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(54) **MESSAGE USER INTERFACES FOR CAPTURE AND TRANSMITTAL OF MEDIA AND LOCATION CONTENT**

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(56) **References Cited**
U.S. PATENT DOCUMENTS
4,975,694 A 12/1990 Mclaughlin et al.
5,146,217 A 9/1992 Holmes et al.
(Continued)

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FOREIGN PATENT DOCUMENTS

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AU 2016102028 B4 7/2017
CA 2545339 A1 11/2007
(Continued)

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OTHER PUBLICATIONS

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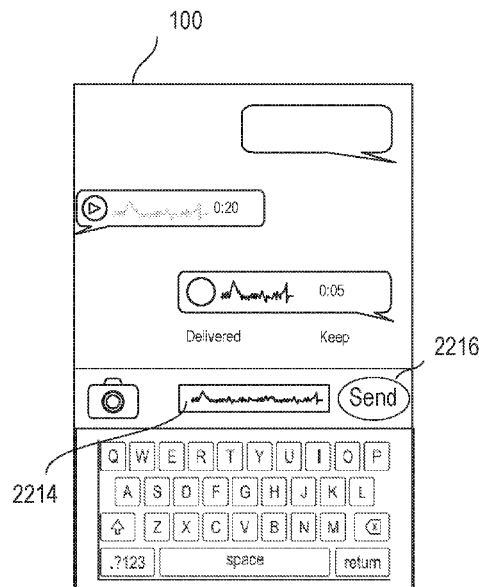
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(57) **ABSTRACT**
An electronic device displays a messaging interface that allows a participant in a message conversation to capture, send, and/or play media content. The media content includes images, video, and/or audio. The media content is captured, sent, and/or played based on the electronic device detecting one or more conditions.

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(56) References Cited**U.S. PATENT DOCUMENTS**

5,418,528 A 5/1995 Hosack et al.
 5,475,653 A 12/1995 Yamada et al.

5,483,595 A	1/1996	Owen	
5,687,216 A	11/1997	Svensson	
5,801,700 A	9/1998	Ferguson	
5,835,084 A	11/1998	Bailey et al.	
5,872,521 A	2/1999	Lopatukin et al.	
5,875,403 A	2/1999	Christal	
6,002,402 A	12/1999	Schacher	
6,014,429 A	1/2000	Laporta et al.	
6,084,529 A	7/2000	Lee et al.	
6,124,947 A	9/2000	Seo	
6,169,911 B1	1/2001	Wagner et al.	
6,191,807 B1	2/2001	Hamada et al.	
6,216,008 B1	4/2001	Lee	
6,230,019 B1	5/2001	Lee	
6,292,473 B1	9/2001	Duske et al.	
6,323,846 B1	11/2001	Westerman et al.	
6,333,973 B1	12/2001	Smith et al.	
6,362,842 B1	3/2002	Tahara et al.	
6,393,464 B1	5/2002	Dieterman	
6,456,841 B1	9/2002	Tomimori	
6,457,122 B1	9/2002	Ramezani	
6,570,557 B1	5/2003	Westerman et al.	
6,661,438 B1	12/2003	Shiraishi et al.	
6,662,023 B1	12/2003	Helle	
6,677,932 B1	1/2004	Westerman	
6,720,863 B2	4/2004	Hull et al.	
6,721,784 B1	4/2004	Leonard et al.	
6,778,642 B1	8/2004	Schmidt et al.	
6,809,724 B1	10/2004	Shiraishi et al.	
6,850,781 B2	2/2005	Goto	
6,934,738 B1	8/2005	Furusawa et al.	
6,937,707 B2	8/2005	Kim et al.	
7,120,455 B1	10/2006	Chen et al.	
7,149,893 B1	12/2006	Leonard et al.	
7,197,122 B2 *	3/2007	Vuori	H04W 4/14 379/201.1
7,250,955 B1	7/2007	Beeman et al.	
7,365,736 B2	4/2008	Marvit et al.	
7,433,920 B2	10/2008	Blagsvedt et al.	
7,496,385 B2	2/2009	Gruen et al.	
7,571,014 B1	8/2009	Lambourne et al.	
7,593,749 B2	9/2009	Vallström et al.	
7,603,379 B2	10/2009	Kang et al.	
7,614,008 B2	11/2009	Ording	
7,633,076 B2	12/2009	Huppi et al.	
7,636,578 B1	12/2009	Cope et al.	
7,650,361 B1	1/2010	Wong et al.	
7,653,883 B2	1/2010	Hotelling et al.	
7,657,849 B2	2/2010	Chaudhri et al.	
7,663,607 B2	2/2010	Hotelling et al.	
7,665,031 B2	2/2010	Matthews et al.	
7,685,530 B2	3/2010	Sherrard et al.	
7,716,593 B2	5/2010	Durazo et al.	
7,789,225 B2	9/2010	Whiteis	
7,797,390 B2	9/2010	Hagale et al.	
7,834,861 B2	11/2010	Lee	
7,844,914 B2	11/2010	Andre et al.	
7,899,474 B2	3/2011	Neil et al.	
7,908,219 B2	3/2011	Abanami et al.	
7,921,166 B2	4/2011	Karn	
7,953,393 B2	5/2011	Chin et al.	
7,957,762 B2	6/2011	Herz et al.	
8,006,002 B2	8/2011	Kalayjian et al.	
8,019,822 B2	9/2011	Martino et al.	
8,024,758 B2	9/2011	Byun et al.	
8,060,621 B2	11/2011	Lee et al.	
8,121,586 B2	2/2012	Araradian et al.	
8,139,573 B2	3/2012	Kim	
8,150,930 B2	4/2012	Satterfield et al.	
8,180,382 B1 *	5/2012	Graefen	H04L 51/04 455/433
8,209,634 B2	6/2012	Klassen et al.	
8,239,784 B2	8/2012	Hotelling et al.	
8,255,830 B2	8/2012	Ording et al.	
8,279,180 B2	10/2012	Hotelling et al.	
8,285,258 B2	10/2012	Schultz et al.	
8,381,135 B2	2/2013	Hotelling et al.	
8,456,297 B2	6/2013	Van Os	
8,479,122 B2	7/2013	Hotelling et al.	

US 11,775,145 B2

Page 3

(56)	References Cited			2004/0225502	A1 *	11/2004	Bear	G06F 3/0219 704/E15.045
	U.S. PATENT DOCUMENTS			2004/0248598	A1	12/2004	Ding et al.	
				2005/0004990	A1	1/2005	Durazo et al.	
	8,488,752	B1 *	7/2013 Wiesen	2005/0041793	A1	2/2005	Fulton et al.	
				2005/0055412	A1	3/2005	Kaminsky et al.	
				2005/0114753	A1	5/2005	Kumar et al.	
	8,572,493	B2	10/2013 Qureshi	2005/0120306	A1	6/2005	Klassen et al.	
	8,607,334	B2	12/2013 Brown et al.	2005/0130631	A1	6/2005	Maguire et al.	
	8,611,873	B2	12/2013 Onyon et al.	2005/0138552	A1	6/2005	Venolia	
	8,648,799	B1	2/2014 Lloyd	2005/0143104	A1	6/2005	Kim	
	8,650,652	B2	2/2014 Adams	2005/0144247	A1	6/2005	Christensen et al.	
	8,689,147	B2	4/2014 Griffin et al.	2005/0144568	A1	6/2005	Gruen et al.	
	8,706,818	B2	4/2014 Krzyzanowski et al.	2005/0181821	A1	8/2005	Elomaa et al.	
	8,751,594	B2	6/2014 Aceves	2005/0188320	A1	8/2005	Booking	
	8,774,868	B2	7/2014 Niu et al.	2005/0190059	A1	9/2005	Wehrenberg	
	8,811,951	B1	8/2014 Faaborg et al.	2005/0191159	A1	9/2005	Benko	
	8,848,932	B2	9/2014 Poulsen et al.	2005/0191996	A1	9/2005	Cha	
	8,849,928	B2	9/2014 Yuyama	2005/0193345	A1	9/2005	Klassen et al.	
	8,914,752	B1	12/2014 Spiegel	2005/0198128	A1	9/2005	Anderson et al.	
	8,918,128	B2	12/2014 Merrett	2005/0223058	A1	10/2005	Buchheit et al.	
	8,922,485	B1	12/2014 Lloyd	2005/0223066	A1	10/2005	Buchheit et al.	
	8,924,866	B2	12/2014 Shin et al.	2005/0233784	A1	10/2005	You et al.	
	8,984,444	B2	3/2015 O	2005/0266884	A1 *	12/2005	Marriott	H04M 1/72436 455/558
	9,075,612	B2	7/2015 Yang et al.	2005/0268237	A1	12/2005	Crane et al.	
	9,100,944	B2	8/2015 Sauhta et al.	2006/0002523	A1	1/2006	Bettis et al.	
	9,185,062	B1	11/2015 Yang et al.	2006/0005156	A1	1/2006	Korpiää et al.	
	9,191,988	B2	11/2015 Newham et al.	2006/0017692	A1	1/2006	Wehrenberg et al.	
	9,207,835	B1	12/2015 Yang et al.	2006/0019639	A1	1/2006	Adams et al.	
	9,268,387	B2	2/2016 Yu	2006/0019649	A1	1/2006	Feinleib et al.	
	9,313,160	B1	4/2016 Shamis et al.	2006/0025091	A1	2/2006	Buford	
	9,400,489	B2	7/2016 Kim et al.	2006/0026245	A1	2/2006	Cunningham et al.	
	9,461,833	B1	10/2016 Marra et al.	2006/0026536	A1	2/2006	Hotelling et al.	
	9,477,208	B2	10/2016 Park et al.	2006/0031775	A1	2/2006	Sattler et al.	
	9,483,529	B1	11/2016 Pasoi et al.	2006/0033724	A1	2/2006	Chaudhri et al.	
	9,575,591	B2	2/2017 Yang et al.	2006/0044283	A1	3/2006	Eri et al.	
	9,578,160	B2 *	2/2017 Kim	2006/0075027	A1	4/2006	Zager et al.	
				2006/0084450	A1	4/2006	Dam et al.	
	9,860,200	B1	1/2018 Braun et al.	2006/0085505	A1	4/2006	Gillum et al.	
	9,954,991	B2	4/2018 Wang et al.	2006/0092177	A1	5/2006	Blasko et al.	
	9,998,888	B1	6/2018 Chang et al.	2006/0094416	A1	5/2006	Endo et al.	
	10,003,938	B2	6/2018 Chang et al.	2006/0123353	A1	6/2006	Matthews et al.	
	10,097,496	B2	10/2018 Dye et al.	2006/0128404	A1	6/2006	Klassen et al.	
	10,110,530	B2	10/2018 Sachtjen	2006/0135136	A1	6/2006	Kim et al.	
	10,306,049	B1	5/2019 Bauer et al.	2006/0161629	A1	7/2006	Cohen et al.	
	10,341,826	B2	7/2019 Chang et al.	2006/0187897	A1	8/2006	Dabbs et al.	
	10,416,844	B2	9/2019 Yang et al.	2006/0195787	A1	8/2006	Topiwala et al.	
	10,511,559	B2	12/2019 Stovicek et al.	2006/0197753	A1	9/2006	Hotelling	
	10,523,625	B1	12/2019 Allen et al.	2006/0210092	A1	9/2006	Navid	
	10,924,446	B1	2/2021 Paul	2006/0286968	A1	12/2006	Klassen et al.	
	10,963,145	B1	3/2021 Voss et al.	2007/0004461	A1	1/2007	Bathina et al.	
	11,079,913	B1	8/2021 Kim et al.	2007/0036300	A1	2/2007	Brown et al.	
	2001/0030597	A1	10/2001 Inoue et al.	2007/0037605	A1	2/2007	Logan et al.	
	2001/0033298	A1	10/2001 Slotznick	2007/0053337	A1	3/2007	Aoyama	
	2002/0015024	A1	2/2002 Westerman et al.	2007/0061786	A1	3/2007	Zhou et al.	
	2002/0037715	A1	3/2002 Mauney et al.	2007/0073823	A1	3/2007	Cohen	
	2002/0057284	A1	5/2002 Dalby et al.	2007/0085157	A1	4/2007	Fadell et al.	
	2002/0093536	A1	7/2002 Hong	2007/0093256	A1	4/2007	Cha	
	2002/0115478	A1	8/2002 Fujisawa et al.	2007/0097083	A1	5/2007	Seok et al.	
	2002/0120869	A1	8/2002 Engstrom	2007/0117549	A1	5/2007	Arnos	
	2002/0126135	A1	9/2002 Ball et al.	2007/0124403	A1	5/2007	Umezawa et al.	
	2002/0152220	A1	10/2002 Kang et al.	2007/0150834	A1	6/2007	Muller et al.	
	2002/0167488	A1	11/2002 Hinckley et al.	2007/0150836	A1	6/2007	Deggelmann et al.	
	2003/0003897	A1 *	1/2003 Hyon	2007/0150842	A1	6/2007	Chaudhri et al.	
				2007/0157106	A1	7/2007	Bishop	
	2003/0073496	A1	4/2003 D'Amico et al.	2007/0173233	A1	7/2007	Vander Veen et al.	
	2003/0078833	A1	4/2003 Suzuki et al.	2007/0173267	A1	7/2007	Klassen et al.	
	2003/0081506	A1	5/2003 Karhu et al.	2007/0202925	A1	8/2007	Beith	
	2003/0112938	A1	6/2003 Kanakubo et al.	2007/0203991	A1	8/2007	Fisher et al.	
	2003/0120957	A1	6/2003 Pathiyal	2007/0213099	A1	9/2007	Bast	
	2003/0162554	A1	8/2003 Kim	2007/0216659	A1	9/2007	Amineh	
	2003/0229722	A1	12/2003 Beyda	2007/0224979	A1	9/2007	Oneal et al.	
	2004/0015548	A1	1/2004 Lee et al.	2007/0236475	A1	10/2007	Wherry	
	2004/0015553	A1	1/2004 Griffin et al.	2007/0243889	A1	10/2007	Choi et al.	
	2004/0041841	A1	3/2004 Lemogne et al.	2007/0271527	A1	11/2007	Paas et al.	
	2004/0070511	A1	4/2004 Kim	2007/0288932	A1	12/2007	Horvitz et al.	
	2004/0078444	A1	4/2004 Malik et al.	2007/0291018	A1	12/2007	Park et al.	
	2004/0113953	A1	6/2004 Newman	2007/0300140	A1	12/2007	Makela et al.	
	2004/0130581	A1	7/2004 Howard et al.					
	2004/0172455	A1	9/2004 Green et al.					
	2004/0208301	A1	10/2004 Urban et al.					

IPR2026-00104

Patent Owner Exhibit 2003

(56)	References Cited		2010/0223055 A1	9/2010	Mclean	
	U.S. PATENT DOCUMENTS		2010/0273456 A1	10/2010	Wolovitz et al.	
			2010/0279663 A1 *	11/2010	Wang	H04M 3/53366
						455/413
2008/0014989 A1	1/2008	Sandegard et al.	2010/0281409 A1	11/2010	Rainisto et al.	
2008/0030496 A1	2/2008	Lee et al.	2010/0287249 A1	11/2010	Yigang et al.	
2008/0037722 A1	2/2008	Klassen	2010/0309149 A1	12/2010	Blumenberg et al.	
2008/0051065 A1	2/2008	Hong	2010/0318928 A1	12/2010	Neuman et al.	
2008/0052945 A1	3/2008	Matas et al.	2010/0318939 A1	12/2010	Moon	
2008/0055264 A1	3/2008	Anzures et al.	2010/0325194 A1	12/2010	Williamson et al.	
2008/0057926 A1	3/2008	Forstall et al.	2010/0332518 A1	12/2010	Song et al.	
2008/0070593 A1	3/2008	Altman et al.	2011/0003587 A1	1/2011	Belz et al.	
2008/0079589 A1	4/2008	Blackadar	2011/0012919 A1	1/2011	Tai et al.	
2008/0091166 A1	4/2008	Fitzgerald et al.	2011/0054830 A1	3/2011	Logan	
2008/0094370 A1	4/2008	Ording et al.	2011/0059769 A1	3/2011	Brunolli	
2008/0096593 A1	4/2008	Park	2011/0080356 A1	4/2011	Kang et al.	
2008/0100693 A1	5/2008	Jobs et al.	2011/0092190 A1	4/2011	Willey et al.	
2008/0114849 A1	5/2008	Yuyama	2011/0096011 A1	4/2011	Suzuki	
2008/0120427 A1	5/2008	Ramanathan et al.	2011/0151418 A1	6/2011	Delespaul et al.	
2008/0122796 A1	5/2008	Jobs et al.	2011/0157046 A1	6/2011	Lee et al.	
2008/0133336 A1	6/2008	Altman et al.	2011/0164058 A1	7/2011	Lemay	
2008/0146289 A1	6/2008	Korneluk et al.	2011/0167383 A1	7/2011	Schuller et al.	
2008/0153459 A1	6/2008	Kansal et al.	2011/0183650 A1	7/2011	Mckee	
2008/0162649 A1	7/2008	Lee et al.	2011/0225547 A1	9/2011	Fong et al.	
2008/0163121 A1	7/2008	Lee et al.	2011/0239158 A1	9/2011	Barracough et al.	
2008/0165136 A1	7/2008	Christie et al.	2011/0254684 A1	10/2011	Antoci et al.	
2008/0171535 A1	7/2008	Carmody et al.	2011/0265041 A1	10/2011	Ganetakos et al.	
2008/0174570 A1	7/2008	Jobs et al.	2011/0276901 A1	11/2011	Zambetti et al.	
2008/0178175 A1	7/2008	Woundy et al.	2011/0279323 A1	11/2011	Hung et al.	
2008/0216001 A1	9/2008	Ording et al.	2011/0304648 A1	12/2011	Kim et al.	
2008/0216022 A1	9/2008	Lorch et al.	2011/0306393 A1	12/2011	Goldman et al.	
2008/0228386 A1	9/2008	Geelen et al.	2011/0316769 A1	12/2011	Boettcher et al.	
2008/0261569 A1	10/2008	Britt et al.	2012/0005476 A1	1/2012	Wei et al.	
2008/0262715 A1	10/2008	Geelen et al.	2012/0008526 A1	1/2012	Borghei et al.	
2008/0268901 A1	10/2008	Miramontes et al.	2012/0022872 A1	1/2012	Gruber et al.	
2008/0270560 A1	10/2008	Tysowski et al.	2012/0038546 A1	2/2012	Cromer et al.	
2008/0307305 A1	12/2008	Klassen et al.	2012/0054278 A1	3/2012	Taleb et al.	
2008/0310602 A1	12/2008	Bhupati	2012/0054655 A1	3/2012	Kang et al.	
2008/0320391 A1	12/2008	Lemay et al.	2012/0059787 A1	3/2012	Brown et al.	
2009/0003552 A1	1/2009	Goldman et al.	2012/0102437 A1	4/2012	Worley et al.	
2009/0003620 A1	1/2009	Mckillop et al.	2012/0105358 A1	5/2012	Momeyer et al.	
2009/0005011 A1	1/2009	Christie et al.	2012/0108215 A1	5/2012	Kameli et al.	
2009/0005089 A1	1/2009	Paik et al.	2012/0117507 A1	5/2012	Tseng et al.	
2009/0037536 A1 *	2/2009	Braam	2012/0131458 A1	5/2012	Hayes et al.	
		H04L 67/59	2012/0149405 A1	6/2012	Bhat	
		370/352	2012/0150970 A1	6/2012	Peterson et al.	
2009/0042607 A1	2/2009	Adachi et al.	2012/0157114 A1	6/2012	Alameh et al.	
2009/0049502 A1	2/2009	Levien et al.	2012/0158511 A1	6/2012	Lucero et al.	
2009/0051648 A1	2/2009	Shamaie et al.	2012/0162350 A1	6/2012	Lee et al.	
2009/0051649 A1	2/2009	Rondel	2012/0172088 A1	7/2012	Kirch et al.	
2009/0055494 A1	2/2009	Fukumoto et al.	2012/0185547 A1 *	7/2012	Hugg	H04L 51/222
2009/0082043 A1	3/2009	Lazaridis				709/206
2009/0085881 A1	4/2009	Keam	2012/0216127 A1	8/2012	Meyr	
2009/0088204 A1	4/2009	Culbert et al.	2012/0218177 A1	8/2012	Pang et al.	
2009/0098914 A1	4/2009	Martin-Coher et al.	2012/0239949 A1	9/2012	Kalyanasundaram et al.	
2009/0119678 A1	5/2009	Shih et al.	2012/0254324 A1	10/2012	Majeti et al.	
2009/0164219 A1	6/2009	Yeung et al.	2012/0254325 A1	10/2012	Majeti et al.	
2009/0172599 A1	7/2009	Nezu	2012/0302256 A1	11/2012	Pai et al.	
2009/0175425 A1 *	7/2009	Lee	2012/0304084 A1	11/2012	Kim et al.	
		H04M 1/72433	2012/0306765 A1	12/2012	Moore et al.	
		379/88.11	2012/0306770 A1	12/2012	Moore et al.	
2009/0176517 A1	7/2009	Christie et al.	2012/0313847 A1	12/2012	Boda et al.	
2009/0177981 A1	7/2009	Christie et al.	2012/0322508 A1	12/2012	Forstall et al.	
2009/0181726 A1	7/2009	Vargas et al.	2013/0002580 A1	1/2013	Sudou	
2009/0187842 A1	7/2009	Collins et al.	2013/0007665 A1	1/2013	Chaudhri et al.	
2009/0199130 A1	8/2009	Tsern et al.	2013/0021362 A1	1/2013	Sakurada et al.	
2009/0209293 A1	8/2009	Louch	2013/0024780 A1	1/2013	Sutedja et al.	
2009/0248751 A1	10/2009	Myman et al.	2013/0026293 A1	1/2013	Schneider et al.	
2009/0254840 A1	10/2009	Churchill et al.	2013/0053007 A1	2/2013	Cosman et al.	
2009/0265643 A1	10/2009	Jachner et al.	2013/0063364 A1	3/2013	Moore	
2009/0298444 A1	12/2009	Shigeta	2013/0065566 A1	3/2013	Gisby et al.	
2009/0313582 A1	12/2009	Rupasingh et al.	2013/0067027 A1	3/2013	Song et al.	
2010/0058231 A1	3/2010	Duarte et al.	2013/0091298 A1	4/2013	Ozzie et al.	
2010/0069104 A1	3/2010	Neil et al.	2013/0091443 A1	4/2013	Park et al.	
2010/0094809 A1	4/2010	Consul et al.	2013/0093833 A1	4/2013	Al-Asaad et al.	
2010/0121636 A1	5/2010	Burke et al.	2013/0120106 A1	5/2013	Cauwels et al.	
2010/0124906 A1	5/2010	Hautala	2013/0132865 A1	5/2013	Li	
2010/0125785 A1	5/2010	Moore et al.	2013/0159941 A1	6/2013	Langlois et al.	
2010/0162138 A1	6/2010	Pascal et al.	2013/0212470 A1	8/2013	Karunamuni et al.	
2010/0162169 A1	6/2010	Skarp				
2010/0191818 A1	7/2010	Satterfield et al.				

(56)

References Cited

U.S. PATENT DOCUMENTS

2013/0222230	A1*	8/2013	Choi	G06F 1/1684 345/156
2013/0222236	A1	8/2013	GÄrdenfors et al.	
2013/0234924	A1	9/2013	Janefalkar et al.	
2013/0243924	A1	9/2013	Bhandari et al.	
2013/0244633	A1	9/2013	Jacobs et al.	
2013/0254714	A1	9/2013	Shin et al.	
2013/0262298	A1	10/2013	Morley et al.	
2013/0275899	A1	10/2013	Schubert et al.	
2013/0275924	A1	10/2013	Weinberg et al.	
2013/0282180	A1	10/2013	Layton	
2013/0282844	A1	10/2013	Logan et al.	
2013/0301482	A1*	11/2013	Katis	H04L 12/1827 370/352
2013/0307809	A1	11/2013	Sudou	
2013/0310089	A1	11/2013	Gianoukos et al.	
2013/0321314	A1	12/2013	Oh et al.	
2013/0322634	A1	12/2013	Bennett et al.	
2013/0339436	A1	12/2013	Gray	
2013/0339772	A1	12/2013	Yu	
2013/0346882	A1	12/2013	Shiplacoff et al.	
2013/0347018	A1	12/2013	Limp et al.	
2014/0032682	A1	1/2014	Prado et al.	
2014/0055552	A1	2/2014	Song et al.	
2014/0058873	A1	2/2014	Sorensen et al.	
2014/0059448	A1	2/2014	Lee	
2014/0066105	A1	3/2014	Bridge et al.	
2014/0068314	A1	3/2014	Kim et al.	
2014/0073256	A1	3/2014	Newham et al.	
2014/0082501	A1	3/2014	Bae et al.	
2014/0085487	A1	3/2014	Park et al.	
2014/0106677	A1	4/2014	Altman	
2014/0136633	A1	5/2014	Murillo et al.	
2014/0136990	A1	5/2014	Gonnen et al.	
2014/0171156	A1	6/2014	Pattikonda et al.	
2014/0176426	A1	6/2014	Morohoshi	
2014/0181183	A1	6/2014	Yamamoto et al.	
2014/0189533	A1	7/2014	Krack et al.	
2014/0213295	A1	7/2014	Conklin	
2014/0222933	A1	8/2014	Stovicek et al.	
2014/0239733	A1	8/2014	Mach et al.	
2014/0240122	A1	8/2014	Roberts et al.	
2014/0279728	A1	9/2014	Skole	
2014/0282005	A1	9/2014	Gutowitz	
2014/0333670	A1	11/2014	Balivada et al.	
2014/0344711	A1	11/2014	Sjostedt et al.	
2014/0354527	A1	12/2014	Chen et al.	
2014/0365126	A1	12/2014	Vulcano et al.	
2014/0365944	A1	12/2014	Moore et al.	
2015/0007049	A1	1/2015	Langlois	
2015/0019963	A1	1/2015	Park et al.	
2015/0040029	A1	2/2015	Koum et al.	
2015/0042852	A1	2/2015	Lee et al.	
2015/0082446	A1	3/2015	Flowers et al.	
2015/0089660	A1	3/2015	Song et al.	
2015/0095804	A1	4/2015	Grossman et al.	
2015/0100537	A1	4/2015	Grieves et al.	
2015/0102992	A1	4/2015	Klement et al.	
2015/0156307	A1	6/2015	Kim et al.	
2015/0169893	A1	6/2015	Desai	
2015/0172393	A1	6/2015	Oplinger et al.	
2015/0172584	A1	6/2015	Park et al.	
2015/0177914	A1	6/2015	Coyner et al.	
2015/0185849	A1	7/2015	Ramsay et al.	
2015/0188869	A1	7/2015	Smilak et al.	
2015/0193196	A1	7/2015	Lin et al.	
2015/0201062	A1	7/2015	Shih et al.	
2015/0220774	A1	8/2015	Ebersman et al.	
2015/0248389	A1	9/2015	Kahn et al.	
2015/0264004	A1	9/2015	Khoo	
2015/0264303	A1	9/2015	Chastney et al.	
2015/0264304	A1	9/2015	Chastney et al.	
2015/0271120	A1	9/2015	Langholz	
2015/0286387	A1	10/2015	Gu et al.	
2015/0286391	A1	10/2015	Jacobs et al.	
2015/0302301	A1	10/2015	Petersen	
2015/0312184	A1	10/2015	Langholz et al.	
2015/0312185	A1	10/2015	Langholz et al.	
2015/0319006	A1	11/2015	Plummer et al.	
2015/0326510	A1	11/2015	Tomlinson et al.	
2015/0331881	A1	11/2015	Myles	
2015/0350141	A1	12/2015	Yang et al.	
2015/0370426	A1	12/2015	Carrigan et al.	
2016/0036996	A1	2/2016	Midholt et al.	
2016/0041597	A1	2/2016	Graham et al.	
2016/0054841	A1	2/2016	Yang et al.	
2016/0062540	A1	3/2016	Yang et al.	
2016/0062570	A1	3/2016	Dascola et al.	
2016/0065509	A1	3/2016	Butcher et al.	
2016/0065707	A1	3/2016	Yang et al.	
2016/0065708	A1	3/2016	Yang et al.	
2016/0066277	A1	3/2016	Yang et al.	
2016/0073223	A1	3/2016	Woolsey et al.	
2016/0080552	A1	3/2016	Keating et al.	
2016/0088146	A1	3/2016	Ying et al.	
2016/0099901	A1	4/2016	Allen et al.	
2016/0124592	A1	5/2016	Kidron et al.	
2016/0165600	A1	6/2016	Choi et al.	
2016/0209906	A1	7/2016	Chae et al.	
2016/0231902	A1	8/2016	Sirpal et al.	
2016/0277885	A1	9/2016	Shan et al.	
2016/0277903	A1	9/2016	Poosala et al.	
2016/0294958	A1	10/2016	Zhang et al.	
2016/0295384	A1	10/2016	Shan et al.	
2016/0299526	A1	10/2016	Inagaki et al.	
2016/0320849	A1	11/2016	Koo	
2016/0335041	A1	11/2016	Wachter et al.	
2016/0342141	A1	11/2016	Koumaiha et al.	
2017/0019517	A1	1/2017	Wilder et al.	
2017/0048686	A1	2/2017	Chang et al.	
2017/0083189	A1	3/2017	Yang et al.	
2017/0083202	A1	3/2017	Yang et al.	
2017/0097621	A1	4/2017	Ackmann et al.	
2017/0147197	A1	5/2017	Yang et al.	
2017/0153795	A1	6/2017	Yang et al.	
2017/0206779	A1	7/2017	Lee et al.	
2017/0220212	A1	8/2017	Yang et al.	
2017/0357425	A1	12/2017	Smith et al.	
2017/0357434	A1	12/2017	Coffman et al.	
2017/0359191	A1	12/2017	Smith et al.	
2018/0101297	A1	4/2018	Yang et al.	
2018/0146349	A1	5/2018	Chang et al.	
2018/0181185	A1	6/2018	Graham et al.	
2018/0227341	A1	8/2018	Rizzi	
2018/0228003	A1	8/2018	O'Driscoll et al.	
2018/0270627	A1	9/2018	Chang et al.	
2018/0308480	A1	10/2018	Jang et al.	
2018/0329672	A1	11/2018	Sadak et al.	
2018/0332559	A1	11/2018	Gudivada et al.	
2018/0341448	A1	11/2018	Behzadi et al.	
2018/0352072	A1	12/2018	Christie et al.	
2018/0364665	A1	12/2018	Clymer et al.	
2019/0025943	A1	1/2019	Jobs et al.	
2019/0028419	A1	1/2019	Sullivan	
2019/0102145	A1	4/2019	Wilberding et al.	
2019/0138951	A1	5/2019	Brownhill et al.	
2019/0158645	A1	5/2019	Yang et al.	
2019/0286301	A1	9/2019	Yang et al.	
2019/0320301	A1	10/2019	Chang et al.	
2019/0361575	A1	11/2019	Ni et al.	
2020/0050502	A1	2/2020	Ghafourifar et al.	
2020/0135191	A1	4/2020	Nourbakhsh	
2020/0152186	A1	5/2020	Koh et al.	
2020/0186378	A1	6/2020	Six et al.	
2020/0272287	A1	8/2020	Yang et al.	
2020/0302913	A1	9/2020	Marcinkiewicz	
2020/0348807	A1	11/2020	Garcia et al.	
2020/0371577	A1	11/2020	Graham et al.	
2020/0395012	A1	12/2020	Kim et al.	
2021/0043189	A1	2/2021	Pyun	
2021/0064317	A1	3/2021	Juenger et al.	
2021/0065134	A1	3/2021	Chhabra et al.	
2021/0099829	A1	4/2021	Soto et al.	
2021/0141437	A1	5/2021	Graham et al.	

(56)

References Cited**U.S. PATENT DOCUMENTS**

2021/0158830	A1	5/2021	Boehlke
2021/0203765	A1	7/2021	Yang et al.
2021/0266274	A1	8/2021	Liu et al.
2021/0323406	A1	10/2021	So et al.
2021/0349680	A1	11/2021	Kim et al.
2021/0352172	A1	11/2021	Kim et al.
2022/0004356	A1	1/2022	Kim et al.
2022/0141329	A1	5/2022	Christie et al.
2022/0147135	A1	5/2022	Graham et al.
2022/0300108	A1	9/2022	Yang et al.
2022/0386085	A1	12/2022	Chang et al.
2023/0041125	A1	2/2023	Kim et al.

FOREIGN PATENT DOCUMENTS

CN	1852335	A	10/2006
CN	1950762	A	4/2007
CN	101046721	A	10/2007
CN	101276255	A	10/2008
CN	101390371	A	3/2009
CN	101535940	A	9/2009
CN	101873386	A	10/2010
CN	102111505	A	6/2011
CN	201928419	U	8/2011
CN	102215374	A	10/2011
CN	102404458	A	4/2012
CN	102695302	A	9/2012
CN	103119968	A	5/2013
CN	103199311	A	7/2013
CN	103207674	A	7/2013
CN	103309606	A	9/2013
CN	103327159	A	9/2013
CN	103399703	A	11/2013
CN	103440247	A	12/2013
CN	103473004	A	12/2013
CN	103500079	A	1/2014
CN	103576902	A	2/2014
CN	103581413	A	2/2014
CN	103581544	A	2/2014
CN	103582873	A	2/2014
CN	103583031	A	2/2014
CN	103677520	A	3/2014
CN	103685729	A	3/2014
CN	203520050	U	4/2014
CN	103793075	A	5/2014
CN	103838992	A	6/2014
CN	103944811	A	7/2014
CN	103959751	A	7/2014
CN	104205785	A	12/2014
CN	205263700	U	5/2016
CN	105900376	A	8/2016
CN	106843711	A	6/2017
CN	109196825	A	1/2019
EP	1589734	A2	10/2005
EP	1885109	A2	2/2008
EP	2194698	A1	6/2010
EP	2490432	A1	8/2012
EP	2574026	A1	3/2013
EP	2582120	A1	4/2013
EP	2610701	A1	7/2013
EP	2610701	A9	4/2014
EP	2849042	A1	3/2015
EP	2998822	A2	3/2016
EP	3038427	A1	6/2016
EP	3373122	A1	9/2018
IN	1038/MUM/2005	A	6/2007
JP	H1145117	A	2/1999
JP	H1198249	A	4/1999
JP	2002-163217	A	6/2002
JP	2002-366485	A	12/2002
JP	2003-141050	A	5/2003
JP	2006-072489	A	3/2006
JP	2006-079427	A	3/2006
JP	2006-113637	A	4/2006
JP	2006-129429	A	5/2006

JP	2006-135667	A	5/2006
JP	2008-99330	A	4/2008
JP	2008-526156	A	7/2008
JP	2008-546069	A	12/2008
JP	2010-503126	A	1/2010
JP	2010-503332	A	1/2010
JP	2011-065654	A	3/2011
JP	2011-107823	A	6/2011
JP	2012-508530	A	4/2012
JP	2012-198369	A	10/2012
JP	2013-012802	A	1/2013
JP	2013-048389	A	3/2013
JP	2013-511900	A	4/2013
JP	2013-542522	A	11/2013
JP	2014-057129	A	3/2014
JP	2014-071835	A	4/2014
JP	2014-087126	A	5/2014
JP	2014-519126	A	8/2014
JP	2014-170982	A	9/2014
JP	2018-007158	A	1/2018
KR	10-2004-0089329	A	10/2004
KR	10-2018-0085931	A	7/2018
KR	10-2020-0039030	A	4/2020
TW	200532429	A	10/2005
WO	2008/030776	A2	3/2008
WO	2008/030972	A1	3/2008
WO	2009/071112	A1	6/2009
WO	2010/054373	A2	5/2010
WO	2012/128824	A1	9/2012
WO	2012/166277	A1	12/2012
WO	2012/170446	A2	12/2012
WO	2013/048880	A1	4/2013
WO	2013/093558	A1	6/2013
WO	2013/169842	A2	11/2013
WO	2013/169865	A2	11/2013
WO	2013/169870	A1	11/2013
WO	2013/169875	A2	11/2013
WO	2014/083001	A2	6/2014
WO	2014/105276	A1	7/2014
WO	2014/129655	A1	8/2014
WO	2014/143776	A2	9/2014
WO	2015/038684	A1	3/2015
WO	2015/120358	A1	8/2015
WO	2015/183755	A1	12/2015
WO	2016/036472	A1	3/2016
WO	2017/027632	A1	2/2017
WO	2017/218143	A1	12/2017
WO	2018/213401	A1	11/2018
WO	2018/213415	A1	11/2018
WO	2018/232333	A1	12/2018

OTHER PUBLICATIONS

Applicant-Initiated Interview Summary received for U.S. Appl. No. 17/835,334, dated Jan. 27, 2023, 4 pages.

Non-Final Office Action received for U.S. Appl. No. 16/871,995, dated Jan. 31, 2023, 19 pages.

Notice of Allowance received for Japanese Patent Application No. 2022-125792, dated Jan. 27, 2023, 4 pages (1 page of English Translation and 3 pages of Official Copy).

Office Action received for Chinese Patent Application No. 201810654707.2, dated Dec. 28, 2022, 13 pages (5 pages of English Translation and 8 pages of Official Copy).

Advisory Action received for U.S. Appl. No. 14/641,308, dated Nov. 14, 2019, 4 pages.

Advisory Action received for U.S. Appl. No. 16/454,884, dated Jan. 1, 2021, 6 pages.

Airize, "Notification & Control Center Problem Issue Solution", Available online at: <https://www.youtube.com/watch?v=K0zCueYlaTA>, Dec. 6, 2013, 1 page.

Ambrogio Robert, "Send Secure, Self-Destructing Messages with Wickr", Lawsites Blog, Available online at: <https://www.lawsitesblog.com/2013/11/send-secure-self-destructing-messages-wickr.html>, Nov. 5, 2013, 3 pages.

Android Central, "Gmail on iOS versus Android", Online Available at: <https://www.youtube.com/watch?v=w2aVeZLxU5Q&t=80s>, Nov. 2, 2011, 3 pages.

(56)

References Cited**OTHER PUBLICATIONS**

Androidcentral, "How do i respond to group messages from notification bar?", Available online at: <https://forums.androidcentral.com/ask-question/952030-how-do-i-respond-group-messages-notification-bar.html>, Mar. 25, 2019, 3 pages.

Apple, "iPhone User's Guide", Available at <<http://mesnotices.20minutes.fr/manuel-notice-mode-emploi/APPLE/IPHONE%2D%5FE#>>, Retrieved on Mar. 27, 2008, Jun. 2007, 137 pages.

Applicant-Initiated Interview Summary received for U.S. Appl. No. 14/641,308, dated Oct. 10, 2019, 5 pages.

Applicant-Initiated interview summary received for U.S. Appl. No. 15/488,093, dated Jan. 14, 2020, 4 pages.

Applicant-Initiated Interview Summary received for U.S. Appl. No. 15/902,401, dated Oct. 28, 2019, 4 pages.

Applicant-Initiated Interview Summary received for U.S. Appl. No. 15/960,330, dated Aug. 11, 2020, 3 pages.

Applicant-Initiated Interview Summary received for U.S. Appl. No. 15/960,330, dated Jan. 21, 2021, 5 pages.

Applicant-Initiated Interview Summary received for U.S. Appl. No. 16/259,954, dated Mar. 23, 2020, 3 pages.

Applicant-Initiated Interview Summary received for U.S. Appl. No. 16/434,747, dated Mar. 18, 2022, 4 pages.

Applicant-Initiated Interview Summary received for U.S. Appl. No. 16/434,747, dated Sep. 8, 2021, 4 pages.

Applicant-Initiated Interview Summary received for U.S. Appl. No. 16/454,884, dated Dec. 4, 2020, 4 pages.

Applicant-Initiated Interview Summary received for U.S. Appl. No. 16/454,884, dated Jun. 2, 2020, 3 pages.

Applicant-Initiated Interview Summary received for U.S. Appl. No. 16/871,995, dated Apr. 5, 2022, 5 pages.

Applicant-Initiated Interview Summary received for U.S. Appl. No. 16/871,995, dated Dec. 6, 2021, 4 pages.

Applicant-Initiated Interview Summary received for U.S. Appl. No. 16/871,995, dated Jul. 16, 2021, 4 pages.

Applicant-Initiated Interview Summary received for U.S. Appl. No. 16/936,164, dated Aug. 23, 2022, 5 pages.

Applicant-Initiated Interview Summary received for U.S. Appl. No. 16/936,164, dated Mar. 22, 2022, 4 pages.

Applicant-Initiated Interview Summary received for U.S. Appl. No. 17/013,778, dated Feb. 28, 2022, 2 pages.

Applicant-Initiated Interview Summary received for U.S. Appl. No. 17/026,818, dated Dec. 15, 2020, 7 pages.

Applicant-Initiated Interview Summary received for U.S. Appl. No. 17/026,818, dated Mar. 8, 2021, 4 pages.

Applicant-Initiated Interview Summary received for U.S. Appl. No. 17/157,391, dated Nov. 23, 2021, 2 pages.

Applicant-Initiated Interview Summary received for U.S. Appl. No. 17/223,794, dated Sep. 7, 2021, 3 pages.

Applicant-Initiated Interview Summary received for U.S. Appl. No. 17/476,404, dated Jul. 27, 2022, 6 pages.

Applicant-Initiated Interview Summary received for U.S. Appl. No. 17/476,404, dated Mar. 18, 2022, 2 pages.

Basu Saikat, "MS Outlook Tip: How to Automatically Organize Incoming Emails", Available online at <<http://www.makeuseof.com/tag/ms-outlook-productivity-tip-how-to-move-emails-to-individual-folders-automatically/>>, Sep. 27, 2009, pp. 1-6.

Board Decision received for Chinese Patent Application No. 201580029071.7, dated Jul. 13, 2021, 2 pages.

Board Decision received for Chinese Patent Application No. 201580046788.2, dated Jun. 6, 2022, 17 pages.

Board Decision received for Chinese Patent Application No. 201580047640.0, dated Jun. 29, 2021, 2 pages.

Board Opinion received for Chinese Patent Application No. 201580046788.2, dated Dec. 29, 2021, 10 pages.

Brief Communication Regarding Oral Proceedings received for European Patent Application No. 15760008.1, dated Sep. 13, 2021, 8 pages.

Brief Communication Regarding Oral Proceedings received for European Patent Application No. 17167629.9, dated Nov. 12, 2020, 2 pages.

Brief Communication Regarding Oral Proceedings received for European Patent Application No. 18170262.2, dated Oct. 4, 2021, 2 pages.

Certificate of Examination received for Australian Patent Application No. 2017100760 dated Feb. 9, 2018, 2 pages.

CNET download.com, "WeChat for Android", Available at <http://download.cnet.com/WeChat/3000-2150_4-75739423.html>, Jan. 7, 2013, 6 pages.

Communication of the Board of Appeal received for European Patent Application No. 15728307.8, dated Sep. 14, 2022, 9 pages.

