatedly (e.g., to view the time or check for an incoming notification) while maintaining a list of missed notifications for the user to handle when the user is ready to interact with the notifications (without requiring the user to provide input for redisplaying the missed notifications while the wake screen is displayed).

In some embodiments, after displaying the at least one second notification without displaying the first notification on the wake screen user interface (e.g., in FIG. **5**AU, notifications **508** and **512** are displayed and notifications **506** and **510** are no longer displayed), the device detects (**634**) a first transition from the screen-on state to the screen-off state (e.g., the transition is triggered when an amount of time that has passed since a last input was received increased above a threshold time, or when an input is received at a control for shutting off the display) followed by a second transition from the screen-off state to the screen-on state (e.g., when an input is received to wake the device or turn on the display). For example, FIGS. **5**AU-**5**AV illustrate a transition from the screen-on state to the screen-off state and FIGS. **5**AV-**5**AW illustrate a transition from the screen-off-state to the screen-on state. In response to detecting the first transition followed by the second transition: the device redisplays the wake screen user interface without displaying any of the one or more notifications on the wake screen user interface (e.g., the notification-clearance criteria are met, and all of the missed notifications that were still remaining on the wake screen are now cleared). For example, in FIG. **5**AW, no notifications are displayed.

Automatically clearing a set of missed notifications in accordance with a determination that notification-clearance criteria are met makes the user-device interface more efficient and enhances the operability of the device by providing the user with the ability to clear multiple notifications without requiring the user to manually dismiss each notification. Enabling the user to use the device more quickly and efficiently reduces power usage and improves battery life of the device.

In some embodiments, while displaying the wake screen user interface with all of the one or more notifications (e.g., before the user interacted with one of the notifications or opened an application that corresponds to one of the one or more notifications), the device detects (**636**) a third transitioning from the screen-on state to the screen-off state (e.g., the transition is triggered when an amount of time that has passed since a last input was received increased above a threshold time, or when an input is received at a control for shutting off the display) followed by a fourth transition from the screen-off state to the screen-on state (e.g., when an input is received to wake the device or turn on the display). For example, a transition from the screen-on state to the screen-off state is shown in FIGS. **5**B-**5**C and a transition from the screen-off state to the screen-on state is shown in FIGS. **5**C-**5**D. In response to detecting the third transition followed by the fourth transition, the device redisplays the wake screen user interface with the one or more notifications on the wake screen user interface (e.g., all of the missed notifications still remain on the wake screen). For example, in FIG. **5**D, all of the notifications **506**-**512** displayed in FIG. **5**B are redisplayed.

Maintaining display of a set of missed notifications after a transition from the screen-on state to the screen-off state followed by a transition from the screen-off state to the screen-on state makes the user-device interface more efficient and enhances the operability of the device by allowing a user to display the wake screen repeatedly (e.g., to view the time or check for an incoming notification) while maintaining a list of missed notifications for the user to handle when the user is ready to interact with the notifications (without requiring the user to provide input for redisplaying the missed notifications while the wake screen is displayed).

In some embodiments, while displaying the wake screen user interface with the one or more notifications, the device detects (**638**) a tenth input (e.g., an upward swipe gesture on the touch-sensitive surface) for displaying an authentication user interface **518** (e.g., including a password input prompt, such as a number pad). In response to detecting the tenth input for displaying the authentication user interface: the device ceases to display the wake screen user interface **504** and displays the authentication user interface **518**. For example, in response to an input described with regard to FIG. **5**E, authentication user interface **518** is displayed in FIG. **5**F. While the authentication user interface **518** is displayed, the device detects an authorization input (e.g., a passcode entered via the number pad). In accordance with a determination that the authorization input is valid, the device displays a second user interface (e.g., an application user interface, a settings user interface, or a home screen user interface). For example, in response to detecting the authorization input shown in FIG. **5**G, home screen user interface **522** is displayed in FIG. **5**H. While displaying the second user interface, the device detects an eleventh input for redisplaying the wake screen user interface **504** (e.g., detecting a downward swipe gesture on the touch-sensitive surface (e.g., a downward swipe gesture that started from the top edge of the touch-sensitive surface)). In response to detecting the eleventh input, the device ceases to display the second application user interface; and redisplays the wake screen user interface with the one or more notifications. For example, an input for redisplaying wake screen user interface **504** received while home screen user interface **522** is displayed is shown in FIGS. **5**I-**5**J. In some embodiments, in accordance with a determination that the authorization input is not valid, the second user interface is not displayed and/or the user is prompted for additional authorization input. In some embodiments, the authentication is automatically performed, and detecting an upward swipe gesture dismisses the wake screen user interface and reveals the last active user interface prior to the device's transition from the screen-on state to the screen-off state, or the last active user interface prior to the device's transition from the unlocked state to the locked state.

Maintaining display of a set of missed notifications after detecting intermediate inputs for dismissing and redisplaying a wake screen user interface makes the user-device

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interface more efficient and enhances the operability of the device by allowing a user to display the wake screen repeatedly (e.g., to view the time or check for an incoming notification) while maintaining a list of missed notifications for the user to handle when the user is ready to interact with the notifications (without requiring the user to provide input for redisplaying the missed notifications while the wake screen is displayed).

In some embodiments, in accordance with the determination that the third input meets the notification-clearance criteria, the device adds (**640**), to a set of recent notifications, one or more cleared notifications that correspond to the at least one of the one or more notifications not displayed on the wake screen user interface. In some embodiments, when the notification-clearance criteria are met, all of the missed notifications are cleared from the wake screen user interface/cover sheet user interface, and are added to a list of recent notifications. In some embodiments, when a missed notification is individually cleared by direct user interaction with that notification, that notification is added to the list of recent notifications.

Adding a cleared notification to a set of recent notifications makes the cleared notification available for future user access. Making a cleared notification available for future user access makes the user-device interface more efficient by allowing a user to view notification content associated with multiple applications without individually accessing each application).

In some embodiments, after adding the one or more cleared notifications to the set of recent notifications, while the wake screen user interface is displayed, the device detects (**642**) a twelfth input (e.g., an upward swipe on the touch-screen that pulls on a currently displayed notification, or an input on a control for revealing recent notifications). In response to detecting the twelfth input, in accordance with a determination that the twelfth input meets recent-notification-display criteria, the device displays at least a portion of the set of recent notifications (e.g., overlaid on the wake screen user interface). For example, In FIGS. **5**BJ-**5**BO, notifications **506-512**, that were cleared as discussed with regard to **5**A-**5**AW, are redisplayed in response to an input that meets recent-notification-display criteria.

Displaying notifications from a set of recent notifications in response to input on the wake screen user interface allows a user to view a sequential list of notification content (e.g., including notifications that were previously cleared). Allowing a user to view a sequential list of notification content received by the device makes the user-device interface more efficient by allowing a user to view notification content associated with multiple applications without individually accessing each application).

It should be understood that the particular order in which the operations in FIGS. **6**A-**6**G have been described is merely an example and is not intended to indicate that the described order is the only order in which the operations could be performed. One of ordinary skill in the art would recognize various ways to reorder the operations described herein. Additionally, it should be noted that details of other processes described herein with respect to other methods described herein (e.g., methods **700**, **800**, and **900**) are also applicable in an analogous manner to method **600** described above with respect to FIGS. **6**A-**6**G. For example, the contacts, gestures, user interface objects, tactile outputs, focus selectors, and animations described above with reference to method **600** optionally have one or more of the characteristics of the contacts, gestures, user interface objects, tactile outputs, focus selectors, and animations described herein with reference to other methods described herein (e.g., methods **700**, **800**, and **900**). For brevity, these details are not repeated here.

The operations described above with reference to FIGS. **6**A-**6**G are, optionally, implemented by components depicted in FIGS. **1**A-**1**B. For example, receiving operation **602**, detection operation **604**, transitioning operation **606**, and displaying operation **606**, are, optionally, implemented by event sorter **170**, event recognizer **180**, and event handler **190**. Event monitor **171** in event sorter **170** detects a contact on touch-sensitive display **112**, and event dispatcher module **174** delivers the event information to application **136-1**. A respective event recognizer **180** of application **136-1** compares the event information to respective event definitions **186**, and determines whether a first contact at a first location on the touch-sensitive surface (or whether rotation of the device) corresponds to a predefined event or sub-event, such as selection of an object on a user interface, or rotation of the device from one orientation to another. When a respective predefined event or sub-event is detected, event recognizer **180** activates an event handler **190** associated with the detection of the event or sub-event. Event handler **190** optionally uses or calls data updater **176** or object updater **177** to update the application internal state **192**. In some embodiments, event handler **190** accesses a respective GUI updater **178** to update what is displayed by the application. Similarly, it would be clear to a person having ordinary skill in the art how other processes can be implemented based on the components depicted in FIGS. **1**A-**1**B.

FIGS. **7**A-**7**E are flow diagrams illustrating method **700** of displaying notification history in accordance with some embodiments. Method **700** is performed at an electronic device (e.g., device **300**, FIG. **3**, or portable multifunction device **100**, FIG. **1**A) with a display, a touch-sensitive surface, and one or more sensors to detect intensity of contacts with the touch-sensitive surface. In some embodiments, the display is a touch-screen display and the touch-sensitive surface is on or integrated with the display. In some embodiments, the display is separate from the touch-sensitive surface. Some operations in method **700** are, optionally, combined and/or the order of some operations is, optionally, changed.

As described below, method **700** provides an intuitive way to display a notification history. The method reduces the number, extent, and/or nature of the inputs from a user when displaying a notification history, thereby creating a more efficient human-machine interface. For battery-operated electronic devices, enabling a user to display a notification history faster and more efficiently conserves power and increases the time between battery charges.

The device displays (**702**), on display **112**, a first user interface, including displaying one or more missed notifications in a first scrollable arrangement (e.g., a first scrollable list) on the first user interface. For example, in FIG. **5**BA, notifications **586**, **588**, **590**, and **592** are displayed on wake screen user interface **504**. In some embodiments, the first user interface is a wake screen user interface **504** that is displayed upon the display transitioning from a display-off state to a display-on state (e.g., in response to detecting an input or event that wakes the device from the display-off state, such as a sleep state or other power-saving or inactive state). For example, FIGS. **5**A**1**-**5**A**4** show the display transitioning from a display-off state to a display-on state. In some embodiments, the first user interface is a cover sheet user interface (also depicted as **504**) that is displayed to cover a currently displayed user interface when a downward edge swipe gesture (e.g., a downward swipe that starts from

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an upper edge of the touch-sensitive surface) is detected on the display. In some embodiments, the cover sheet user interface is also the wake screen user interface that is displayed when the device transitions from the screen-off state to the screen-on state.