Communication of the Board of Appeal received for European Patent Application No. 15729286.3, dated Oct. 6, 2022, 8 pages.

Corrected Notice of Allowance received for U.S. Appl. No. 12/163,908, dated Feb. 22, 2018, 8 pages.

Corrected Notice of Allowance received for U.S. Appl. No. 14/641,308, dated Mar. 10, 2020, 4 pages.

Corrected Notice of Allowance received for U.S. Appl. No. 14/841,614, dated Jan. 8, 2019, 3 pages.

Corrected Notice of Allowance received for U.S. Appl. No. 14/928,865, dated Aug. 5, 2019, 2 pages.

Corrected Notice of Allowance received for U.S. Appl. No. 14/928,865, dated May 16, 2019, 2 pages.

Corrected Notice of Allowance received for U.S. Appl. No. 15/366,763, dated Jan. 2, 2020, 5 pages.

Corrected Notice of Allowance received for U.S. Appl. No. 15/366,890, dated Feb. 12, 2020, 2 pages.

Corrected Notice of Allowance received for U.S. Appl. No. 15/488,093, dated Jun. 15, 2020, 2 pages.

Corrected Notice of Allowance received for U.S. Appl. No. 15/488,093, dated Jun. 30, 2020, 2 pages.

Corrected Notice of Allowance received for U.S. Appl. No. 16/841,352, dated Dec. 2, 2020, 2 pages.

Corrected Notice of Allowance received for U.S. Appl. No. 16/936,164, dated Oct. 13, 2022, 3 pages.

Corrected Notice of Allowance received for U.S. Appl. No. 16/936,164, dated Oct. 28, 2022, 3 pages.

Corrected Notice of Allowance received for U.S. Appl. No. 17/027,373, dated Jul. 12, 2022, 2 pages.

Corrected Notice of Allowance received for U.S. Appl. No. 17/157,391, dated Dec. 30, 2021, 2 pages.

Decision on Appeal received for U.S. Appl. No. 14/503,355, dated Aug. 25, 2020, 10 pages.

Decision on Appeal received for U.S. Appl. No. 16/454,884, dated Feb. 16, 2022, 12 pages.

Decision to Grant received for Danish Patent Application No. PA201770126, dated Mar. 27, 2018, 2 pages.

Decision to Grant received for European Patent Application No. 15759981.2, dated Jan. 8, 2020, 2 pages.

Decision to Grant received for European Patent Application No. 15760008.1, dated Aug. 11, 2022, 2 pages.

Decision to Grant received for European Patent Application No. 18170262.2, dated Mar. 11, 2022, 2 pages.

Decision to Refuse received for European Patent Application No. 15728307.8, dated Dec. 18, 2019, 14 pages.

Decision to Refuse received for European Patent Application No. 15729286.3, dated Dec. 18, 2019, 13 pages.

Decision to Refuse received for European Patent Application No. 17167629.9, dated Nov. 24, 2020, 2 pages.

Dewsbury Victor, "Designing for Small Screens", AVA Publishing, 2005, 27 pages.

digitalstreetsa.com, "Why WeChat might kill Whatsapp's future...", Available at <<http://digitalstreetsa.com/why-wechatmight-kill-whatsapps-future/>>, Jul. 3, 2013, 10 pages.

Examiner-Initiated Interview Summary received for U.S. Appl. No. 17/027,373, dated Mar. 31, 2022, 4 pages.

Examiner's Answer to Appeal Brief received for U.S. Appl. No. 14/503,355, dated Apr. 17, 2020, 17 pages.

Examiner's Answer to Appeal Brief received for U.S. Appl. No. 16/454,884, dated Sep. 17, 2021, 33 pages.

Extended European Search Report Received for European Patent Application No. 17167629.9, dated Jun. 2, 2017, 7 pages.

Extended European Search Report received for European Patent Application No. 18170262.2, dated Jul. 25, 2018, 8 pages.

(56)

References Cited**OTHER PUBLICATIONS**

Extended European Search Report received for European Patent Application No. 22158560.7, dated Jun. 10, 2022, 12 pages.

Extended European Search Report received for European Patent Application No. 22169639.6, dated Jul. 19, 2022, 14 pages.

Final Office Action received for U.S. Appl. No. 12/163,908, dated Nov. 7, 2012, 15 pages.

Final Office Action received for U.S. Appl. No. 14/503,355, dated May 20, 2019, 27 pages.

Final Office Action received for U.S. Appl. No. 14/503,355, dated Sep. 8, 2017, 25 pages.

Final Office Action received for U.S. Appl. No. 14/641,308, dated Jul. 1, 2019, 46 pages.

Final Office Action received for U.S. Appl. No. 14/641,308, dated Mar. 14, 2018, 42 pages.

Final Office Action received for U.S. Appl. No. 14/817,572, dated Mar. 23, 2017, 14 pages.

Final Office Action received for U.S. Appl. No. 14/838,235, dated Jun. 15, 2016, 18 pages.

Final Office Action received for U.S. Appl. No. 14/841,614, dated May 10, 2018, 13 pages.

Final Office Action received for U.S. Appl. No. 14/841,623, dated Sep. 5, 2017, 16 pages.

Final Office Action received for U.S. Appl. No. 14/928,865, dated Dec. 5, 2018, 15 pages.

Final Office Action received for U.S. Appl. No. 15/960,330, dated Nov. 10, 2020, 19 pages.

Final Office Action received for U.S. Appl. No. 16/434,747, dated Nov. 26, 2021, 14 pages.

Final Office Action received for U.S. Appl. No. 16/454,884, dated Sep. 11, 2020, 28 pages.

Final Office Action received for U.S. Appl. No. 16/871,995, dated Aug. 20, 2021, 25 pages.

Final Office Action received for U.S. Appl. No. 16/871,995, dated Jul. 5, 2022, 17 pages.

Final Office Action received for U.S. Appl. No. 16/936,164, dated Jul. 6, 2022, 21 pages.

Final Office Action received for U.S. Appl. No. 17/013,778, dated Apr. 1, 2022, 11 pages.

Final Office Action received for U.S. Appl. No. 17/026,818, dated Jan. 29, 2021, 21 pages.

Final Office Action received for U.S. Appl. No. 17/476,404, dated May 5, 2022, 30 pages.

Grothaus Michael, "WhatsApp Introduces Major New Audio Features", Engadget, Available at <<http://www.engadget.com/2013/08/07/whatsapp-introduces-major-new-audio-features/>>, Aug. 7, 2013, 4 pages.

How to Move Mail to Different Folders in Gmail, Available online at <<https://web.archive.org/web/20140731230338/http://www.wikihow.com/Move-Mail-to-Different-Folders-in-Gmail>>, Jul. 31, 2014, pp. 1-4.

How to use popular SNS confidence (wechat) in China 2 _ voice message, press together, shake function etc., Available at "<http://seechina365.com/2014/04/05/wechat02/>", Apr. 5, 2014, 27 pages.

Intention to Grant received for Danish Patent Application No. PA201570550, dated Dec. 22, 2016, 2 pages.

Intention to Grant received for Danish Patent Application No. PA202070617, dated Nov. 15, 2021, 2 pages.

Intention to Grant received for Denmark Patent Application No. PA201770126, dated Jan. 19, 2018, 2 pages.

Intention to Grant received for European Patent Application No. 15759981.2, dated Aug. 12, 2019, 8 pages.

Intention to Grant received for European Patent Application No. 15759981.2, dated Mar. 21, 2019, 8 pages.

Intention to Grant received for European Patent Application No. 15760008.1, dated Apr. 6, 2022, 11 pages.

Intention to Grant received for European Patent Application No. 15760008.1, dated Oct. 5, 2021, 11 pages.

Intention to Grant received for European Patent Application No. 18170262.2, dated Jun. 30, 2020, 8 pages.

Intention to Grant received for European Patent Application No. 18170262.2, dated Oct. 27, 2021, 8 pages.

International Preliminary Report on Patentability received for PCT Patent Application No. PCT/US2015/032305, dated Dec. 15, 2016, 8 pages.

International Preliminary Report on Patentability received for PCT Patent Application No. PCT/US2015/032309, dated Dec. 15, 2016, 8 pages.

International Preliminary Report on Patentability received for PCT Patent Application No. PCT/US2015/043487, dated Feb. 16, 2017, 13 pages.

International Preliminary Report on Patentability received for PCT Patent Application No. PCT/US2015/044083, dated Mar. 16, 2017, 24 pages.

International Preliminary Report on Patentability received for PCT Patent Application No. PCT/US2016/046828, dated Mar. 1, 2018, 19 pages.

International Preliminary Report on Patentability received for PCT Patent Application No. PCT/US2015/019321, dated Mar. 16, 2017, 8 pages.

International Preliminary Report on Patentability received for PCT Patent Application No. PCT/US2015/046787, dated Mar. 16, 2017, 19 pages.

International Search Report and Written Opinion received for PCT Patent Application No. PCT/US2015/019321, dated Jun. 3, 2015, 11 pages.

International Search Report and Written Opinion received for PCT Patent Application No. PCT/US2015/032305, dated Sep. 10, 2015, 10 pages.

International Search Report and Written Opinion received for PCT Patent Application No. PCT/US2015/032309, dated Sep. 2, 2015, 10 pages.

International Search Report and Written Opinion received for PCT Patent Application No. PCT/US2015/043487, dated Jan. 29, 2016, 19 pages.

International Search Report and Written Opinion received for PCT Patent Application No. PCT/US2015/044083, dated Feb. 4, 2016, 33 pages.

International Search Report and Written Opinion received for PCT Patent Application No. PCT/US2015/046787, dated Apr. 1, 2016, 26 pages.

International Search Report and Written Opinion received for PCT Patent Application No. PCT/US2016/046828, dated Dec. 15, 2016, 22 pages.

International Search Report and Written Opinion received for PCT Patent Application No. PCT/US2021/031760, dated Sep. 16, 2021, 18 pages.

Invitation to Pay Additional Fees and Partial Search Report received for PCT Patent Application No. PCT/US2015/043487, dated Nov. 9, 2015, 4 pages.

Invitation to Pay Additional Fees received for PCT Patent Application No. PCT/US2015/044083, dated Nov. 4, 2015, 11 pages.

Invitation to Pay Additional Fees received for PCT Patent Application No. PCT/US2015/046787, dated Dec. 15, 2015, 8 pages.

Invitation to Pay Additional Fees received for PCT Patent Application No. PCT/US2016/046828, dated Sep. 23, 2016, 2 pages.

IOSvlog Daily, "iOS 7 Notification Center Complete Walkthrough", Available online at : "<https://www.youtube.com/watch?v=gATXt-o42LA>", Jun. 10, 2013, 1 page.

Iphone, "User Guide for iOS 7.1 Software", Mar. 2014, 162 pages.

Leonard Jonathano., "How to: dismiss banner notifications or toast notifications on ios7", Available online at : "https://www.youtube.com/watch?v=vSjHnBFIW_M", Dec. 17, 2013, 1 page.

Lewis Jeffery, "iOS Notification Banner Pull Down to Notification Center in iOS 7 Beta 5", Available online at : "<https://www.youtube.com/watch?v=nP0s6ETPxDg>", Aug. 6, 2013, 1 page.

Minutes of Oral Proceedings received for European Patent Application No. 15728307.8, mailed Dec. 13, 2019, 4 pages.

Minutes of Oral Proceedings received for European Patent Application No. 15729286.3, mailed Dec. 13, 2019, 4 pages.

Minutes of the Oral Proceedings received for European Patent Application No. 15760008.1, mailed on Sep. 21, 2021, 6 pages.

(56)

References Cited**OTHER PUBLICATIONS**

Mobile How To, "How to Send A Picture Message/MMS—Samsung Galaxy Note 3", Online Available at: <https://www.youtube.com/watch?v=-3d0z8-KeDw>, Published on Nov. 3, 2013, 1 page.

Non-Final Office Action received for U.S. Appl. No. 14/503,386, dated Jan. 7, 2015, 19 pages.

Non-Final Office Action received for U.S. Appl. No. 17/476,404, dated Feb. 8, 2022, 26 pages.

Non-Final Office Action received for U.S. Appl. No. 14/817,572, dated Sep. 12, 2016, 9 pages.

Non-Final Office Action received for U.S. Appl. No. 17/013,778, dated Aug. 20, 2021, 9 pages.

Non-Final Office Action received for U.S. Appl. No. 12/163,908, dated Apr. 7, 2017, 13 pages.

Non-Final Office Action received for U.S. Appl. No. 12/163,908, dated Jun. 13, 2012, 17 pages.

Non-Final Office Action received for U.S. Appl. No. 14/503,355, dated Dec. 30, 2016, 23 pages.

Non-Final Office Action received for U.S. Appl. No. 14/503,355, dated Sep. 4, 2018, 25 pages.

Non-Final Office Action received for U.S. Appl. No. 14/503,376, dated Dec. 22, 2014, 21 pages.

Non-Final Office Action received for U.S. Appl. No. 14/641,308, dated Dec. 20, 2018, 43 pages.

Non-Final Office Action received for U.S. Appl. No. 14/641,308, dated Jun. 23, 2017, 53 pages.

Non-Final Office Action received for U.S. Appl. No. 14/841,608, dated Apr. 12, 2017, 9 pages.

Non-Final Office Action received for U.S. Appl. No. 14/841,614, dated Jul. 27, 2017, 13 pages.

Non-Final Office Action received for U.S. Appl. No. 14/841,623, dated Feb. 2, 2017, 17 pages.

Non-Final Office Action received for U.S. Appl. No. 14/928,865, dated Mar. 27, 2018, 15 pages.

Non-Final Office Action received for U.S. Appl. No. 15/142,661, dated Jan. 25, 2017, 29 pages.

Non-Final Office Action received for U.S. Appl. No. 15/366,763, dated Mar. 8, 2019, 14 pages.

Non-Final Office Action received for U.S. Appl. No. 15/366,890, dated May 8, 2019, 16 pages.

Non-Final Office Action received for U.S. Appl. No. 15/425,273, dated Oct. 3, 2018, 10 pages.

Non-Final Office Action received for U.S. Appl. No. 15/431,435, dated Jun. 8, 2017, 13 pages.

Non-Final Office Action received for U.S. Appl. No. 15/488,093, dated Oct. 4, 2019, 18 pages.

Non-Final Office Action received for U.S. Appl. No. 15/902,401, dated Jul. 19, 2019, 11 pages.

Non-Final Office Action received for U.S. Appl. No. 15/960,330, dated Apr. 28, 2020, 20 pages.

Non-Final Office Action received for U.S. Appl. No. 15/985,570, dated Aug. 16, 2018, 23 pages.

Non-Final Office Action received for U.S. Appl. No. 16/259,954, dated Feb. 5, 2020, 10 pages.

Non-Final Office Action received for U.S. Appl. No. 16/434,747, dated Jun. 10, 2021, 13 pages.

Non-Final Office Action received for U.S. Appl. No. 16/454,884, dated Jan. 14, 2020, 41 pages.

Non-Final Office Action received for U.S. Appl. No. 16/871,995, dated Apr. 26, 2021, 14 pages.

Non-Final Office Action received for U.S. Appl. No. 16/871,995, dated Feb. 1, 2022, 18 pages.

Non-Final Office Action received for U.S. Appl. No. 16/936,164, dated Jan. 18, 2022, 18 pages.

Non-Final Office Action received for U.S. Appl. No. 17/013,778, dated Dec. 9, 2021, 11 pages.

Non-Final Office Action received for U.S. Appl. No. 17/026,818, dated Nov. 25, 2020, 20 pages.

Non-Final Office Action received for U.S. Appl. No. 17/027,373, dated Feb. 2, 2022, 17 pages.

Non-Final Office Action received for U.S. Appl. No. 17/157,391, dated Aug. 23, 2021, 12 pages.

Non-Final Office Action received for U.S. Appl. No. 17/223,794, dated Jun. 16, 2021, 32 pages.

Non-Final Office Action received for U.S. Appl. No. 14/838,235, dated Jan. 5, 2016, 3 pages.

Norman Don, "Affordances and Design", Jng.org, Available at <http://jnd.org/dn.mss/affordances_and.html>, Jan. 14, 2006, 5 pages.

Notice of Acceptance received for Australian Patent Application No. 2015267259, dated Jan. 30, 2018, 3 pages.

Notice of Acceptance received for Australian Patent Application No. 2015267260, dated Jan. 30, 2018, 3 pages.

Notice of Acceptance received for Australian Patent Application No. 2018203215, dated Nov. 20, 2019, 3 pages.

Notice of Acceptance received for Australian Patent Application No. 2018204430, dated Jun. 26, 2019, 3 pages.

Notice of Acceptance received for Australian Patent Application No. 2019246830, dated Oct. 24, 2019, 3 pages.

Notice of Acceptance received for Australian Patent Application No. 2020201575, dated Mar. 15, 2021, 3 pages.

Notice of Acceptance received for Australian Patent Application No. 2020239711, dated Dec. 16, 2021, 3 pages.

Notice of Acceptance received for Australian Patent Application No. 2021202815, dated Jun. 16, 2022, 3 pages.

Notice of Acceptance received for Australian Patent Application No. 2015312369, dated Mar. 21, 2018, 3 pages.

Notice of Allowance received for Chinese Patent Application No. 201510290133.1, dated Jan. 9, 2019, 2 pages.

Notice of Allowance received for Chinese Patent Application No. 201510291012.9, dated Jan. 9, 2019, 2 pages.

Notice of Allowance received for Chinese Patent Application No. 201510549056.7, dated Jul. 2, 2019, 2 pages.

Notice of Allowance received for Chinese Patent Application No. 201520365358.4, dated Nov. 20, 2015, 4 pages.

Notice of Allowance received for Chinese Patent Application No. 201520365843.1, dated Feb. 15, 2016, 5 pages.

Notice of Allowance received for Chinese Patent Application No. 201520669842.6, dated May 18, 2016, 4 pages.

Notice of Allowance received for Chinese Patent Application No. 201580029071.7, dated Aug. 19, 2021, 5 pages.

Notice of Allowance received for Chinese Patent Application No. 201580047640.0, dated Sep. 18, 2021, 2 pages.

Notice of Allowance received for Chinese Patent Application No. 201620830403.3, dated Sep. 8, 2017, 2 pages.

Notice of Allowance received for Chinese Patent Application No. 201710267617.3, dated May 8, 2021, 2 pages.

Notice of Allowance received for Danish Patent Application No. PA201570550, dated Mar. 20, 2017, 2 pages.

Notice of Allowance received for Japanese Patent Application No. 2017-510297, dated May 7, 2018, 4 pages.

Notice of Allowance received for Japanese Patent Application No. 2017-514992, dated Feb. 15, 2019, 4 pages.

Notice of Allowance received for Japanese Patent application No. 2017-514993, dated Jan. 12, 2018, 4 pages.

Notice of Allowance received for Japanese Patent Application No. 2018-018497, dated Jun. 21, 2019, 4 pages.

Notice of Allowance received for Japanese Patent Application No. 2018-072632, dated Dec. 7, 2018, 4 pages.

Notice of Allowance received for Japanese Patent Application No. 2019-000698, dated Feb. 8, 2021, 4 pages.

Notice of Allowance received for Japanese Patent Application No. 2019-050138, dated Jun. 15, 2020, 5 pages.

Notice of Allowance received for Japanese Patent Application No. 2020-118723, dated Oct. 16, 2020, 4 pages.

Notice of Allowance received for Japanese Patent Application No. 2020-159840, dated Jul. 8, 2022, 4 pages.

Notice of Allowance received for Japanese Patent Application No. 2020-187397, dated Sep. 10, 2021, 4 pages.

Notice of Allowance received for Korean Patent Application No. 10-2017-7005628, dated Jun. 18, 2018, 5 pages.

Notice of Allowance Received for Korean Patent Application No. 10-2018-7027006, dated May 23, 2019, 4 pages.

(56)

References Cited**OTHER PUBLICATIONS**

Notice of Allowance received for Korean Patent Application No. 10-2019-7024901, dated May 12, 2020, 5 pages.
 Notice of Allowance received for Korean Patent Application No. 10-2020-0123805, dated Jun. 19, 2022, 5 pages.
 Notice of Allowance received for Taiwanese Patent Application No. 104107318, dated Oct. 19, 2021, 5 pages.
 Notice of Allowance received for Taiwanese Patent Application No. 104107332, dated Jun. 21, 2019, 5 pages.
 Notice of Allowance received for Taiwanese Patent Application No. 104128519, dated Nov. 20, 2017, 5 pages.
 Notice of Allowance received for Taiwanese Patent Application No. 104128704, dated Feb. 21, 2018, 5 pages.
 Notice of Allowance received for U.S. Appl. No. 14/841,608, dated Nov. 14, 2017, 5 pages.
 Notice of Allowance received for U.S. Appl. No. 12/163,908, dated Nov. 30, 2017, 13 pages.
 Notice of Allowance received for U.S. Appl. No. 12/789,440, dated Jan. 14, 2013, 7 pages.
 Notice of Allowance received for U.S. Appl. No. 12/789,440, dated Jun. 26, 2012, dated Jun. 26, 2012, 9 pages.
 Notice of Allowance received for U.S. Appl. No. 14/503,376, dated Jul. 29, 2015, 13 pages.
 Notice of Allowance received for U.S. Appl. No. 14/503,376, dated Sep. 2, 2015, 2 pages.
 Notice of Allowance received for U.S. Appl. No. 14/503,376, dated Sep. 24, 2015, 5 pages.
 Notice of Allowance received for U.S. Appl. No. 14/503,386, dated Jul. 30, 2015, 12 pages.
 Notice of Allowance received for U.S. Appl. No. 14/503,386, dated Sep. 24, 2015, 5 pages.
 Notice of Allowance received for U.S. Appl. No. 14/641,308, dated Jan. 15, 2020, 7 pages.
 Notice of Allowance received for U.S. Appl. No. 14/817,572, dated Nov. 30, 2017, 26 pages.
 Notice of Allowance received for U.S. Appl. No. 14/838,235, dated Dec. 29, 2016, 4 pages.
 Notice of Allowance Received for U.S. Appl. No. 14/838,235, dated Oct. 4, 2016, 7 pages.
 Notice of Allowance received for U.S. Appl. No. 14/841,614, dated Oct. 24, 2018, 10 pages.
 Notice of Allowance received for U.S. Appl. No. 14/841,623, dated Feb. 23, 2018, 8 pages.
 Notice of Allowance received for U.S. Appl. No. 14/928,865, dated Apr. 3, 2019, 7 pages.
 Notice of Allowance received for U.S. Appl. No. 14/928,865, dated Jul. 22, 2019, 7 pages.
 Notice of Allowance received for U.S. Appl. No. 15/142,661, dated Feb. 15, 2018, 9 pages.
 Notice of Allowance received for U.S. Appl. No. 15/142,661, dated Oct. 4, 2017, 22 pages.
 Notice of Allowance received for U.S. Appl. No. 15/366,763, dated Oct. 8, 2019, 10 pages.
 Notice of Allowance received for U.S. Appl. No. 15/366,890, dated Nov. 14, 2019, 9 pages.
 Notice of Allowance received for U.S. Appl. No. 15/425,273, dated Mar. 7, 2019, 8 pages.
 Notice of Allowance received for U.S. Appl. No. 15/431,435, dated Jan. 23, 2018, 8 pages.
 Notice of Allowance received for U.S. Appl. No. 15/488,093, dated Apr. 22, 2020, 8 pages.
 Notice of Allowance received for U.S. Appl. No. 15/876,673, dated May 4, 2018, 27 pages.
 Notice of Allowance received for U.S. Appl. No. 15/902,401, dated Dec. 4, 2019, 8 pages.
 Notice of Allowance received for U.S. Appl. No. 15/960,330, dated Apr. 30, 2021, 18 pages.
 Notice of Allowance received for U.S. Appl. No. 15/985,570, dated Mar. 13, 2019, 22 pages.

Notice of Allowance received for U.S. Appl. No. 16/259,954, dated May 7, 2020, 9 pages.
 Notice of Allowance received for U.S. Appl. No. 16/434,747, dated Apr. 28, 2022, 8 pages.
 Notice of Allowance received for U.S. Appl. No. 16/454,884, dated May 18, 2022, 9 pages.
 Notice of Allowance received for U.S. Appl. No. 16/841,352, dated Oct. 27, 2020, 13 pages.
 Notice of Allowance received for U.S. Appl. No. 16/936,164, dated Sep. 21, 2022, 9 pages.
 Notice of Allowance received for U.S. Appl. No. 17/026,818, dated May 13, 2021, 10 pages.
 Notice of Allowance received for U.S. Appl. No. 17/027,373, dated Aug. 2, 2022, 2 pages.
 Notice of Allowance received for U.S. Appl. No. 17/027,373, dated Jun. 3, 2022, 8 pages.
 Notice of Allowance received for U.S. Appl. No. 17/157,391, dated Dec. 17, 2021, 8 pages.
 Office Action received for Australian Patent Application No. 2015100711, dated Jul. 27, 2015, 7 pages.
 Office Action Received for Australian Patent Application No. 2015100711, dated Nov. 19, 2015, 6 pages.
 Office Action received for Australian Patent Application No. 2015101188, dated Apr. 14, 2016, 3 pages.
 Office Action received for Australian Patent Application No. 2015267259, dated Jun. 2, 2017, 2 pages.
 Office Action received for Australian Patent Application No. 2015267260, dated Jun. 2, 2017, 2 pages.
 Office Action received for Australian Patent Application No. 2016102028, dated Feb. 13, 2017, 4 pages.
 Office Action received for Australian Patent Application No. 2016102029, dated Feb. 22, 2017, 4 pages.
 Office Action received for Australian Patent Application No. 2017100197, dated Apr. 28, 2017, 4 pages.
 Office Action received for Australian Patent Application No. 2017100198, dated Apr. 20, 2017, 4 pages.
 Office Action received for Australian Patent Application No. 2017100760, dated Aug. 10, 2017, 4 pages.
 Office Action received for Australian Patent Application No. 2017100760, dated Jan. 30, 2018, 3 pages.
 Office Action received for Australian Patent Application No. 2018203215, dated Mar. 29, 2019, 3 pages.
 Office Action received for Australian Patent Application No. 2018204430, dated Aug. 15, 2018, 5 pages.
 Office Action received for Australian Patent Application No. 2020201575, dated Dec. 22, 2020, 3 pages.
 Office Action received for Australian Patent Application No. 2020239711, dated Sep. 13, 2021, 5 pages.
 Office Action received for Australian Patent Application No. 2021202815, dated Apr. 11, 2022, 2 pages.
 Office Action received for Australian Patent Application No. 2015312369, dated Mar. 29, 2017, 3 pages.
 Office Action received for Chinese Patent Application No. 201510290133.1, dated Feb. 9, 2018, 10 pages.
 Office Action Received for Chinese Patent Application No. 201510291012.9, dated Feb. 8, 2018, 10 pages.
 Office Action received for Chinese Patent Application No. 201510549056.7, dated Aug. 7, 2018, 7 pages.
 Office Action received for Chinese Patent Application No. 201510549056.7, dated Mar. 15, 2019, 7 pages.
 Office Action received for Chinese Patent Application No. 2015105490567, dated Nov. 24, 2017, 15 pages.
 Office Action received for Chinese Patent Application No. 201520365358.4, dated Aug. 11, 2015, 4 pages.
 Office Action received for Chinese Patent Application No. 201520365843.1, dated Aug. 25, 2015, 4 pages.
 Office Action Received for Chinese Patent Application No. 201520365843.1, dated Nov. 16, 2015, 3 pages.
 Office Action received for Chinese Patent Application No. 201520669842.6, dated Dec. 4, 2015, 7 pages.
 Office Action received for Chinese Patent Application No. 201580029071.7, dated Apr. 2, 2021, 19 pages.

(56)

References Cited**OTHER PUBLICATIONS**

Office Action received for Chinese Patent Application No. 201580029071.7, dated Apr. 9, 2020, 33 pages.
 Office Action received for Chinese Patent Application No. 201580029071.7, dated Jul. 2, 2019, 29 pages.
 Office Action received for Chinese Patent Application No. 201580029071.7, dated Oct. 29, 2020, 20 pages.
 Office Action received for Chinese Patent Application No. 201580046788.2, dated Apr. 15, 2019, 13 pages.
 Office Action received for Chinese Patent Application No. 201580046788.2, dated Feb. 25, 2020, 14 pages.
 Office Action received for Chinese Patent Application No. 201580046788.2, dated Mar. 25, 2021, 9 pages.
 Office Action received for Chinese Patent Application No. 201580046788.2, dated Sep. 22, 2020, 10 pages.
 Office Action received for Chinese Patent Application No. 201580047640.0, dated Aug. 5, 2019, 18 pages.
 Office Action received for Chinese Patent Application No. 201580047640.0, dated Jul. 6, 2021, 10 pages.
 Office Action received for Chinese Patent Application No. 201580047640.0, dated Mar. 3, 2021, 11 pages.
 Office Action received for Chinese Patent Application No. 201580047640.0, dated Oct. 16, 2020, 20 pages.
 Office Action received for Chinese Patent Application No. 201620393549.6, dated Aug. 18, 2016, 2 pages.
 Office Action received for Chinese Patent Application No. 201620393549.6, dated Jan. 13, 2017, 2 pages.
 Office Action received for Chinese Patent Application No. 201620393748.7, dated Aug. 18, 2016, 2 pages.
 Office Action received for Chinese Patent Application No. 201620393748.7, dated Jan. 13, 2017, 2 pages.
 Office Action Received for Chinese Patent Application No. 201620830403.3, dated Jun. 7, 2017, 2 pages.
 Office Action Received for Chinese Patent Application No. 201620830403.3, dated Mar. 7, 2017, 3 pages.
 Office Action received for Chinese Patent Application No. 201710267617.3, dated Apr. 17, 2020, 23 pages.
 Office Action received for Chinese Patent Application No. 201710267617.3, dated Jul. 10, 2019, 18 pages.
 Office Action received for Chinese Patent Application No. 201710267617.3, dated Nov. 2, 2020, 6 pages.
 Office Action received for Chinese Patent Application No. 201810654707.2 dated Apr. 2, 2022, 16 pages.
 Office Action received for Chinese Patent Application No. 201810654707.2 dated Jan. 11, 2022, 11 pages.
 Office Action received for Chinese Patent Application No. 201810654707.2, dated Jun. 22, 2022, 14 pages.
 Office Action received for Chinese Patent Application No. 201810654707.2, dated Mar. 1, 2021, 23 pages.
 Office Action received for Danish Patent Application No. PA201570550, dated Dec. 7, 2015, 6 pages.
 Office Action received for Danish Patent Application No. PA201570550, dated Jan. 19, 2016, 2 pages.
 Office Action received for Danish Patent Application No. PA201570550, dated Oct. 19, 2016, 3 pages.
 Office Action received for Danish Patent Application No. PA201770089, dated Apr. 25, 2017, 10 pages.
 Office Action received for Danish Patent Application No. PA201770125, dated Jan. 26, 2018, 5 pages.
 Office Action received for Danish Patent Application No. PA201770125, dated Jul. 20, 2018, 2 pages.
 Office Action received for Danish Patent Application No. PA201770126, dated Oct. 18, 2017, 3 pages.
 Office Action received for Danish Patent Application No. PA202070617, dated Sep. 24, 2021, 4 pages.
 Office Action received for European Patent Application No. 15729286.3, dated Feb. 7, 2018, 7 pages.
 Office Action received for European Patent Application No. 15728307.8, dated Feb. 8, 2018, 7 pages.

Office Action received for European Patent Application No. 15759981.2, dated Apr. 19, 2018, 6 pages.
 Office Action received for European Patent Application No. 15759981.2, dated Aug. 6, 2018, 10 pages.
 Office Action received for European Patent Application No. 15759981.2, dated May 16, 2018, 6 pages.
 Office Action received for European Patent Application No. 15760008.1, dated Jul. 16, 2019, 9 pages.
 Office Action received for European Patent Application No. 17167629.9, dated Jan. 25, 2019, 7 pages.
 Office Action received for European Patent Application No. 18170262.2, dated Dec. 9, 2019, 3 pages.
 Office Action received for European Patent Application No. 18170262.2, dated May 16, 2019, 6 pages.
 Office Action received for European Patent Application No. 18170262.2, dated May 27, 2019, 6 pages.
 Office Action received for German Patent Application No. 212015000194.6, dated Mar. 16, 2017, 2 pages.
 Office Action received for Indian Patent Application No. 202014041529, dated Dec. 6, 2021, 6 pages.
 Office Action received for Japanese Patent Application No. 2017-510297, dated Dec. 4, 2017, 5 pages.
 Office Action received for Japanese Patent Application No. 2017-510297, dated Jul. 10, 2017, 10 pages.
 Office Action received for Japanese Patent Application No. 2017-514992, dated Apr. 6, 2018, 11 pages.
 Office Action received for Japanese Patent Application No. 2018-018497, dated Dec. 10, 2018, 8 pages.
 Office Action received for Japanese Patent Application No. 2018-072632, dated Jul. 9, 2018, 5 pages.
 Office Action received for Japanese Patent Application No. 2019-000698, dated Mar. 9, 2020, 8 pages.
 Office Action received for Japanese Patent Application No. 2019000698, dated Oct. 23, 2020, 4 pages.
 Office Action received for Japanese Patent Application No. 2019-050138, dated Jan. 27, 2020, 9 pages.
 Office Action received for Japanese Patent Application No. 2020-159840, dated Dec. 10, 2021, 13 pages.
 Office Action received for Japanese Patent Application No. 2020-159840, dated Mar. 28, 2022, 6 pages.
 Office Action received for Japanese Patent Application No. 2020-187397, dated Mar. 12, 2021, 8 pages.
 Office Action received for Japanese Patent Application No. 2021-037591, dated Jun. 6, 2022, 6 pages.
 Office Action received for Korean Patent Application No. 10-2017-7005628, dated Jan. 30, 2018, 6 pages.
 Office Action received for Korean Patent Application No. 10-2017-7005628, dated May 10, 2017, 12 pages.
 Office Action Received for Korean Patent Application No. 10-2018-7027006, dated Jan. 14, 2019, 6 pages.
 Office Action received for Korean Patent Application No. 10-2019-7024901, dated Sep. 26, 2019, 6 pages.
 Office Action received for Taiwanese Patent Application No. 104107318, dated Dec. 26, 2018, 33 pages.
 Office Action received for Taiwanese Patent Application No. 104107318, dated Feb. 18, 2020, 10 pages.
 Office Action received for Taiwanese Patent Application No. 104107318, dated Jul. 9, 2021, 5 pages.
 Office Action received for Taiwanese Patent Application No. 104107332, dated Oct. 29, 2018, 12 pages.
 Office Action received for Taiwanese Patent Application No. 104128519, dated Mar. 29, 2017, 16 pages.
 Office Action received for Taiwanese Patent Application No. 104128704, dated Jul. 31, 2017, 7 pages.
 Office Action received for Taiwanese Patent Application No. 104128704, dated Nov. 2, 2016, 12 pages.
 Olson Parmy, "Delete by Default: Why More Snapchat-Like Messaging Is On Its Way", Forbes.com, Available Online at <https://www.forbes.com/sites/parmyolson/2013/11/22/delete-by-default-why-more-snapchat-like-messaging-is-on-its-way>, Nov. 22, 2013, 6 pages.
 Patterson Ben, "iOS 7 tip: Alerts, banners, and badges—what's the difference?", Available online at: "<https://web.archive.org/web/>

(56)

References Cited**OTHER PUBLICATIONS**

20140128072440/<http://heresthethingblog.com/2014/01/22/ios-7-tip-whats-difference-alert/>”, Jan. 22, 2014, 5 pages.

Record of Oral Hearing received for U.S. Appl. No. 16/454,884, mailed on Feb. 14, 2022, 13 pages.

Result of Consultation received for European Patent Application No. 15728307.8, dated Nov. 21, 2019, 7 pages.

Result of Consultation received for European Patent Application No. 15729286.3, dated Nov. 21, 2019, 6 pages.

Result of Consultation received for European Patent Application No. 15760008.1, dated Sep. 9, 2021, 7 pages.

Result of Consultation received for European Patent Application No. 17167629.9, dated Nov. 10, 2020, 3 pages.

Result of Consultation received for European Patent Application No. 18170262.2, dated Jan. 18, 2021, 3 pages.

Rossignol Joe, “iOS 10 Concept Simplifies Lock Screen With Collapsed Notifications”, Available online at: <https://www.macrumors.com/2016/06/16/ios-10-collapsed-notifications-concept/>, Jun. 16, 2016, 10 pages.

S. Rohan, “WeChat Review—Communication Application with Screenshots”, Absolute Blogger, Available at <<http://www.absoluteblogger.com/2012/10/wechat-review-communication-application.html>>, Oct. 19, 2010, 5 pages.

Samsung User Manual, SM-R380_UM_EU_Eng_D13_140411.pdf, Apr. 2014, 78 pages.

Samsung, “Samsung Gear 2 User manual”, Online Available<https://data2.manualslib.com/pdf/76/7550/754923-samsung/gear_2.pdf?7eb313a9f65b1566bc9ff58661c6b3a&take=binary>, XP055464984, retrieved on Apr. 5, 2018, Apr. 9, 2014, pp. 1-97.

Samsung, “SM-G900F User Manual”, English (EU). Rev.1.0, Mar. 2014, 249 pages.

Search Report and Opinion received for Danish Patent Application No. PA202070617, dated Dec. 23, 2020, 8 pages.

Search Report and Opinion received for Netherlands Patent Application No. 2015354, completed on Jun. 22, 2017, 24 pages.

Search Report and Opinion received for Netherlands Patent Application No. 2019878, dated Apr. 6, 2018, 24 pages.

Search Report received for Danish Patent Application No. PA201770125, dated May 5, 2017, 10 pages.

Search Report received for Danish Patent Application No. PA201770126, dated Apr. 26, 2017, 8 pages.

Senicar et al., “User-Centred Design and Development of an Intelligent Light Switch for Sensor Systems”, Technical Gazette, vol. 26, No. 2, available online at: <https://hrcak.srce.hr/file/320403>, 2019, pp. 339-345.

Softonic, “Beginners Guide to WhatsApp”, Retrieved from the Internet: <https://www.youtube.com/watch?v=1YN36kYDgrk>, Apr. 29, 2013, 2 pages.

Sony, “Sony Smartwatch 3 SWR50”, User Guide, Jul. 2014, 31 pages.

Summons to Attend Oral Proceedings received for European Patent Application No. 15728307.8, mailed on Jun. 28, 2019, 10 pages.

Summons to Attend Oral Proceedings received for European Patent Application No. 15728307.8, mailed on Mar. 7, 2022, 4 pages.

Summons to Attend Oral Proceedings received for European Patent Application No. 15729286.3, mailed on Jun. 27, 2019, 9 pages.

Summons to Attend Oral Proceedings received for European Patent Application No. 15729286.3, mailed on Mar. 10, 2022, 3 pages.

Summons to Attend Oral Proceedings received for European Patent Application No. 15760008.1, mailed on Feb. 5, 2021, 11 pages.

Summons to Attend Oral Proceedings received for European Patent Application No. 17167629.9, mailed on Jun. 3, 2020, 11 pages.

Summons to Attend Oral Proceedings received for European Patent Application No. 18170262.2, mailed on Dec. 15, 2020, 5 pages.

Supplemental Notice of Allowance received for U.S. Appl. No. 12/789,440, dated Apr. 23, 2013, 2 pages.

Supplemental Notice of Allowance received for U.S. Appl. No. 14/841,608, dated Jan. 25, 2018, 2 pages.

Supplemental Notice of Allowance received for U.S. Appl. No. 15/902,401, dated Feb. 3, 2020, 2 pages.

Supplemental Notice of Allowance received for U.S. Appl. No. 15/902,401, dated Feb. 13, 2020, 2 pages.

Technique, “How to Sent Voice Messages in WhatsApp”, Published on YouTube.com, Available at: <https://www.youtube.com/watch?v=mkJqYO984v0>, Aug. 12, 2013, 1 page.

User Manual, Available online at < <http://www.manualslib.com/download/754923/Samsung-Gear-2.html>>, 2014, pp. 1-97.

WeChat Philippines, “WeChat TVC—Hold To Talk”, available at <https://www.youtube.com/watch?v=E_UxteOWVSo>, May 11, 2013, 1 page.

WeChat Wiki, available on <http://web.archive.org/web/20130514131044/http://wechat.wikia.com/wiki/WeChat_Wiki>, May 14, 2013, 12 pages.

WhatsApp users over 400 million people! I tried to investigate the most used messaging application in the world, Available at “<http://www.appps.jp/2128786/>”, Jan. 24, 2014, 10 pages.

You can use LINE perfectly if you just read this!! How to use & set up LINE, LINE convenience book for 50 million people, Japan, EI Publishing Co. Ltd., Mar. 10, 2014, pp. 16-55.

Yundanfengqingdeqing, “A light cloud and light breeze; How to upload multiple pictures on Sina Weibo”, Baidu Experience, Available Online at: <<https://jingyan.baidu.com/article/6181c3e074ad0d152ff15353.html>>, Jan. 13, 2014, 12 pages.

Applicant-Initiated Interview Summary received for U.S. Appl. No. 16/871,995, dated Oct. 18, 2022, 4 pages.

Applicant-Initiated Interview Summary received for U.S. Appl. No. 17/476,404, dated Dec. 20, 2022, 2 pages.

Applicant-initiated Interview Summary received for U.S. Appl. No. 17/835,334, dated Oct. 31, 2022, 3 pages.

Corrected Notice of Allowance received for U.S. Appl. No. 17/027,373, dated Oct. 26, 2022, 2 pages.

Decision of Board of Appeal received for European Patent Application No. 15728307.8, mailed on Dec. 8, 2022, 17 pages.

Examiner’s Answer to Appeal Brief received for U.S. Appl. No. 17/013,778, dated Dec. 20, 2022, 9 pages.

Final Office Action received for U.S. Appl. No. 17/835,334, dated Dec. 22, 2022, 11 pages.

International Preliminary Report on Patentability received for PCT Patent Application No. PCT/US2021/031760, dated Nov. 24, 2022, 11 pages.

Invitation to Pay Search Fees received for European Patent Application No. 21728781.2, dated Dec. 2, 2022, 3 pages.

Minutes of Oral Proceedings received for European Patent Application No. 15728307.8, mailed on Nov. 11, 2022, 4 pages.

Minutes of the Oral Proceedings received for European Patent Application No. 15729286.3, mailed on Dec. 6, 2022, 5 pages.

Non-Final Office Action received for U.S. Appl. No. 17/476,404, dated Sep. 14, 2022, 31 pages.

Non-Final Office Action received for U.S. Appl. No. 17/583,657, dated Sep. 13, 2022, 13 pages.

Non-Final Office Action received for U.S. Appl. No. 17/835,334, dated Sep. 22, 2022, 11 pages.

Notice of Allowance received for Japanese Patent Application No. 2021-037591, dated Nov. 18, 2022, 4 pages (1 page of English Translation and 3 pages of Official Copy).