While displaying the first user interface with the one or more missed notifications, the device detects (**704**) a first swipe gesture (e.g., as shown in FIGS. **5**BF-**5**BG), including detecting a first contact at a location on the touch-sensitive surface that corresponds to the first scrollable arrangement (e.g., as indicated by region **5100**), and detecting first movement of the first contact across the touch-sensitive surface in a first direction (e.g., upward).

In response to detecting the first swipe gesture, the device scrolls (**706**) the first scrollable arrangement in accordance with the first movement of the first contact (e.g., notifications **586-592** move upward in response to the input illustrated at FIGS. **5**BF-**5**BG).

After scrolling the first scrollable arrangement in accordance with the first movement of the first contact, the device detects (**708**) a second swipe gesture, including detecting a second contact at a location on the touch-sensitive surface that corresponds to the first scrollable arrangement and detecting second movement of the second contact across the touch-sensitive surface in the first direction (e.g., as shown in FIGS. **5**BI-**5**BN).

In response to detecting the second swipe gesture (**710**): in accordance with a determination that the second movement of the second contact meets notification-history-display criteria, the device displays a plurality of previously received notifications that are distinct from the one or more missed notifications in a second scrollable arrangement on the first user interface (e.g., the device displays previously received notifications **506-512**, which are distinct from missed notifications **586-592**). The notification-history-display criteria require (1) that the second movement of the second contact is detected after an end (e.g., a bottommost missed notification **5102**) of the first scrollable arrangement has been reached in accordance with the first movement of the first contact and (2) that the second movement exceeds a first threshold amount of movement (e.g., as indicated at **5108**) in the first direction. In accordance with the determination that the second movement of the first contact does not meet the notification-history-display criteria, the device forgoes displaying the plurality of previously received notifications (and, optionally, continuing to scroll the first scrollable arrangement in accordance with the second movement of the second contact).

This method relates to a way to combine the functions of a wake screen user interface and a notification history screen into a wake screen user interface. The wake screen user interface displays missed notifications, and in response to specific inputs notification history is displayed in the wake screen user interface as well. Displaying previously received notifications in accordance with a determination that movement of a contact meets notification history display criteria allows a user to view a sequential list notification content received by the device (e.g., including notifications that were previously cleared). The notifications in the second scrollable arrangement remain undisplayed when swipe input does not meet the notification-history-display criteria, so that the user does not unintentionally reveal previously cleared notifications. Allowing a user to view a sequential list of notification content received by the device makes the user-device interface more efficient by allowing a user to view notification content associated with multiple applications without individually accessing each application. Leaving the notifications in the second scrollable arrangement undisplayed when swipe input does not meet the notification-history-display criteria allows the user to navigate among the missed notifications in the first scrollable arrangement without unintentionally viewing previously cleared notifications.

In some embodiments (**712**), the first user interface is a wake screen user interface **504**, and the first user interface is displayed immediately upon waking the device from the display-off state to the display-on state. For example, FIGS. **5**A1-**5**A4 show display of a wake screen user interface **504** when device **100** transitions from a display-off state to a display-on state.

In some embodiments, while displaying the one or more missed notifications in the first scrollable arrangement on the first user interface, the device detects (**714**) a missed notification dismissal input for dismissing a respective notification of the one or more missed notifications in the first scrollable arrangement. For example, input to dismiss notification **592** is illustrated in FIGS. **5**BV-**5**BY. A dismissal input for dismissing a respective notification is, e.g., an input to activate a displayed control (e.g., a tap gesture by a contact at a location that corresponds to the displayed control) for dismissing the notification; an input (such as a deep press or swipe gesture) on the notification to dismiss the notification, or to reveal a control for dismissing the notification followed by an input to activate a control for dismissing the notification, or an input to open the notification in an application (e.g., a tap gesture by a contact at a location that corresponds to the notification)). After detecting the missed notification dismissal input for dismissing the respective notification, the device ceases to display the respective notification of the one or more notifications on the first user interface, and adds the respective notification to the plurality of previously received notifications. For example, if the wake screen is displayed again without the respective notification, and a swipe gesture that meets notification-history-display criteria is detected on the first scroll arrangement including the remaining missed notifications, the respective notification is displayed among the plurality of previously received notifications in the second scrollable arrangement.

Ceasing to display a notification after detecting a missed notification dismissal input for dismissing the notification reduces the number of notifications displayed on the first user interface after the user has provided input that indicates the notification has been viewed and/or handled by the user. Reducing the number of notifications displayed on the first user interface makes the user-device interface more efficient by allowing a user to more quickly locate and address notifications that have not been previously viewed and/or handled by the user.

In some embodiments, while the first user interface is displayed, the device detects (**716**) a third swipe gesture (e.g., as shown at FIGS. **5**BB-**5**BC), including detecting a third contact at a location on the touch-sensitive surface that corresponds the first scrollable arrangement and detecting third movement of the third contact across the touch-sensitive surface in a second direction that is distinct from the first direction (e.g., downwards). In response to detecting the third swipe gesture, the device translates the first scrollable arrangement (and optionally, at least one object (e.g., an object that displays a current time and/or date)) in accordance with the third movement of the third contact (e.g., translating the first scrollable arrangement relative to other objects currently displayed on the first user interface in the downward direction, or translating the first user interface

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as a whole in the downward direction to display an extension of the first user interface at the top that was not displayed prior to detecting the third swipe gesture). For example, notifications **586**-**592** move downward in accordance with the movement of the input shown in FIGS. **5**BB-**5**BC. The device detects lift-off of the third contact from the touch-sensitive surface (e.g., the touch-screen display) after detecting the third movement (e.g., the contact indicated by focus selector **594** in FIG. **5**BC has lifted off of touch screen **112**, as shown in FIG. **5**BD). In response to detecting the liftoff of the third contact, the device reverses the translation of the first scrollable arrangement that was made in accordance with the third movement of the third contact (e.g., restoring the position of the first scrollable arrangement relative to the other objects currently displayed on the first user interface, or restoring the first user interface as a whole and ceasing to display the extension of the first user interface at the top). As shown in FIGS. **5**BD-**5**BE, in response to the liftoff that occurred, the notifications move **586**-**592** upward.

Providing visual feedback, such as a "rubber band effect" simulated by translating the scrollable arrangement of missed notifications in accordance with movement of a contact and reversing the translation of the scrollable arrangement upon lift-off of the contact, enhances operability of the device by providing an intuitive indication to the user that the first user interface is responsive to input (such as a swipe input) to view additional notifications.

In some embodiments, while displaying the plurality of previously received notifications in the second scrollable arrangement on the first user interface, the device detects (**718**) a fourth swipe gesture (e.g., as shown at FIG. **5**CA), including detecting a fourth contact at a location on the touch-sensitive surface that corresponds to the second scrollable arrangement (e.g., notifications **506**-**512**) and detecting fourth movement of the fourth contact across the touch-sensitive surface in a second direction opposite the first direction (e.g., the fourth swipe gesture is a downward swipe gesture directed to the second scrollable arrangement). In response to detecting the fourth swipe gesture, in accordance with a determination that the fourth movement of the fourth contact meets notification-history-dismissal criteria, the device ceases to display the plurality of previously received notifications on the first user interface. In some embodiments, the notification-history-dismissal criteria require (1) that the fourth movement of the fourth contact is detected after an end (e.g., an uppermost notification) of the second scrollable arrangement has been reached and (2) that the fourth movement exceeds a second threshold amount of movement in the second direction opposite the first direction. In accordance with the determination that the fourth movement of the fourth contact does not meet the notification-history-dismissal criteria, the device scrolls the plurality of previously received notifications in the second scrollable arrangement in accordance with the fourth movement of the fourth contact. In some embodiments, scrolling the plurality of previously received notifications in the second scrollable arrangement causes at least one of the one or more missed notifications in the first scrollable arrangement to be revealed (e.g., if the at least one of the one or more missed notifications in the first scrollable arrangement was scrolled beyond the edge of the display in response to the first swipe gesture and/or the second swipe gesture). In some embodiments, scrolling previously received notifications causes missed notifications in the first scrollable arrangement to be revealed (e.g., as shown in FIGS. **5**BT-**5**BU), allowing a user to navigate between notifications that have been cleared and notifications that have not yet been cleared for a comprehensive view of notifications that have been received by the device. Providing the user with a comprehensive view of notifications that have been received by the device makes the user-device interface more efficient by allowing a user to view recent notification content without needing to individually access each application for which the content was received and/or generated.

Scrolling through the notification history or dismissing the notification history based on the same swipe gesture in accordance with whether the notification-history-dismissal criteria are met enhances the operability of the user interface and makes the user-device interface more efficient (e.g., by performing different functions based on whether predefined conditions are met), which additionally improves the battery life of the device.

In some embodiments, while displaying the first user interface, the device detects (**720**) a first user interface dismissal input for input (e.g., as shown at FIG. **5**CO) for dismissing the first user interface (e.g., a swipe gesture, including fifth movement of a fifth contact from a location that corresponds to an edge of the display (such as a location that is at or proximate to the bottom edge of the display) across the touch-sensitive surface in the first direction (e.g., upward from the bottom edge of the display). In response to detecting the first user interface dismissal input, the device ceases to display the first user interface (e.g., along with any missed notifications and/or recent notifications that are currently displayed on the first user interface), and, in some embodiments, the device reveals an underlying interface such as a home screen user interface **522**, a settings user interface, or an application user interface. For example, in FIGS. **5**CO-**5**CQ, home screen user interface **522** is revealed in response to an input for dismissing wake screen user interface **504**.

In some embodiments, the device includes one or more tactile output generators (**722**), and while the first user interface is displayed, in accordance with the determination that the second movement of the second contact meets the notification-history-display criteria (e.g., as described with regard to FIG. **5**BK), the device generates, with the one or more tactile output generators, a tactile output (e.g., tactile output **5112**) to indicate that the criteria for displaying the plurality of previously received notifications have been met.

Generating a tactile output to indicate that criteria for displaying the plurality of previously received notifications have been met provides the user with feedback about the input that is required to meet notification-history-display criteria. Providing the user with feedback about the input that is required to meet notification-history-display criteria makes the user-device interface more efficient (e.g., by helping the user to provide proper inputs and reducing user mistakes when operating/interacting with the device) which, additionally, reduces power usage and improves battery life of the device by enabling the user to use the device more quickly and efficiently.