Notice of Allowance received for Korean Patent Application No. 10-2022-0091730, dated Oct. 4, 2022, 5 pages (2 pages of English Translation and 3 pages of Official Copy).

Notice of Allowance received for U.S. Appl. No. 17/027,373, dated Oct. 3, 2022, 5 pages.

Notice of Allowance received for U.S. Appl. No. 17/583,657, dated Nov. 16, 2022, 8 pages.

Office Action received for Australian Patent Application No. 2022201532, dated Dec. 19, 2022, 5 pages.

Office Action received for Chinese Patent Application No. 202111652452.4, dated Aug. 29, 2022, 23 pages (12 pages of English Translation and 11 pages of Official Copy).

Corrected Notice of Allowance received for U.S. Appl. No. 17/013,778, dated Mar. 7, 2023, 5 pages.

Non-Final Office Action received for U.S. Appl. No. 17/467,700, dated Feb. 21, 2023, 11 pages.

Non-Final Office Action received for U.S. Appl. No. 17/835,334, dated Mar. 1, 2023, 11 pages.

(56)

References Cited

OTHER PUBLICATIONS

Notice of Allowance received for U.S. Appl. No. 17/013,778, dated Feb. 23, 2023, 8 pages.
Office Action received for Chinese Patent Application No. 202111652452.4, dated Feb. 11, 2023, 28 pages (13 pages of English Translation and 15 pages of Official Copy).
Office Action received for European Patent Application No. 21728781.2, dated Mar. 1, 2023, 13 pages.
Office Action received for Japanese Patent Application No. 2021-166451, dated Jan. 5, 2023, 6 pages (3 pages of English Translation and 3 pages of Official Copy).
Applicant-Initiated Interview Summary received for U.S. Appl. No. 16/871,995, dated May 2, 2023, 4 pages.
Corrected Notice of Allowance received for U.S. Appl. No. 17/467,700, dated Apr. 17, 2023, 2 pages.
Board Decision received for Chinese Patent Application No. 201810654707.2, dated Apr. 13, 2023, 2 pages (1 page of English Translation and 1 page of Official Copy).
Applicant-Initiated Interview Summary received for U.S. Appl. No. 17/467,700, dated Mar. 28, 2023, 2 pages.
Decision to Refuse received for European Patent Application No. 22209306.4, dated Mar. 20, 2023, 2 pages.

Non-Final Office Action received for U.S. Appl. No. 17/476,404, dated Mar. 30, 2023, 29 pages.
Notice of Allowance received for U.S. Appl. No. 17/467,700, dated Apr. 7, 2023, 12 pages.
Office Action received for Indian Patent Application No. 202215025360, dated Mar. 29, 2023, 6 pages.
Office Action received for Indian Patent Application No. 202215025361, dated Mar. 29, 2023, 6 pages.
Office Action received for Indian Patent Application No. 202215025363, dated Mar. 29, 2023, 6 pages.
Office Action received for Indian Patent Application No. 202215025364, dated Mar. 29, 2023, 6 pages.
Applicant-Initiated Interview Summary received for U.S. Appl. No. 17/885,807, dated May 26, 2023, 4 pages.
Non-Final Office Action received for U.S. Appl. No. 17/885,807, dated May 12, 2023, 50 pages.
Notice of Acceptance received for Australian Patent Application No. 2022201532, dated May 22, 2023, 3 pages.
Notice of Allowance received for Japanese Patent Application No. 2021-166451, dated Jun. 5, 2023, 4 pages (1 pages of English Translation and 3 pages of Official Copy).

* cited by examiner

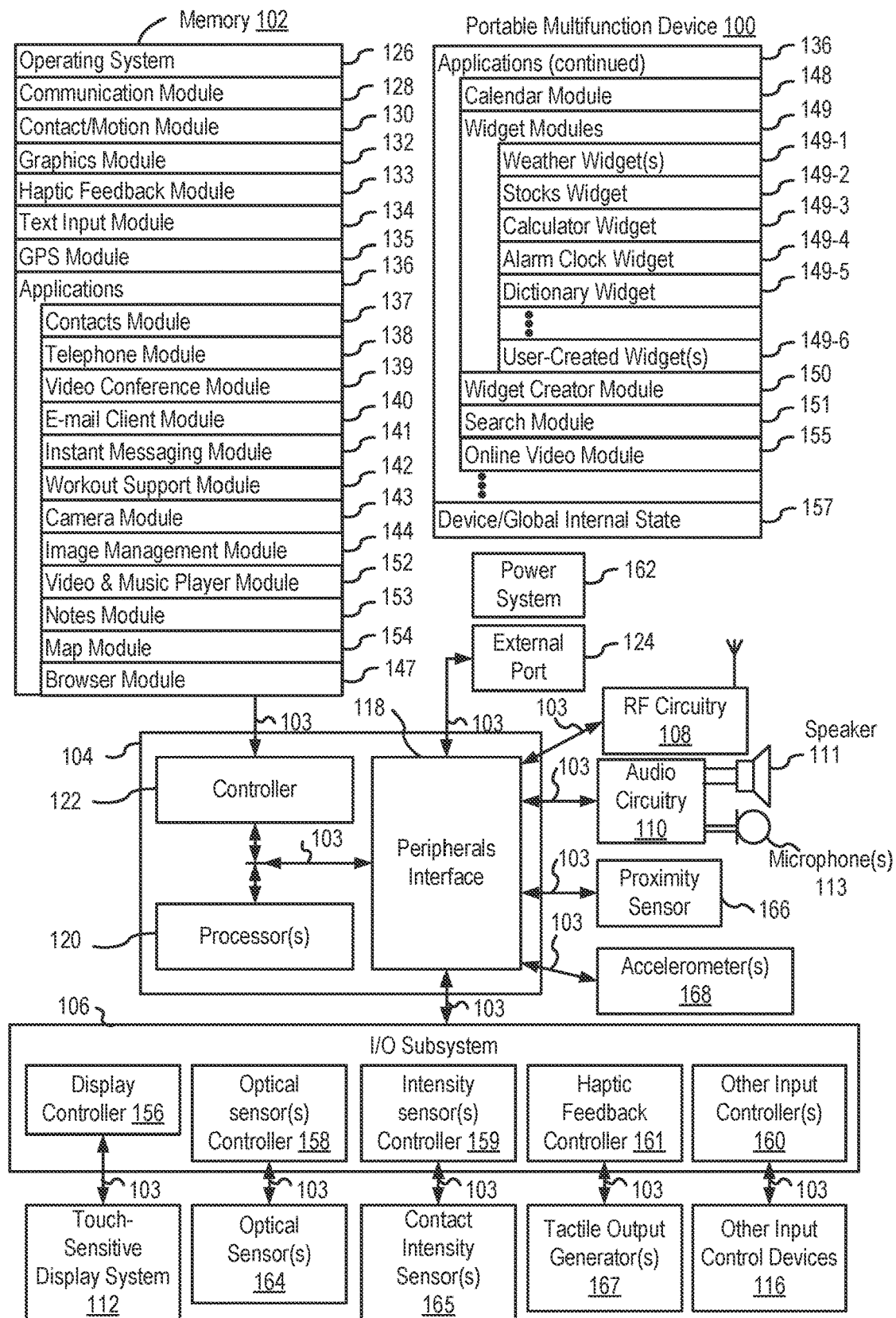


FIG. 1A

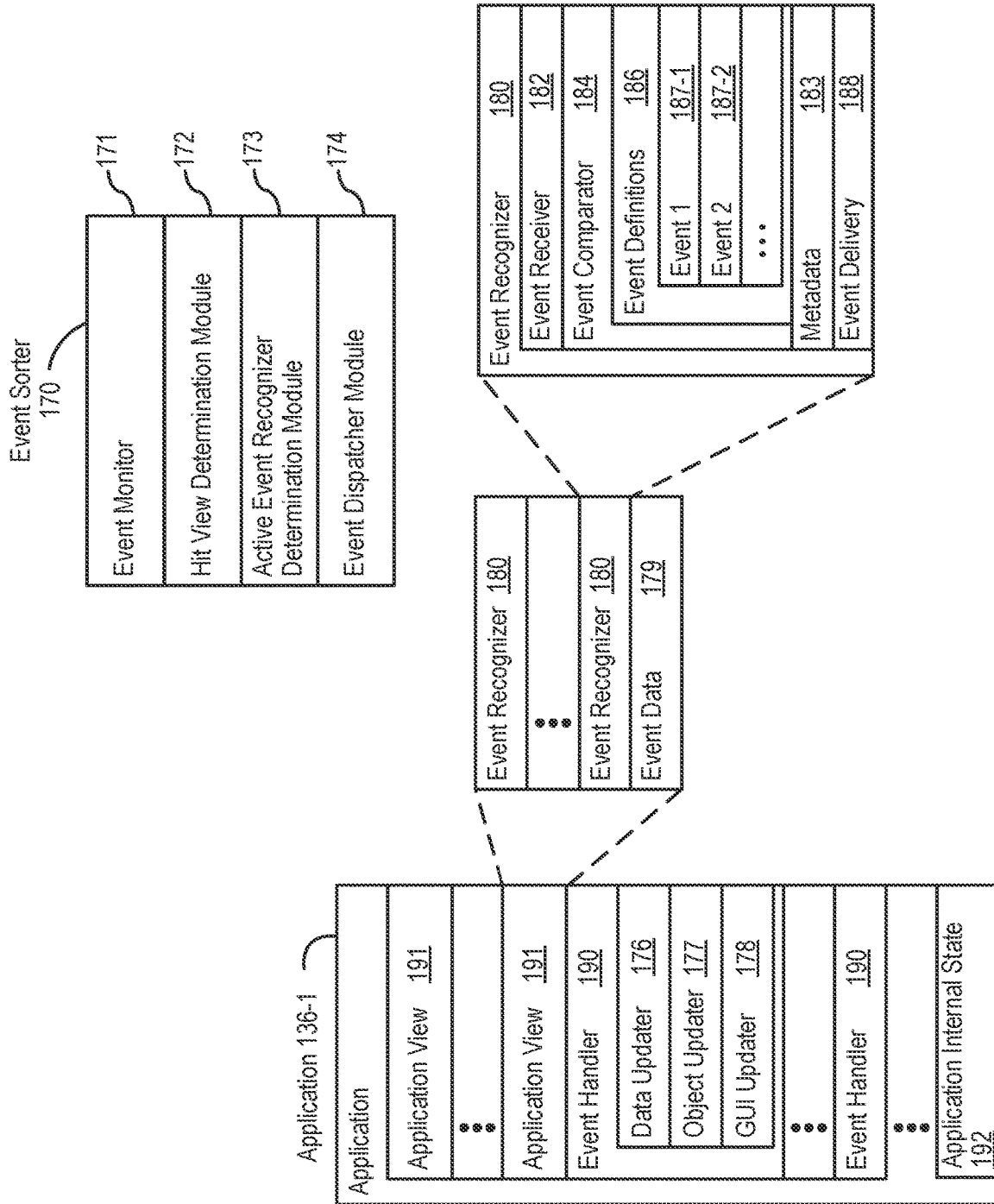


FIG. 1B

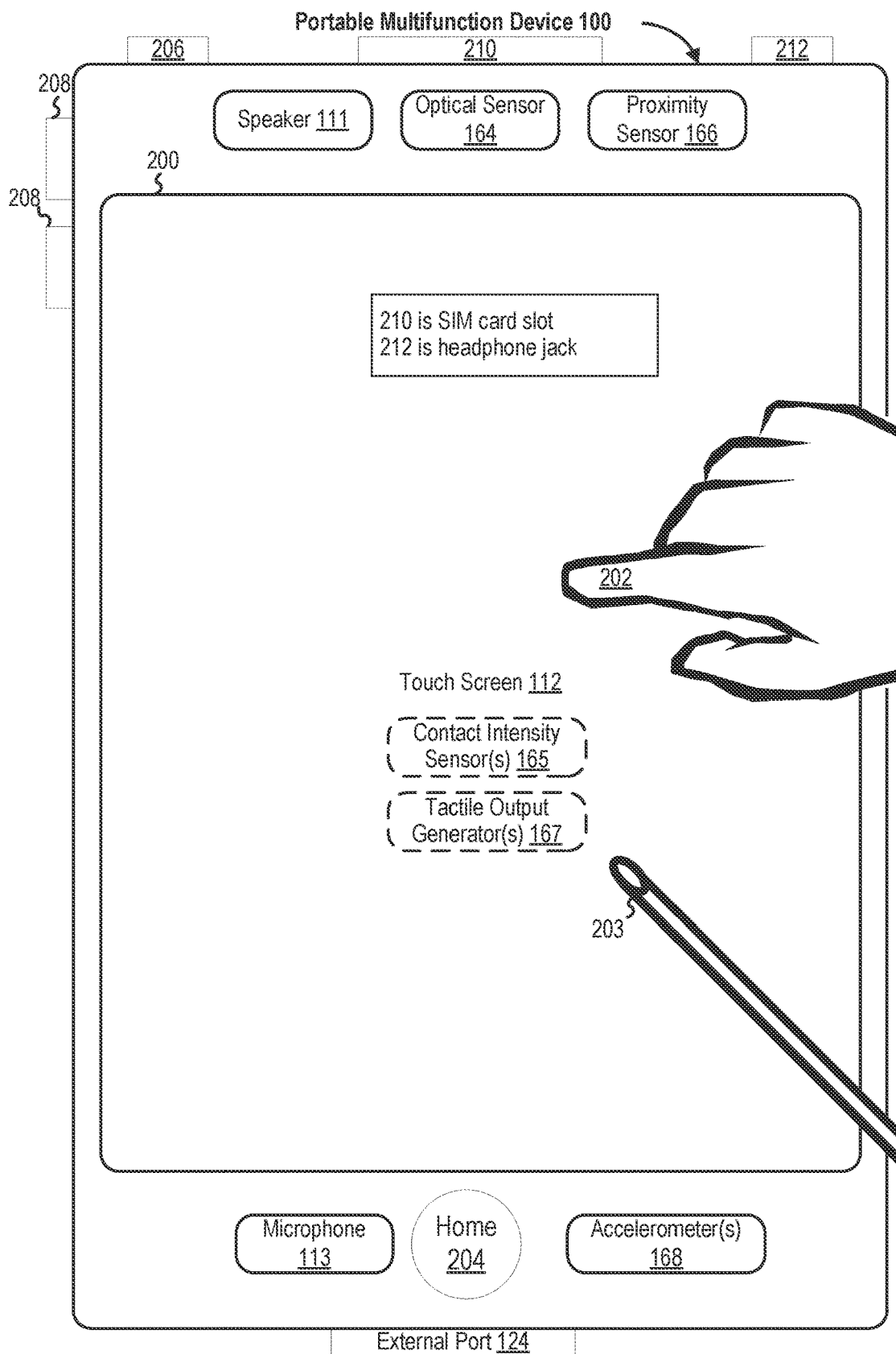


FIG. 2

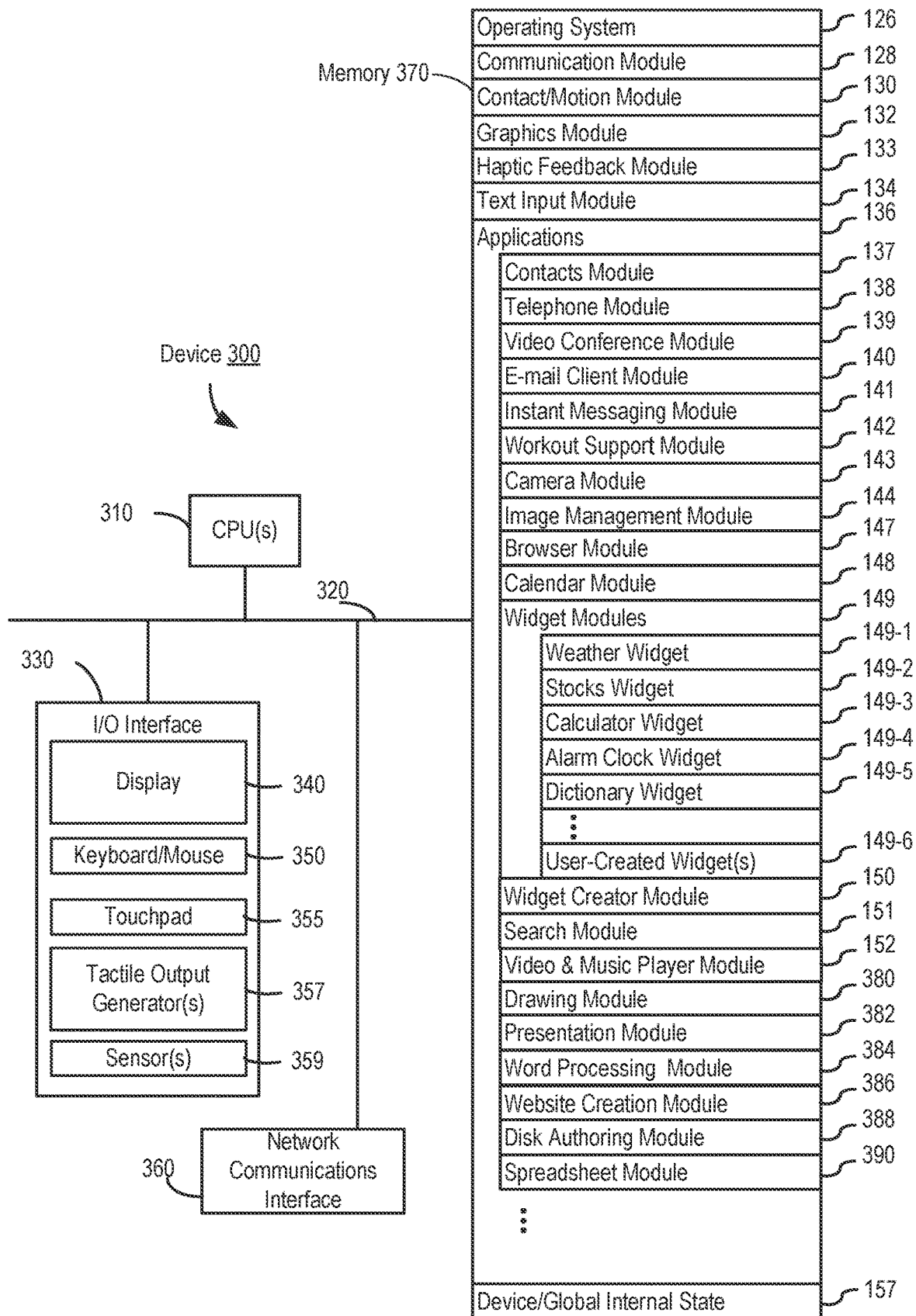


FIG. 3

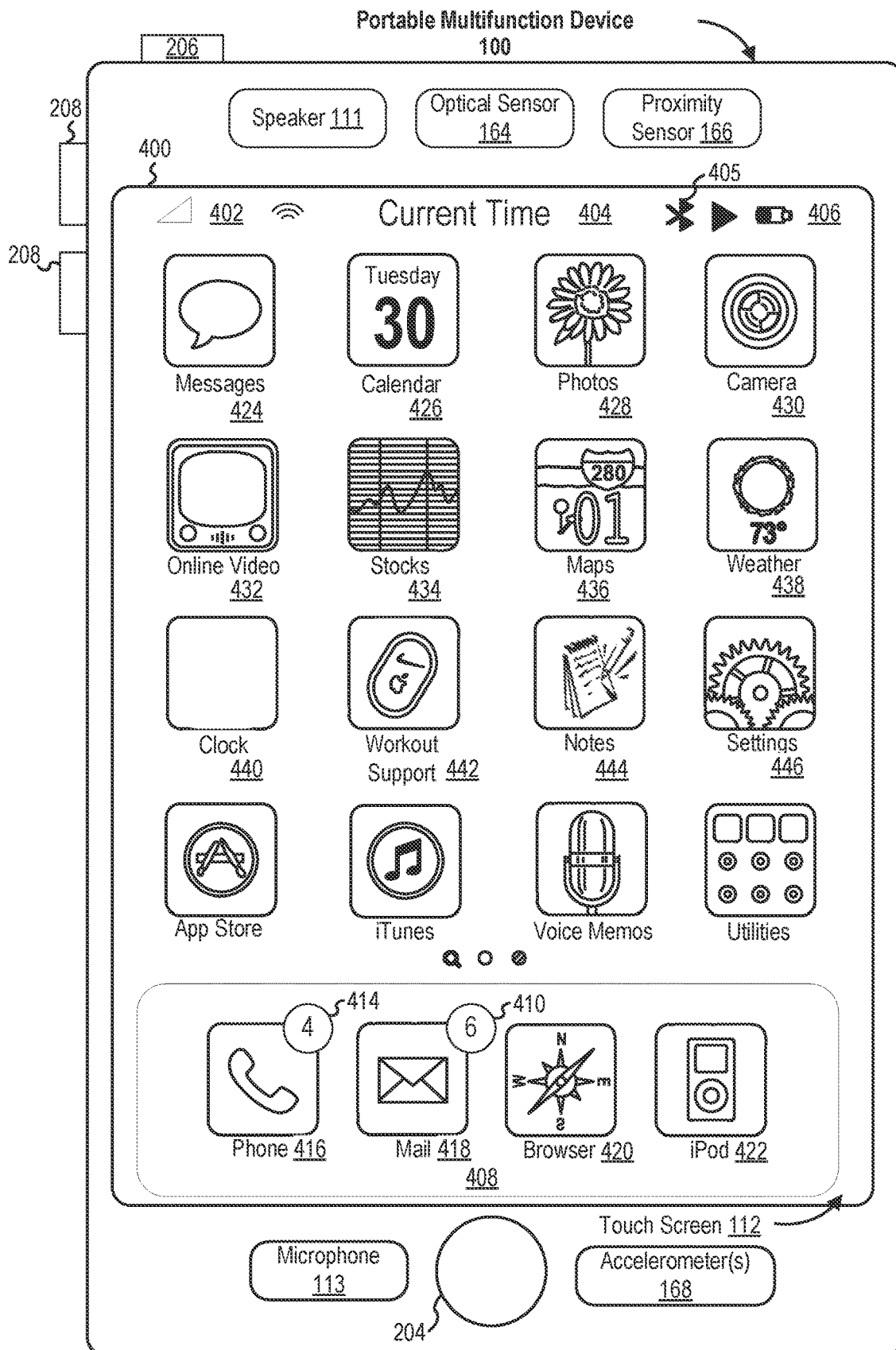


FIG. 4A

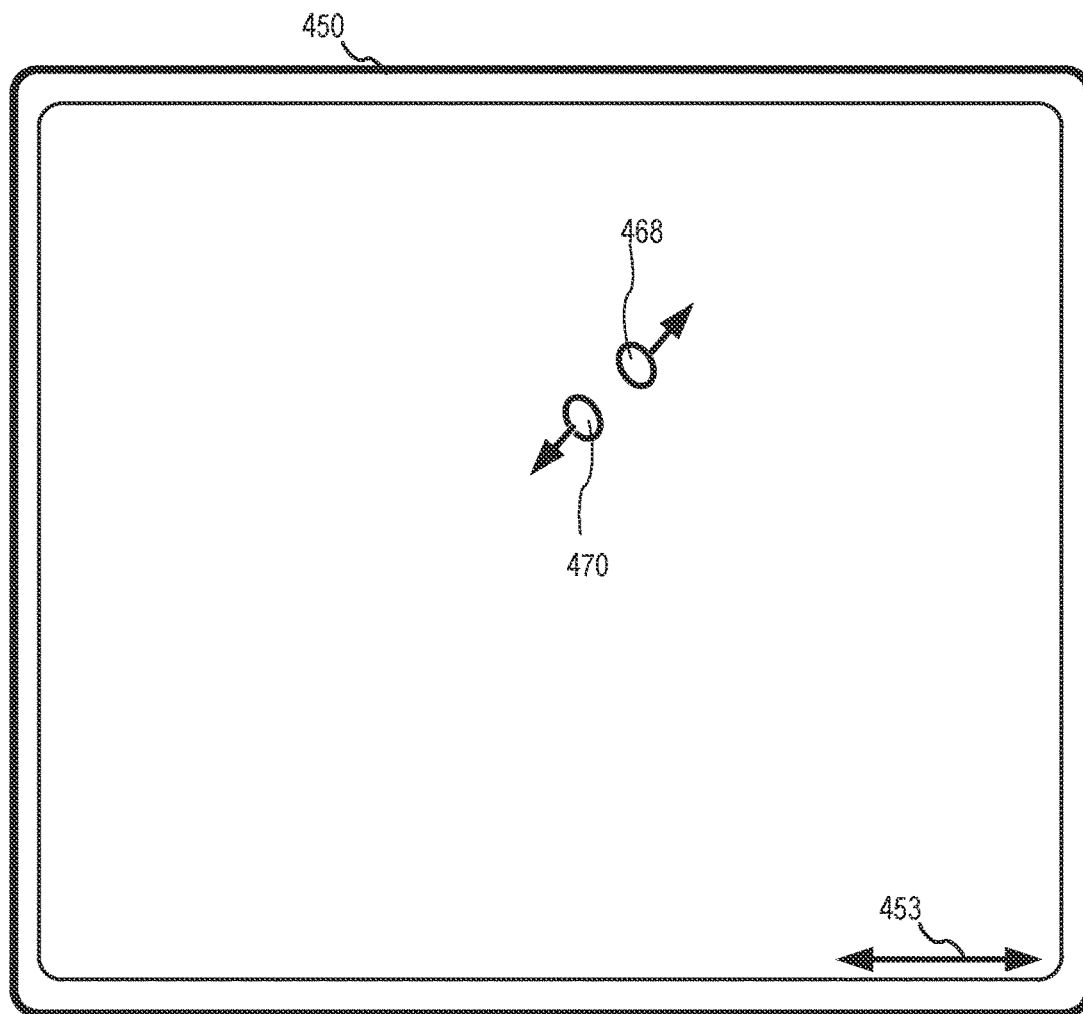
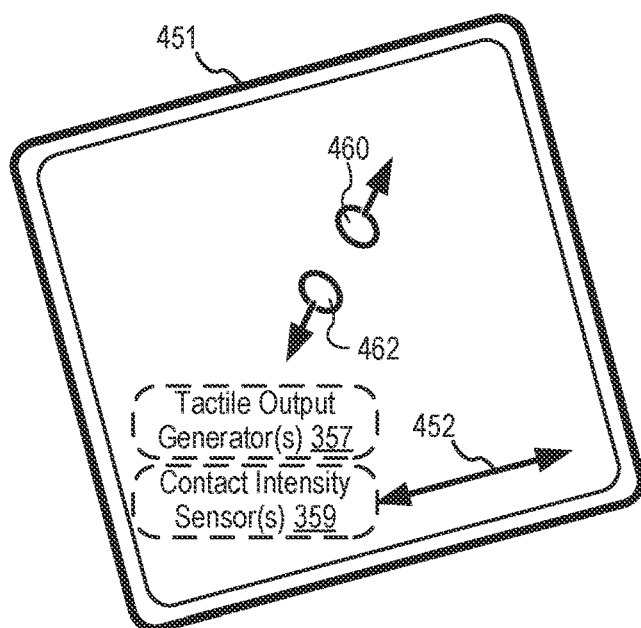