In some embodiments (**724**), the first contact moves with a first rate of movement during the first swipe gesture, scrolling the first scrollable arrangement occurs at a first scroll rate that corresponds to the first rate of movement by the first contact (e.g., the scroll rate matches the first rate of movement); the second contact moves with a second rate of movement during the second swipe gesture; and displaying the plurality of previously received notifications in the second scrollable arrangement includes scrolling a first previously received notification of the plurality of previously received notifications in the second scrollable arrangement at a second scroll rate that is greater than the second

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rate of movement by the second contact (e.g., to provide an appearance of the previously received notifications in the second scrollable arrangement "catching up" with the second contact). For example, as the contact indicated by focus selector **5106** moves along touch screen **112** as shown in FIGS. **5**BI-**5**BN, missed notifications **586-592** in a first scrollable arrangement move at the rate of movement of the contact, and, in FIGS. **5**BK-**5**BN, previously received notifications **506-512** in a second scrollable arrangement move faster than the rate of movement of the contact. In some embodiments, a second previously received notification of the plurality of previously received notifications is scrolled at a third scroll rate that is distinct from the second scroll rate.

Scrolling a first previously received notification of the plurality of previously received notifications in the second scrollable arrangement at a second scroll rate that is greater than the second rate of movement by the second contact provides the user with visual feedback about the input that is required to meet notification-history-display criteria (e.g., by giving the user of a sense of the notifications in the second scrollable arrangement "racing to catch up" with the second contact when the criteria are met). Providing the user with feedback about the input that is required to meet notification-history-display criteria makes the user-device interface more efficient (e.g., by helping the user to provide proper inputs and reducing user mistakes when operating/interacting with the device) which, additionally, reduces power usage and improves battery life of the device by enabling the user to use the device more quickly and efficiently.

In some embodiments, the device detects (**726**) a fifth swipe gesture, including detecting a fifth contact at a first location on the touch-sensitive surface and detecting fifth movement of the fifth contact across the touch-sensitive surface in a third direction that is perpendicular to the first direction (e.g., leftward or rightward). In response to detecting the fifth swipe gesture, in accordance with a determination that the first location on the touch-sensitive surface corresponds to a first notification among the one or more missed notifications or the plurality of previously received notifications, the device moves the first notification in accordance with the movement of the fifth contact (e.g., the input shown in FIG. **5**BV-**5**BW drags notification **592**). In accordance with a determination that the first location on the touch-sensitive surface corresponds to a location outside of the first scrollable arrangement and the second scrollable arrangement, the device replaces display of the first user interface with display of a second user interface (e.g., a control center user interface **5138** or mini application user interface **5140**). For example, FIGS. **5**CC-**5**CE illustrate a swipe gesture by contact at a location outside of the first scrollable arrangement and the second scrollable arrangement that causes control center user interface **5138** to be displayed, and FIGS. **5**CI-**5**CK illustrate a swipe gesture by contact at a location outside of the first scrollable arrangement and the second scrollable arrangement that causes mini application user interface **5140** to be displayed.

This heuristic allows a swipe gesture (e.g., a horizontal swipe gesture) to have different responses depending on whether the gesture corresponds to a missed notification or corresponds to a location outside of scrollable arrangements of missed notifications. This heuristic enhances operability of the device by providing different responses to the same gesture depending on the location of the gesture rather than requiring the device to provide a different gesture type (in turn requiring the user to learn the additional gesture type) to obtain the different responses.

In some embodiments, the device detects (**728**) that criteria for dismissing all of the one or more missed notifications in the first scrollable arrangement are met (e.g., via one or more inputs that include user interaction with all of the missed notifications, via one or more inputs for accessing one or more applications associated with the missed notifications, and/or by satisfying notification clearance criteria that require input that is received at a time that is (1) after a respective notification of the one or more notifications has been cleared through direct user interaction with the respective notification or an application that corresponds to the respective notification and (2) after the device has transitioned from the screen-on state to the screen-off state at least once since the last direct user interaction that dismissed a respective notification). In response to detecting that the criteria for dismissing all of the one or more missed notifications are met, the device adds, to the plurality of previously received notifications, all of the one or more missed notifications (and forgoing displaying those one or more missed notifications the next time that the first user interface is displayed). For example, in FIG. **5**CS, all notifications have been cleared (e.g., as a result of input as shown at FIGS. **5**BV-**5**BZ and FIGS. **5**CQ-**5**CS). In FIG. **5**CX, in response to input shown in **5**CW, notifications **586-592** that had been cleared and added to the plurality of previously received notifications are redisplayed.

In some embodiments, while displaying the first user interface without any missed notifications (e.g., after detecting that the criteria for dismissing all of the one or more missed notifications in the first scrollable arrangement have been met and adding the one or more missed notifications to the plurality of previously received notifications), the device detects (**730**) a sixth swipe gesture (e.g., as shown in FIG. **5**CW), including a sixth contact at a location on the touch-sensitive surface that corresponds to the location at which the first scrollable arrangement was previously displayed, and the device detects sixth movement of the sixth contact across the touch-sensitive surface in the first direction. In response to detecting the sixth swipe gesture: in accordance with a determination that the sixth movement of the sixth contact exceeds the first threshold amount of movement in the first direction, the device displays the plurality of previously received notifications (including the one or more missed notifications that were dismissed and added to the plurality of previously received notifications). For example, in FIG. **5**CX, in response to input shown in **5**CW, notifications **586-592** are redisplayed. In accordance with the determination that the sixth movement of the sixth contact does not exceed the first threshold amount of movement in the first direction, the device forgoes displaying the plurality of previously received notifications.

Displaying a plurality of previously received notifications after displaying the first user interface without any missed notifications allows a user to recall missed notifications (e.g., even after providing input to clear all missed notifications). Enabling the user to recall the missed notifications makes the user-device interface more efficient and by allowing the user to view content received and/or generated by the device without needing to access multiple applications. Additionally, a user can provide input to clear notifications with the knowledge that the notification will be recoverable if the user subsequently wishes to view the notification content.

In some embodiments, while the first user interface is displayed without any missed notifications (e.g., after

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detecting that the criteria for dismissing all of the one or more missed notifications in the first scrollable arrangement have been met and adding the one or more missed notifications to the plurality of previously received notifications), the device detects (**732**) a seventh swipe gesture (e.g., as shown at FIGS. **5**CS-**5**CT), including detecting a seventh contact at a location on the touch-sensitive surface that corresponds to the location at which the first scrollable arrangement was previously displayed and detecting seventh movement of the seventh contact across the touch-sensitive surface in a second direction opposite the first direction (e.g., downward). In response to detecting the seventh swipe gesture, the device translates at least one object (e.g., an object **582** that displays a current time and/or date) displayed on the first user interface in the second direction in accordance with the seventh movement of the seventh contact. After translating the at least one object, the device detects lift-off of the seventh contact (e.g., as shown at FIG. **5**CU). In response to detecting liftoff of the seventh contact from the touch-sensitive surface, the device reverses the translation of the at least one object that have been made in accordance with the seventh movement of the seventh contact.

Providing visual feedback, such as a "rubber band effect" simulated by translating at least one object in accordance with movement of a contact and reversing the translation of the at least one object upon lift-off of the contact, enhances operability of the device by providing an intuitive indication to the user that the wake screen is responsive to input (such as a swipe input) to view notifications (e.g., even when the user is viewing a first user interface that does not include display of any missed notifications).

It should be understood that the particular order in which the operations in FIGS. **7**A-**7**E have been described is merely an example and is not intended to indicate that the described order is the only order in which the operations could be performed. One of ordinary skill in the art would recognize various ways to reorder the operations described herein. Additionally, it should be noted that details of other processes described herein with respect to other methods described herein (e.g., methods **600**, **800**, and **900**) are also applicable in an analogous manner to method **700** described above with respect to FIGS. **7**A-**7**E. For example, the contacts, gestures, user interface objects, tactile outputs, focus selectors, and animations described above with reference to method xxx optionally have one or more of the characteristics of the contacts, gestures, user interface objects, tactile outputs, focus selectors, and animations described herein with reference to other methods described herein (e.g., methods **600**, **800**, and **900**). For brevity, these details are not repeated here.

The operations described above with reference to FIGS. **7**A-**7**E are, optionally, implemented by components depicted in FIGS. **1**A-**1**B. For example, display operation **702**, detection operation **704**, and scrolling operation **706** are, optionally, implemented by event sorter **170**, event recognizer **180**, and event handler **190**. Event monitor **171** in event sorter **170** detects a contact on touch-sensitive display **112**, and event dispatcher module **174** delivers the event information to application **136-1**. A respective event recognizer **180** of application **136-1** compares the event information to respective event definitions **186**, and determines whether a first contact at a first location on the touch-sensitive surface (or whether rotation of the device) corresponds to a predefined event or sub-event, such as selection of an object on a user interface, or rotation of the device from one orientation to another. When a respective predefined event or sub-event is detected, event recognizer **180** activates an event handler **190** associated with the detection of the event or sub-event. Event handler **190** optionally uses or calls data updater **176** or object updater **177** to update the application internal state **192**. In some embodiments, event handler **190** accesses a respective GUI updater **178** to update what is displayed by the application. Similarly, it would be clear to a person having ordinary skill in the art how other processes can be implemented based on the components depicted in FIGS. **1**A-**1**B.

FIGS. **8**A-**8**C are flow diagrams illustrating method **800** of displaying updating information from an application using a floating banner in accordance with some embodiments. Method **800** is performed at an electronic device (e.g., device **300**, FIG. **3**, or portable multifunction device **100**, FIG. **1**A) with a display, a touch-sensitive surface, and one or more sensors to detect intensity of contacts with the touch-sensitive surface. In some embodiments, the display is a touch-screen display and the touch-sensitive surface is on or integrated with the display. In some embodiments, the display is separate from the touch-sensitive surface. Some operations in method **800** are, optionally, combined and/or the order of some operations is, optionally, changed.

As described below, method **800** provides an intuitive way to display updating information from an application in a floating banner. The method reduces the number, extent, and/or nature of the inputs from a user when accessing information that is displayed in the floating banner, thereby creating a more efficient human-machine interface. For battery-operated electronic devices, displaying updating information from an application in floating banner that is visible in various operating contexts allows the user to operate the device faster and more efficiently, which conserves power and increases the time between battery charges.

The device displays (**802**) a first user interface (e.g., an application user interface, a home screen user interface, a lock screen user interface, etc.) on the display. For example, in FIG. **5**DA, the device displays a map application user interface **5154**.

The device displays (**804**) a first user interface object overlaid on a first portion of the first user interface (e.g., the device displays a banner object, such as navigation banner **5160**, overlaid on a user interface of an application, such as map application user interface **5154**), where the banner object is initially stationary relative to the user interface of the application. In some embodiments, the first user interface object is displayed when a persistent banner display mode of an application is active. In some embodiments, persistent banner display modes include a navigation mode of a maps application, and the first user interface object is a banner that includes navigation information, such as text and/or an icon indicating information associated with a next step in a navigation sequence (e.g., navigation information includes navigation text **5178** and navigation direction image **5180**, as shown in FIG. **5**DT). In some embodiments, persistent banner display modes include a content playback mode of a media application, and the first user interface object is a banner that includes media playback information, such as text and/or an image that correspond to a playing content item and/or one or more playback controls (see, e.g., media banner **568** shown in FIG. **5**AO). In some embodiments, persistent banner display modes include a telephone call session of a telephone application, and the first user interface object is a banner that includes text with information about the call in progress, such as elapsed time and/or

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contact information. In some embodiments, the first user interface object is a notification.

While displaying the first user interface object overlaid on the first portion of the first user interface, the device detects (**806**) a first input (e.g., a downward swipe input from an upper edge of the display **112**, as shown at FIG. **5**DB) for displaying a cover sheet user interface **504**. In some embodiments, the cover sheet user interface **504** is also a wake screen user interface that is displayed when the device transitions from a screen-off state to a screen-on state. The cover sheet user interface **504** includes a first content object (e.g., one or more missed notifications, such as missed notifications **5164** and **5168** shown in FIG. **5**DD) and a second content object (e.g., a time-date object **582** that displays a current time and date) displayed on a background object (e.g., a cover sheet platter or substrate with a predefined background).

In response to detecting the first input for displaying the cover sheet user interface **504**, the device moves (**808**) the cover sheet user interface **504** across the display in a first direction (e.g., downward). For example, cover sheet user interface **504** slides down over map application user interface **5154**, as shown at FIGS. **5**DC-**5**DD. Moving the cover sheet user interface **504** across the display in a first direction includes moving the background object **5163** of the cover sheet user interface **504** across the display (e.g., to obscure an increasing portion of the first user interface without obscuring the first user interface object that is overlaid on the first user interface). In some embodiments, the background object **5163** of the cover sheet user interface slides onto the display in a z-layer that is located between the z-layer of the first user interface and the z-layer of the first user interface object.

Many electronic devices display user interface objects that have a layer order (i.e., a z-order or front-to-back order of the user interface objects). A user typically interacts with such objects by repositioning them on the display, and overlapping objects are displayed on the display in accordance with their front-to-back order (e.g., an object that is "in front" of another object is displayed where the two objects overlap). As used in the specification, a "layer order" is the front-to-back order of objects in a user interface (e.g., in an electronic document). Thus, if two objects overlap, the object that is higher in the layer order (e.g., the object that is "on top of" or "in front of") is displayed at any points where the two objects overlap, thereby partially obscuring the object that is lower in the layer order (e.g., the object that is "beneath" or "behind" or "in back of" the other object).

In accordance with a determination that the first user interface object has not reached a predefined threshold position relative to the cover sheet user interface (e.g., relative to a position between the first content object (e.g., missed notifications **5164** and/or **5168**) and the second content object (e.g., time/date object **582**) in the cover sheet user interface **504**), the device moves the first content object and the second content object (e.g., in unison) with the background object **5163** while maintaining a current position of the first user interface object (e.g., navigation banner **5160**) on the display (e.g., as shown in FIGS. **5**DC-**5**DD). In accordance with a determination that the first user interface object (e.g., navigation banner **5160**) has reached the predefined threshold position relative to the cover sheet user interface, the device moves the first user interface object (e.g., in unison) with the background object (e.g., as shown in FIGS. **5**DD-**5**DE). In some embodiments, the device also moves the first content object (e.g., missed notifications **5164** and **5168**), the second content object (e.g., time/date object **582**), and the first user interface object (e.g., navigation banner **5160**) in unison with the background object **5163**. For example, in FIG. **5**DD, the time/date object **582** catches the banner object **5160** on its way down and pushes the banner object downward with the time/date object.

Method **800** relates to combining display of a user interface object that is overlaid on an initial user interface (e.g., a home screen user interface) with a newly displayed user interface (e.g., a cover sheet user interface). Specifically, some of the objects on the newly displayed user interface move past the first user interface object, while other objects on the newly displayed user interface "catches" the first user interface object and pushes it to its final position on the newly displayed user interface. This heuristic brings attention to the first user interface object (e.g., a banner object) by moving or not moving the first user interface object with the background object depending on whether the first user interface object has reached a predefined threshold position relative to a cover sheet interface. Bringing attention to the first user interface object improves the user-device interface, e.g., by helping the user to understand the connection between the banner content and the application from which the banner content originated. Displaying the banner improves the operability of the device by allowing the user to view content from an application without needing to navigate to the application, reducing the number of inputs required from the user to obtain banner content (e.g., navigation information).

In some embodiments, moving the cover sheet user interface **504** across the display in the first direction includes (**810**), in accordance with a determination that the second content object (e.g., the time and date object **582**) has reached a first predefined location (e.g., the default position for the time and date on the display when the cover sheet is fully displayed) on the display, ceasing to move the second content object (e.g., the time and date **582**) and the first user interface object (e.g., the banner **5160**) and continuing to move the first content object (the one or more missed notifications) in the first direction (e.g., to make room for the banner object **5160** between the top missed notifications (e.g., notifications **5164** and **5168**) and the current time and date object **582**. For example, as cover sheet user interface **504** slides down in FIGS. **5**DC-**5**DF, time/date object **582** and the navigation banner **5160** stop moving in FIG. **5**DE, while missed notifications **5164** and **5168** continue to move downward in FIGS. **5**DE-**5**DF.

Ceasing to move some of the content object while continuing to move other content objects on the cover sheet user interface allows the cover sheet user interface to be rearranged to accommodate the first user interface object (e.g., the banner), while providing visual continuity to the user, thereby reducing user mistakes when operating the device and enhance the operability of the device.

In some embodiments, the device ceases (**812**) to continue to move the first content object (e.g., the one or more missed notifications) in the first direction in accordance with a determination that the first content object has reached a second predefined location on the display (e.g., ceasing to move the missed notifications once the missed notifications have completely moved past the banner object).

Continuing to move the content objects on the cover sheet user interface until they reach their final locations allows the cover sheet user interface to be rearranged to accommodate the first user interface object (e.g., the banner), while providing visual continuity to the user, thereby reducing user mistakes when operating the device and enhance the operability of the device.

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In some embodiments, the device transitions (**814**) from a screen-on state (as shown in FIG. **5**DY) to a screen-off state (as shown in FIG. **5**DZ) in accordance with a determination that display shutoff criteria are met (e.g., a power button is pressed or a period of user inactivity is detected). While the display is in the screen-off state, the device displays the first user interface object (e.g., the banner **5160**) on a dark screen corresponding to the screen-off state (e.g., in accordance with a determination that an application associated with the first user interface object is in a persistent banner display mode, such as a navigation mode of a map application, a playback mode of a media application, or a call mode of a phone application). For example, in FIG. **5**DZ, navigation banner **5160** is displayed on an otherwise dark display **112**.

Displaying a first user interface object (e.g., a banner) when the device is in a screen-off state (e.g., displaying the first user interface object on an otherwise dark screen or on a screen that displays only one or more received notifications in addition to the first user interface object) provides the user with high priority information (e.g., navigation information) while the display forgoes displaying other content. Displaying the first user interface object (and/or the one or more missed notifications) while forgoing display of other content makes the user-device interface more efficient by reducing the amount of power required for the display. Additionally, displaying the first user interface object (and/or the one or more missed notifications) while forgoing display of other content eliminates the need for the user to wake the display from a screen-off state to display the first user interface object.

In some embodiments, while the display is in the screen-off state and the first user interface object is displayed on the display, the device receives (**816**) one or more notifications and, in response to receiving the one or more notifications, the device displays the first user interface object (e.g., the banner) and a third content object (e.g., the one or more notifications) on the first user interface (e.g., the one or more missed notifications are displayed under the first user interface object). For example, in FIG. **5**EA, the device displays banner **5160** and missed notification **5186** on otherwise dark display **112**. In some embodiments, while the display is in the screen-off state, the device detects a notification event and displays a notification object (e.g., for a new notification) under the banner. In some embodiments, one or more previously received notifications are displayed on the display (e.g., under the banner and/or above the new notification) while the display is in the screen-off state.

Displaying one or more received notifications when the device is in a screen-off state (e.g., displaying the one or more received notifications on an otherwise dark screen or on a screen that displays only a first user interface object in addition to the one or more received notifications) provides the user with high priority information (e.g., navigation information) while the display forgoes displaying other content. Displaying the one or more received notifications (and/or the first user interface object) while forgoing display of other content makes the user-device interface more efficient by reducing the amount of power required for the display. Additionally, displaying the one or more missed notifications (and/or the first user interface object) while forgoing display of other content eliminates the need for the user to wake the display from a screen-off state to display the one or more missed notifications.

In some embodiments, the device transitions (**818**) the device from a screen-off state to a screen-on state (e.g., as shown in FIGS. **5**A1-**5**A3 and **5**EA-**5**EB) in accordance with a determination that display-waking criteria are met (e.g., a power button is pressed or the device orientation is changed in a certain way (e.g., picked up by a user), or a notification event is detected). In response to transitioning the device from the screen-off state to the screen-on state, the device displays the first user interface object (and no other objects) on a dark screen that corresponds to the display-off state. For example, in FIG. **5**DZ, navigation banner **5160** is displayed on an otherwise dark display **112**.

Displaying a first user interface object (e.g., a banner) when the device is in a screen-off state (e.g., displaying the first user interface object on an otherwise dark screen or on a screen that displays only one or more received notifications in addition to the first user interface object) provides the user with high priority information (e.g., navigation information) while the display forgoes displaying other content. Displaying the first user interface object (and/or the one or more missed notifications) while forgoing display of other content makes the user-device interface more efficient by reducing the amount of power required for the display. Additionally, displaying the first user interface object (and/or the one or more missed notifications) while forgoing display of other content eliminates the need for the user to wake the display from a screen-off state to display the first user interface object.