FIG. 4B

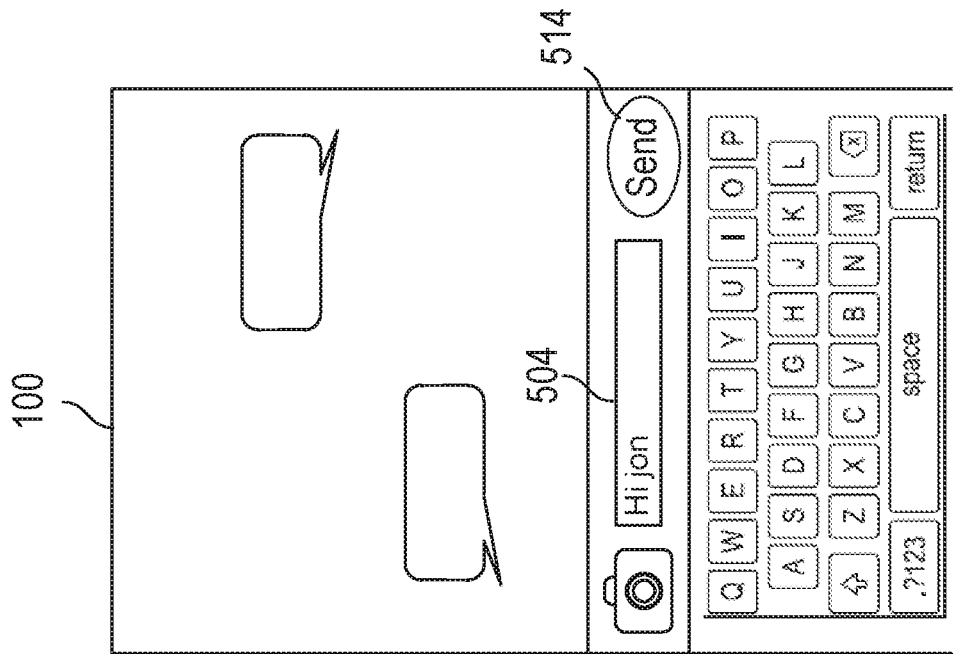


FIG. 5B

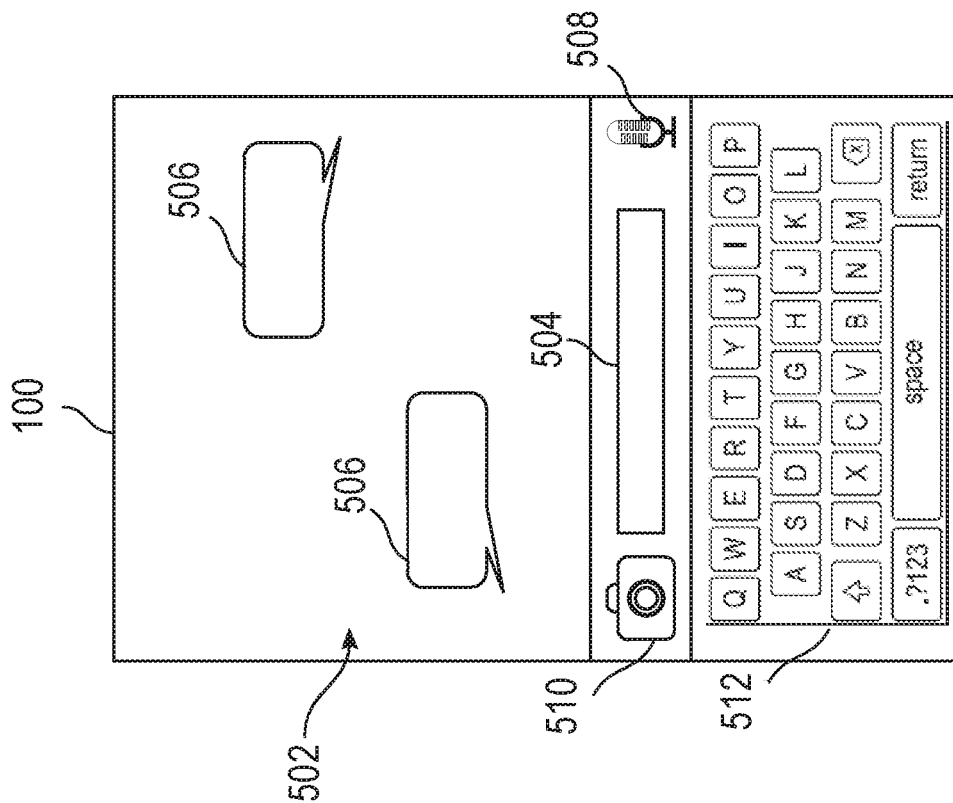


FIG. 5A

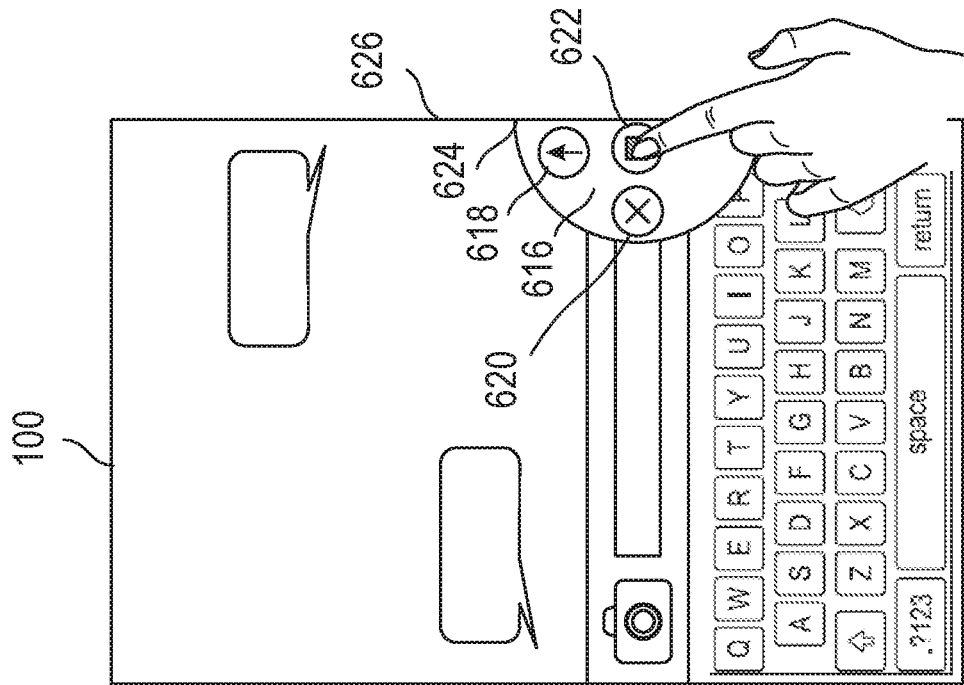


FIG. 6A

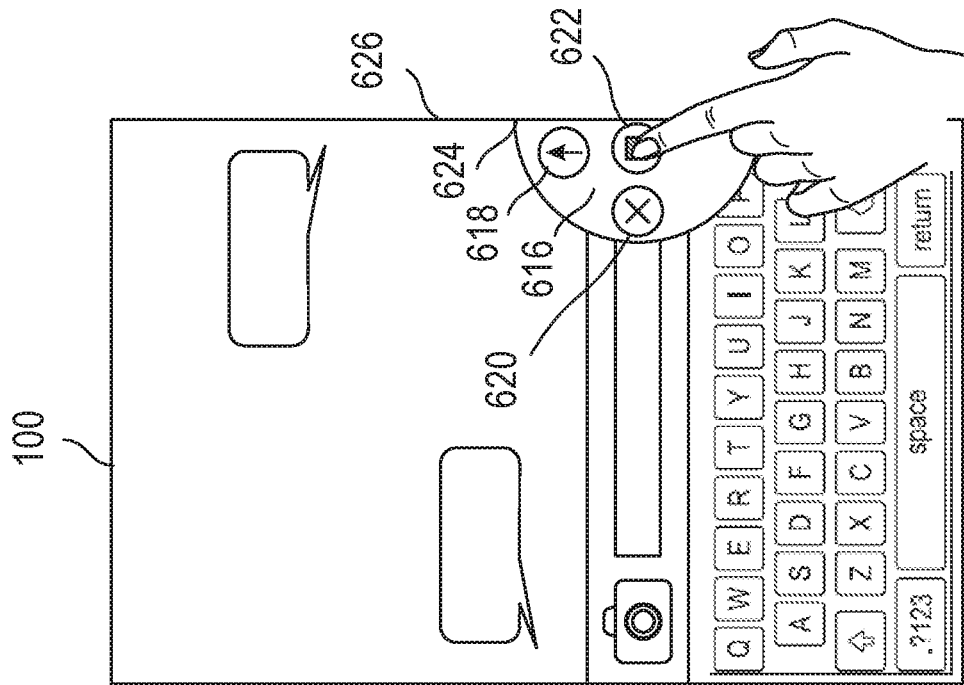


FIG. 6B

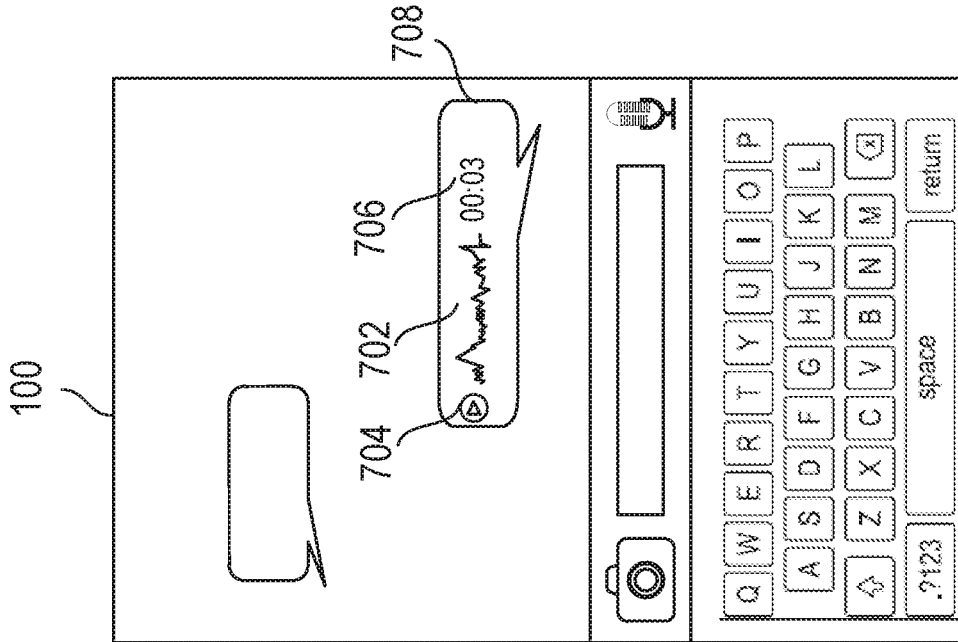


FIG. 7B

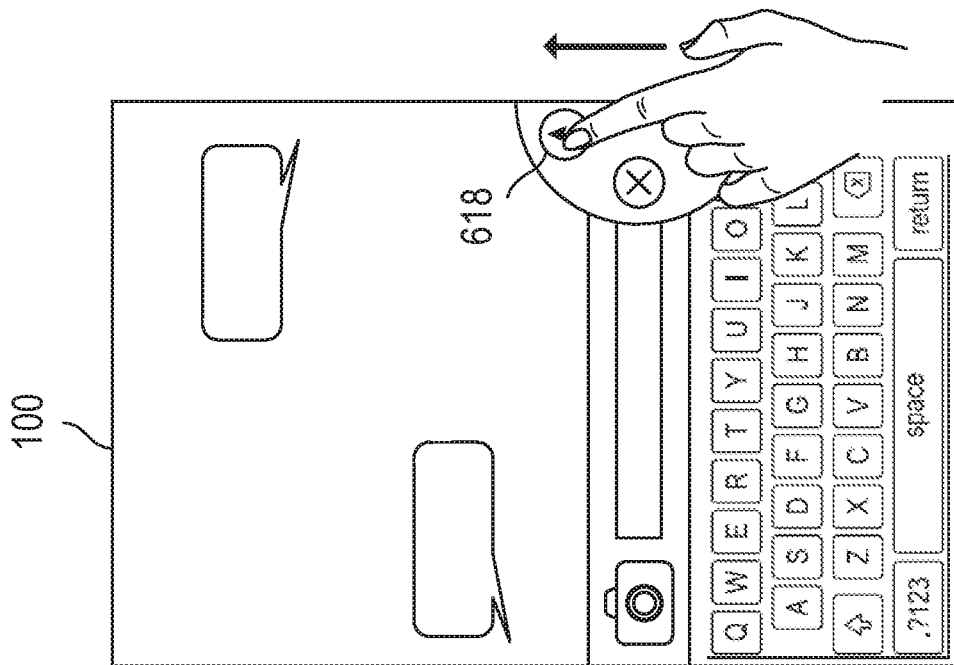


FIG. 7A

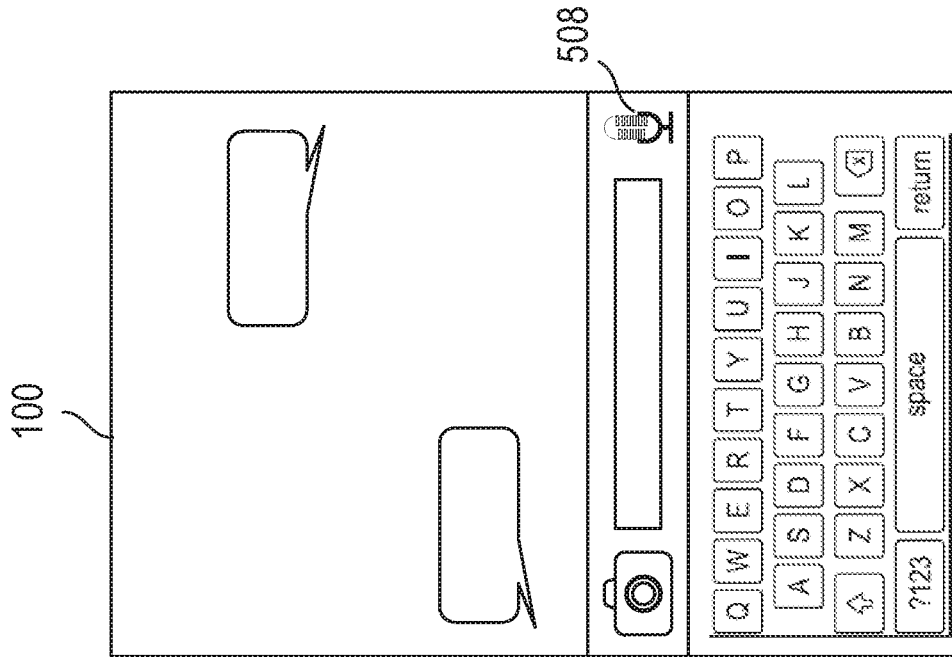


FIG. 7D

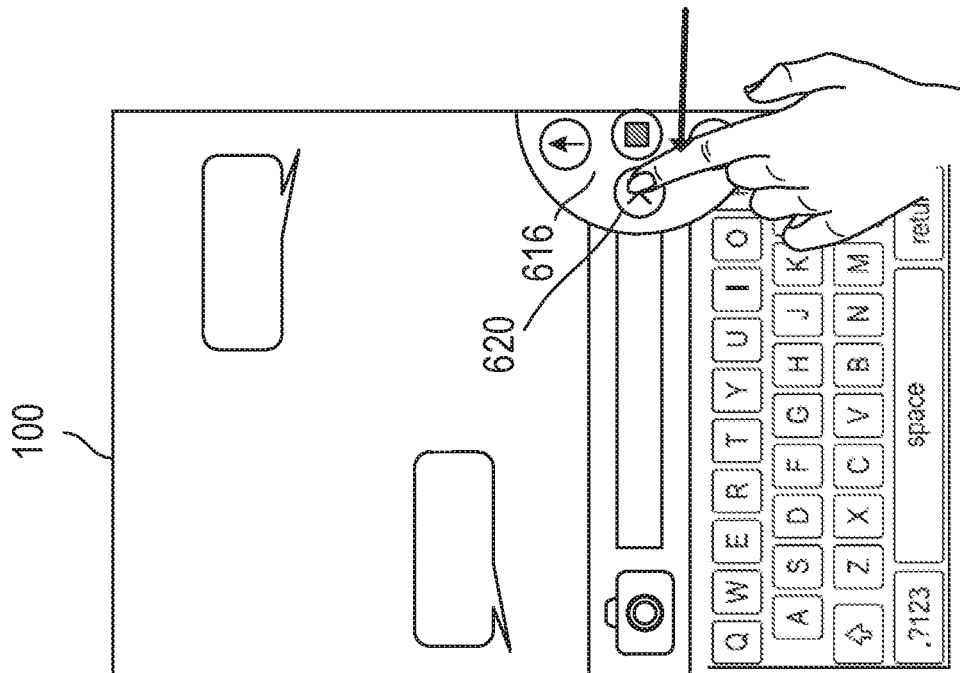


FIG. 7C

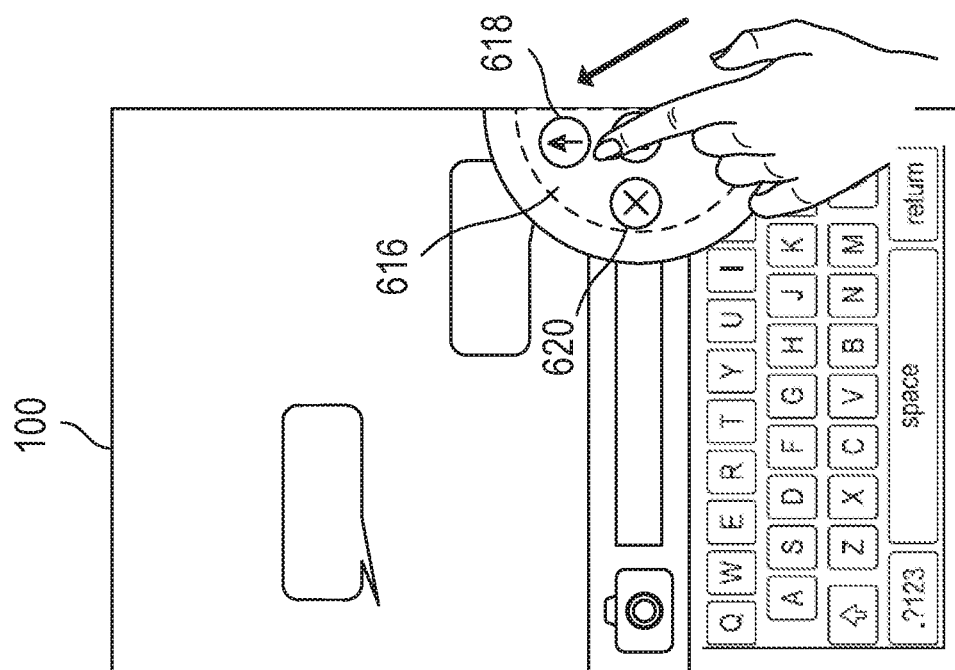


FIG. 8

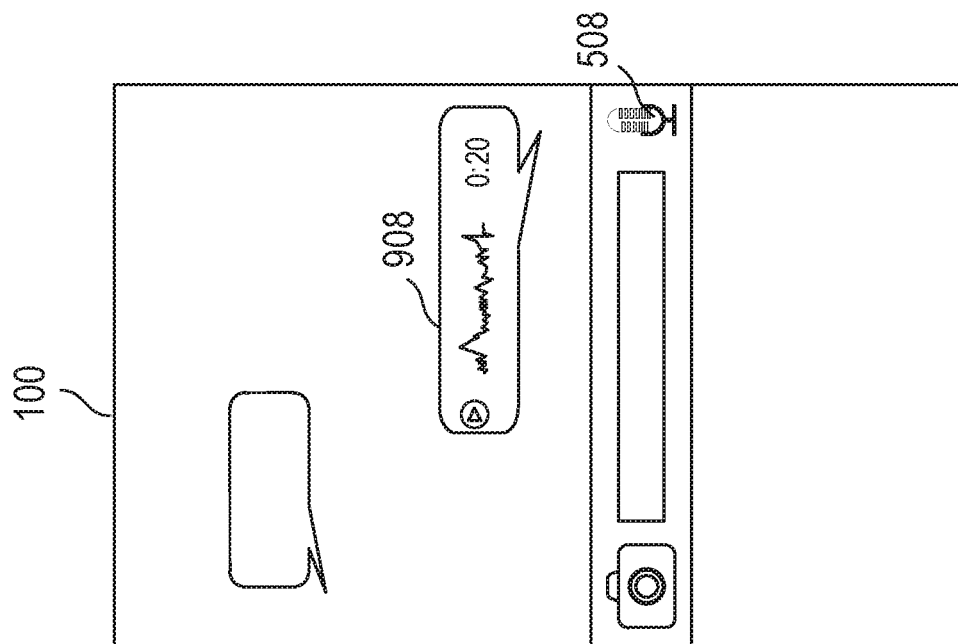


FIG. 9B

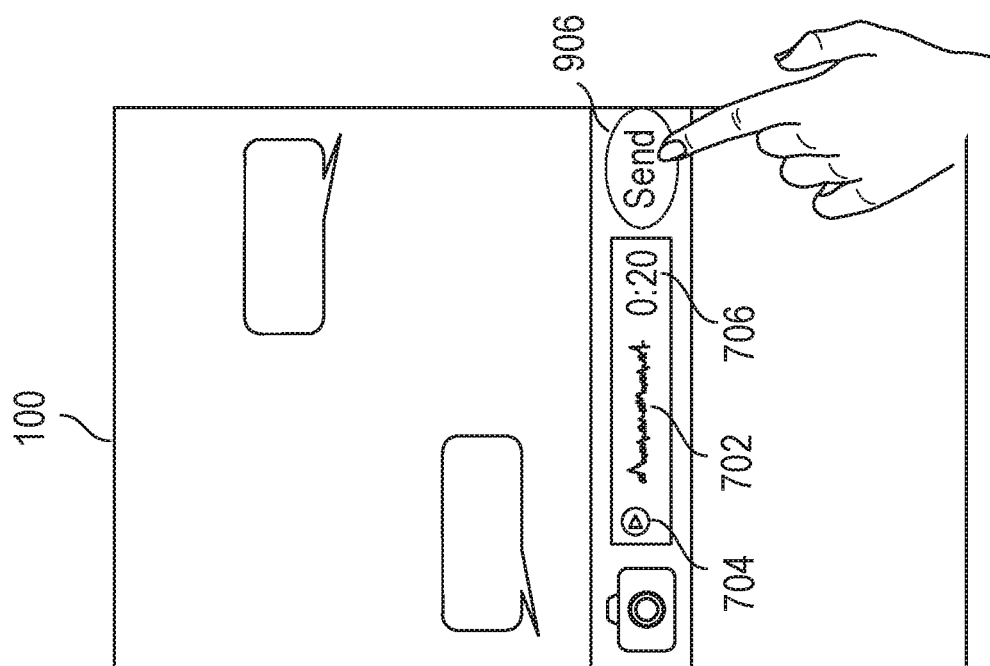


FIG. 9A

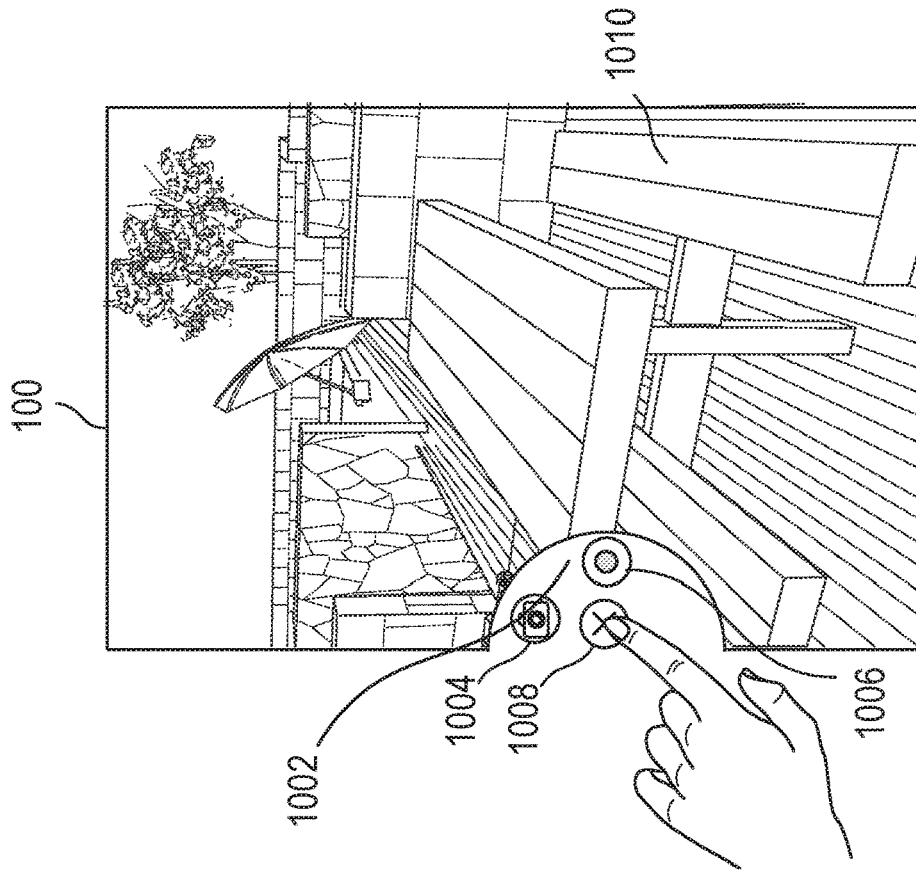


FIG. 10B

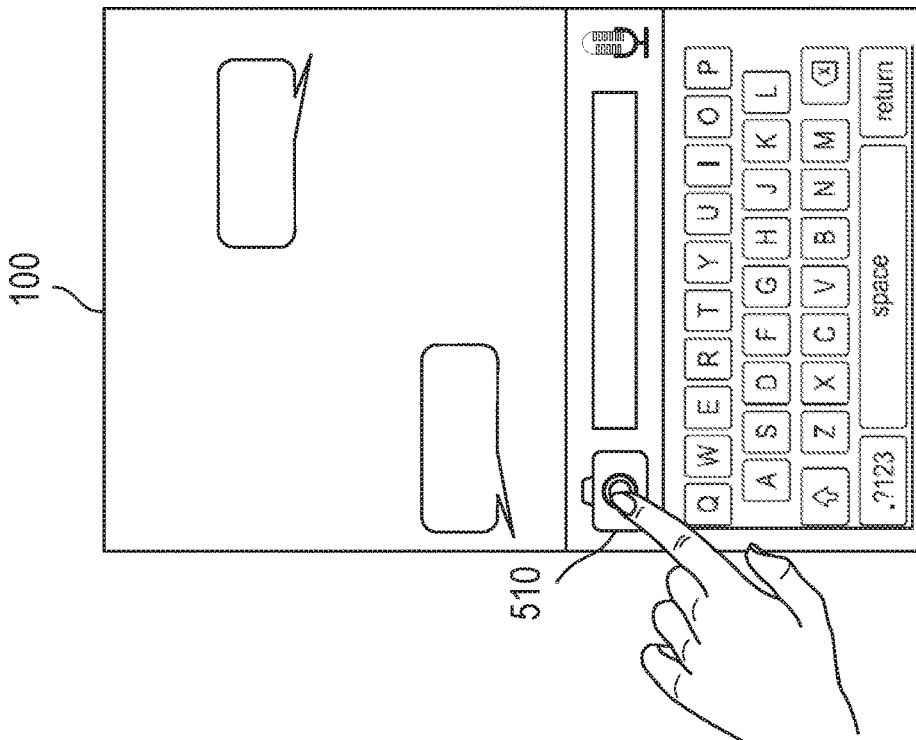


FIG. 10A

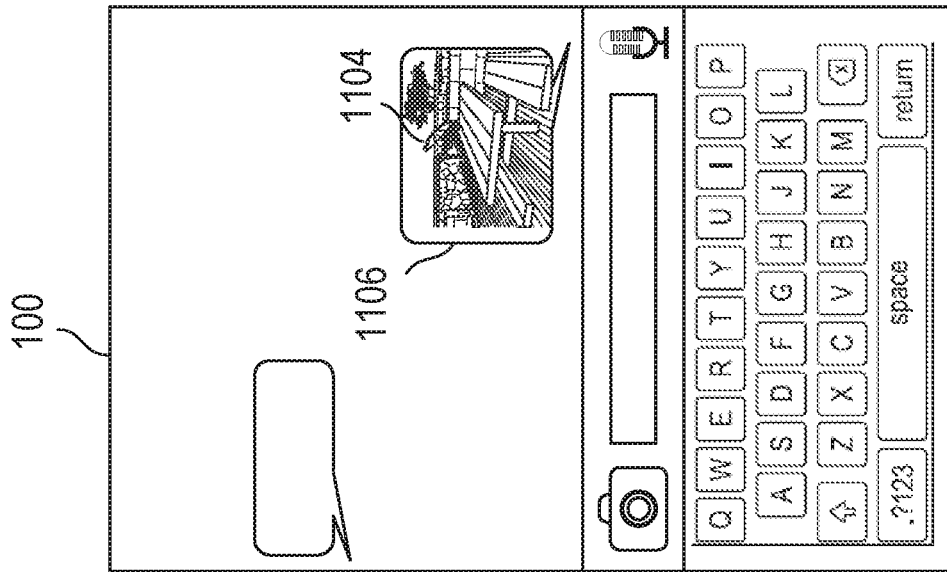


FIG. 11B

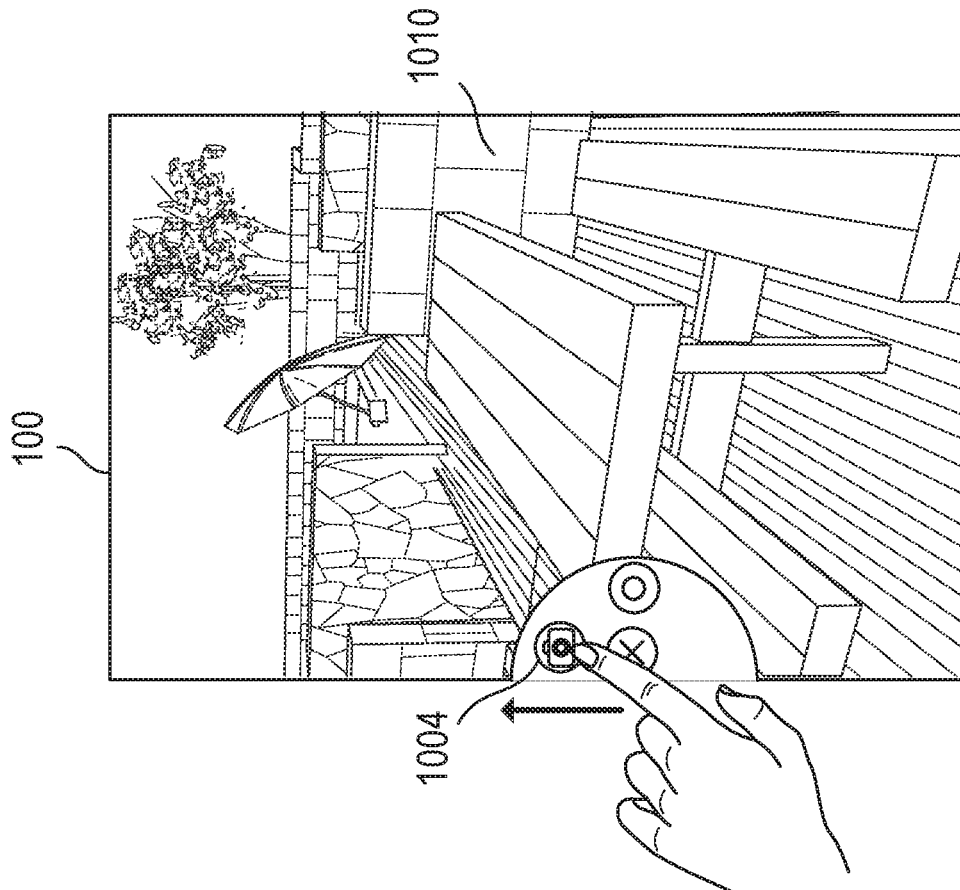


FIG. 11A

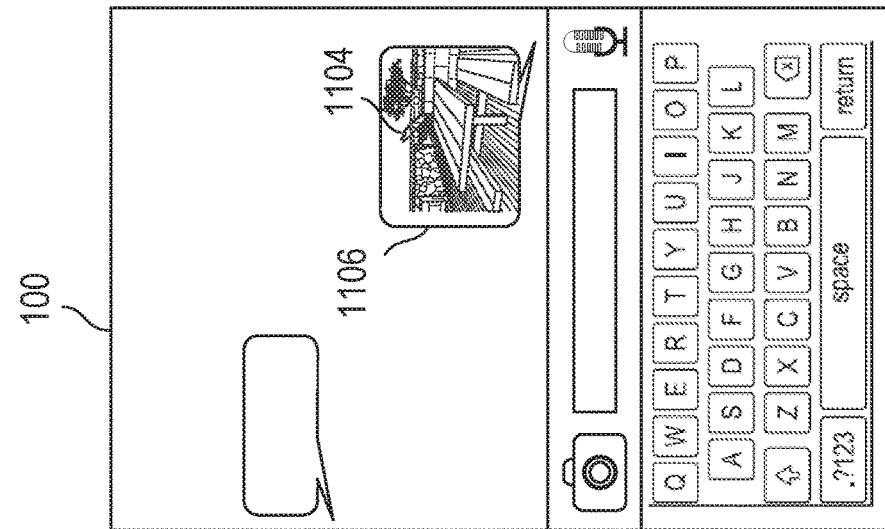


FIG. 11E

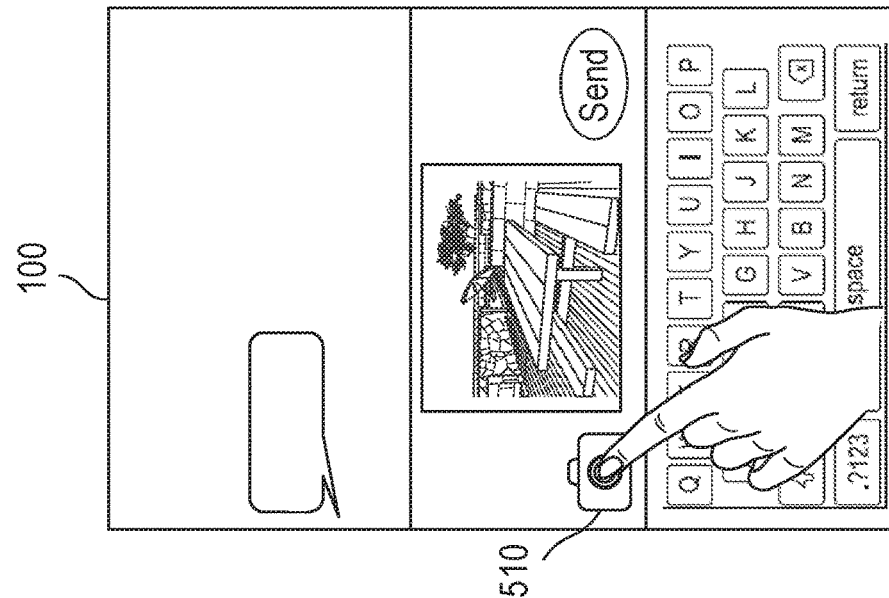


FIG. 11D

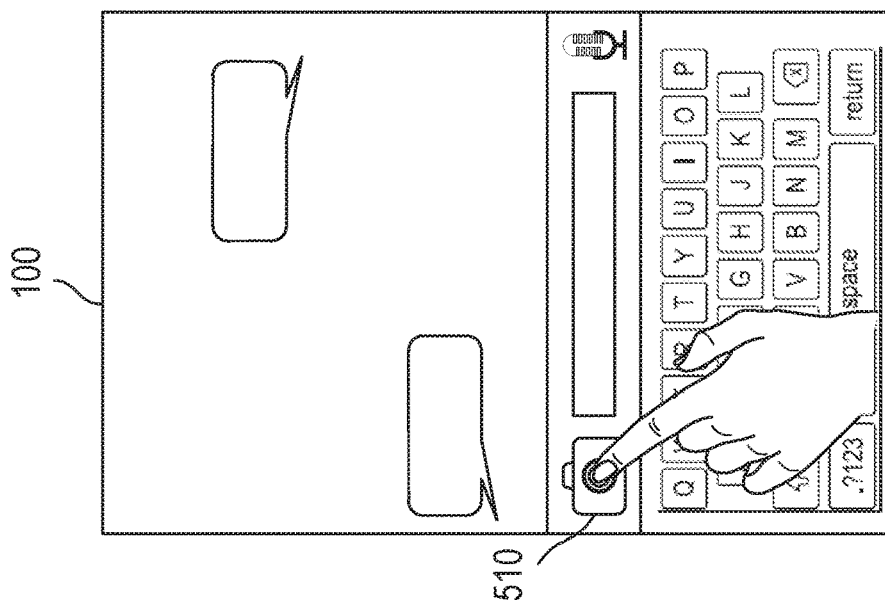


FIG. 11C