In some embodiments, while the cover sheet interface is displayed, the device detects (**820**) a third input (e.g., as shown at FIGS. **5**DQ-**5**DR) for dismissing the cover sheet user interface **504**. The third input includes a swipe gesture by a contact on the touch-sensitive surface (e.g., a upward swipe that started from the bottom edge of the touch-screen). In response to detecting the third input for dismissing the cover sheet user interface, the device ceases to display the cover sheet user interface **504**, maintains display of the first user interface object (e.g., navigation banner **5160**), and displays a home screen user interface **522**. The first user interface object is overlaid on the home screen user interface. For example, in response to detecting an upward swipe gesture from the bottom edge of the touch-screen (e.g., as shown in FIGS. **5**DQ-**5**DR), the cover sheet user interface **504** slides upward to reveal the home screen interface **522** underneath, while the first user interface (e.g., navigation banner **5160**) remains stationary in a display layer above the cover sheet user interface **504**, and appears overlaid on the home screen user interface **522** after the cover sheet user interface **504** is completely removed from view. In some embodiments, instead of the home screen user interface **522**, a user interface of an application is displayed when the input for dismissing the cover sheet user interface **504** is detected, and the first user interface object is overlaid on the user interface of the application.

Displaying the first user interface object (e.g., a banner, such as navigation banner **5160**) overlaid on the home screen makes the user-device interface more efficient by allowing the user to view the first user interface object after accessing the home screen without needing to navigate from the home screen to the application that generated the content of the first user interface object.

In some embodiments, while displaying the first user interface object overlaid on the home screen user interface (or a user interface of an application), the device detects (**822**) an input for minimizing the first user interface object (e.g., a upward swipe gesture on the banner, as shown at FIG. **5**DT). In response to detecting the input for minimizing the first user interface object, the device transitions the first user interface object (e.g., banner mode of navigation banner **5160**, as shown in FIG. **5**DT) into a second user interface

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object (e.g., a "pill" that has a smaller area than the first user interface object, as shown at **5160** FIG. **5**DW). The first user interface object has a first size and the second user interface object has a second size that is smaller than the first size. In some embodiments, the second user interface object pulsates or blinks (e.g., at least a portion of the pill, such as the background of the pill, periodically changes color and/or size over time) to indicate that an application mode or process associated with the banner object is still active. In some embodiments, the second user interface object displays at least a portion of information displayed by the first user interface object. For example, in FIG. **5**DT, navigation banner **5160** in banner mode displays navigation direction arrow **5180**, which is also displayed in the pill mode of navigation banner **5160** in FIG. **5**DW. In some embodiments, the device displays an animated transition showing the banner shrinking and morphing into the "pill" while moving and settling into a upper corner of the touch-screen (e.g., as shown at FIGS. **5**DT-**5**DW). In some embodiments, the second user interface object (e.g., navigation banner **5160** in pill form) displays media playback information (e.g., a play/pause toggle control). In some embodiments, the second user interface object displays information (e.g., a turn icon) associated with a navigation instruction.

Transitioning the first user interface object into a second user interface object in response to detecting input for minimizing the first user interface object makes the user-device interface more efficient by allowing the user to simultaneously view content of the home screen user interface that would otherwise be covered by the first user interface object and information from the first user interface object that is contained in the second user interface object (e.g., without needing to navigate from the home screen to the application that generated the content of the first user interface object).

In some embodiments, while the second user interface object is displayed, the device determines (**824**) that the display shutoff criteria are met. In response to determining that the display shutoff criteria are met, the device transitions the device from the screen-on state to a screen-off state, transitions the second user interface object into the first user interface object; and displays the first user interface object overlaid a dark screen corresponding to the screen-off state (e.g., a direct transition from FIG. **5**DX to FIG. **5**DZ).

Transitioning the second user interface object into a first user interface object in response to determining that display shutoff criteria are met provides the user with a larger object for increased visibility when the device is likely to be distant from the user (e.g., on a table or in a car rather than in the user's hand). Providing the user with a larger object for increased visibility reduces power usage and improves battery life by providing information without requiring the user to wake the device and/or navigate to an application that generated the content of the first user interface object.

In some embodiments, while the second user interface object is displayed, the device detects (**826**) an input for activating the second user interface object (e.g., a tap input on the second user interface object). For example, in FIG. **5**DX, an input is detected at a location corresponding to navigation banner **5160** in pill form, as indicated by focus selector **5160** in FIG. **5**DX. In response to detecting the input for activating the second user interface object, the device displays an application user interface of an application that corresponds to the second user interface object. For example, in response to the input described with regard to FIG. **5**DX, map application **5154** is displayed, as shown in FIG. **5**DY.

Displaying an application user interface of an application that corresponds to the second user interface object in response to detecting input for activating the second user interface object provides the user with direct access to an application that corresponds to the second user interface object (e.g., the user can access the application that corresponds to the second user interface object from any page of a multi-page home screen without needing to provide input to navigate to an application launch icon on a different page of the home screen, within a folder on the home screen, etc.). This makes the user-device interface more efficient and enhances the operability of the device by reducing the number of inputs required to access an application user interface of an application that corresponds to the second user interface object.

In some embodiments, while the first user interface object is displayed (e.g., overlaid over the first user interface or overlaid over the cover sheet user interface **504**), the device detects (**828**) an input that activates the first user interface object (e.g., a tap input on the first user interface object). For example, in FIG. **5**DH, an input, as indicated by focus selector **5168**, is detected at a location that corresponds to the navigation object **5160** displayed overlaid over cover sheet user interface **504**. In response to detecting the input that activates the first user interface object, the device displays the application user interface of the application that corresponds to the information displayed in the first user interface object. For example, in response to the input, maps application **5154** is displayed, as shown in FIG. **5**DI.

In some embodiments, the application that corresponds to the second user interface object is an application that also corresponds to the first user interface object.

Displaying an application user interface of an application that corresponds to the first user interface object in response to detecting input for activating the first user interface object provides the user with direct access to an application that corresponds to the first user interface object (e.g., the user can access the application that corresponds to the first user interface object directly from the first user interface or the cover sheet user interface without providing input to navigate to the home screen.) This makes the user-device interface more efficient and enhances the operability of the device by reducing the number of inputs required to access an application user interface of an application that corresponds to the first user interface object.

It should be understood that the particular order in which the operations in FIGS. **8**A-**8**C have been described is merely an example and is not intended to indicate that the described order is the only order in which the operations could be performed. One of ordinary skill in the art would recognize various ways to reorder the operations described herein. Additionally, it should be noted that details of other processes described herein with respect to other methods described herein (e.g., **600**, **700**, and **900**) are also applicable in an analogous manner to method **800** described above with respect to FIGS. **8**A-**8**C. For example, the contacts, gestures, user interface objects, focus selectors, animations described above with reference to method xxx optionally have one or more of the characteristics of the contacts, gestures, user interface objects, focus selectors, animations described herein with reference to other methods described herein (e.g., methods **600**, **700**, and **900**). For brevity, these details are not repeated here.

The operations described above with reference to FIGS. **8**A-**8**C are, optionally, implemented by components depicted in FIGS. **1**A-**1**B. For example, display operation **802**, detection operation **806**, and object moving operation

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808 are, optionally, implemented by event sorter 170, event recognizer 180, and event handler 190. Event monitor 171 in event sorter 170 detects a contact on touch-sensitive display 112, and event dispatcher module 174 delivers the event information to application 136-1. A respective event recognizer 180 of application 136-1 compares the event information to respective event definitions 186, and determines whether a first contact at a first location on the touch-sensitive surface (or whether rotation of the device) corresponds to a predefined event or sub-event, such as selection of an object on a user interface, or rotation of the device from one orientation to another. When a respective predefined event or sub-event is detected, event recognizer 180 activates an event handler 190 associated with the detection of the event or sub-event. Event handler 190 optionally uses or calls data updater 176 or object updater 177 to update the application internal state 192. In some embodiments, event handler 190 accesses a respective GUI updater 178 to update what is displayed by the application. Similarly, it would be clear to a person having ordinary skill in the art how other processes can be implemented based on the components depicted in FIGS. 1A-1B.

FIGS. 9A-9C are flow diagrams illustrating method 900 of navigation using a cover sheet, in accordance with some embodiments. Method 900 is performed at an electronic device (e.g., device 300, FIG. 3, or portable multifunction device 100, FIG. 1A) with a display, a touch-sensitive surface, and one or more sensors to detect intensity of contacts with the touch-sensitive surface. In some embodiments, the display is a touch-screen display and the touch-sensitive surface is on or integrated with the display. In some embodiments, the display is separate from the touch-sensitive surface. Some operations in method 800 are, optionally, combined and/or the order of some operations is, optionally, changed.

As described below, method 900 provides an intuitive way to navigate using a cover sheet. The method reduces the number, extent, and/or nature of the inputs from a user for accessing various controls that are available from user interfaces that are accessible via input provided at the cover sheet, thereby creating a more efficient human-machine interface. For battery-operated electronic devices, enabling a user to navigate using a cover sheet faster and more efficiently conserves power and increases the time between battery charges.

While the device is in a screen-off state, the device detects (902) a first input for waking the device from the screen-off state to a screen-on state (e.g., the device detects a state change indicating that the device has been picked up, as described with regard to FIGS. 5EC1-5EC4, or the device detects an input at a control, such as push button 106, for waking the device).

In response to detecting the first input for waking the device from the screen-off state to the screen-on state, the device transitions (904) the device from the screen-off state to the screen-on state (e.g., as shown at FIGS. 5EC2-5EC3), and displays a wake screen user interface 504 on the display 112. In some embodiments, the wake screen user interface 504 is redisplayed as a cover sheet user interface that covers an existing user interface in response to a cover sheet call-up command, and re-reveals the existing user interface that was covered by the cover sheet user interface in response to a cover-sheet dismissal command.

While displaying the wake screen user interface, the device detects (906) a first swipe gesture on the touch-sensitive surface 112 (e.g., a swipe gesture as shown at FIGS. 5EK-5EL or a swipe gesture as shown at FIGS. 5EQ-5ER), including detecting a first contact on the touch-sensitive surface and detecting movement of the first contact across the touch-sensitive surface.

In response to detecting the first swipe gesture, the device (908) ceases to display the wake screen user interface 504 and displays a first user interface. In accordance with a determination that the first swipe gesture is in a first direction (e.g., rightward, as shown in FIGS. 5EK-5EL), the displayed first user interface is a mini-application-object user interface 5140. The mini-application-object user interface 5140 includes one or more mini-application objects (e.g., mini-application objects 583, 585, 587, and 589) that each provide a subset of functions of a corresponding application without launching the corresponding application. In accordance with a determination that the first swipe gesture is in a second direction (e.g., leftward, as shown in FIGS. 5EQ-5ER), that is opposite the first direction, the displayed first user interface is a control panel user interface 5138. The control panel user interface 5138 includes one or more device controls (e.g., flashlight control 5190 and camera control 5192) for controlling one or more device functions of the device.

The wake screen user interface 504 has a fixed positional relationship relative to the mini-application-object screen 5140 and the control panel user interface 5138. Allowing the user to use directional gestures to navigate to either the mini-application-object screen or the control panel user interface enhances the operability of the device (e.g., by reducing the number of controls displayed on a wake screen user interface) and makes the user-device interface more efficient (e.g., by reducing visual clutter and reducing user mistakes due to the visual clutter), which, additionally, improves the battery life of the device.

In some embodiments, while the wake screen user interface 504 is displayed, the device displays (910) one or more notifications (e.g., notification 5188, as shown in FIG. 5ED) on the wake screen user interface. The device detects a second input for transitioning the device from an unauthenticated state to an authenticated state (e.g., as described with regard to FIGS. 5FN-5FQ). In response to detecting the second input, the device displays, on the wake screen user interface 504, restricted notification information corresponding to at least one of the one or more notifications. For example, as shown in FIG. 5FT, an additional notification 5234 is displayed and notification 5188 displays text 5234 and image 5236 that were not displayed prior to authentication. In some embodiments, restricted notification information is, e.g., notification content and/or other notification information that is subject to restricted access by a setting, such as a privacy and/or security setting of the device. In some embodiments, the restricted notification information includes one or more notifications that are not displayed when the device is an unauthenticated state, such as notifications from one or more applications with settings that restrict display of notifications when the device is in an unauthenticated state. In some embodiments, the restricted notification information includes contextual information, such as earlier communication content in a notification and/or calendar information for a range of time that corresponds to a time associated with a calendar appointment notification. In some embodiments, when the device is in the unlocked mode of the display-on state, the second user interface includes longer versions of the notifications that are shown in the second user interface when the device is in the locked mode of the display-on state. The longer version of a notification includes expanded notification content that, for example, includes all of the content in the short version

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or standard version of the notification, and some additional content that is not included in the short version or standard version of the notification. In some embodiments, the expanded notification content includes more complete versions of the notification content shown in the short version of the notification. In some embodiments, the expanded notification content includes images, interactive controls, and/or selectable options for performing actions with respect to the notification, that are not included in the short versions of the notification.

Displaying restricted notification information in response to detecting a second input for transitioning the device from an unauthenticated state to an authenticated state allows the device to provide a user with an indication that a notification was received without disclosing full notification information to unauthenticated individuals able to view the device display. This makes the user-device interface more efficient and enhances the operability of the device by allowing a user to view information about incoming notifications without needing to wake the device (e.g., without jeopardizing the privacy of the notification content).

In some embodiments, while displaying the first user interface in response to the first swipe gesture, the device detects (**912**) a second swipe gesture (e.g., as shown in FIG. **5**FN and or as shown in FIG. **5**GC) in a third direction (e.g., upward, such as upward from a location proximate to the lower edge of the display) that is perpendicular to the first direction and the second direction. In accordance with a determination that the device is in an unauthenticated state, the device displays an authentication user interface **518**, as shown at FIG. **5**FO. In accordance with a determination that the device is in an authenticated state, the device displays a second user interface. The second user interface is a last displayed user interface that was displayed prior to the display of the wake screen user interface (e.g., either a home screen user interface or a user interface of an application). For example, FIG. **5**GC is displayed when home screen user interface **522** was the last displayed user interface before wake screen user interface **504** was displayed, so in response to the swipe input illustrated at FIG. **5**GC, home screen user interface **522** is redisplayed, as shown in FIG. **5**GD. In some embodiments if the home screen user interface **522** was the last displayed user interface before the wake screen user interface **504** was displayed, then a swipe up from the control center user interface **5138** or mini application user interface **5140** reveals the home screen user interface **522** and if an application user interface (e.g., map application user interface **5154**) was the last displayed user interface before the wake screen user interface **504** was displayed, then the swipe up reveals the application user interface. In some embodiments, the wake screen user interface **504** is displayed immediately upon waking the device, before authentication is made, and when authentication fails. In some embodiments, an indicator (e.g., an open lock icon and/or text indicating an unlocked state) is displayed briefly on the wake screen upon authentication. In some embodiments, an indicator changes state (e.g., a lock icon changes state from a closed lock icon to an open lock icon) in accordance with a determination that authentication has been successfully performed.

Redisplaying a last displayed user interface after dismissing the first user interface (e.g., the wake screen user interface/cover sheet user interface) enhances the operability of the device by reducing the number of steps needed to navigate back to the previous user interface, and the consistent behavior also reduces user mistakes which makes the user-device interface more efficient.

In some embodiments, in accordance with a determination that the second user interface is a home screen user interface **522**, the device displays (**914**), in the home screen user interface, an object (e.g., navigation banner **5160**) that displays content from a first active application (e.g., an application that has updating content, such as an application that last had focus and includes updating content, or an application that has a highest priority among multiple applications that includes updating content). In accordance with a determination that a state of the first active application has changed, the device updates the content displayed in the object in accordance with the changed state of the first active application. For example, navigation content shown in navigation object **5160** (shown in pill form in FIGS. **5**GM and **5**GU) updates (e.g., in accordance with a determined change in location of the device). In some embodiments, navigation content shown in navigation object **5160** (shown in banner form in FIGS. **5**GP-**5**GQ) updates (e.g., in accordance with a determined change in location of the device). In some embodiments, the object also includes a region **5182** that displays a current time. In some embodiments, the object on the home screen user interface **522** is a "pill" (e.g., an object having a pill shape). In some embodiments, the object on the home screen user interface **522** is displayed in a region of the device display that is beyond a main display area (e.g., a rectangular display area) of the display. In some embodiments, the object displays live directions from a maps application operating in navigation mode. In some embodiments, the object displays live playback information from a media player application operating in playback mode. In some embodiments, the object displays live recording information from a screen recording or video recording application operating in recording mode. In some embodiments, the object corresponding to the first active application is also displayed when a user interface of a second active application distinct from the first active application is the currently displayed user interface.

Updating the content displayed in an object in the home screen user interface in accordance with a changed state of an active application provides information to a user from an active application without displaying the full application user interface. This makes the user-device interface more efficient by allowing a user to determine that an application is operating in an active mode without providing input to navigate from the home screen to the application user interface.

In some embodiments, while displaying the second user interface in response to the second swipe gesture, the device detects (**916**) a third swipe gesture (e.g., as shown at FIG. **5**FR) in a fourth direction (e.g., downward) that is opposite the third direction; and in response to detecting the third swipe gesture in the fourth direction, the device ceases to display the second user interface (e.g., home screen user interface **522**) and redisplays the wake screen user interface **504** (e.g., as shown in FIGS. **5**FR-**5**FT).

In some embodiments, the control center user interface **5138** is displayed in response to a left swipe on the wake screen user interface **504** (e.g., as shown at FIGS. **5**EQ-**5**ES) both when the wake screen user interface **504** is first displayed on waking the device, and when the wake screen user interface **504** is subsequently redisplayed (e.g., as a cover sheet layer over an application user interface or over a home screen user interface). In some embodiments, the mini-application-object user interface **5140** is displayed in response to a right swipe on the wake screen user interface **504** (e.g., as shown at FIGS. **5**EK-**5**EM) both when the wake screen user interface **504** is first displayed, and when the

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wake screen user interface **504** is subsequently redisplayed. In some embodiments, as the third swipe gesture in the fourth direction is received, the object on the home screen (the "pill") morphs into a second affordance (a floating banner) that is displayed on the wake screen user interface **504** (e.g., as shown by navigation banner **5160** in FIGS. **5**GM-**5**GP). The morphing includes, e.g., a change in the size of the object, addition of content to the object (e.g., a direction icon **5180** and/or text), and/or removal of content (e.g., a time **5182**) from the object.

Redisplaying the first user interface from any user interface (e.g., the home screen user interface or an application user interface) using the same gesture enhances the operability of the device (e.g., by reducing the number of steps needed to navigate to the first user interface), and makes the user-device interface more efficient (e.g., by providing a consistent way to bring about the first user interface and thereby reducing user mistakes).

In some embodiments, the wake screen user interface is displayed (**918**) with an affordance (e.g., a navigation banner **5160**) that displays content from a second active application (e.g., an application, that is the same as the first active application or distinct from the first active application, that has updating content (such as an application that last had focus and includes updating content, or an application that has a highest priority among multiple applications that includes updating content)). For example, navigation banner **5160** shown in FIG. **5**GP-**5**GQ includes updating content from maps application **5154**. While displaying the wake screen user interface **504** with the affordance, in accordance with a determination that a state of the second active application has changed (e.g., a location of the device has changed, requiring an updated navigation instruction), the device updates the content displayed in the affordance in accordance with the changed state of the second active application (as indicated by the changed content from FIG. **5**GP to FIG. **5**GQ). For example, an affordance that corresponds to a maps application includes navigation information (such as next turn information) that updates in real time, or an affordance that corresponds to a media player includes media playback information that updates in real time. In some embodiments, the wake screen user interface **504** includes an intelligently selected app icon, e.g., a hand-off application. In some embodiments, the first affordance is displayed in addition to one or more additional objects on the wake screen (e.g., in addition to time indicator, notification affordances, and/or device control affordances). In some embodiments, the content from the active application displayed in the object (e.g., the pill object) on the home screen user interface is a miniaturized version of the content displayed in the first affordance on the wake screen user interface. For example, in comparison with content displayed in the first affordance on the wake screen, a miniaturized version of the content includes a reduced amount of text, text with reduced size, no text, a reduced number of icons, icons with reduced size, and/or no icons. In some embodiments, content displayed in the first affordance on the wake screen includes navigation instruction text and a navigation instruction icon having a first size, and the miniaturized version of the content includes no navigation instruction text and a navigation instruction icon having a second size that is smaller than the first size.