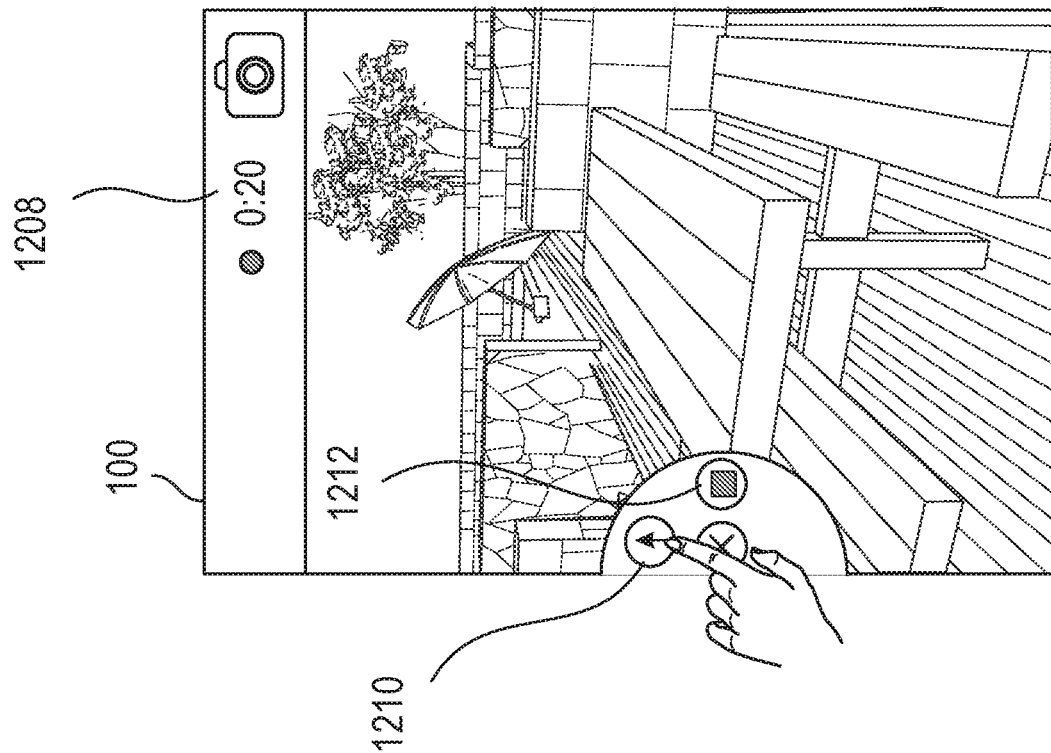


FIG. 12A

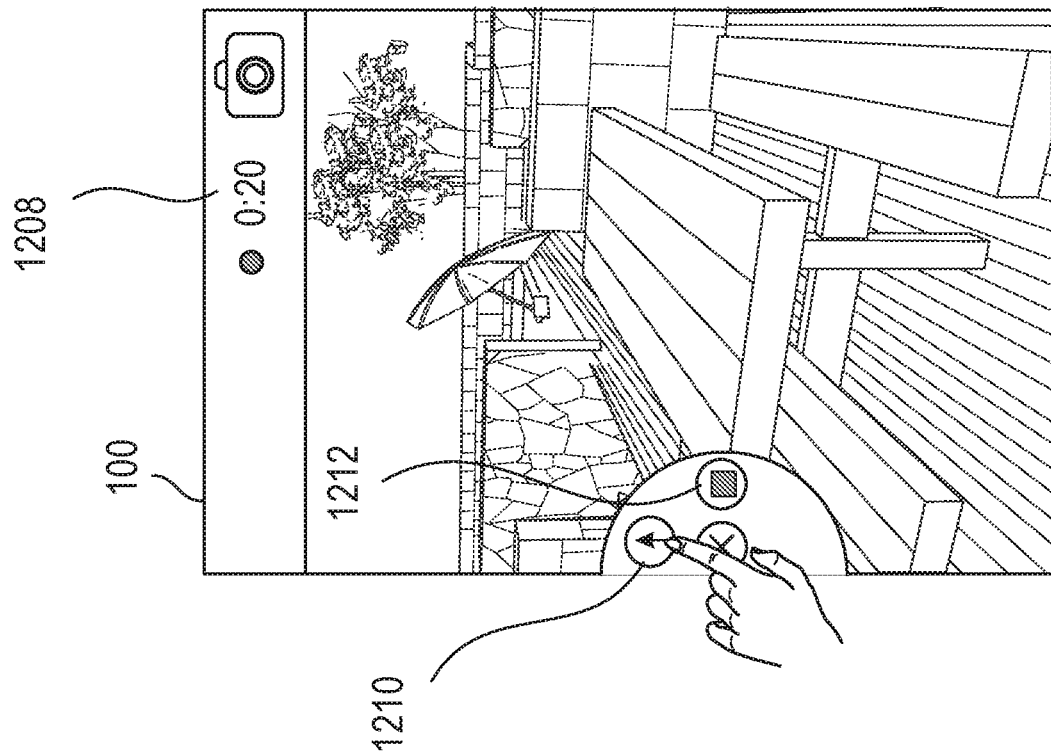


FIG. 12B

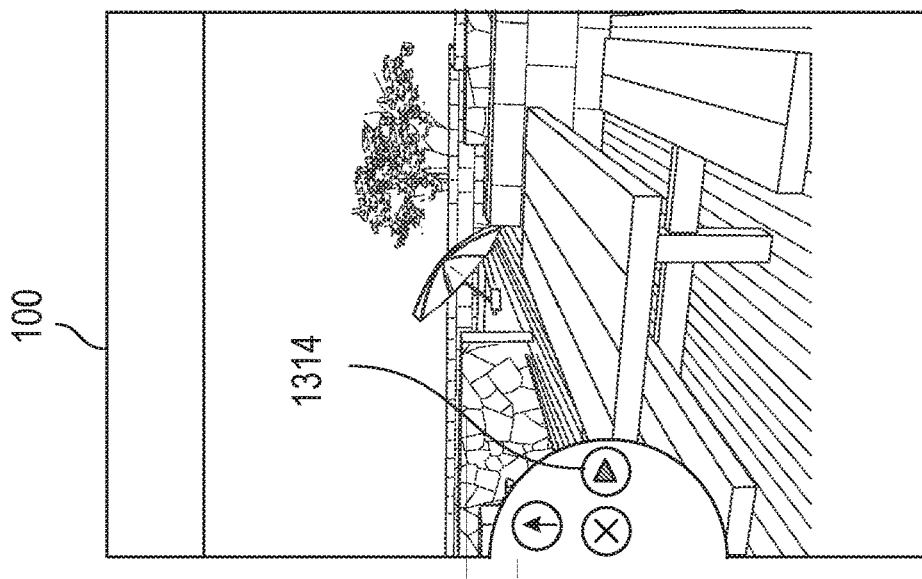


FIG. 13A

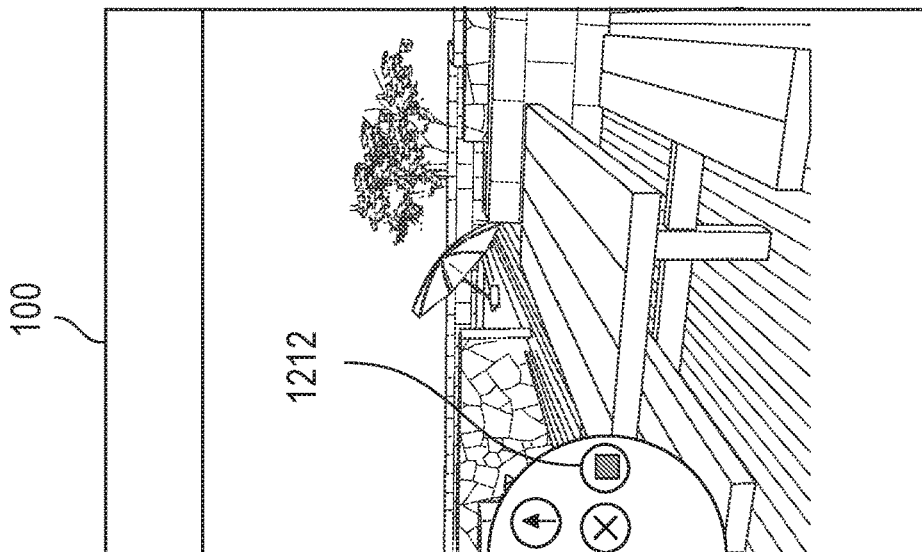


FIG. 13B

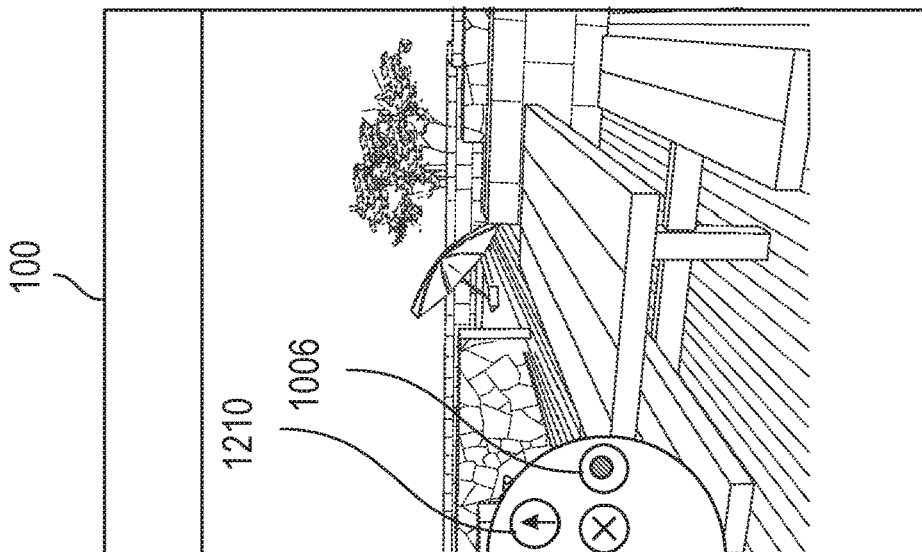


FIG. 13C

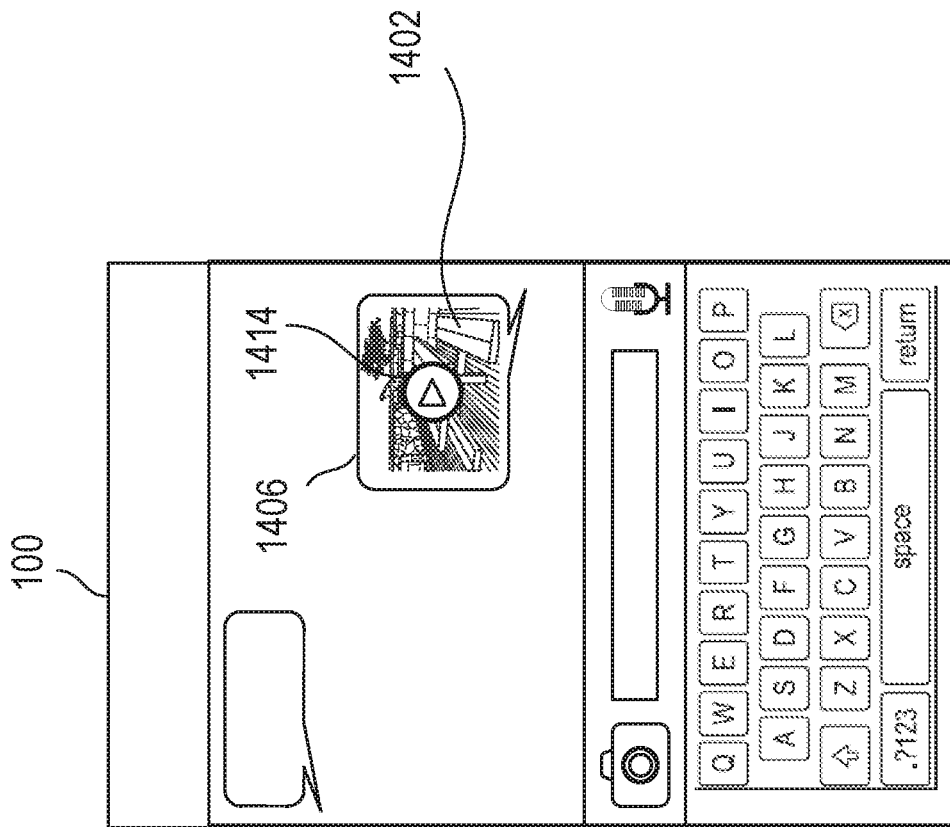


FIG. 14

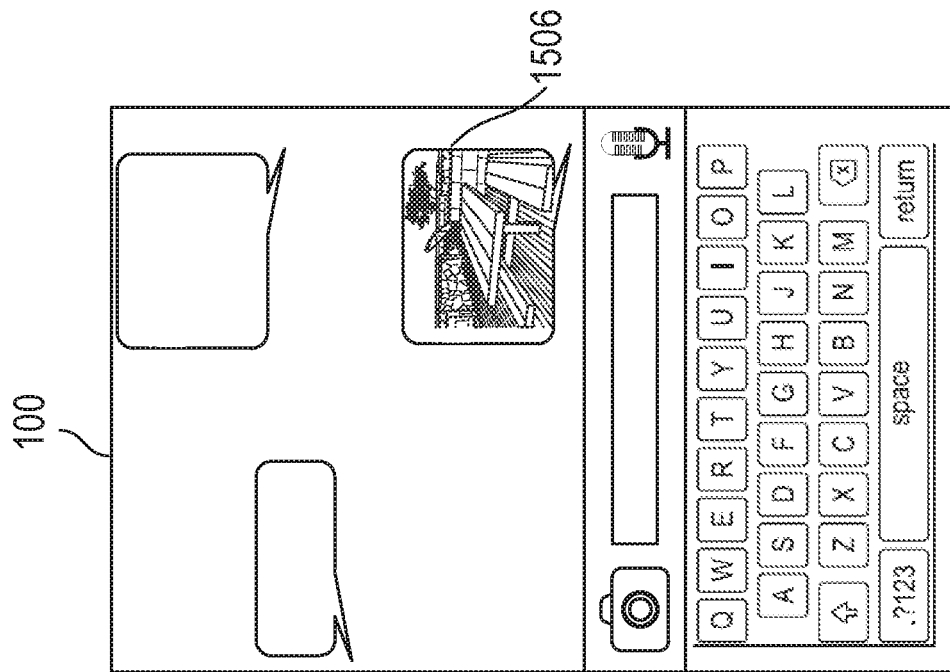


FIG. 15B

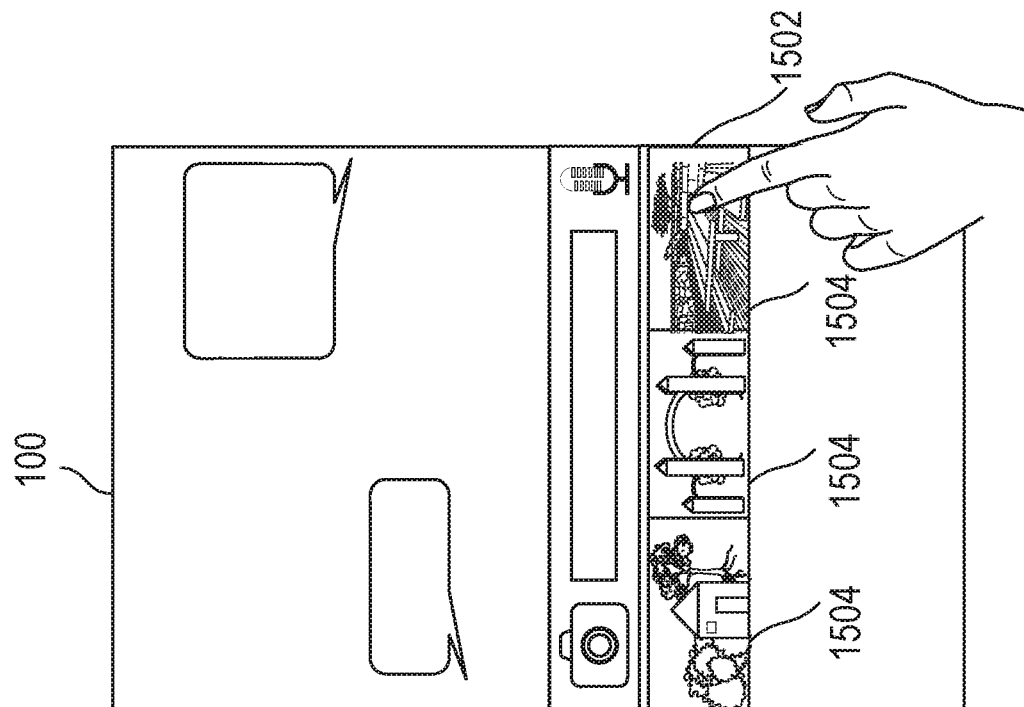


FIG. 15A

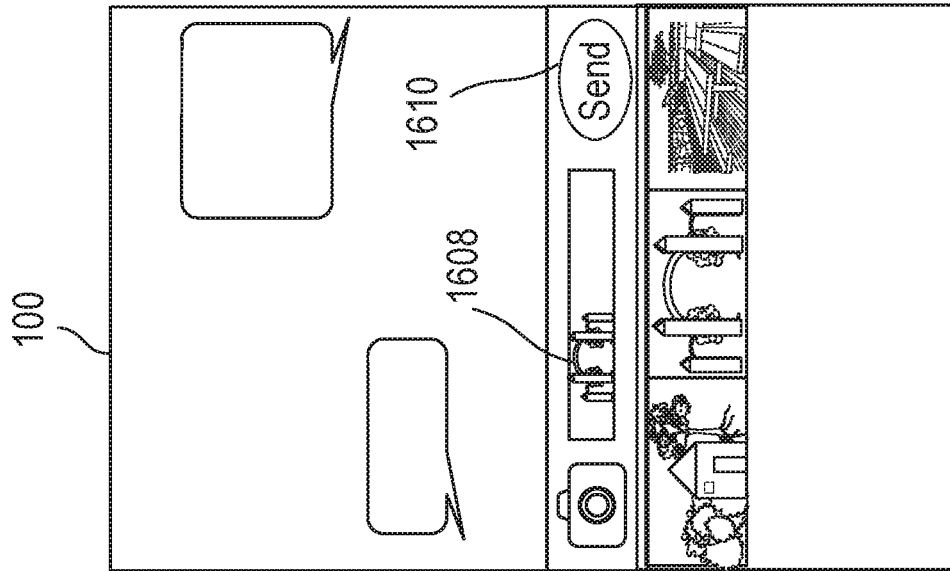


FIG. 16B

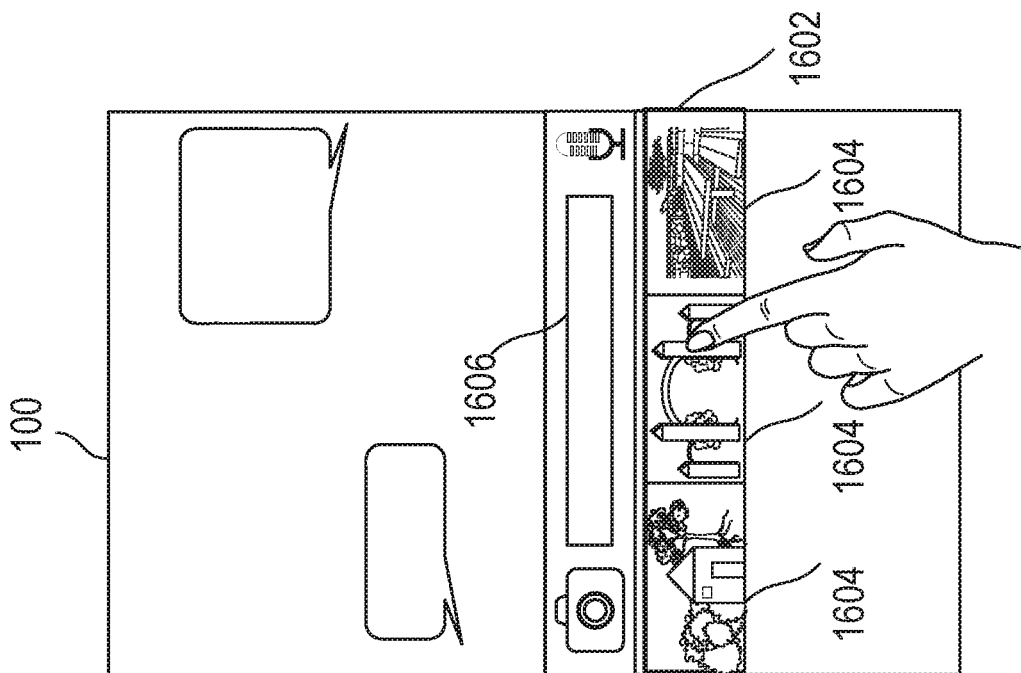


FIG. 16A

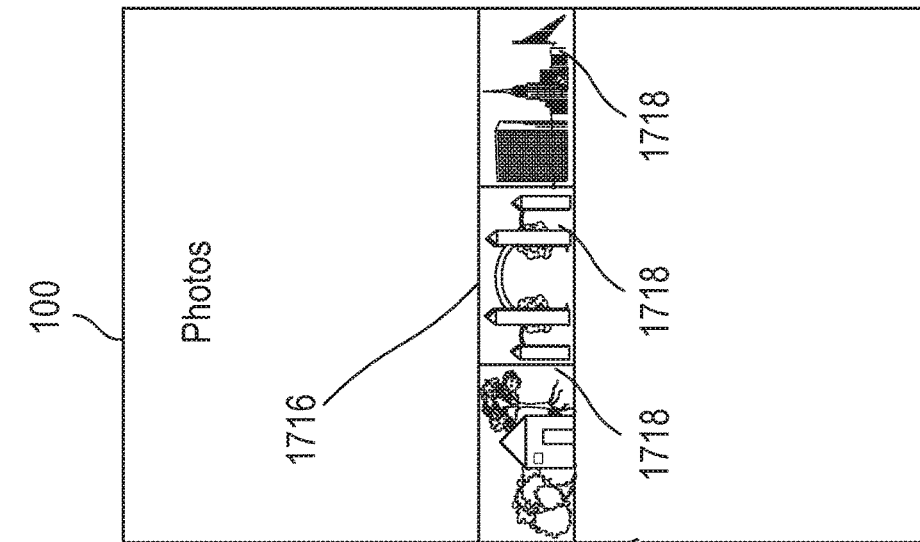


FIG. 17A

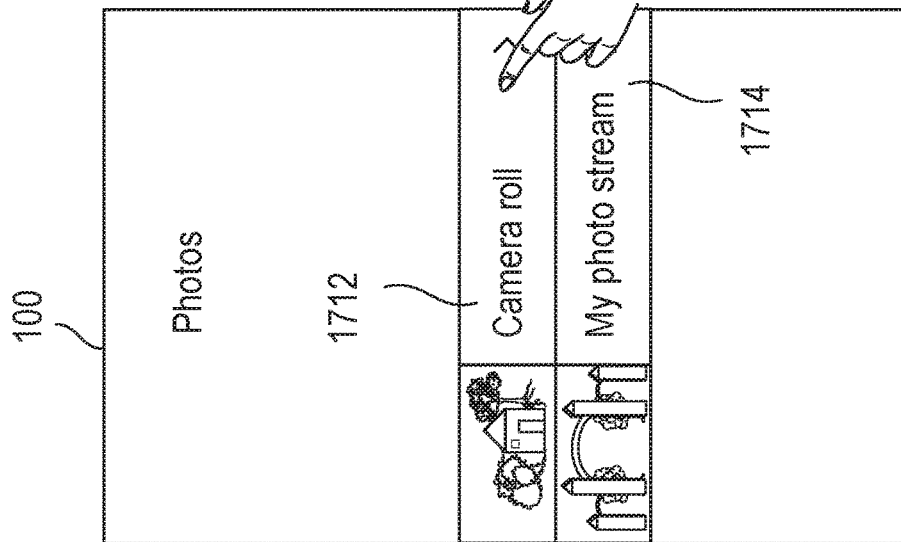


FIG. 17B

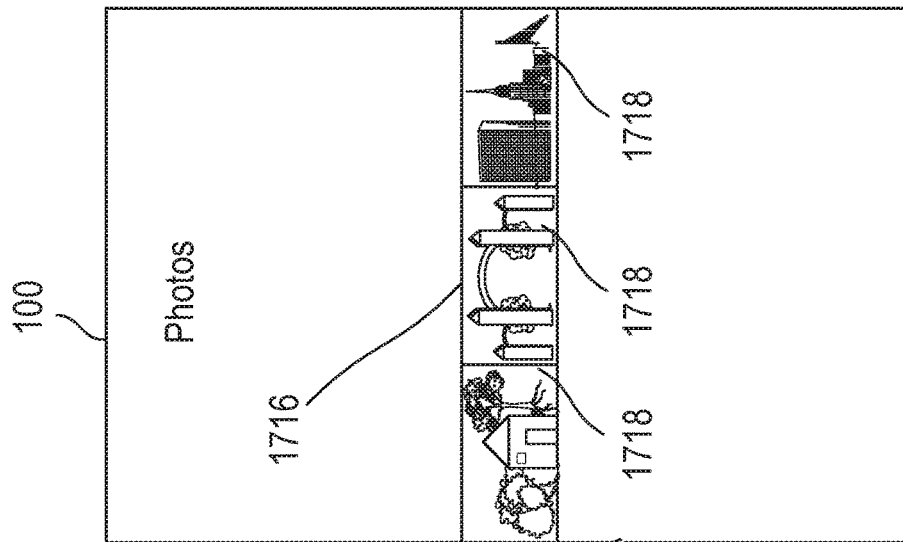
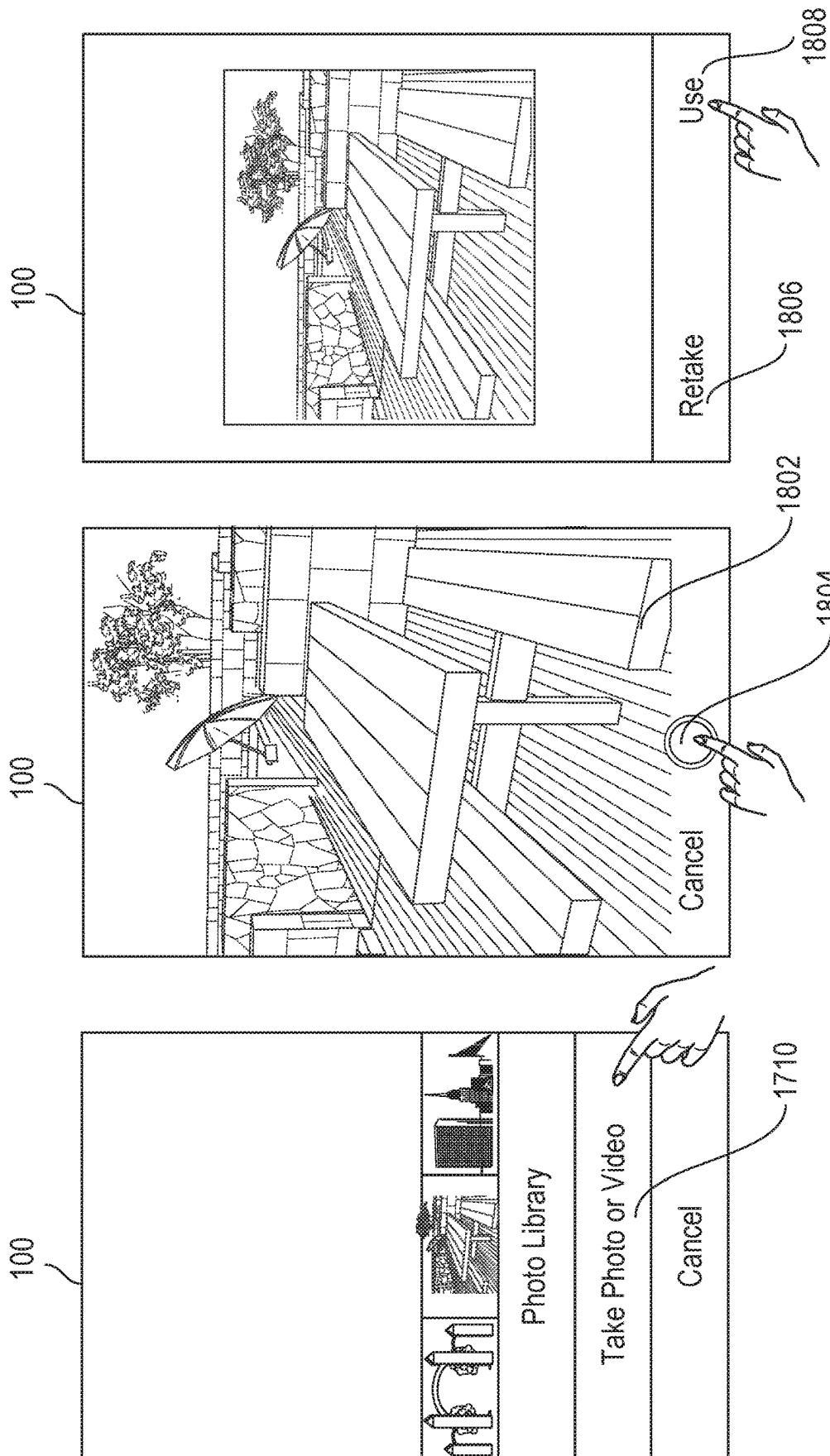


FIG. 17C



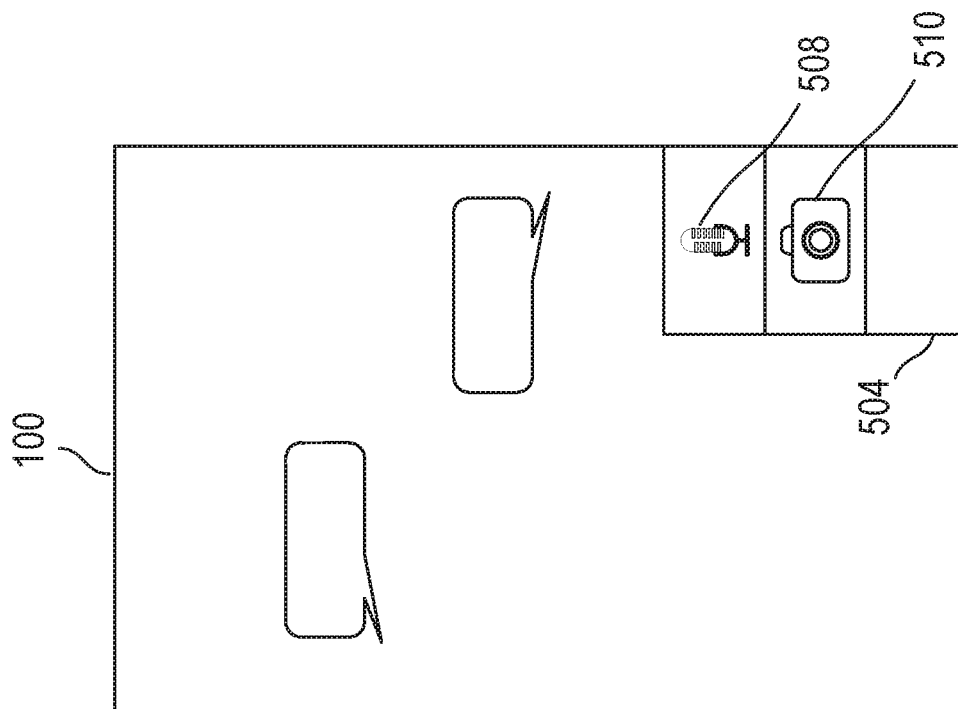


FIG. 19A

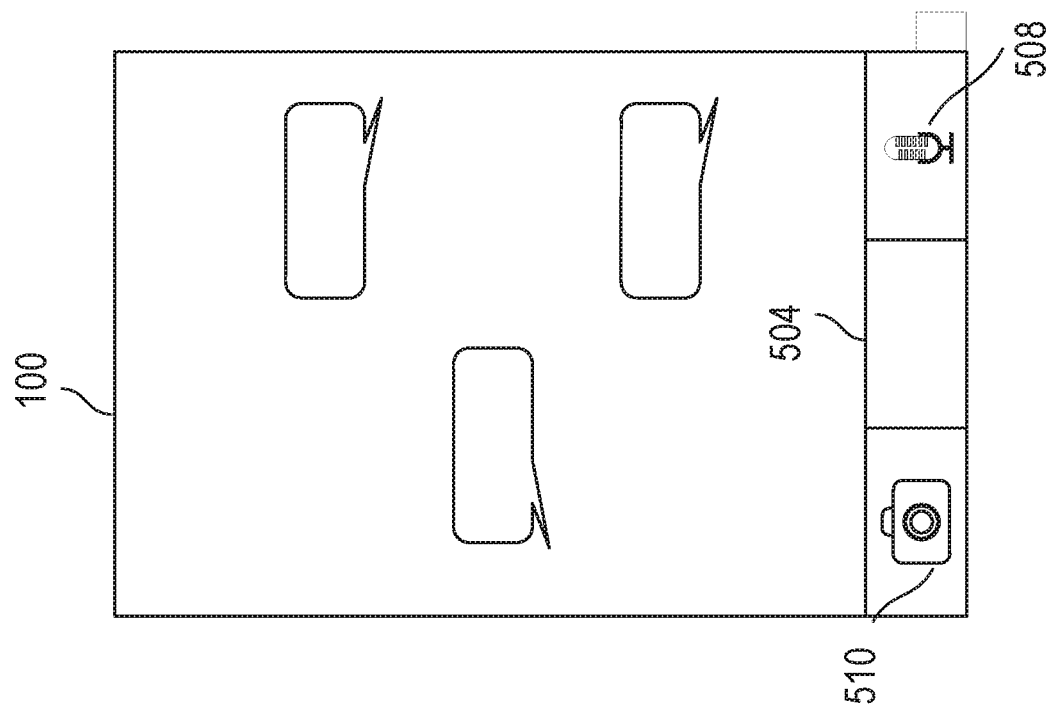


FIG. 19B

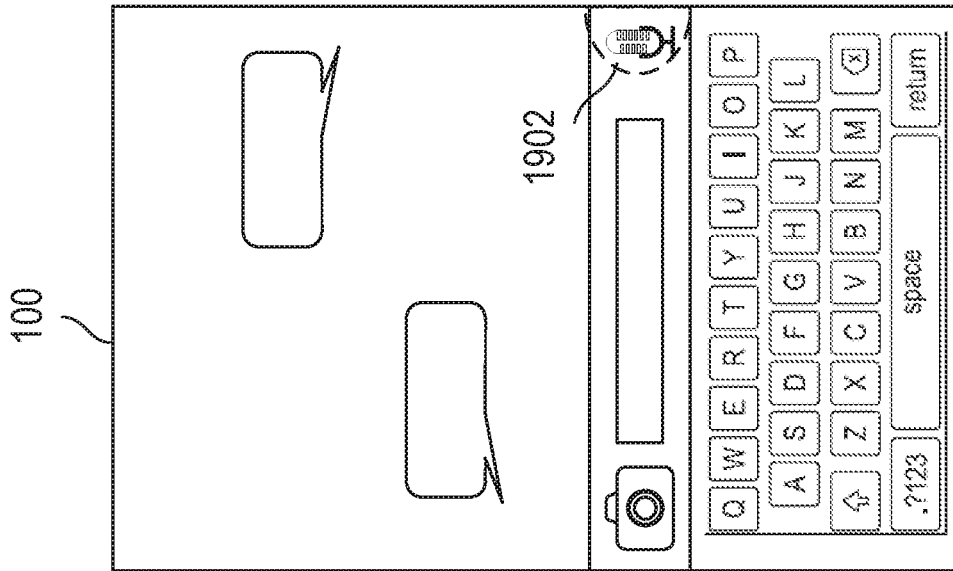


FIG. 19D

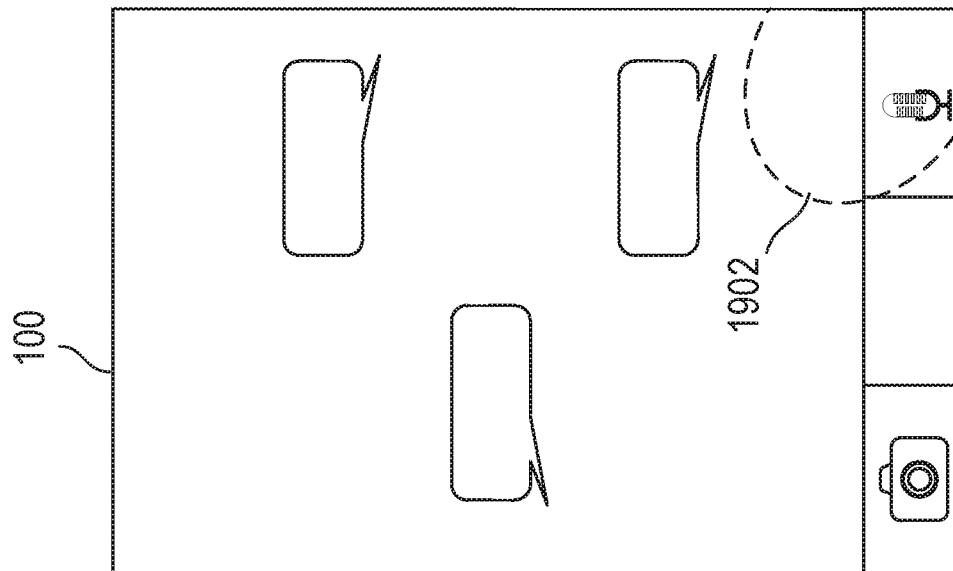
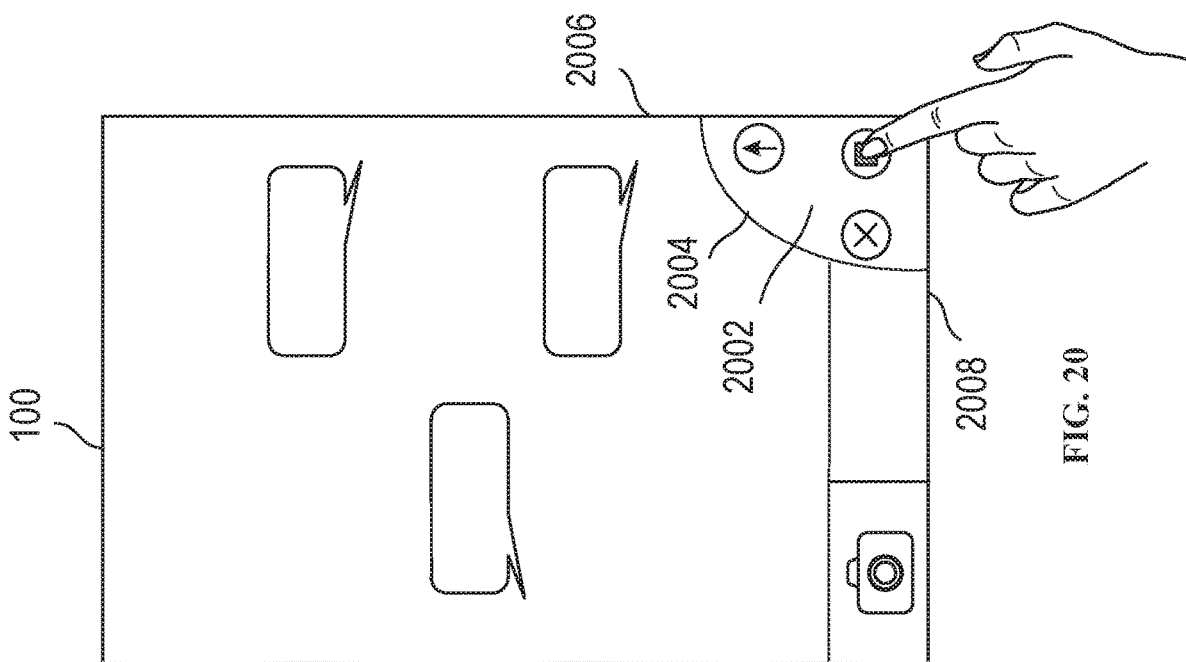