Updating the content displayed in the affordance displayed in the wake screen user interface in accordance with a changed state of an active application provides information to a user from an active application without displaying the full application user interface. This makes the user-device interface more efficient by allowing a user to receive information from the application without providing input to navigate from the wake screen user interface to the application user interface.

In some embodiments, the wake screen user interface **504** includes (**920**) a first control (e.g., flashlight control **5190** and/or camera control **5192**) of the one or more device controls of the control panel user interface **5138** (e.g., as shown in FIG. **5**ED and **5**EW). In some embodiments, the first control is, e.g., a flashlight control **5190** that corresponds to the flashlight control **5190** of the control panel user interface **5138**. When operated, the flashlight control operates a device flashlight. In some embodiments, the affordance is, a camera control **5192** or another pre-selected (e.g., user-selected) control. In some embodiments, the wake screen user interface **504** includes one or more regions (e.g., lower left and lower right corners) that display affordances for pre-selected apps (e.g., a flashlight control icon **5190** and/or a camera application control icon **5192**). In some embodiments, the wake screen user interface **504** includes at least one control affordance that does not correspond to a device control of the control panel user interface.

Providing controls from the control panel user interface on the wake screen user interface allows the user to access the same control functions from multiple locations, and thereby making the user-device interface more efficient (e.g., by reducing the number of steps needed to navigate to the control).

In some embodiments, the first control requires (**922**) a first type of input to activate a first function while displayed on the wake screen user interface and the first control requires a second type of input to activate the first function while displayed on the control panel user interface. In some embodiments, the first control requires different inputs for activating the same function (e.g., a press input is required to toggle the flashlight control **5190** on the wake screen user interface **504**, as described with regard to FIGS. **5**ED-**5**EJ, while a tap input is required to toggle the flashlight control **5190** in the control panel user interface **5138**, as described with regard to FIGS. **5**ES-**5**EW. In some embodiments, a plurality of pre-selected affordances are displayed on the wake screen. In some embodiments, the pre-selected affordances on the wake screen are user-customizable.

Requiring a different input to activate a function from the wake screen than the input that is required to activate the same function from the control center prevents accidental operation of the function (e.g., operation of the flashlight) when the phone wakes at a time that the user does not intend to operate the phone. This saves battery life (e.g., by not using battery to operate the flashlight when the flashlight is not needed).

In some embodiments, the first control (e.g., camera control **5192**) is also displayed on the home screen user interface **522** (**924**), and a press input directed to the first control while displayed on the home screen user interface causes display of a plurality of selectable options (e.g., as shown in menu **5220**), and a press input directed to the first control while displayed on the wake screen user interface does not cause display of the plurality of selectable options.

Displaying a plurality of selectable options in response to press input at control displayed on the home screen user interface and not displaying the plurality of selectable options when a press input is received at the same control displayed on the wake screen user interface prevents accidental access to functions among the plurality of selectable options (e.g., taking a photo) when the phone wakes at a time that the user does not intend to operate the phone. This saves

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battery life (e.g., by not using battery to operate the camera when the camera is not needed).

In some embodiments, the wake screen has a plurality of luminosity display modes (e.g., bright mode, as shown in FIG. **5**GV, and dark mode, as shown in FIG. **5**GW) that are applied to one or more objects (e.g., notifications **5160**, **5188**, **5234**, and other platters and/or banners, such as navigation banner **5160**) displayed on the wake screen user interface **504**. In some embodiments, the device determines a luminosity of the background (e.g., by performing image analysis on a background image to determine a luminosity value. The background image of the wake screen is, e.g., e a default background image or a user-selected background image). The luminosity display mode switches based on the luminosity of the background. For example, a color of at least a portion of an area of one or more objects (e.g., a border around the object, a background of the object, text of the object, and/or an image displayed in the object) is changed when a luminosity mode changes (e.g., as described with regard to FIGS. **5**GV-**5**GW). The change in color causes the object to have a greater degree of contrast with the background image to increase the visibility of the object relative to the background image.

In some embodiments, while displaying the wake screen user interface, the device displays (**926**) a first object (e.g., a time-date indicator **582**) at a first position on the display **112** (e.g., the center of the first object is aligned with the horizontal symmetric center line of the display **112**). In accordance with the determination that the first swipe gesture is in the first direction (e.g., as shown in FIGS. **5**EK-**5**EL, the device displays the first object on the first user interface at a second position (e.g., as shown in FIG. **5**EM) that is shifted in the first direction relative to the first position on the display). When the first swipe is a right swipe, as shown in FIGS. **5**EK-**5**EL, the time indicator **582** is displayed on the right side of the mini-application-object user interface **5140** (e.g., in FIG. **5**EM) to provide a visual indication of the input needed (a swipe to the left) to return to the wake screen. In accordance with the determination that the first swipe gesture is in the second direction (e.g., as shown at FIGS. **5**EQ-**5**ER), the device displays the at least one object is at a third position (e.g., as shown in FIG. **5**ES) that is shifted in the second direction relative to the first position on the display (e.g., when the first swipe is a left swipe, the time indicator **582** is displayed on the left side of the control panel user interface **5138** to provide a visual indication of the input needed (a swipe to the right) to return to the wake screen).

Shifting a position of a first object (e.g., a time-date indicator) in response to swipe gesture input provides an indication of a location of a current user interface relative to the wake screen user interface. Providing an indication of a location of a current user interface relative to the wake screen user interface reduces the number of inputs needed to return to the wake screen user interface by reducing the need for a user (e.g., a user that is new to the interface arrangement) to experimentally swipe in order to recall the location of a desired user interface relative to a current user interface.

It should be understood that the particular order in which the operations in FIGS. **9**A-**9**C have been described is merely an example and is not intended to indicate that the described order is the only order in which the operations could be performed. One of ordinary skill in the art would recognize various ways to reorder the operations described herein. Additionally, it should be noted that details of other processes described herein with respect to other methods described herein (e.g., methods **600**, **700**, and **800**) are also applicable in an analogous manner to method **900** described above with respect to FIGS. **9**A-**9**C. For example, the contacts, gestures, user interface objects, intensity thresholds, focus selectors, and animations described above with reference to method xxx optionally have one or more of the characteristics of the contacts, gestures, user interface objects, intensity thresholds, focus selectors, and animations described herein with reference to other methods described herein (e.g., methods **600**, **700**, and **800**). For brevity, these details are not repeated here.

The operations described above with reference to FIGS. **9**A-**9**C are, optionally, implemented by components depicted in FIGS. **1**A-**1**B. For example, detection operation **902**, transitioning operation **904**, and displaying operation **908** are, optionally, implemented by event sorter **170**, event recognizer **180**, and event handler **190**. Event monitor **171** in event sorter **170** detects a contact on touch-sensitive display **112**, and event dispatcher module **174** delivers the event information to application **136-1**. A respective event recognizer **180** of application **136-1** compares the event information to respective event definitions **186**, and determines whether a first contact at a first location on the touch-sensitive surface (or whether rotation of the device) corresponds to a predefined event or sub-event, such as selection of an object on a user interface, or rotation of the device from one orientation to another. When a respective predefined event or sub-event is detected, event recognizer **180** activates an event handler **190** associated with the detection of the event or sub-event. Event handler **190** optionally uses or calls data updater **176** or object updater **177** to update the application internal state **192**. In some embodiments, event handler **190** accesses a respective GUI updater **178** to update what is displayed by the application. Similarly, it would be clear to a person having ordinary skill in the art how other processes can be implemented based on the components depicted in FIGS. **1**A-**1**B.

The foregoing description, for purpose of explanation, has been described with reference to specific embodiments. However, the illustrative discussions above are not intended to be exhaustive or to limit the invention to the precise forms disclosed. Many modifications and variations are possible in view of the above teachings. The embodiments were chosen and described in order to best explain the principles of the invention and its practical applications, to thereby enable others skilled in the art to best use the invention and various described embodiments with various modifications as are suited to the particular use contemplated.

What is claimed is:

1. A method, comprising:

at computer system that is in communication with a display generation component and one or more input devices:

while the computer system is in a power saving state, detecting an input that meets display-waking criteria;

in response to detecting the input that meets the display-waking criteria, displaying, via the display generation component, a wake screen user interface;

while displaying the wake screen user interface, detecting a first input that is directed to a portion of the wake screen user interface and includes first movement; and

in response to detecting the first input that is directed to the portion of the wake screen user interface:

in accordance with a determination that the first input meets first criteria, wherein the first criteria require the first movement to be in a first direction in order for the first criteria to be met:

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displaying of a home screen user interface that is different from the wake screen user interface, wherein the home screen user interface includes a plurality of application icons corresponding to different applications, and wherein a respective application icon of the plurality of application icons, when selected, causes display of an application corresponding to the respective application icon; and

in accordance with a determination that the first input meets second criteria different from the first criteria, wherein the second criteria require the first movement to be in a second direction that is different from the first direction in order for the second criteria to be met:

displaying a widget screen user interface that is different from the wake screen user interface and the home screen user interface, wherein the widget screen user interface includes a plurality of user interface objects corresponding to different applications, wherein a respective user interface object of the plurality of user interface objects contains application content from an application corresponding to the respective user interface object, and when selected, causes display of an application corresponding to the respective user interface object.

2. The method of claim **1**, wherein the wake screen user interface is a user interface that has a first state that corresponds to an authenticated state of the computer system and a second state that corresponds to an unauthenticated state of the computer system.

3. The method of claim **1**, including:

while displaying the widget screen user interface, detecting a second input that is directed to a portion of the widget screen user interface and includes second movement; and

in response to detecting the second input that is directed to the portion of the widget screen user interface:

in accordance with a determination that the second input meets third criteria, wherein the third criteria require the second movement to be in the first direction in order for the second criteria to be met, displaying the home screen user interface.

4. The method of claim **3**, including:

while the home screen user interface is displayed in response to detection of the second input, detecting a third input that is directed to a portion of the home screen user interface and includes third movement; and

in response to detecting the third input that is directed to the portion of the home screen user interface:

in accordance with a determination that the third input meets fourth criteria, wherein the fourth criteria require the third movement to be in a third direction that is different from the first direction and the second direction in order for the fourth criteria to be met, redisplaying the widget screen user interface.

5. The method of claim **3**, including:

while the home screen user interface is displayed in response to detection of the second input, detecting a fourth input that is directed to a portion of the home screen user interface and includes fourth movement; and

in response to detecting the fourth input that is directed to the portion of the home screen user interface:

in accordance with a determination that the fourth input meets fifth criteria, wherein the fifth criteria require the fourth movement to be in a third direction that is different from the first direction and the second direction in order for the fifth criteria to be met, redisplaying the wake screen user interface.