FIG. 19C



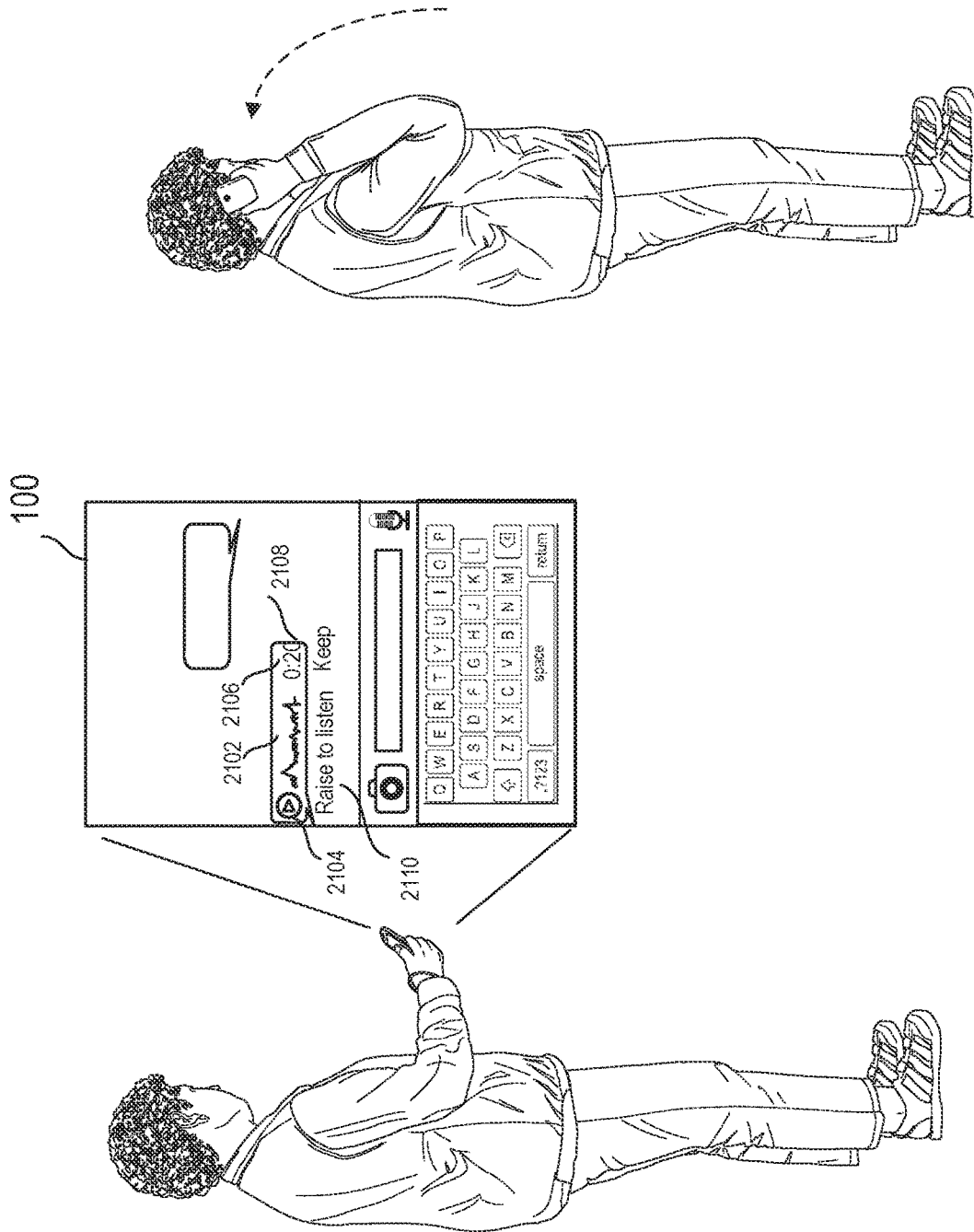


FIG. 21B

FIG. 21A

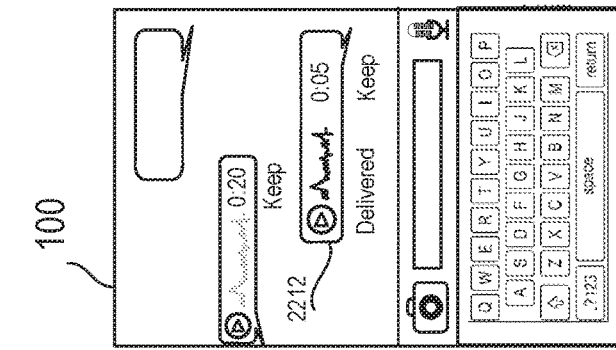


FIG. 22A

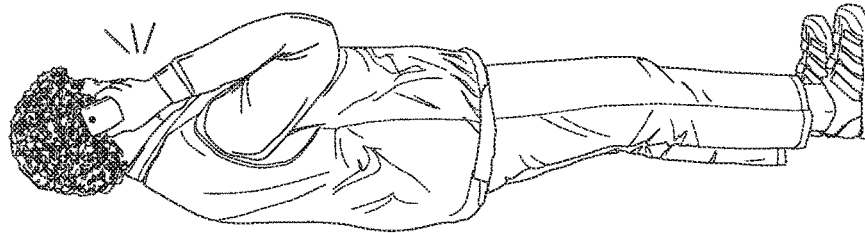


FIG. 22B

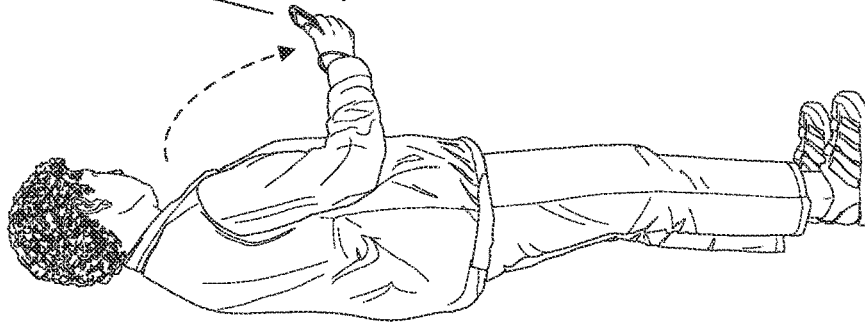


FIG. 22C

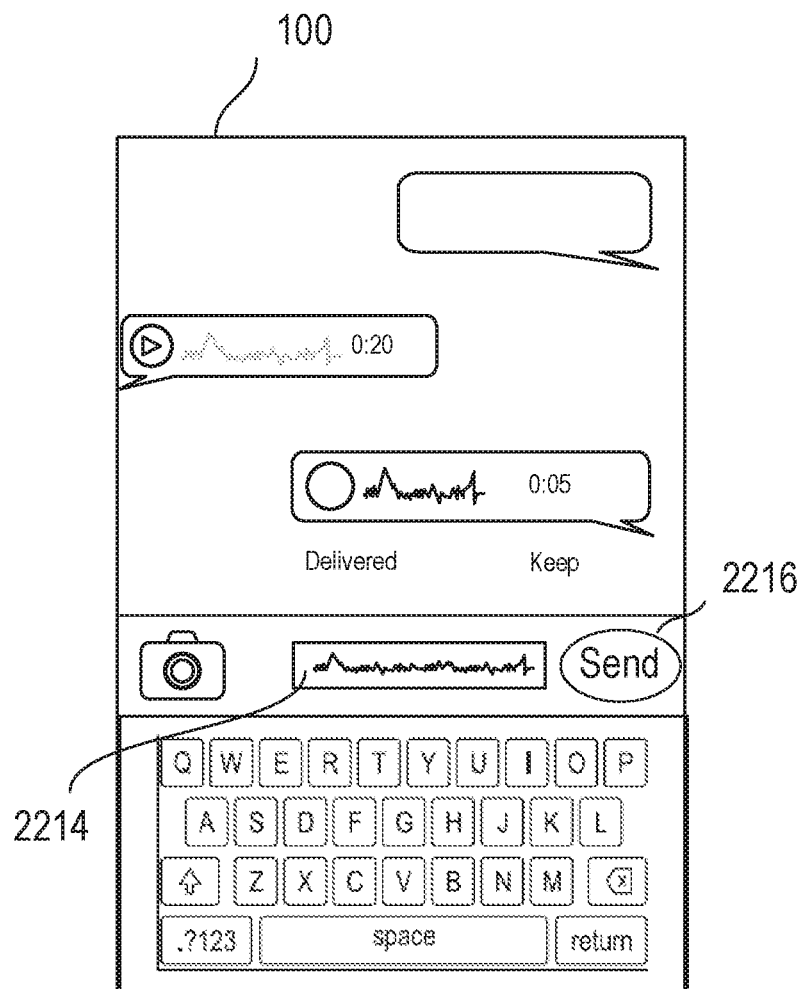


FIG. 22D

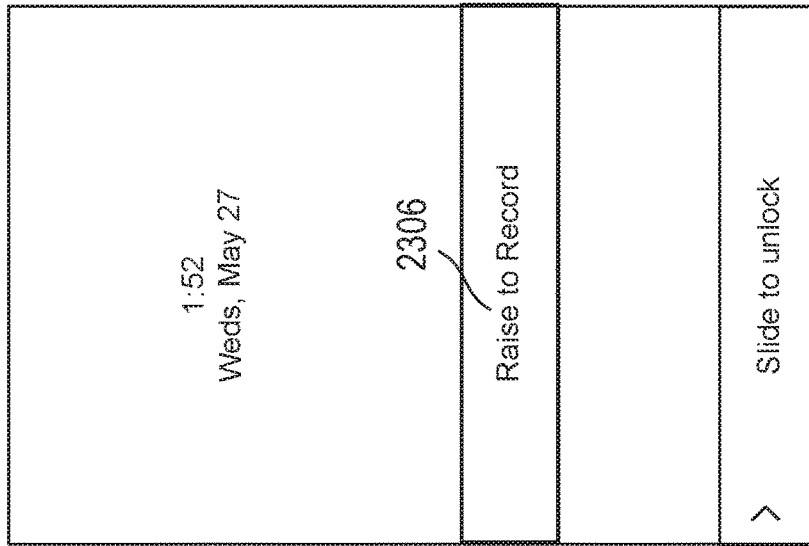


FIG. 23C

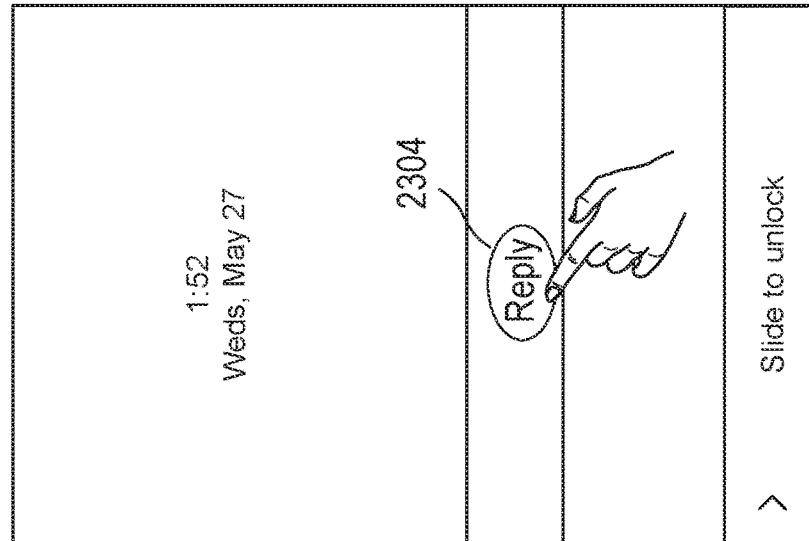


FIG. 23B

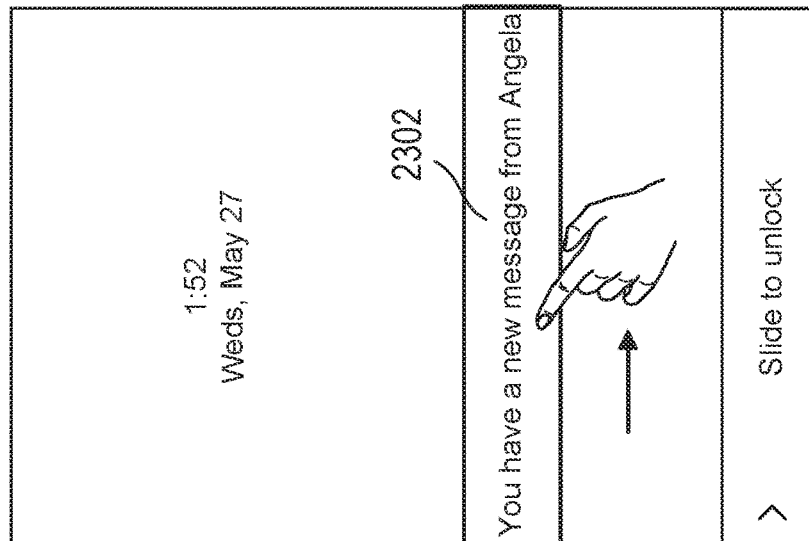


FIG. 23A

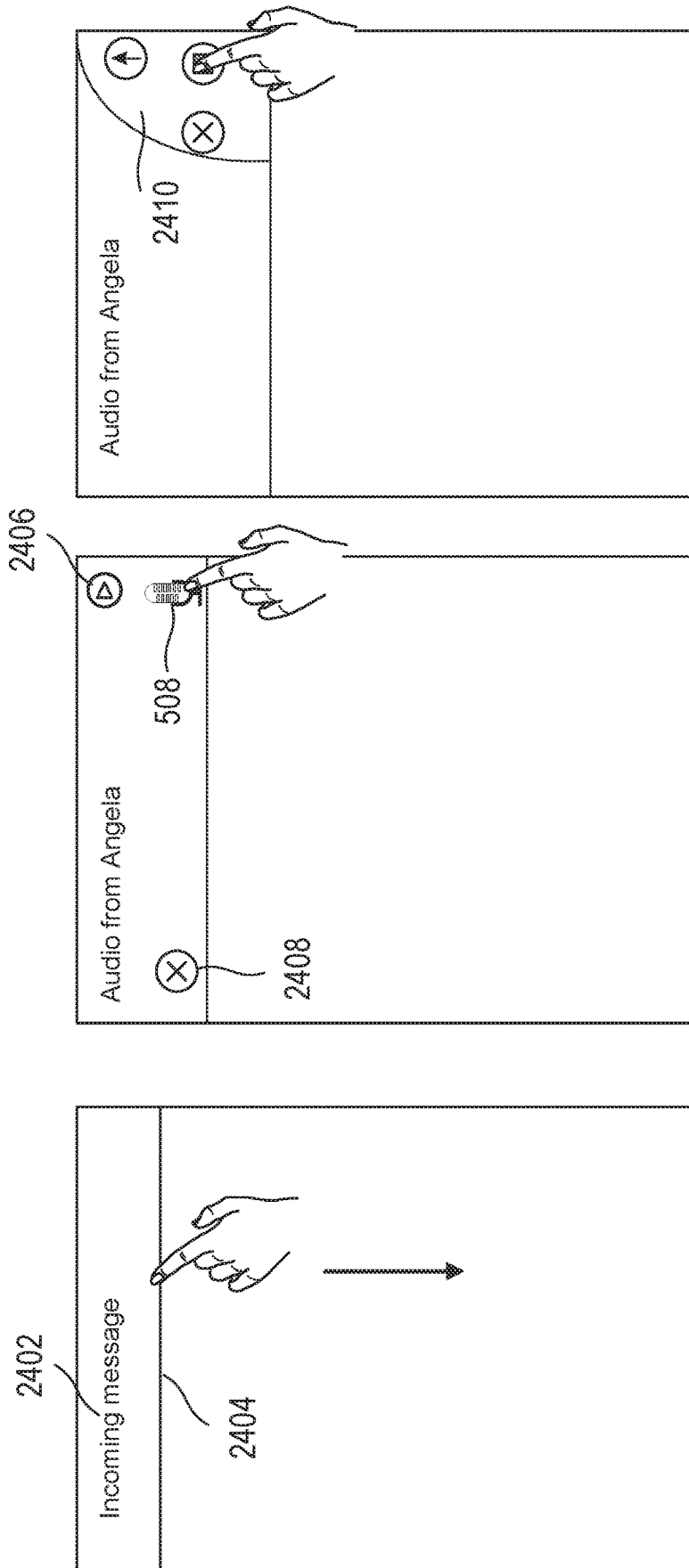


FIG. 24C

FIG. 24B

FIG. 24A

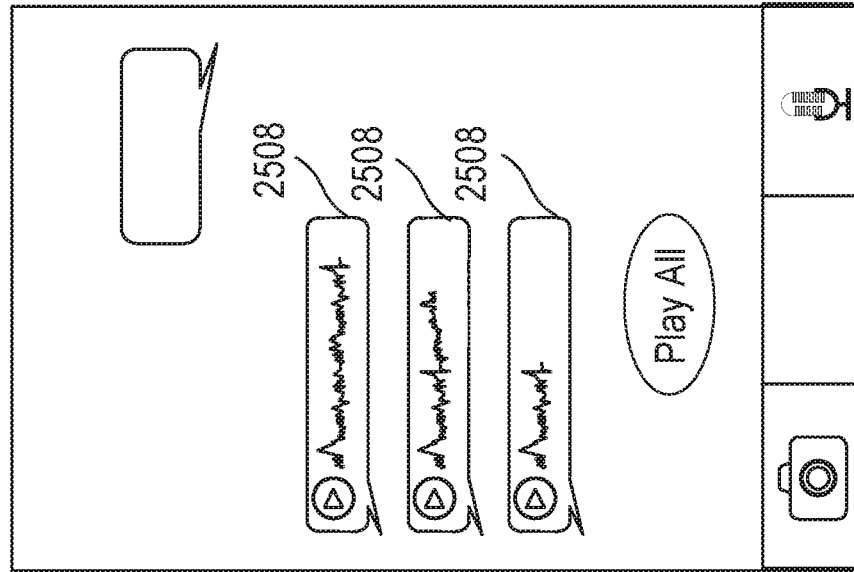


FIG. 25B

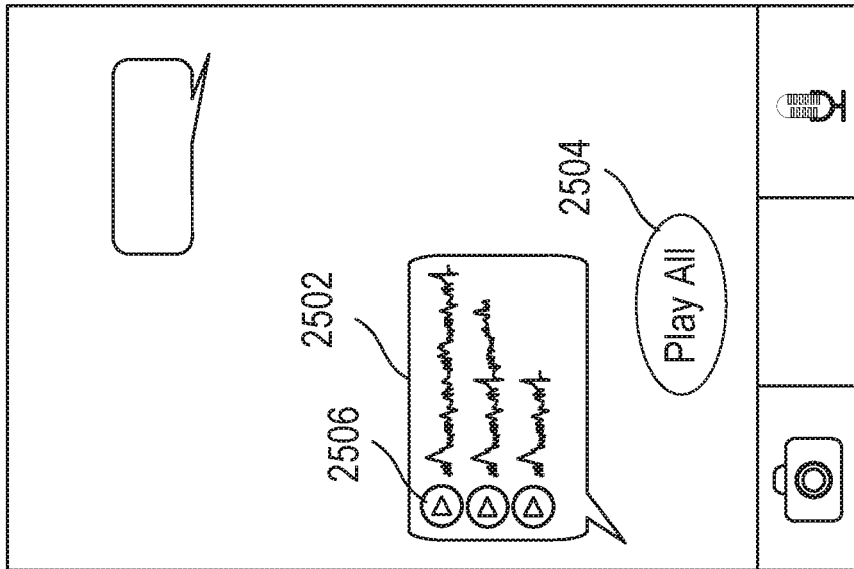


FIG. 25A

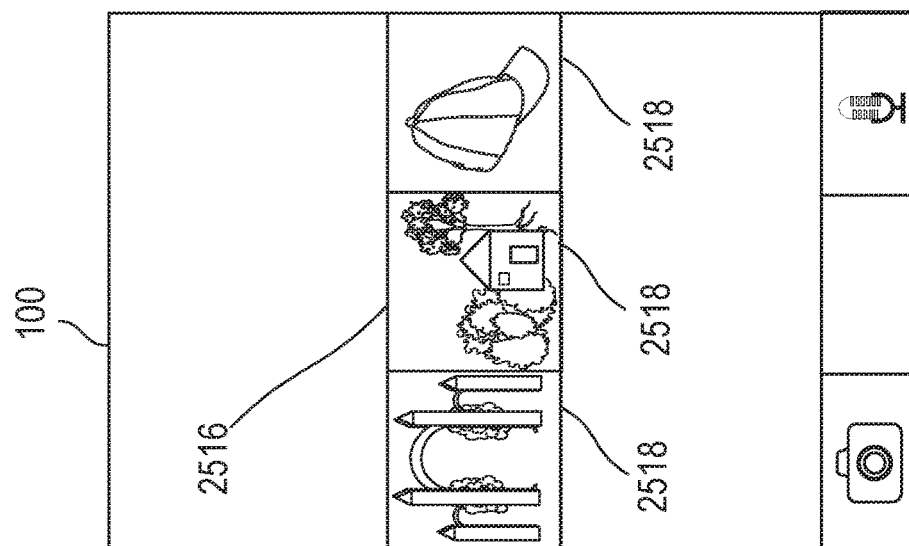


FIG. 25E

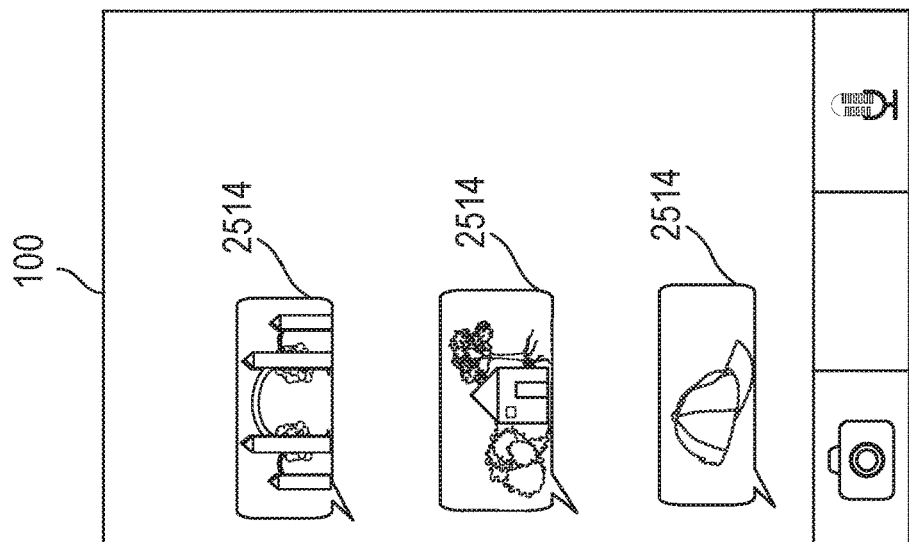


FIG. 25D

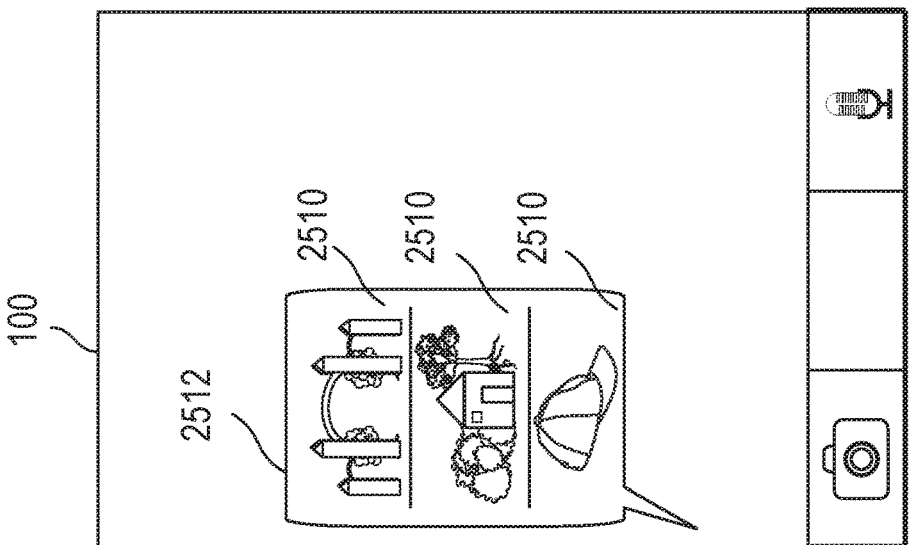


FIG. 25C

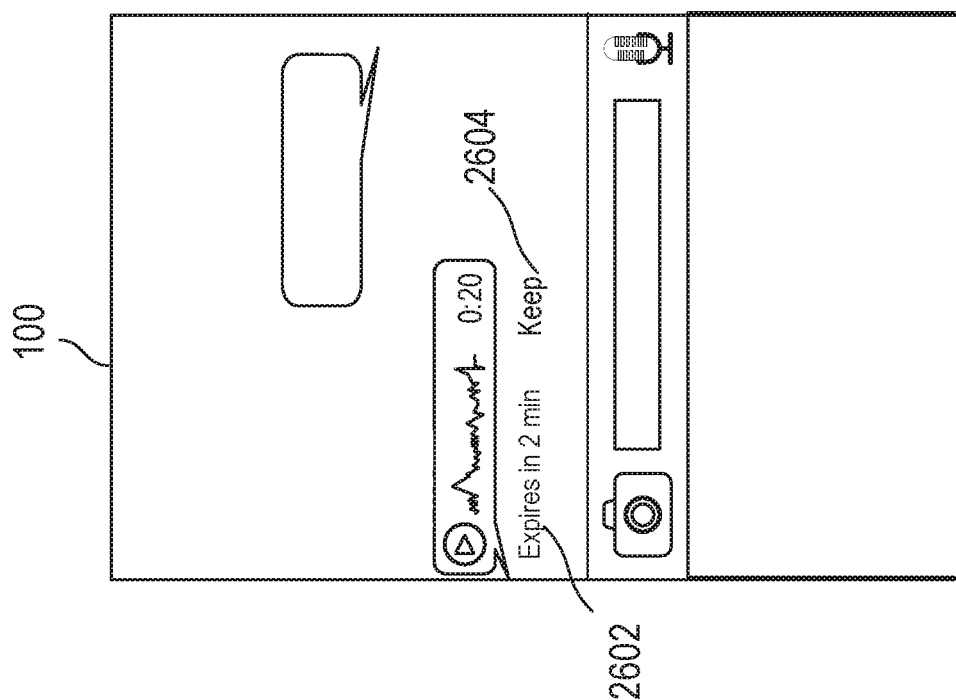


FIG. 26

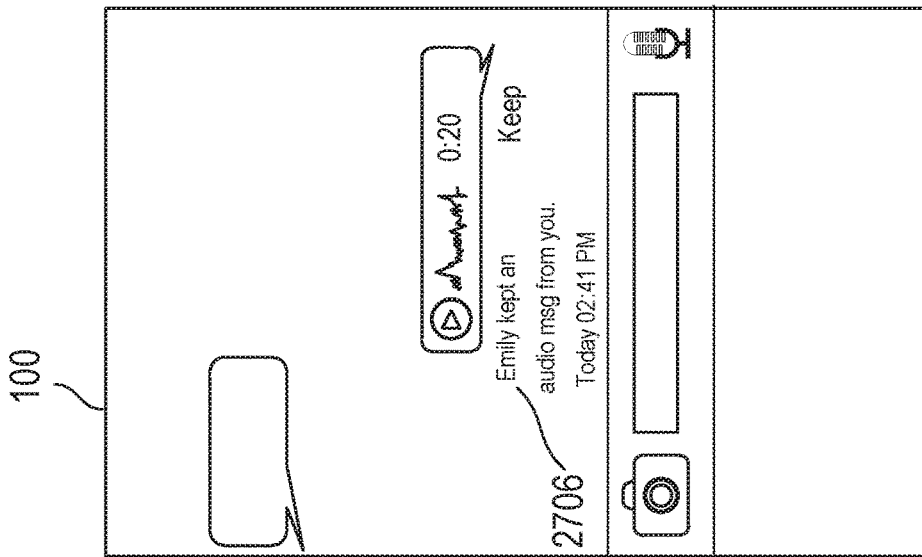


FIG. 27C

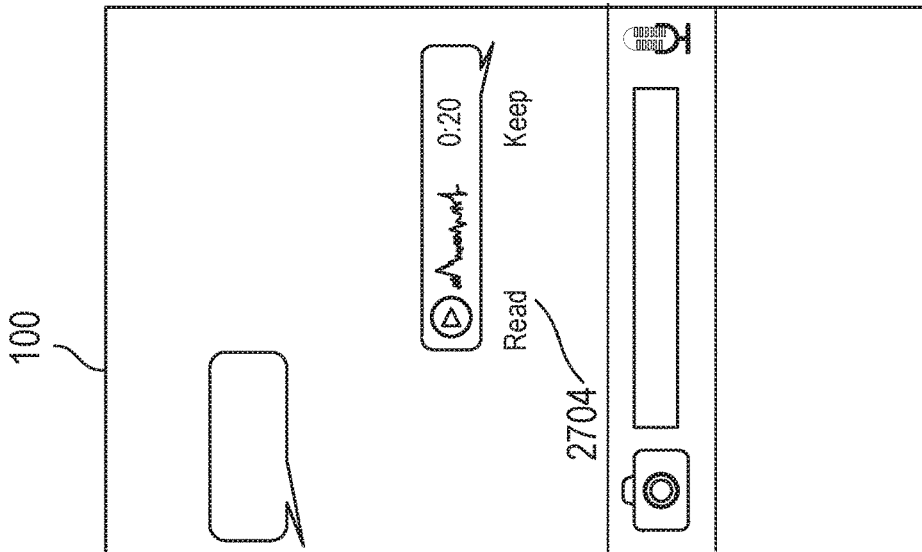


FIG. 27B

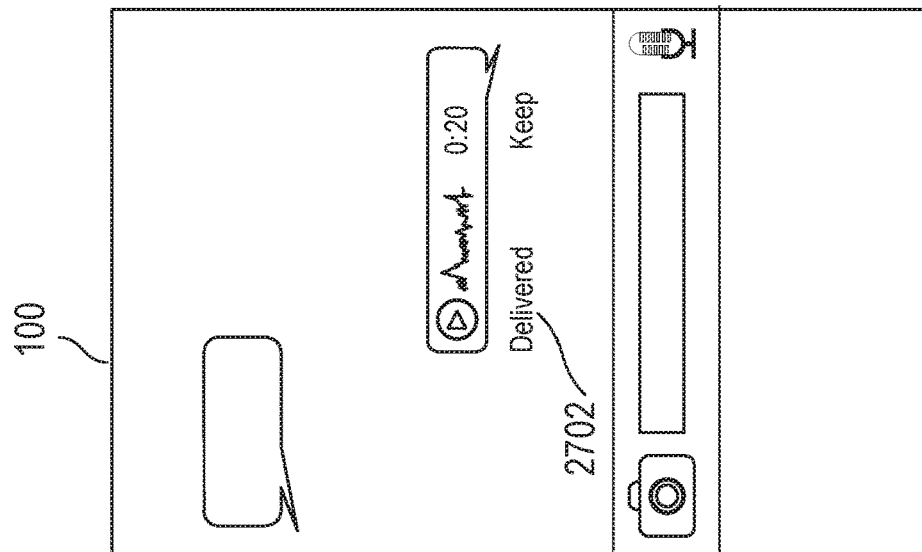
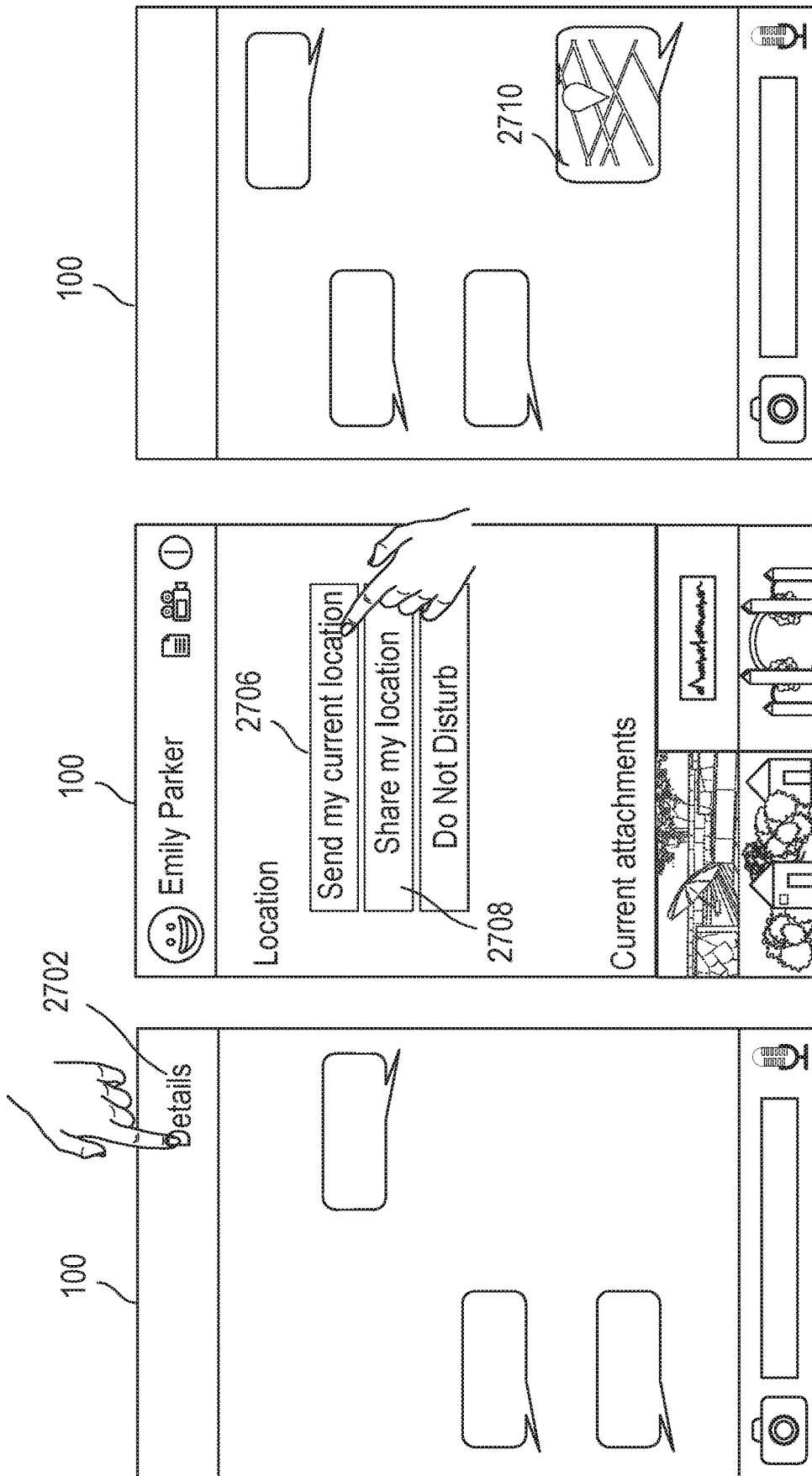


FIG. 27A



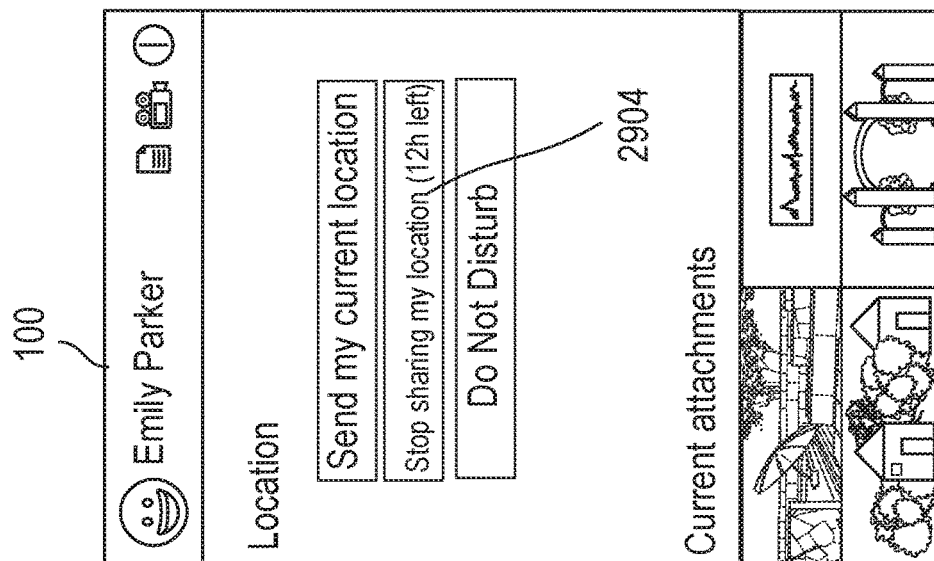


FIG. 29A

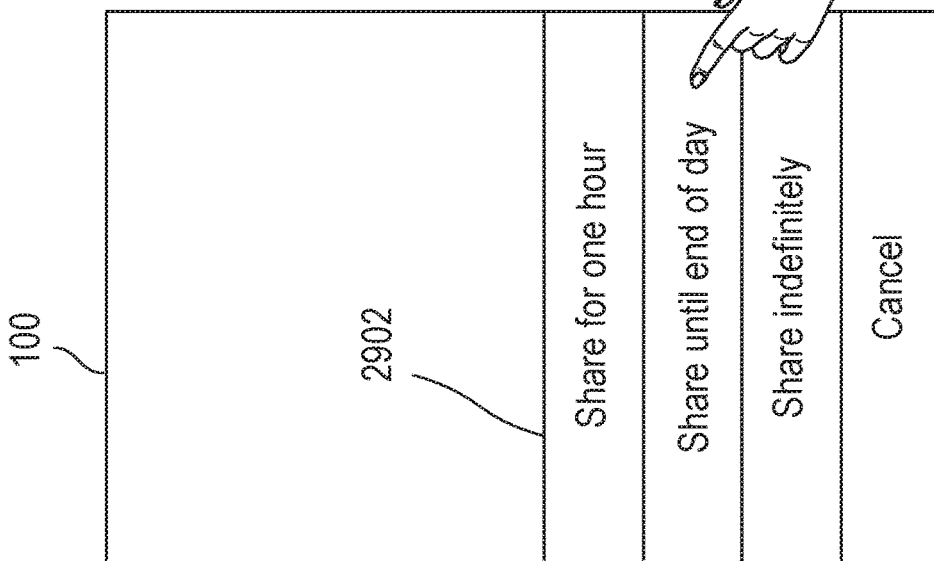


FIG. 29B

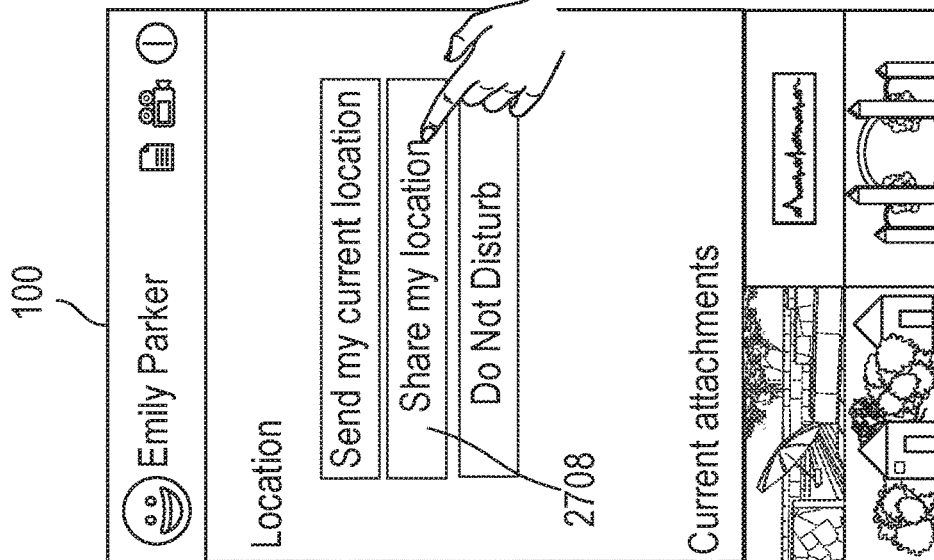


FIG. 29C

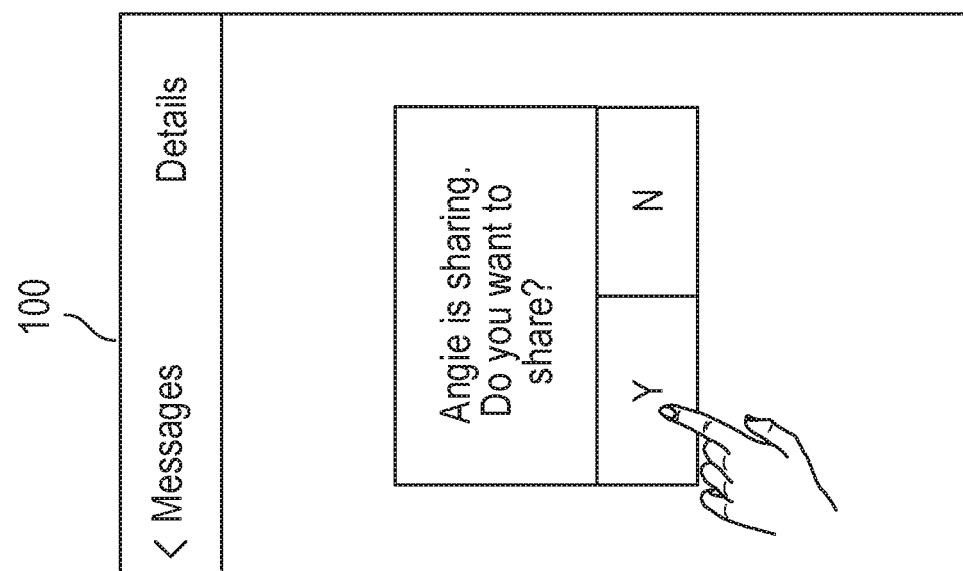


FIG. 30

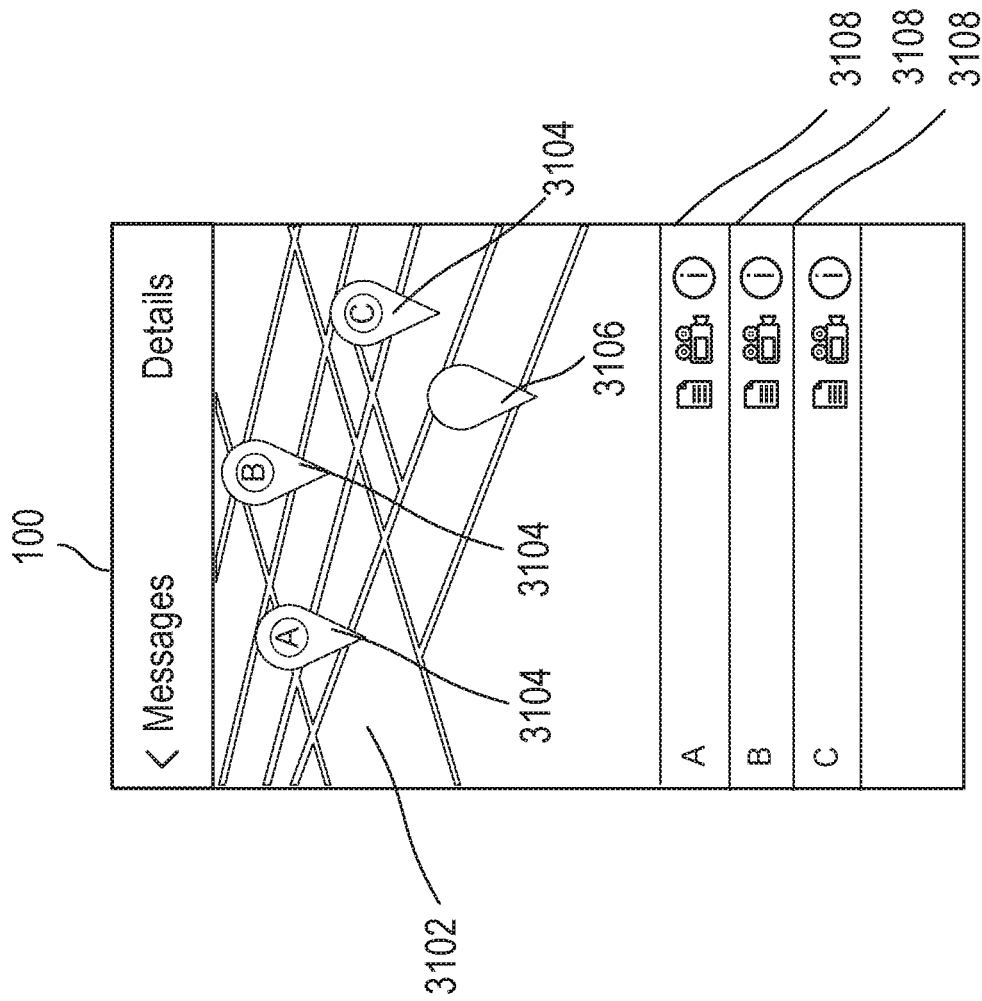


FIG. 31

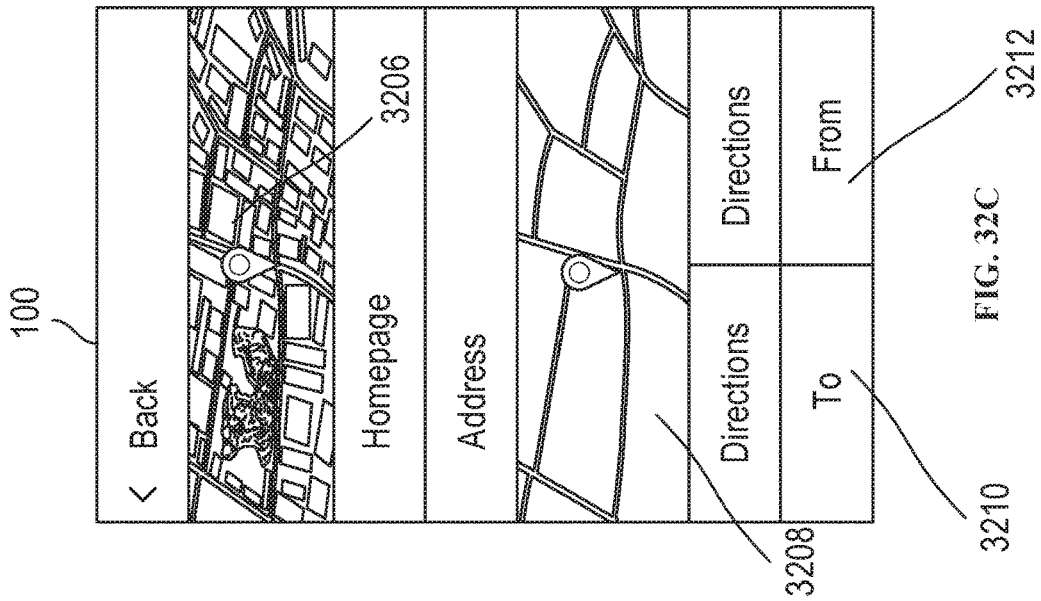


FIG. 32C

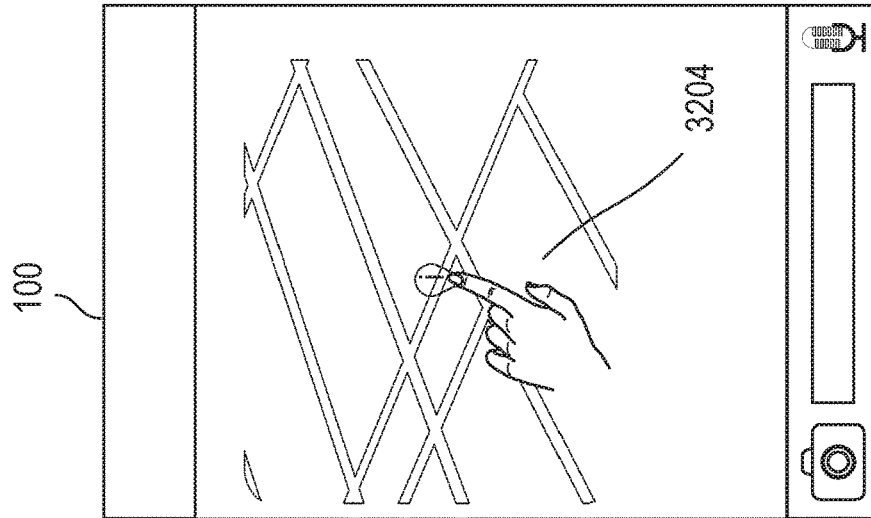


FIG. 32B

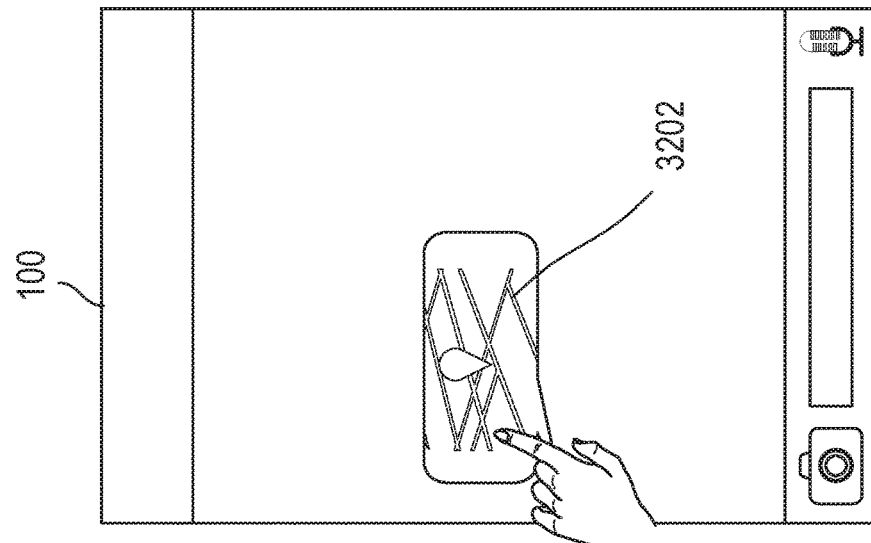


FIG. 32A

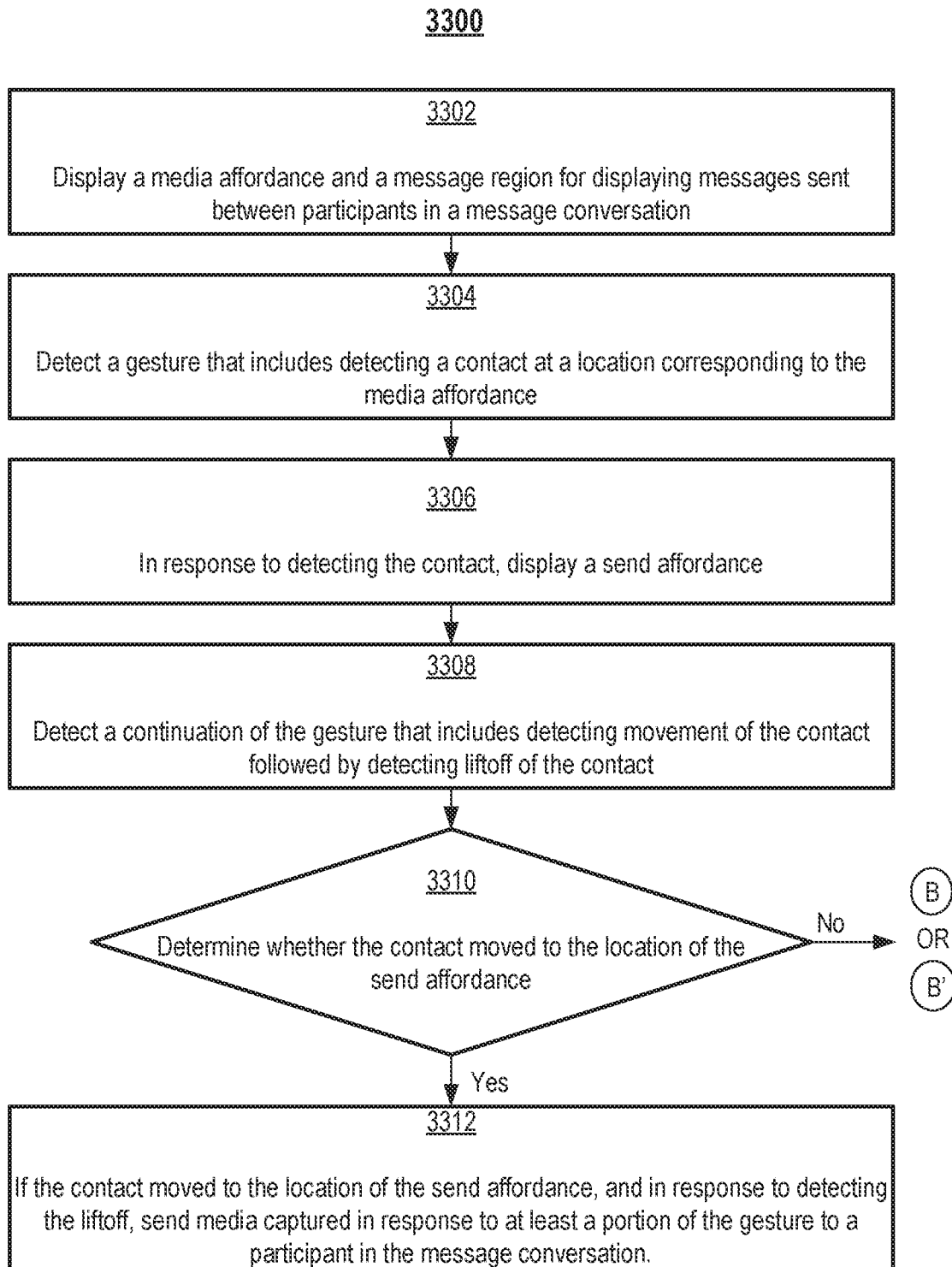


FIG. 33

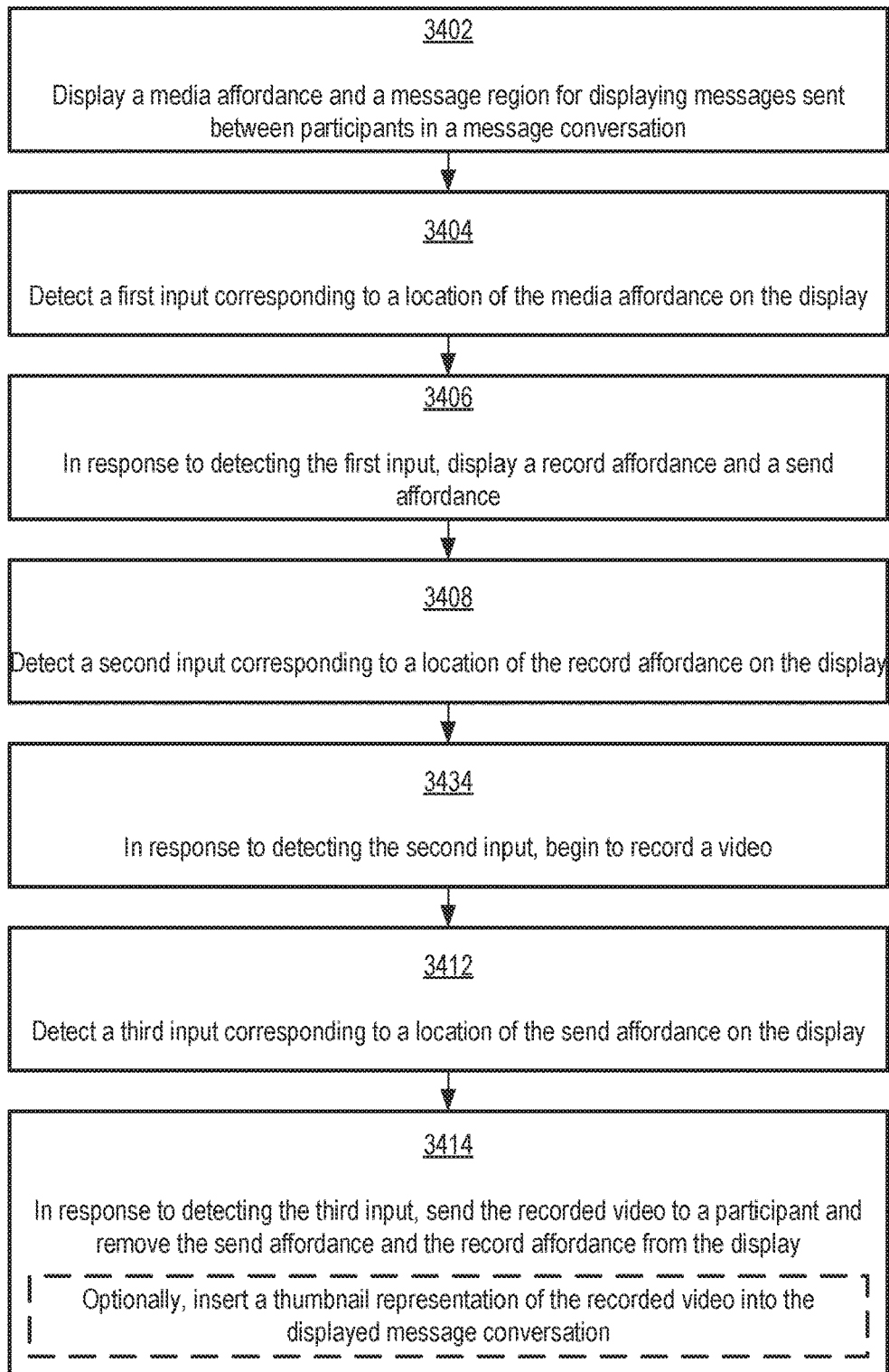
3400

FIG. 34

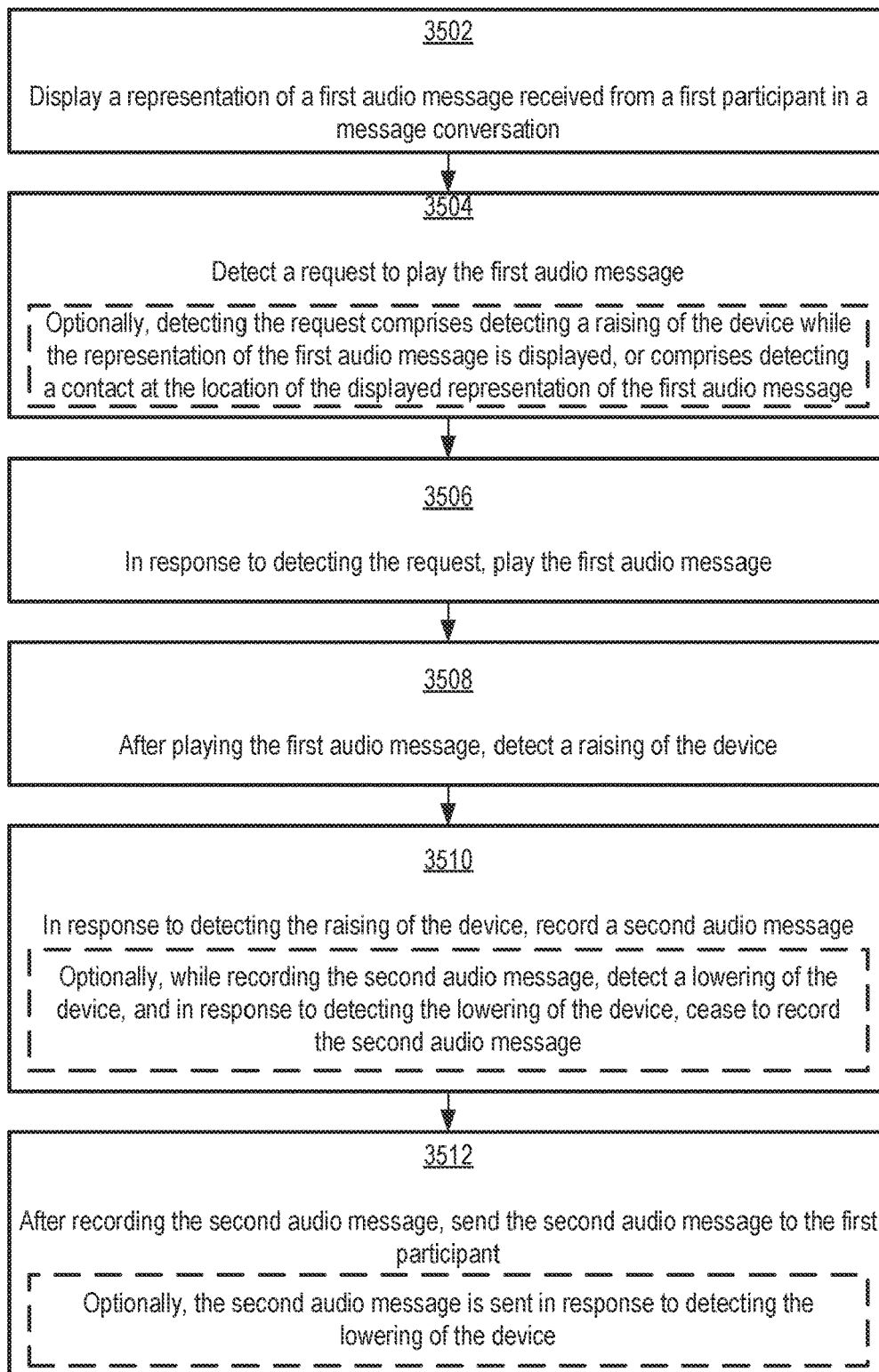
3500

FIG. 35

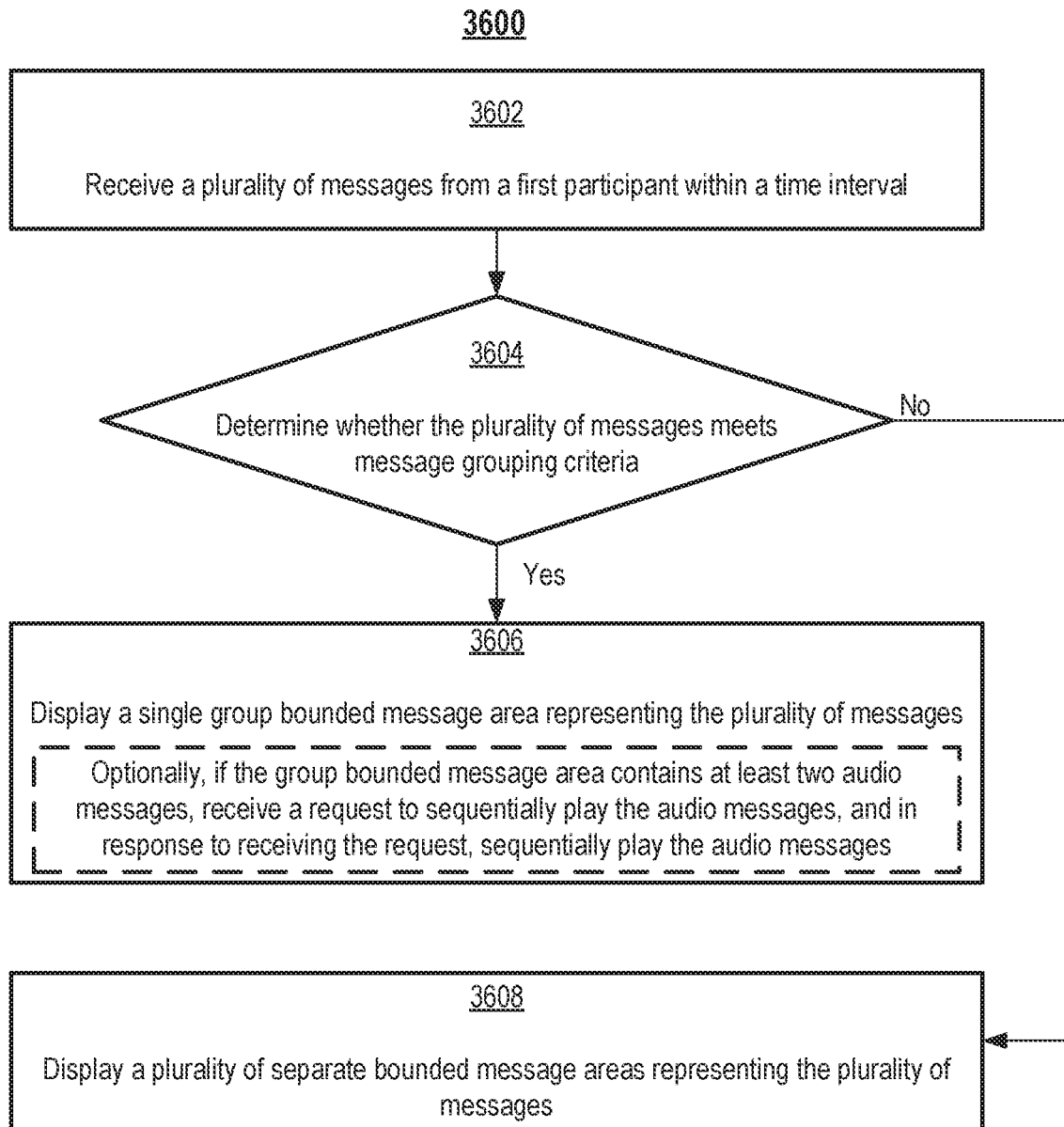


FIG. 36

3700

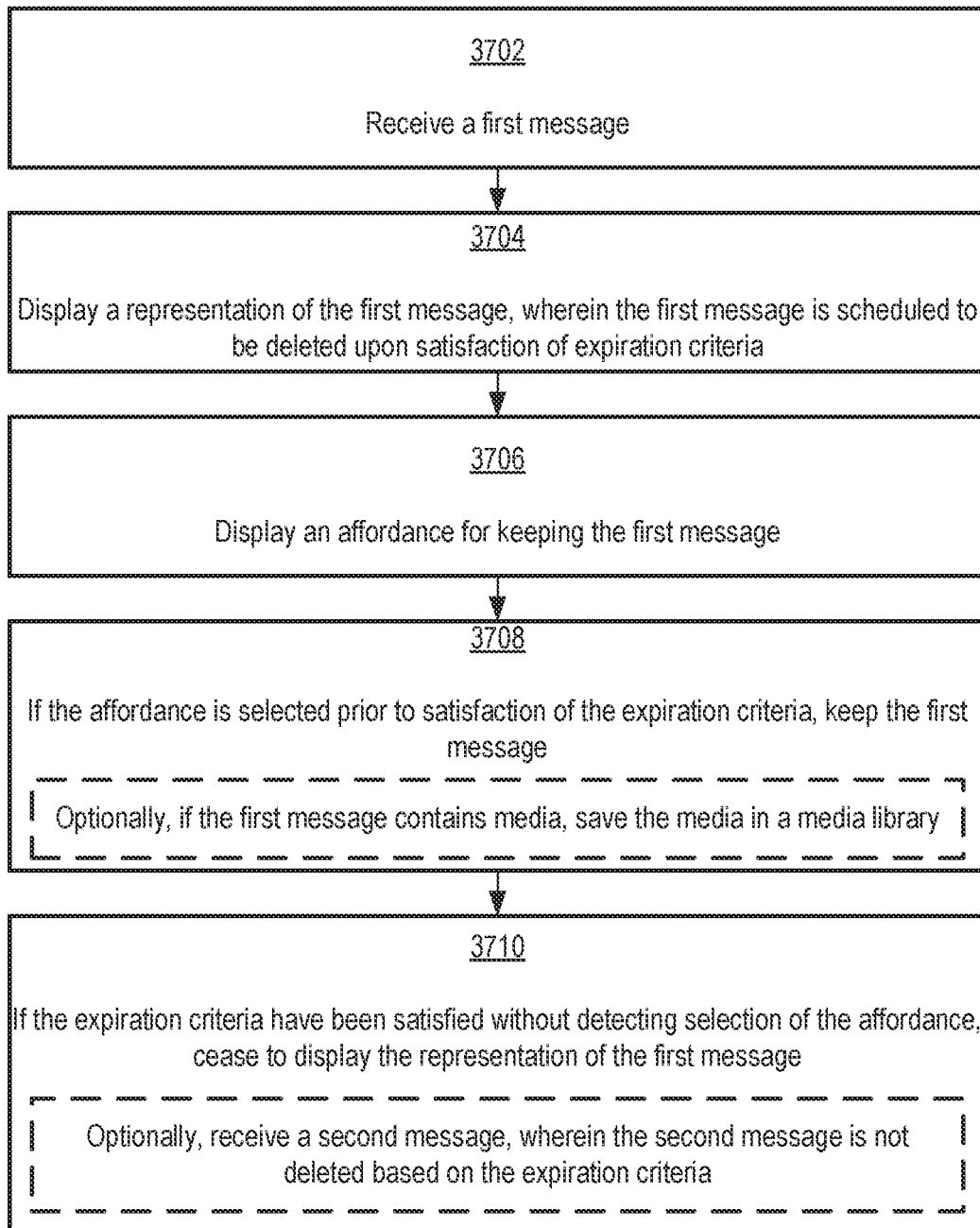
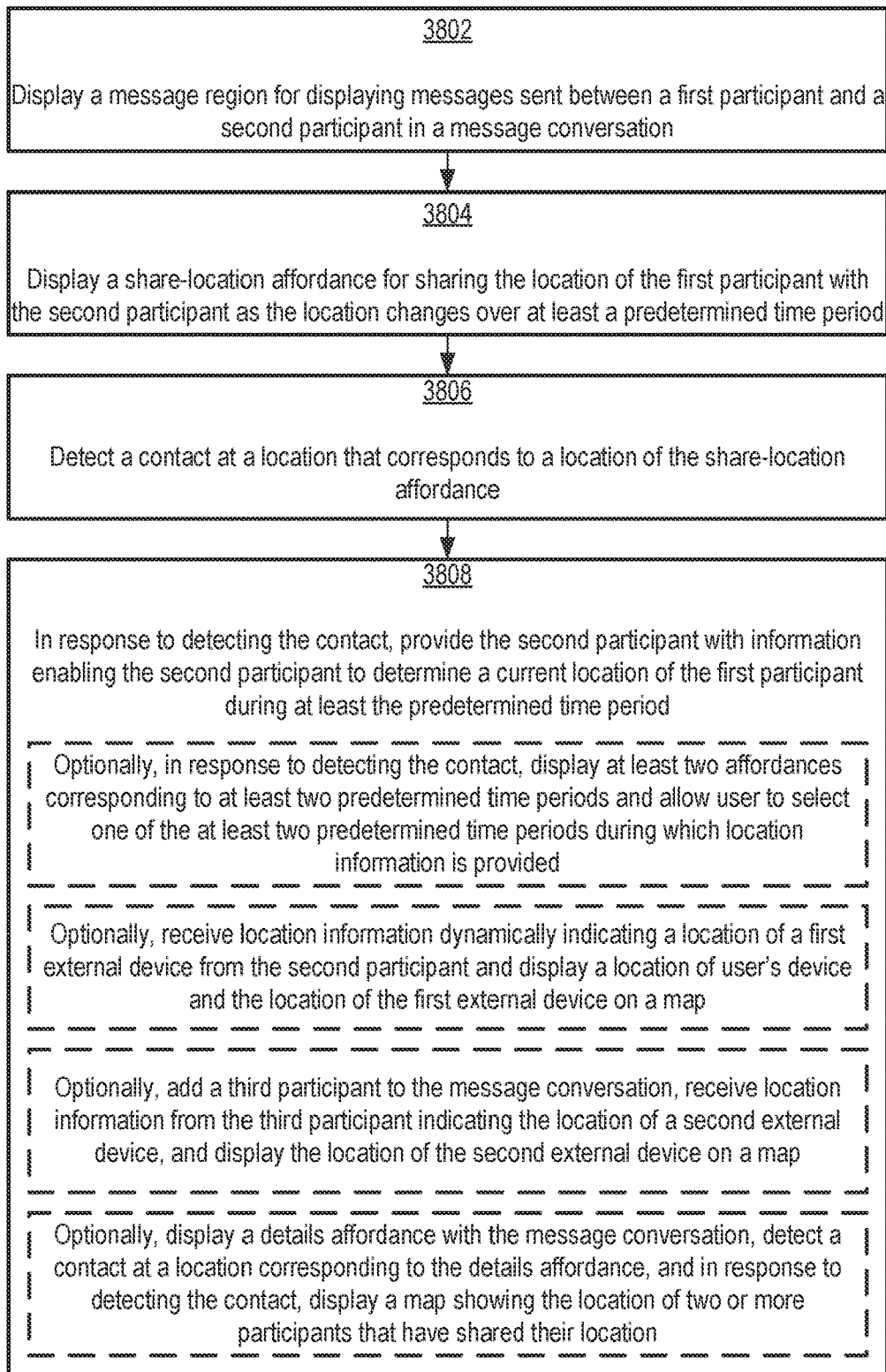