6. The method of claim **1**, including:

while the home screen user interface is displayed in response to detection of the first input, detecting a fifth input that is directed to a portion of the home screen user interface and includes fifth movement; and

in response to detecting the fifth input that is directed to the portion of the home screen user interface:

in accordance with a determination that the fifth input meets sixth criteria, wherein the sixth criteria require the fifth movement to be in a fourth direction that is different from the first direction and the second direction in order for the sixth criteria to be met, redisplaying the wake screen user interface.

7. The method of claim **1**, including:

in response to detecting the first input that is directed to the portion of the wake screen user interface:

in accordance with a determination that the first input meets seventh criteria, wherein the seventh criteria require the first movement to be in a fifth direction that is different from the first direction and the second direction in order for the seventh criteria to be met:

displaying of a control panel user interface that is different from the wake screen user interface and the widget screen user interface, wherein the control panel user interface includes a plurality of controls for controlling one or more device functions of the computer system.

8. The method of claim **7**, including:

while the control panel user interface is displayed in response to detection of the first input, detecting a sixth input that is directed to a portion of the control panel user interface and includes sixth movement; and

in response to detecting the sixth input that is directed to the portion of the control panel user interface:

in accordance with a determination that the sixth input meets eighth criteria, wherein the eighth criteria require the sixth movement to be in a sixth direction (e.g., rightward swipe) that is opposite the fifth direction in order for the eighth criteria to be met, redisplaying the wake screen user interface.

9. A computer system, comprising:

one or more processors that are in communication with a display generation component and one or more input devices; and

memory storing instructions, the instructions, when executed by the one or more processors, cause the processors to perform operations comprising:

while the computer system is in a power saving state, detecting an input that meets display-waking criteria;

in response to detecting the input that meets the display-waking criteria, displaying, via the display generation component, a wake screen user interface;

while displaying the wake screen user interface, detecting a first input that is directed to a portion of the wake screen user interface and includes first movement; and

in response to detecting the first input that is directed to the portion of the wake screen user interface:

in accordance with a determination that the first input meets first criteria, wherein the first criteria require the first movement to be in a first direction in order for the first criteria to be met:

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displaying of a home screen user interface that is different from the wake screen user interface, wherein the home screen user interface includes a plurality of application icons corresponding to different applications, and wherein a respective application icon of the plurality of application icons, when selected, causes display of an application corresponding to the respective application icon; and

in accordance with a determination that the first input meets second criteria different from the first criteria, wherein the second criteria require the first movement to be in a second direction that is different from the first direction in order for the second criteria to be met:

displaying a widget screen user interface that is different from the wake screen user interface and the home screen user interface, wherein the widget screen user interface includes a plurality of user interface objects corresponding to different applications, wherein a respective user interface object of the plurality of user interface objects contains application content from an application corresponding to the respective user interface object, and when selected, causes display of an application corresponding to the respective user interface object.

10. The computer system of claim **9**, wherein the wake screen user interface is a user interface that has a first state that corresponds to an authenticated state of the computer system and a second state that corresponds to an unauthenticated state of the computer system.

11. The computer system of claim **9**, wherein the operations include:

while displaying the widget screen user interface, detecting a second input that is directed to a portion of the widget screen user interface and includes second movement; and

in response to detecting the second input that is directed to the portion of the widget screen user interface:

in accordance with a determination that the second input meets third criteria, wherein the third criteria require the second movement to be in the first direction in order for the second criteria to be met, displaying the home screen user interface.

12. The computer system of claim **11**, wherein the operations include:

while the home screen user interface is displayed in response to detection of the second input, detecting a third input that is directed to a portion of the home screen user interface and includes third movement; and

in response to detecting the third input that is directed to the portion of the home screen user interface:

in accordance with a determination that the third input meets fourth criteria, wherein the fourth criteria require the third movement to be in a third direction that is different from the first direction and the second direction in order for the fourth criteria to be met, redisplaying the widget screen user interface.

13. The computer system of claim **11**, wherein the operations include:

while the home screen user interface is displayed in response to detection of the second input, detecting a fourth input that is directed to a portion of the home screen user interface and includes fourth movement; and

in response to detecting the fourth input that is directed to the portion of the home screen user interface:

in accordance with a determination that the fourth input meets fifth criteria, wherein the fifth criteria require the fourth movement to be in a third direction that is different from the first direction and the second direction in order for the fifth criteria to be met, redisplaying the wake screen user interface.

14. The computer system of claim **9**, wherein the operations include:

while the home screen user interface is displayed in response to detection of the first input, detecting a fifth input that is directed to a portion of the home screen user interface and includes fifth movement; and

in response to detecting the fifth input that is directed to the portion of the home screen user interface:

in accordance with a determination that the fifth input meets sixth criteria, wherein the sixth criteria require the fifth movement to be in a fourth direction that is different from the first direction and the second direction in order for the sixth criteria to be met, redisplaying the wake screen user interface.

15. The computer system of claim **9**, wherein the operations include:

in response to detecting the first input that is directed to the portion of the wake screen user interface:

in accordance with a determination that the first input meets seventh criteria, wherein the seventh criteria require the first movement to be in a fifth direction that is different from the first direction and the second direction in order for the seventh criteria to be met:

displaying of a control panel user interface that is different from the wake screen user interface and the widget screen user interface, wherein the control panel user interface includes a plurality of controls for controlling one or more device functions of the computer system.

16. The computer system of claim **15**, wherein the operations include

while the control panel user interface is displayed in response to detection of the first input, detecting a sixth input that is directed to a portion of the control panel user interface and includes sixth movement; and

in response to detecting the sixth input that is directed to the portion of the control panel user interface:

in accordance with a determination that the sixth input meets eighth criteria, wherein the eighth criteria require the sixth movement to be in a sixth direction (e.g., rightward swipe) that is opposite the fifth direction in order for the eighth criteria to be met, redisplaying the wake screen user interface.

17. A computer-readable storage medium comprising instructions, the instructions, when executed by one or more processors of a computer system that is in communication with a display generation component and one or more input devices, cause the processors to perform operations comprising:

while the computer system is in a power saving state, detecting an input that meets display-waking criteria;

in response to detecting the input that meets the display-waking criteria, displaying, via the display generation component, a wake screen user interface;

while displaying the wake screen user interface, detecting a first input that is directed to a portion of the wake screen user interface and includes first movement; and

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in response to detecting the first input that is directed to the portion of the wake screen user interface:

in accordance with a determination that the first input meets first criteria, wherein the first criteria require the first movement to be in a first direction in order for the first criteria to be met:

displaying of a home screen user interface that is different from the wake screen user interface, wherein the home screen user interface includes a plurality of application icons corresponding to different applications, and wherein a respective application icon of the plurality of application icons, when selected, causes display of an application corresponding to the respective application icon; and

in accordance with a determination that the first input meets second criteria different from the first criteria, wherein the second criteria require the first movement to be in a second direction that is different from the first direction in order for the second criteria to be met:

displaying a widget screen user interface that is different from the wake screen user interface and the home screen user interface, wherein the widget screen user interface includes a plurality of user interface objects corresponding to different applications, wherein a respective user interface object of the plurality of user interface objects contains application content from an application corresponding to the respective user interface object, and when selected, causes display of an application corresponding to the respective user interface object.

18. The computer-readable storage medium of claim **17**, wherein the wake screen user interface is a user interface that has a first state that corresponds to an authenticated state of the computer system and a second state that corresponds to an unauthenticated state of the computer system.

19. The computer-readable storage medium of claim **17**, wherein the operations include:

while displaying the widget screen user interface, detecting a second input that is directed to a portion of the widget screen user interface and includes second movement; and

in response to detecting the second input that is directed to the portion of the widget screen user interface:

in accordance with a determination that the second input meets third criteria, wherein the third criteria require the second movement to be in the first direction in order for the second criteria to be met, displaying the home screen user interface.

20. The computer-readable storage medium of claim **19**, wherein the operations include:

while the home screen user interface is displayed in response to detection of the second input, detecting a third input that is directed to a portion of the home screen user interface and includes third movement; and

in response to detecting the third input that is directed to the portion of the home screen user interface:

in accordance with a determination that the third input meets fourth criteria, wherein the fourth criteria require the third movement to be in a third direction that is different from the first direction and the second direction in order for the fourth criteria to be met, redisplaying the widget screen user interface.

21. The computer-readable storage medium of claim **19**, wherein the operations include:

while the home screen user interface is displayed in response to detection of the second input, detecting a fourth input that is directed to a portion of the home screen user interface and includes fourth movement; and

in response to detecting the fourth input that is directed to the portion of the home screen user interface:

in accordance with a determination that the fourth input meets fifth criteria, wherein the fifth criteria require the fourth movement to be in a third direction that is different from the first direction and the second direction in order for the fifth criteria to be met, redisplaying the wake screen user interface.

22. The computer-readable storage medium of claim **17**, wherein the operations include:

while the home screen user interface is displayed in response to detection of the first input, detecting a fifth input that is directed to a portion of the home screen user interface and includes fifth movement; and

in response to detecting the fifth input that is directed to the portion of the home screen user interface:

in accordance with a determination that the fifth input meets sixth criteria, wherein the sixth criteria require the fifth movement to be in a fourth direction that is different from the first direction and the second direction in order for the sixth criteria to be met, redisplaying the wake screen user interface.

23. The computer-readable storage medium of claim **17**, wherein the operations include:

in response to detecting the first input that is directed to the portion of the wake screen user interface:

in accordance with a determination that the first input meets seventh criteria, wherein the seventh criteria require the first movement to be in a fifth direction that is different from the first direction and the second direction in order for the seventh criteria to be met:

displaying of a control panel user interface that is different from the wake screen user interface and the widget screen user interface, wherein the control panel user interface includes a plurality of controls for controlling one or more device functions of the computer system.

24. The computer-readable storage medium of claim **23**, wherein the operations include

while the control panel user interface is displayed in response to detection of the first input, detecting a sixth input that is directed to a portion of the control panel user interface and includes sixth movement; and

in response to detecting the sixth input that is directed to the portion of the control panel user interface:

in accordance with a determination that the sixth input meets eighth criteria, wherein the eighth criteria require the sixth movement to be in a sixth direction (e.g., rightward swipe) that is opposite the fifth direction in order for the eighth criteria to be met, redisplaying the wake screen user interface.

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