FIG. 37

3800**FIG. 38**

3900

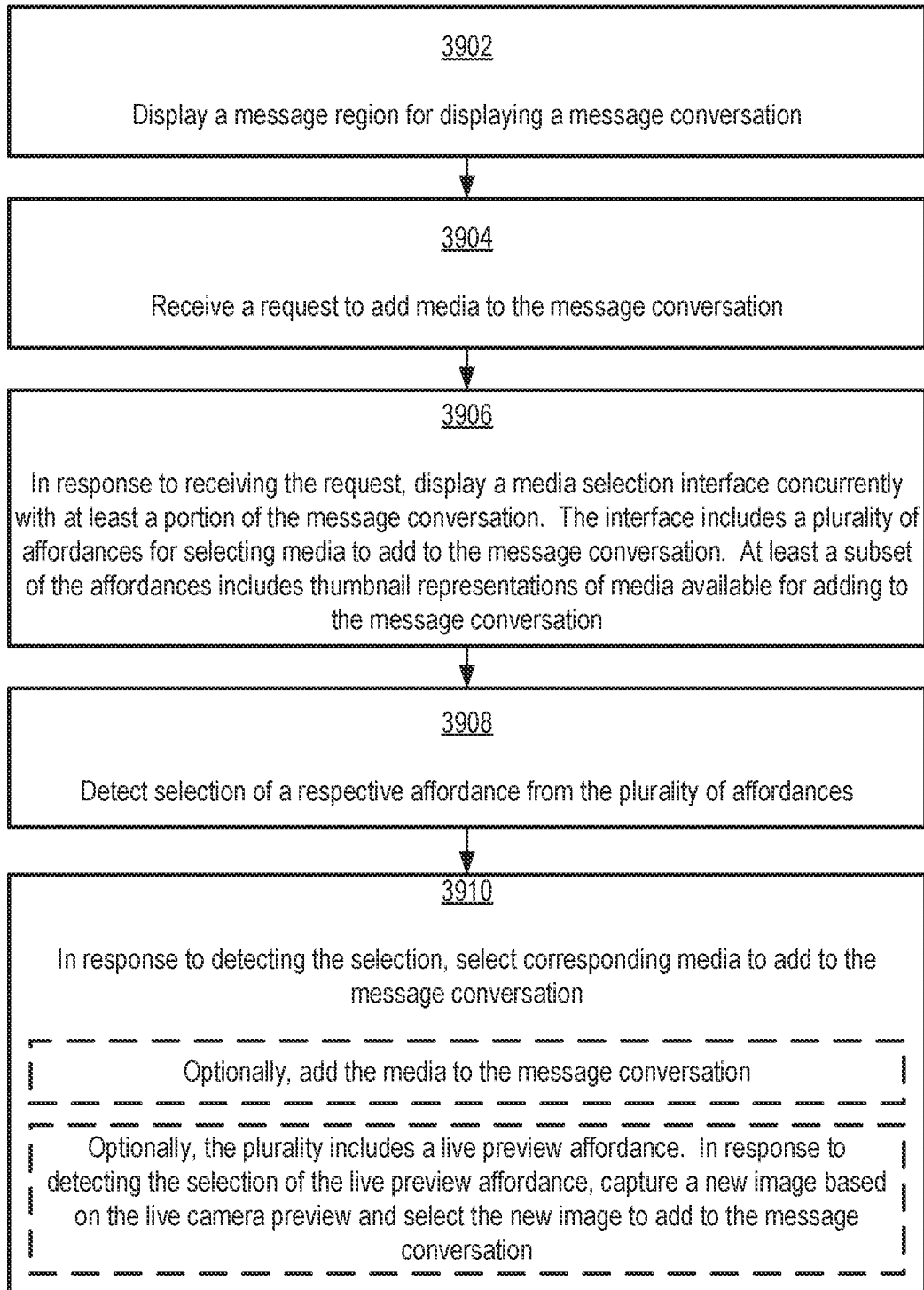


FIG. 39

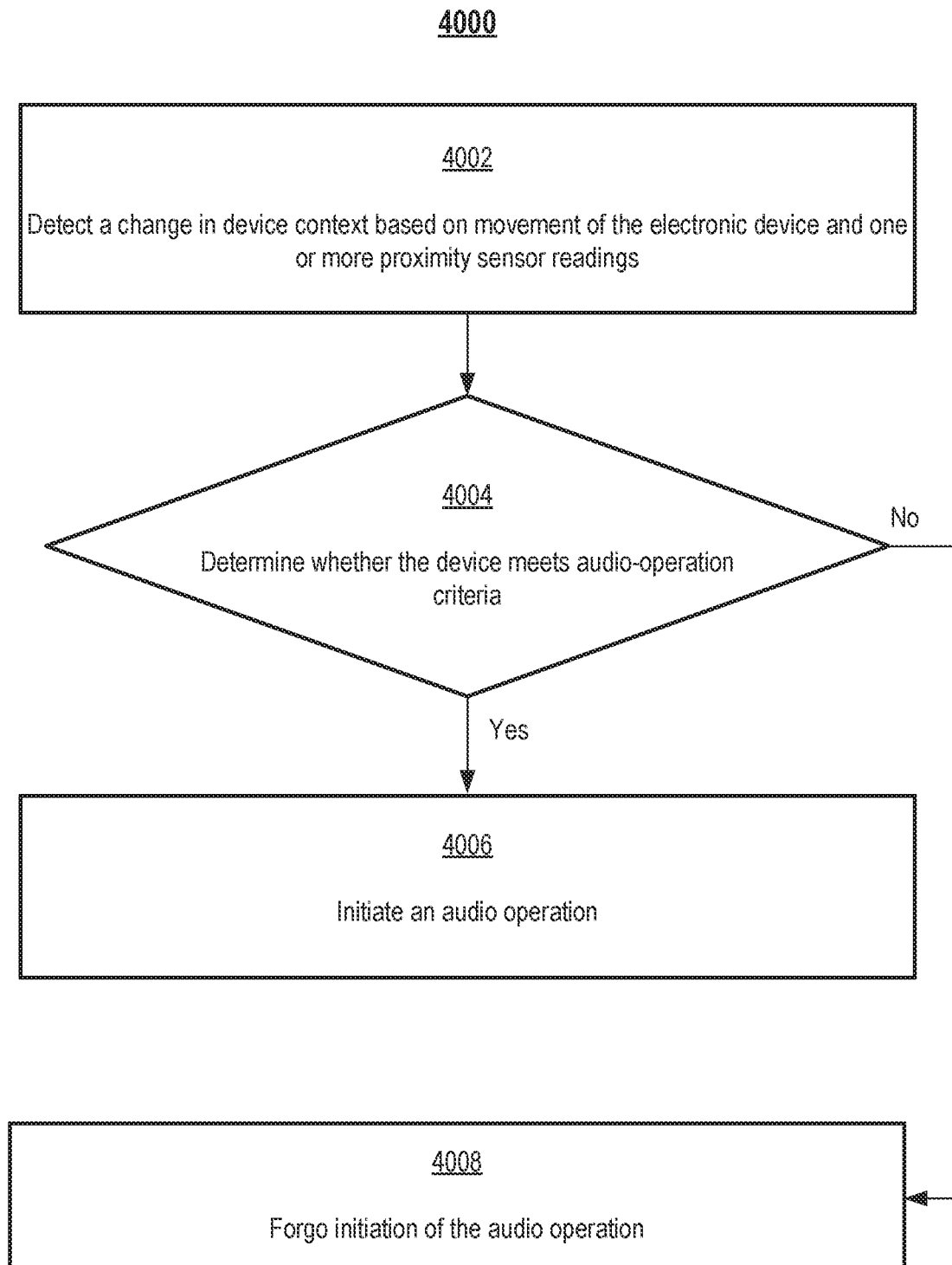


FIG. 40

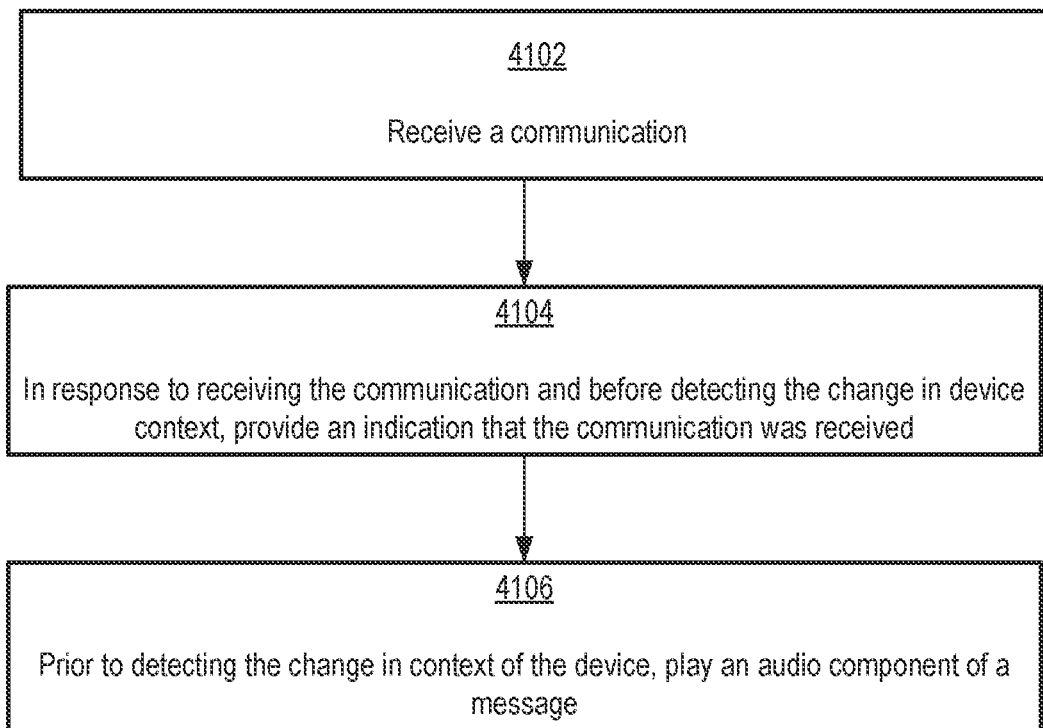


FIG. 41A

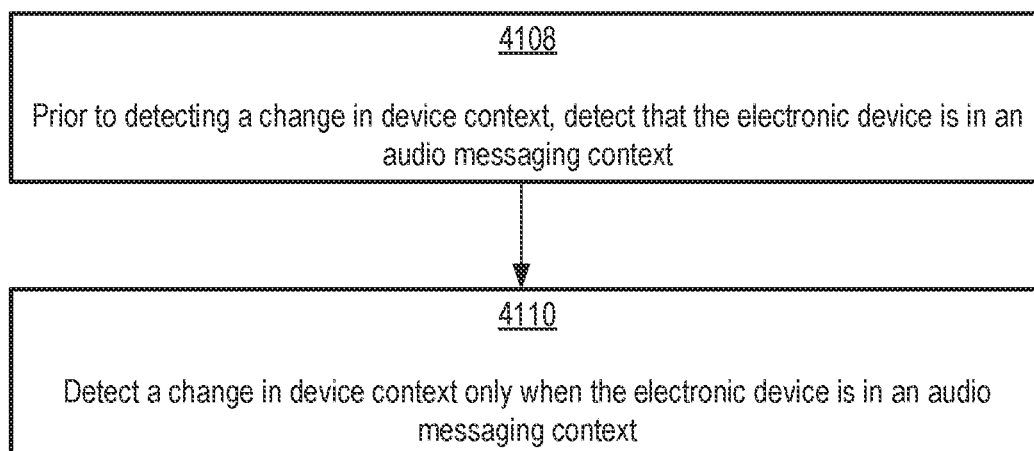


FIG. 41B

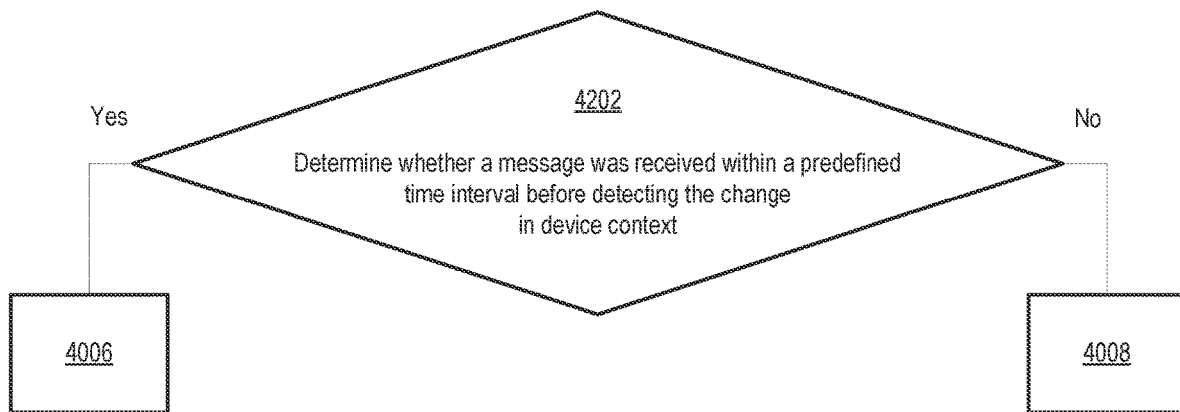


FIG. 42A

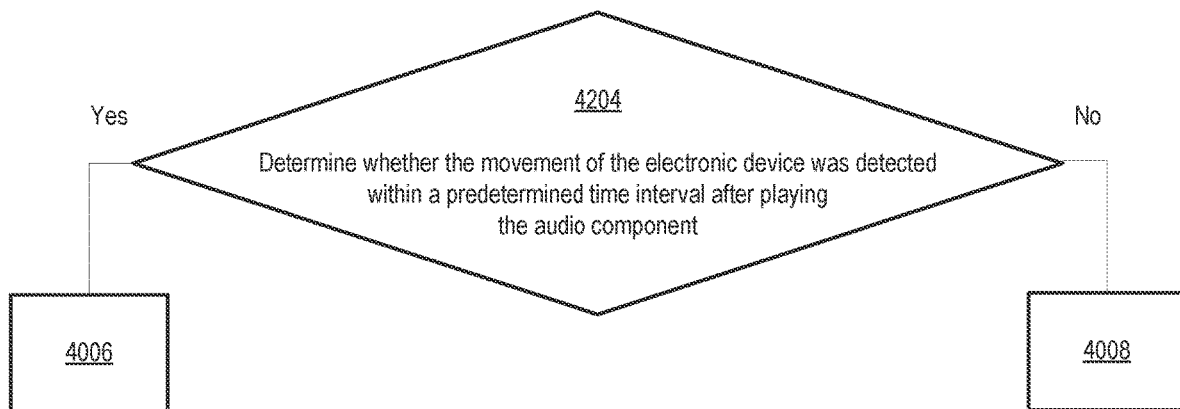
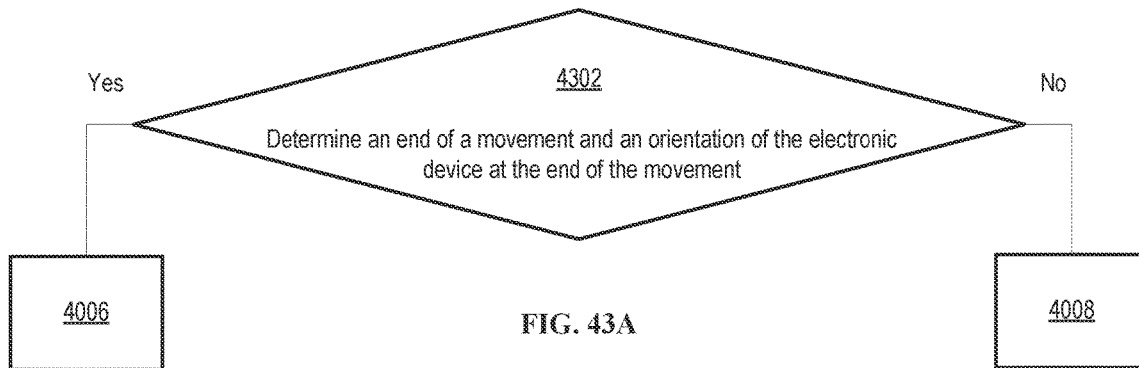
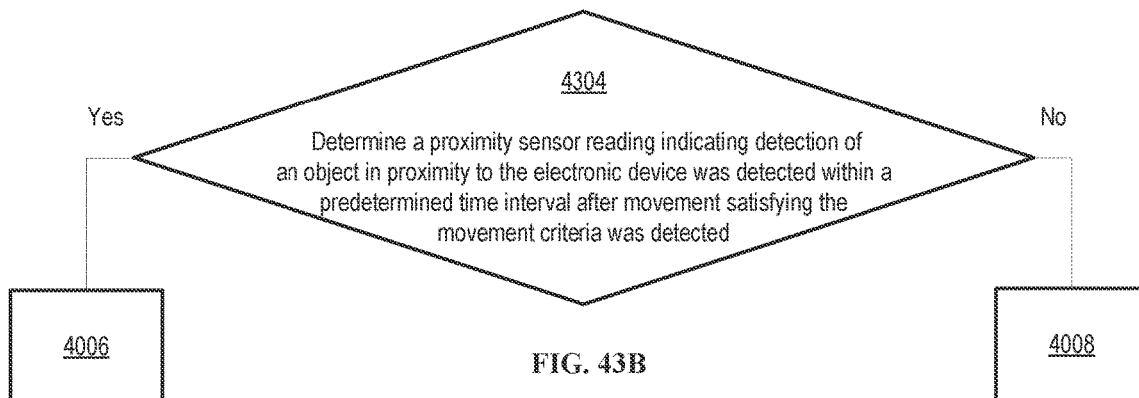
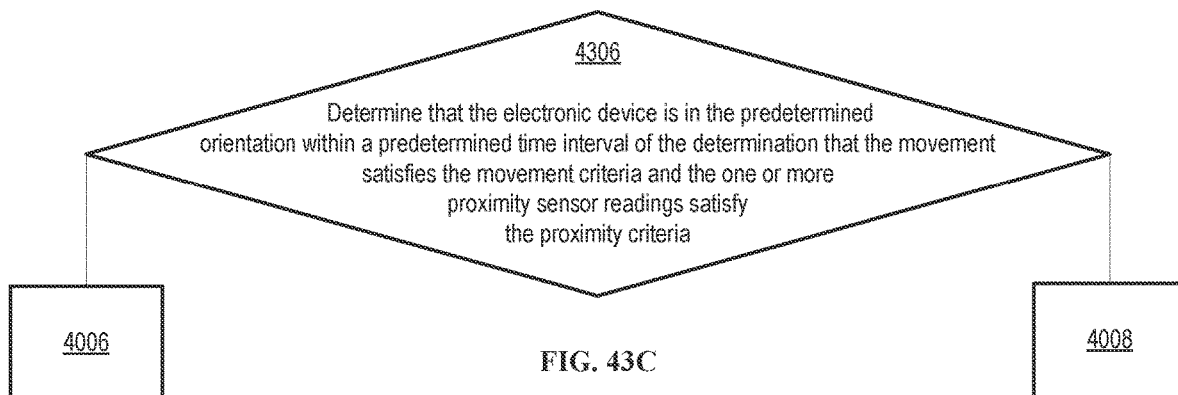


FIG. 42B



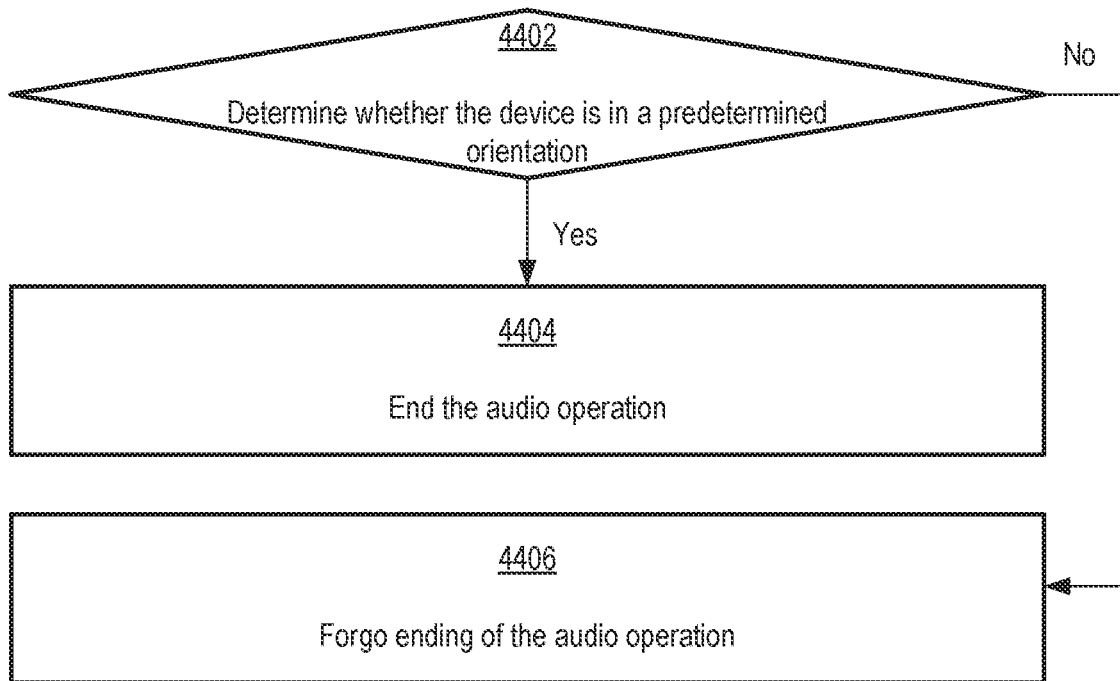


FIG. 44A

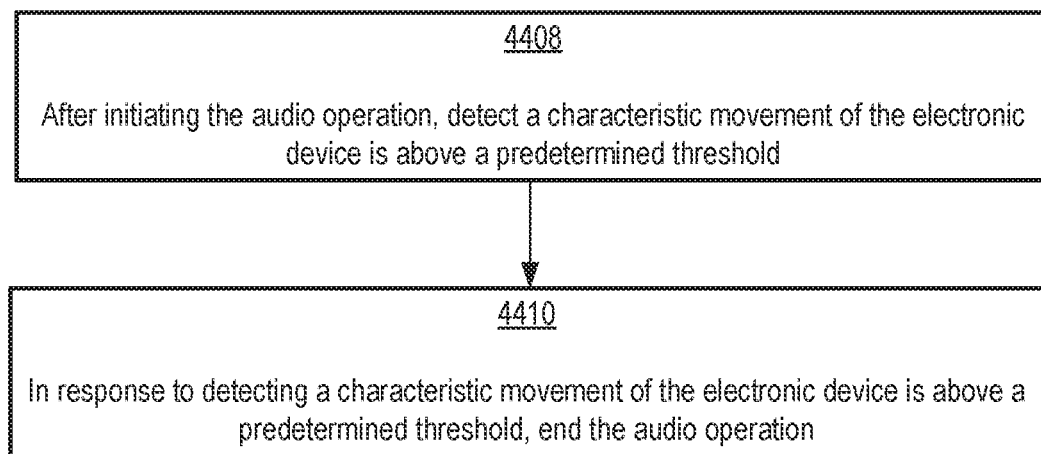


FIG. 44B

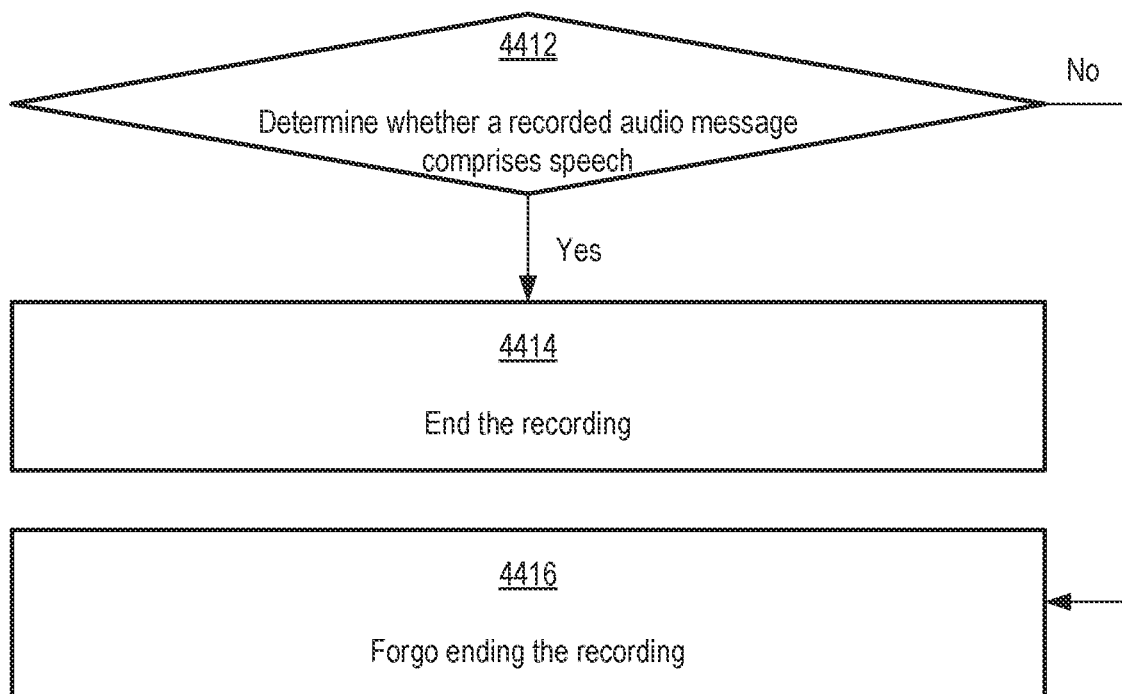


FIG. 44C

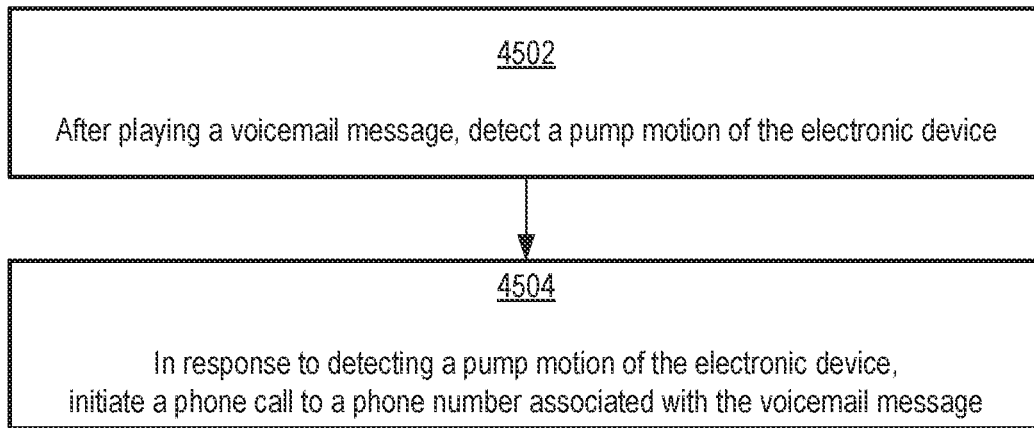


FIG. 45A

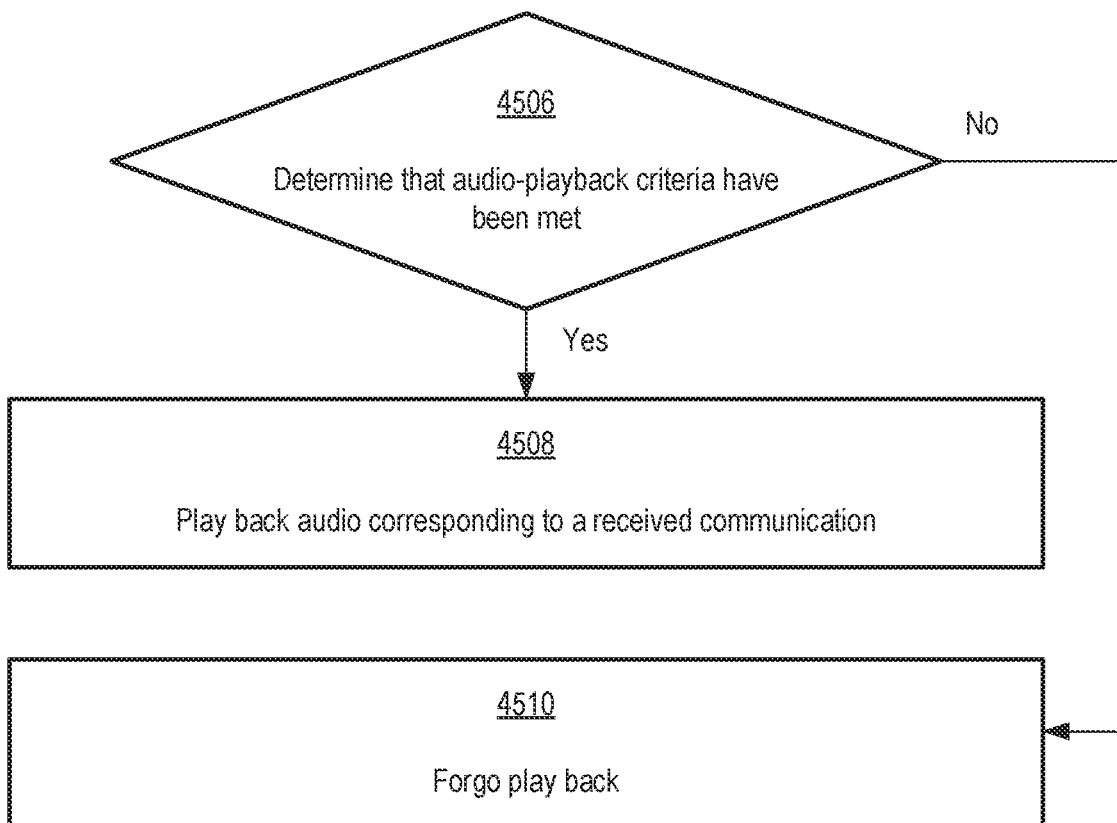


FIG. 45B

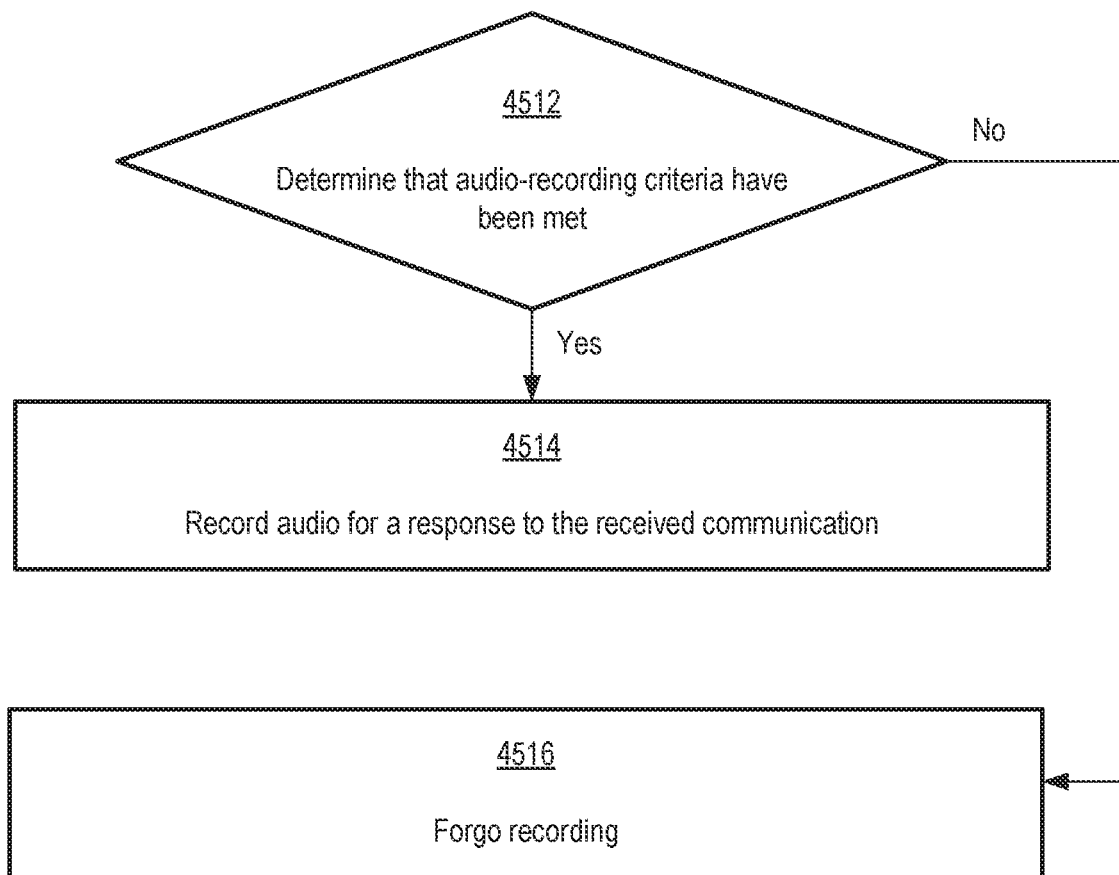


FIG. 45C

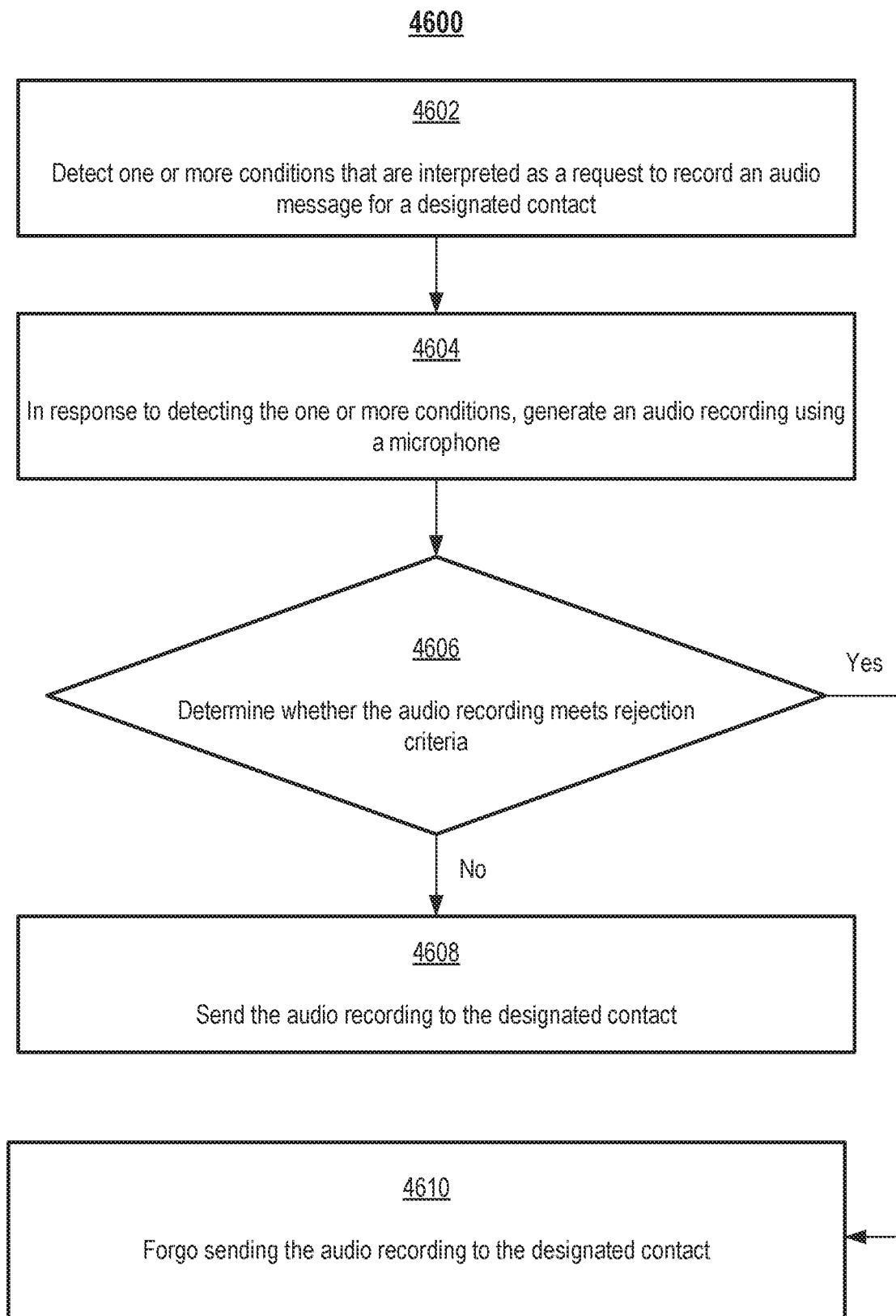


FIG. 46

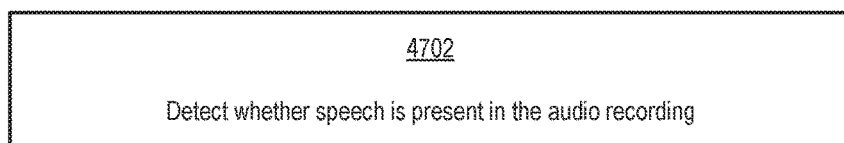


FIG. 47A

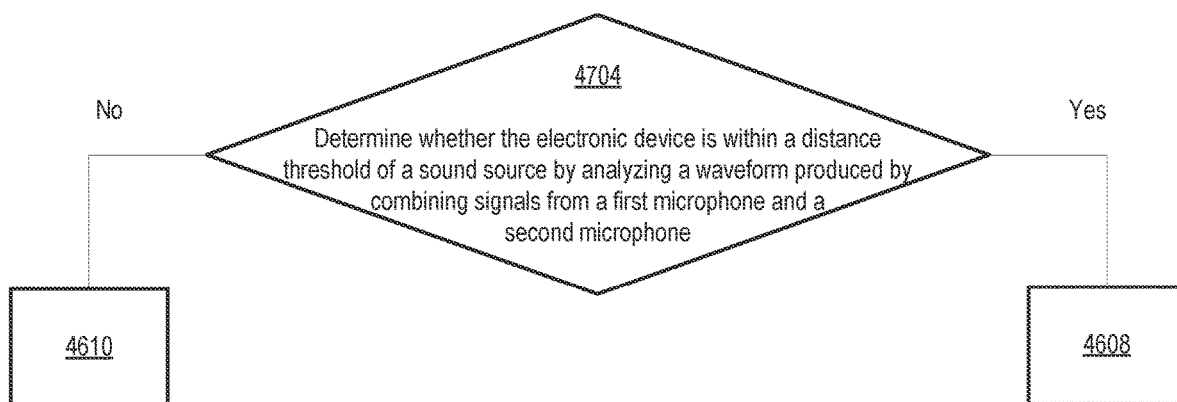


FIG. 47B

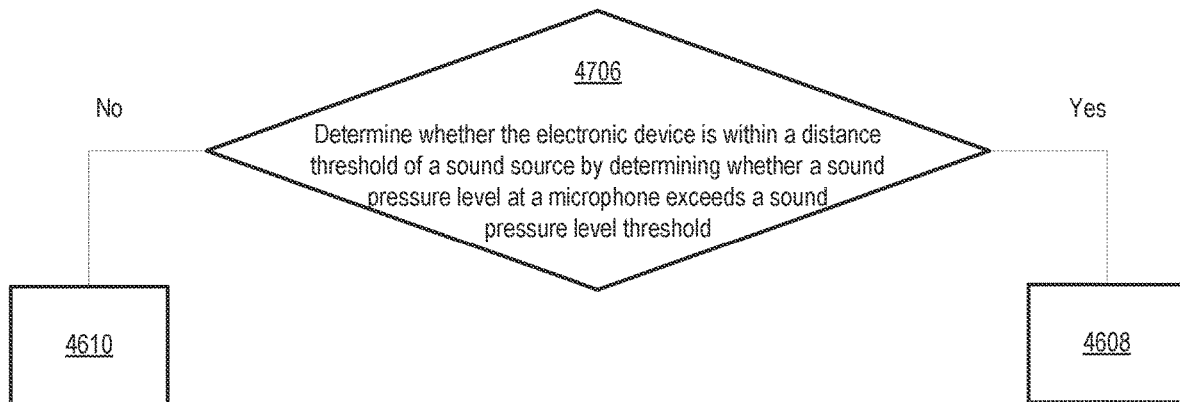


FIG. 47C

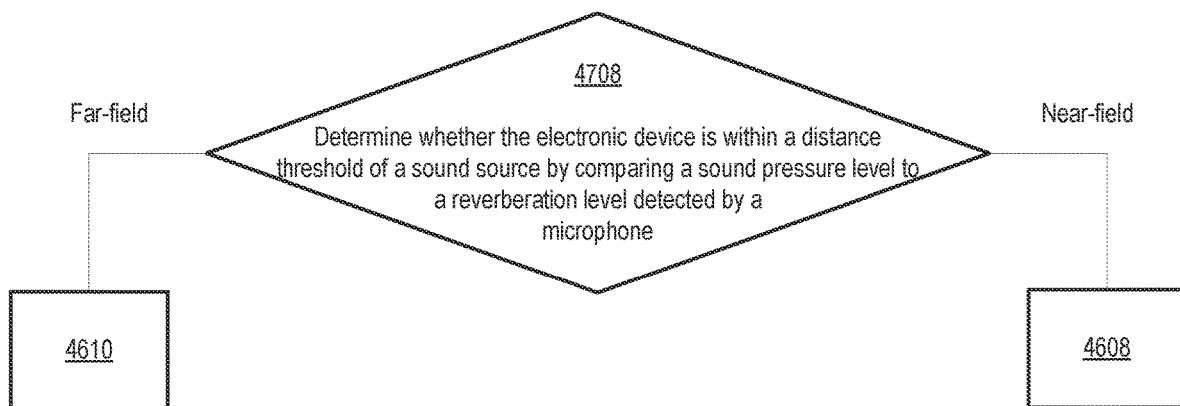


FIG. 47D

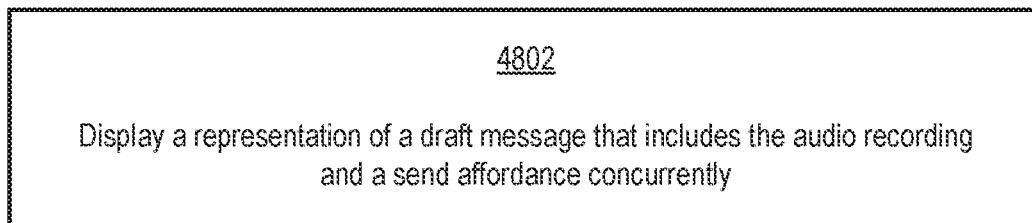


FIG. 48A

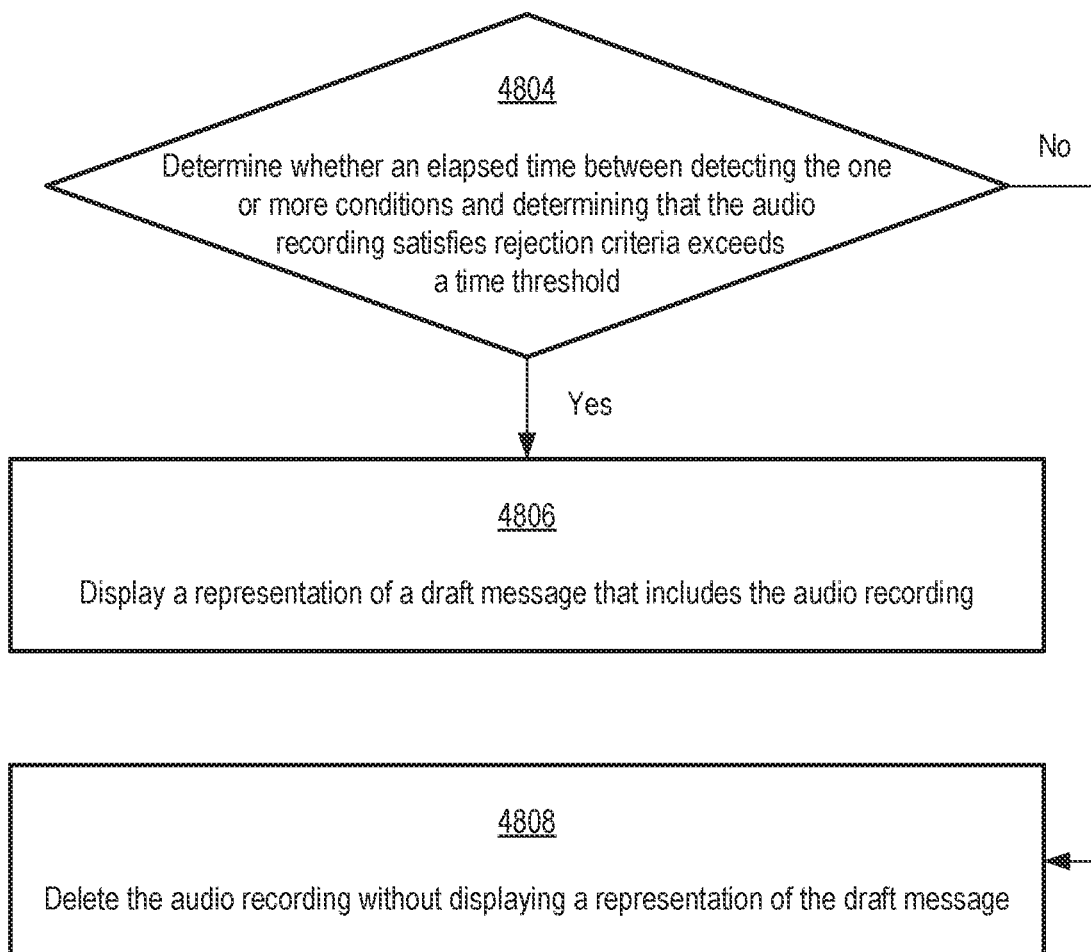


FIG. 48B

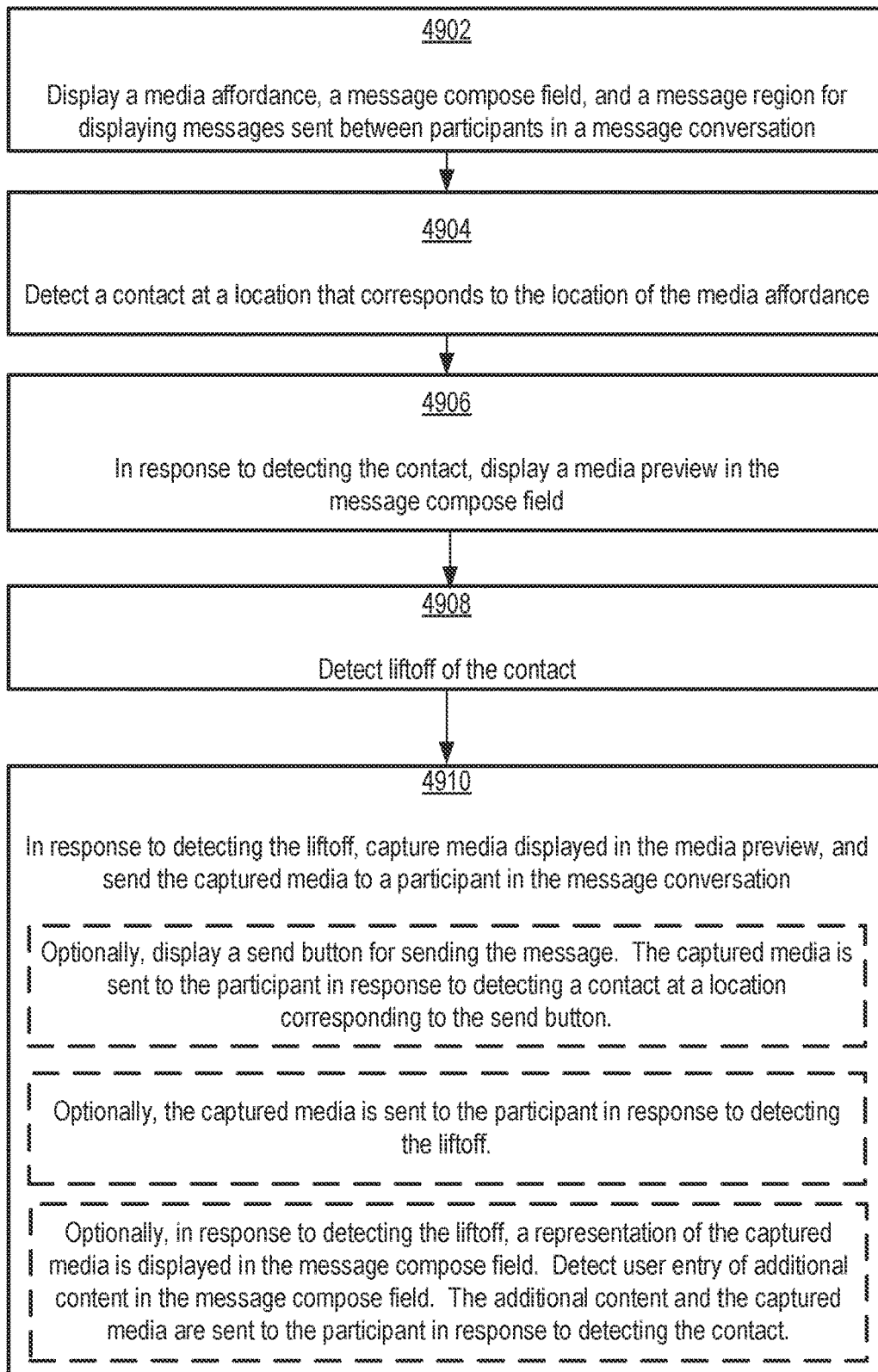
4900

FIG. 49

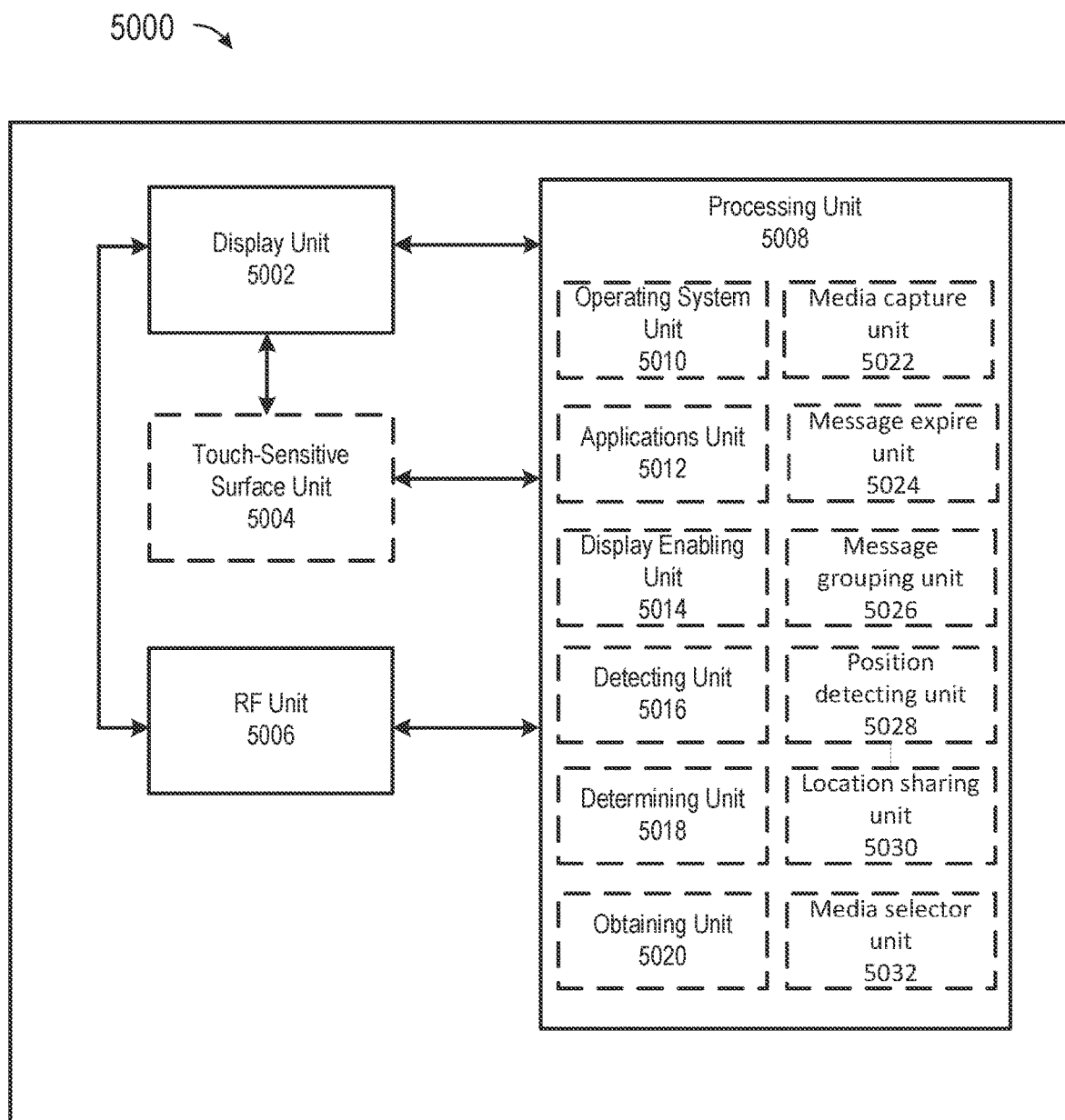


FIG. 50

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MESSAGE USER INTERFACES FOR CAPTURE AND TRANSMITTAL OF MEDIA AND LOCATION CONTENT

CROSS-REFERENCE TO RELATED APPLICATIONS

This application is a continuation of U.S. Non-provisional patent application Ser. No. 16/936,164, "MESSAGE USER INTERFACES FOR CAPTURE AND TRANSMITTAL OF MEDIA AND LOCATION CONTENT," filed on Jul. 22, 2020, which is a continuation of U.S. Non-provisional patent application Ser. No. 15/488,093, "MESSAGE USER INTERFACES FOR CAPTURE AND TRANSMITTAL OF MEDIA AND LOCATION CONTENT," filed on Apr. 14, 2017, which is a continuation of U.S. Non-provisional patent application Ser. No. 14/928,865, "MESSAGE USER INTERFACES FOR CAPTURE AND TRANSMITTAL OF MEDIA AND LOCATION CONTENT," filed on Oct. 30, 2015, which is a continuation of U.S. Non-provisional patent application Ser. No. 14/503,376, "MESSAGE USER INTERFACES FOR CAPTURE AND TRANSMITTAL OF MEDIA AND LOCATION CONTENT," filed on Sep. 30, 2014, now issued as U.S. Pat. No. 9,185,062, which claims the benefit of priority of U.S. Provisional Application Ser. No. 62/047,622, "MESSAGE USER INTERFACES FOR CAPTURE AND TRANSMITTAL OF MEDIA AND LOCATION CONTENT," filed Sep. 8, 2014, and of U.S. Provisional Patent Application Ser. No. 62/006,071, "MESSAGE USER INTERFACES FOR CAPTURE AND TRANSMITTAL OF MEDIA AND LOCATION CONTENT," filed on May 31, 2014. The content of these applications is hereby incorporated by reference for all purposes.

This application is related to: U.S. patent application Ser. No. 13/153,374, "MOTION PATTERN CLASSIFICATION AND GESTURE RECOGNITION," filed on Jun. 3, 2011; and U.S. patent application Ser. No. 13/153,335, "MOTION-BASED DEVICE OPERATIONS," filed on Jun. 3, 2011. The content of these applications is hereby incorporated by reference for all purposes.

FIELD

The disclosed examples relate generally to user interfaces of electronic devices.

BACKGROUND

Messages can include a variety of media, such as audio, video, or images. Some systems may require users to launch media applications outside of the messaging application in order to capture, transmit, and view media. Furthermore, including media in a message may require the user to perform multiple steps to capture the content, include the captured content in a message, and send the message to a recipient. The recipient may then need to perform multiple steps or explicitly launch a separate media application to play back or view the content.

SUMMARY

In addition to sharing media, users may also wish to easily share their location information with one or more other users from within a message application, or initiate an audio operation for communication. A message user interface that supports quick capture and sending of media and location

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information in a message, or initiates an audio operation, to one or more recipients is desirable.

In some embodiments, a method for capturing and sending media from within a message application comprises: at an electronic device having a touch-sensitive surface and a display: displaying, on the display, a media affordance and a message region for displaying messages sent between participants in a message conversation; detecting a gesture on the touch-sensitive surface that includes detecting a contact at a location on the touch-sensitive surface that corresponds to a location of the media affordance on the display; in response to detecting the contact: displaying a send affordance on the display; detecting a continuation of the gesture that includes detecting movement of the contact across the touch-sensitive surface followed by detecting liftoff of the contact from the touch-sensitive surface; determining whether the contact moved to a location on the touch-sensitive surface that corresponds to a location of the send affordance on the display; and in accordance with a determination that the contact moved to the location on the touch-sensitive surface that corresponds to the location of the send affordance, and in response to detecting the liftoff, sending media captured in response to at least a portion of the gesture to a participant in the message conversation.

In some embodiments, a method for capturing and sending video from within a message application comprises: at an electronic device having a touch-sensitive surface and a display: displaying, on the display, a media affordance and a message region for displaying messages sent between participants in a message conversation; detecting a first input on the touch-sensitive surface, wherein the first input corresponds to a location of the media affordance on the display; in response to detecting the first input, displaying a record affordance and a send affordance; detecting a second input on the touch-sensitive surface, wherein the second input corresponds to a location of the record affordance on the display; in response to detecting the second input, beginning to record a video; detecting a third input on the touch-sensitive surface, wherein the third input corresponds to a location of the send affordance on the display; and in response to detecting the third input: sending the recorded video to a participant, and removing the send affordance and the record affordance from the display.

In some embodiments, a method for sharing location information comprises: at an electronic device comprising a touch-sensitive surface and a display: displaying, on the display, a message region for displaying messages sent between a first participant and a second participant in a message conversation; displaying a share-location affordance for sharing the location of the first participant with the second participant as the location changes over at least a predetermined time period; detecting a selection of the share-location affordance; and in response to detecting the selection of the share-location affordance: providing the second participant with information enabling the second participant to determine a current location of the first participant during at least the predetermined time period.

In some embodiments, a method for adding media to a conversation comprises: at an electronic device having a camera sensor, a touch-sensitive surface, and a display: displaying, on the display, a message region for displaying a message conversation: receiving a request to add media to the message conversation; in response to receiving the request, displaying a media selection interface concurrently with at least a portion of the message conversation, wherein the media selection interface includes a plurality of affordances for selecting media for addition to the message

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conversation, at least a subset of the plurality of affordances including thumbnail representations of media available for adding to the message conversation; detecting selection of a respective affordance from the plurality of affordances; and in response to detecting selection of the respective affordance, selecting corresponding media for addition to the message conversation.

In some embodiments, a method for capturing and sending media comprises: at an electronic device having a touch-sensitive surface and a display: displaying, on the display, a media affordance, a message compose field, and a message region for displaying messages sent between participants in a message conversation; detecting a contact at a location on the touch-sensitive surface that corresponds to a location of the media affordance on the display; in response to detecting the contact, displaying a media preview in the message compose field; detecting a liftoff of the contact from the touch-sensitive surface; in response to detecting the liftoff, capturing media displayed in the media preview; and sending the captured media to a participant in the message conversation.

In some embodiments, a method for capturing, sending, and playing audio messages from within a message application comprises: at an electronic device having a touch-sensitive surface and a display: displaying a representation of a first audio message received from a first participant in a message conversation; detecting a request to play the first audio message; in response to detecting the request, playing the first audio message; after playing the first audio message, detecting a raising of the device; in response to detecting the raising of the device, recording a second audio message; and after recording the second audio message, sending the second audio message to the first participant.

In some embodiments, a method for grouping messages for display in a conversation comprises: at an electronic device comprising a touch-sensitive surface and a display: receiving a plurality of messages from a first participant within a time interval; determining whether the plurality of messages meets message grouping criteria; in accordance with a determination that the plurality of messages does not meet the message grouping criteria, displaying a plurality of separate bounded message areas representing the plurality of messages; and in accordance with a determination that the plurality of messages meets the message grouping criteria, displaying a single group bounded message area representing the plurality of messages.

In some embodiments, a method for deleting expired messages from a message conversation comprises: at an electronic device comprising a touch-sensitive surface and a display: receiving a first message; displaying a representation of the first message on the display, wherein the first message is scheduled to be deleted upon satisfaction of expiration criteria; displaying an affordance for keeping the first message; in accordance with a determination that the affordance was selected prior to the satisfaction of the expiration criteria, keeping the first message; and in accordance with a determination that the expiration criteria has been satisfied without detecting selection of the affordance, ceasing to display the representation of the first message on the display.

In some embodiments, a method for initiating an audio operation includes: at an electronic device comprising a microphone: detecting a change in device context based on movement of the electronic device and one or more proximity sensor readings; in response to detecting the change in device context: determining whether the device meets audio-operation criteria, wherein the audio-operation criteria

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include a criterion that is met when the movement of the electronic device satisfies movement criteria and the one or more proximity sensor readings satisfy a proximity criteria; and in accordance with a determination that the change in device context satisfies the audio-operation criteria, initiating an audio operation; and in accordance with a determination that the change in device context does not satisfy the audio-operation criteria, forgoing initiation of the audio operation.

In some embodiments, method for sending an audio message includes: at an electronic device comprising at least one microphone: detecting one or more conditions that are interpreted as a request to record an audio message for a designated contact; in response to detecting the one or more conditions, generating an audio recording using the at least one microphone; determining whether the audio recording meets rejection criteria; in accordance with a determination that the rejection criteria is not satisfied, sending the audio recording to the designated contact; and in accordance with a determination that the rejection criteria is satisfied, forgoing sending of the audio recording to the designated contact.

DESCRIPTION OF THE FIGURES

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

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

FIG. 2 illustrates a portable multifunction device having a touch-sensitive display in accordance with some embodiments.

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

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

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

FIGS. 5A-5B illustrate exemplary messaging user interfaces.

FIGS. 6A-6B illustrate exemplary messaging user interfaces.

FIGS. 7A-7D illustrate exemplary messaging user interfaces.

FIG. 8 illustrates an exemplary messaging user interface.

FIGS. 9A-9B illustrate exemplary messaging user interfaces.

FIGS. 10A-10B illustrate exemplary messaging user interfaces.

FIGS. 11A-11B illustrate exemplary messaging user interfaces.

FIGS. 11C-11E illustrate exemplary messaging user interfaces.

FIGS. 12A-12B illustrate exemplary messaging user interfaces.

FIGS. 13A-13C illustrate exemplary messaging user interfaces.

FIG. 14 illustrates an exemplary messaging user interface.

FIGS. 15A-15B illustrate exemplary messaging user interfaces.

FIGS. 16A-16B illustrate exemplary messaging user interfaces.

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FIGS. 17A-17C illustrate exemplary messaging user interfaces.

FIGS. 18A-18C illustrate exemplary messaging user interfaces.

FIGS. 19A-19B illustrate exemplary messaging user interfaces.

FIGS. 19C-19D illustrate exemplary messaging user interfaces.

FIG. 20 illustrates an exemplary messaging user interface.

FIGS. 21A-21B illustrate exemplary messaging user interfaces.

FIGS. 22A-22D illustrate exemplary messaging user interfaces.

FIGS. 23A-23C illustrate exemplary messaging user interfaces.

FIGS. 24A-24C illustrate exemplary messaging user interfaces.

FIGS. 25A-25B illustrate exemplary messaging user interfaces.

FIGS. 25C-25E illustrate exemplary messaging user interfaces.

FIG. 26 illustrates an exemplary messaging user interface.

FIGS. 27A-27C illustrate exemplary messaging user interfaces.

FIGS. 28A-28C illustrate exemplary messaging user interfaces.

FIGS. 29A-29C illustrate exemplary messaging user interfaces.

FIG. 30 illustrates an exemplary messaging user interface.

FIG. 31 illustrates an exemplary messaging user interface.

FIGS. 32A-32C illustrate exemplary messaging user interfaces.

FIG. 33 is a flow diagram illustrating a process for capturing and sending media.

FIG. 34 is a flow diagram illustrating a process for capturing and sending media.

FIG. 35 is a flow diagram illustrating a process for capturing and sending media.

FIG. 36 is a flow diagram illustrating a process for grouping messages.

FIG. 37 is a flow diagram illustrating a process for managing messages based on expiration criteria.

FIG. 38 is a flow diagram illustrating a process for sharing location information.

FIG. 39 is a flow diagram illustrating a process for adding media to a conversation.

FIG. 40 is a flow diagram illustrating a process for initiating an audio operation.

FIGS. 41A-41B are flow diagrams illustrating processes for initiating an audio operation.

FIGS. 42A-42B are flow diagrams illustrating processes for initiating an audio operation.

FIGS. 43A-43C are flow diagrams illustrating processes for initiating an audio operation.

FIGS. 44A-44C are flow diagrams illustrating processes for initiating an audio operation.

FIGS. 45A-45C are flow diagrams illustrating processes for initiating an audio operation.

FIG. 46 is a flow diagram illustrating a process for sending an audio recording.

FIGS. 47A-47D are flow diagrams illustrating processes for sending an audio recording.

FIGS. 48A-48B are flow diagrams illustrating processes for sending an audio recording.

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FIG. 49 is a flow diagram illustrating a process for capturing and sending media.

FIG. 50 illustrates a functional block diagram of an electronic device in accordance with some embodiments.

DETAILED DESCRIPTION

The following description sets forth exemplary methods, parameters, and the like. It should be recognized, however, that such description is not intended as a limitation on the scope of the present disclosure but is instead provided as a description of exemplary embodiments.

There is a need for electronic devices with faster, more efficient methods and interfaces for capturing, sending, and playing media content or location data on portable electronic devices. Such methods and interfaces reduce the cognitive burden on 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.

Below, FIGS. 1A-1B, 2, 3, and 4A-4B provide a description of exemplary devices for performing the techniques for capturing, sending, and playing or viewing media objects or location content. FIGS. 5A-32C illustrate exemplary user message user interfaces for capturing, sending, playing or viewing media objects or location content, and sending recorded audio messages. FIGS. 33-49 are flow diagrams illustrating methods of capturing, sending, and playing or viewing media and location content, grouping messages for display, removing expired messages from a conversation, initiating an audio operation, and sending a recorded message.

Although the following description uses terms “first,” “second,” etc. to describe various elements, these elements should not be limited by the terms. These terms are only used to distinguish one element from another. For example, a first touch could be termed a second touch, and, similarly, a second touch could be termed a first touch, without departing from the scope of the various described embodiments. The first touch and the second touch are both touches, but they are not the same touch.

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 specification, 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.

The term “if” may be 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” may be 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. Exemplary 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., a 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., 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 button(s), a physical keyboard, a mouse, and/or a joystick.

The device may support a variety of applications, such as one or more of the following: 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. 1A is a block diagram illustrating portable multifunction device 100 with touch-sensitive display system 112 in accordance with some embodiments. Touch-sensitive display 112 is sometimes called a “touch screen” for convenience, and is sometimes known as or called a “touch-sensitive display system.” 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 control devices 116, and external port 124. Device 100 optionally includes one or more optical sensors 164. Device 100 optionally includes one or more contact intensity sensors 165 for detecting intensity 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 “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) 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) 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 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 a touch-sensitive display, a touch-sensitive surface, or a physical/mechanical control such as a knob or a button).

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.

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. 1A are implemented in hardware, software, or a combination of both hardware and software, including one or more signal processing and/or application-specific integrated circuits.

Memory 102 may include one or more computer-readable storage mediums. The computer-readable storage mediums may be tangible and non-transitory. Memory 102 may include high-speed random access memory and may also include non-volatile memory, such as one or more magnetic disk storage devices, flash memory devices, or other non-volatile solid-state memory devices. Memory controller 122 may control access to memory 102 by other components of device 100.

Peripherals interface 118 can be used to couple input and output peripherals of the device to CPU 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 120, and memory controller 122 may be implemented on a single chip, such as chip 104. In some other embodiments, they may be 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 RF circuitry 108 optionally includes well-known circuitry for detecting near field communication (NFC) fields, such as by a short-range communication radio. 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 (HSUPA), Evo-

lution, Data-Only (EV-DO), HSPA, HSPA+, Dual-Cell HSPA (DC-HSPDA), long term evolution (LTE), near field communication, wideband code division multiple access (W-CDMA), code division multiple access (CDMA), time division multiple access (TDMA), Bluetooth, Bluetooth Low Energy (BTLE), Wireless Fidelity (Wi-Fi) (e.g., IEEE 802.11a, IEEE 802.11b, IEEE 802.11g, IEEE 802.11n, and/or IEEE 802.11ac), 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 may be 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). 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 screen 112 and other input control devices 116, to 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 control devices 116. The other input 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 to any (or none) of the following: a keyboard, an infrared port, a USB port, and 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).

A quick press of the push button may disengage a lock of touch screen 112 or begin a process that uses gestures on the touch screen to unlock the device, as described in U.S. patent application Ser. No. 11/322,549, "Unlocking a Device by Performing Gestures on an Unlock Image," filed Dec. 23, 2005, U.S. Pat. No. 7,657,849, which is hereby incorporated by reference in its entirety. A longer press of the push button (e.g., 206) may turn power to device 100 on or off. The user may be able to customize a functionality of one or more of the buttons. Touch screen 112 is used to implement virtual or soft buttons and one or more soft keyboards.

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Touch-sensitive display **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 screen **112**. Touch screen **112** displays visual output to the user. The visual output may include graphics, text, icons, video, and any combination thereof (collectively termed “graphics”). In some embodiments, some or all of the visual output may correspond to user-interface objects.

Touch screen **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 screen **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 screen **112** and convert 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 screen **112**. In an exemplary embodiment, a point of contact between touch screen **112** and the user corresponds to a finger of the user.

Touch screen **112** may use LCD (liquid crystal display) technology, LPD (light emitting polymer display) technology, or LED (light emitting diode) technology, although other display technologies may be used in other embodiments. Touch screen **112** and display controller **156** may 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 screen **112**. In an exemplary embodiment, projected mutual capacitance sensing technology is used, such as that found in the iPhone® and iPod Touch® from Apple Inc. of Cupertino, Calif.

A touch-sensitive display in some embodiments of touch screen **112** may be analogous to the multi-touch sensitive touchpads described in the following U.S. Pat. No. 6,323,846 (Westerman et al.), U.S. Pat. No. 6,570,557 (Westerman et al.), and/or U.S. Pat. No. 6,677,932 (Westerman), and/or U.S. Patent Publication 2002/0015024A1, each of which is hereby incorporated by reference in its entirety. However, touch screen **112** displays visual output from device **100**, whereas touch-sensitive touchpads do not provide visual output.

A touch-sensitive display in some embodiments of touch screen **112** may be as described in the following applications: (1) U.S. patent application Ser. No. 11/381,313, “Multipoint Touch Surface Controller,” filed May 2, 2006; (2) U.S. patent application Ser. No. 10/840,862, “Multipoint Touchscreen,” filed May 6, 2004; (3) U.S. patent application Ser. No. 10/903,964, “Gestures For Touch Sensitive Input Devices,” filed Jul. 30, 2004; (4) U.S. patent application Ser. No. 11/048,264, “Gestures For Touch Sensitive Input Devices,” filed Jan. 31, 2005; (5) U.S. patent application Ser. No. 11/038,590, “Mode-Based Graphical User Interfaces For Touch Sensitive Input Devices,” filed Jan. 18, 2005; (6) U.S. patent application Ser. No. 11/228,758, “Virtual Input Device Placement On A Touch Screen User Interface,” filed Sep. 16, 2005; (7) U.S. patent application Ser. No. 11/228,700, “Operation Of A Computer With A Touch Screen Interface,” filed Sep. 16, 2005; (8) U.S. patent application Ser. No. 11/228,737, “Activating Virtual Keys Of A Touch-Screen Virtual Keyboard,” filed Sep. 16, 2005; and (9) U.S. patent application Ser. No. 11/367,749, “Multi-Functional Hand-Held Device,” filed Mar. 3, 2006. All of these applications are incorporated by reference herein in their entirety.

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Touch screen **112** may have a video resolution in excess of 100 dpi. In some embodiments, the touch screen has a video resolution of approximately 160 dpi. The user may make contact with touch screen **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 primarily 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** may include 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 may be a touch-sensitive surface that is separate from touch screen **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** may include 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** may also include one or more optical sensors **164**. FIG. 1A shows an optical sensor coupled to optical sensor controller **158** in I/O subsystem **106**. Optical sensor **164** may include charge-coupled device (CCD) or complementary metal-oxide semiconductor (CMOS) phototransistors. Optical sensor **164** receives light from the environment, projected through one or more lenses, and converts the light to data representing an image. In conjunction with imaging module **143** (also called a camera module), optical sensor **164** may capture still images or video. In some embodiments, an optical sensor is located on the back of device **100**, opposite touch screen display **112** on the front of the device so that the touch screen display may be used as a viewfinder for still and/or video image acquisition. In some embodiments, an optical sensor is located on the front of the device so that the user’s image may be obtained for video conferencing while the user views the other video conference participants on the touch screen display. In some embodiments, the position of optical sensor **164** can be changed by the user (e.g., by rotating the lens and the sensor in the device housing) so that a single optical sensor **164** may be used along with the touch screen display for both video conferencing and still and/or video image acquisition.

Device **100** optionally also includes one or more contact intensity sensors **165**. FIG. 1A shows a contact intensity sensor coupled to intensity sensor controller **159** in I/O subsystem **106**. Contact intensity sensor **165** optionally includes 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 **165** receives 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 (e.g., touch-sensitive display system **112**). In some embodi-

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ments, at least one contact intensity sensor is located on the back of device **100**, opposite touch screen display **112**, which is located on the front of device **100**.

Device **100** may also include one or more proximity sensors **166**. FIG. 1A shows proximity sensor **166** coupled to peripherals interface **118**. Alternately, proximity sensor **166** may be coupled to input controller **160** in I/O subsystem **106**. Proximity sensor **166** may perform as described in U.S. patent application Ser. No. 11/241,839, "Proximity Detector In Handheld Device"; Ser. No. 11/240,788, "Proximity Detector In Handheld Device"; Ser. No. 11/620,702, "Using Ambient Light Sensor To Augment Proximity Sensor Output"; Ser. No. 11/586,862, "Automated Response To And Sensing Of User Activity In Portable Devices"; and Ser. No. 11/638,251, "Methods And Systems For Automatic Configuration Of Peripherals," which are hereby incorporated by reference in their entirety. In some embodiments, the proximity sensor turns off and disables touch screen **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. 1A shows a tactile output generator coupled to haptic feedback controller **161** in I/O subsystem **106**. Tactile output generator **167** optionally includes 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). Contact intensity sensor **165** receives 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 screen display **112**, which is located on the front of device **100**.

Device **100** may also include one or more accelerometers **168**. FIG. 1A shows accelerometer **168** coupled to peripherals interface **118**. Alternately, accelerometer **168** may be coupled to an input controller **160** in I/O subsystem **106**. Accelerometer **168** may perform as described in U.S. Patent Publication No. 20050190059, "Acceleration-based Theft Detection System for Portable Electronic Devices," and U.S. Patent Publication No. 20060017692, "Methods And Apparatuses For Operating A Portable Device Based On An Accelerometer," both of which are incorporated by reference herein in their entirety. 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

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instructions) **132**, 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** (FIG. 1A) or **370** (FIG. 3) stores device/global internal state **157**, as shown in FIGS. 1A 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 screen display **112**; sensor state, including information obtained from the device's various sensors and input control devices **116**; and location information concerning the device's location and/or attitude.

Operating system **126** (e.g., Darwin, RTXC, LINUX, UNIX, OS X, iOS, 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 on iPod® (trademark of Apple Inc.) devices.

Contact/motion module **130** optionally detects contact with touch screen **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, 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 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.

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 threshold 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).

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 (liftoff) 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 (liftoff) event.

Graphics module 132 includes various known software components for rendering and displaying graphics on touch screen 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 used by tactile output generator(s) 167 to produce tactile outputs at one or more locations on device 100 in response to user interactions with device 100.

Text input module 134, which may be 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 module 138 for use in location-based dialing; to camera module 143 as picture/video metadata; and to applications that provide location-based services such as weather widgets, local yellow page widgets, and map/navigation widgets).

Applications 136 may 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;

- Video player module;
- Music player module;
- Browser module 147;
- Calendar module 148;

Widget modules 149, which may include one or more of: weather widget 149-1, stocks widget 149-2, calculator widget 149-3, alarm clock widget 149-4, dictionary widget 149-5, and other widgets obtained by the user, as well as user-created widgets 149-6;

Widget creator module 150 for making user-created widgets 149-6;

Search module 151;

Video and music player module 152, which merges video player module and music player module;

Notes module 153;

Map module 154; and/or

Online video module 155.

Examples of other applications 136 that may be 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 screen 112, display controller 156, contact/motion module 130, graphics module 132, and text input module 134, contacts module 137 may be used 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 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 screen 112, display controller 156, contact/motion module 130, graphics module 132, and text input module 134, telephone module 138 may be used to enter a sequence of characters corresponding to a telephone number, access one or more telephone numbers in contacts module 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 may use any of a plurality of communications standards, protocols and technologies.

In conjunction with RF circuitry 108, audio circuitry 110, speaker 111, microphone 113, touch screen 112, display controller 156, optical sensor 164, optical sensor controller 158, contact/motion module 130, graphics module 132, text input module 134, contacts module 137, and telephone module 138, video conference 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 screen 112, display controller 156, contact/motion 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 screen 112, display controller 156, contact/motion 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, 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 may include graphics, photos, audio files, video files and/or other attachments as are supported in an 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, or IMPS).

In conjunction with RF circuitry 108, touch screen 112, display controller 156, contact/motion module 130, graphics module 132, text input module 134, GPS module 135, map module 154, and music player module, workout support module 142 includes executable instructions to create workouts (e.g., with time, distance, and/or calorie burning goals); communicate with workout sensors (sports devices); 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 screen 112, display controller 156, optical sensor(s) 164, optical sensor controller 158, contact/motion 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, or delete a still image or video from memory 102.

In conjunction with touch screen 112, display controller 156, contact/motion 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 screen 112, display controller 156, contact/motion 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 screen 112, display controller 156, contact/motion 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 screen 112, display controller 156, contact/motion module 130, graphics module 132, text input module 134, and browser module 147, widget modules 149 are mini-applications that may be downloaded and used by a user (e.g., weather widget 149-1, stocks widget 149-2, calculator widget 149-3, alarm clock widget 149-4, and dictionary widget 149-5) or created by the user (e.g., user-created widget 149-6). In some embodi-

ments, a widget includes an HTML (Hypertext Markup Language) file, a CSS (Cascading Style Sheets) file, and a JavaScript file. In some embodiments, a widget includes an XML (Extensible Markup Language) file and a JavaScript file (e.g., Yahoo! Widgets).

In conjunction with RF circuitry 108, touch screen 112, display controller 156, contact/motion module 130, graphics module 132, text input module 134, and browser module 147, the widget creator module 150 may be used by a user to create widgets (e.g., turning a user-specified portion of a web page into a widget).

In conjunction with touch screen 112, display controller 156, contact/motion 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 screen 112, display controller 156, contact/motion 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 screen 112 or on an external, connected display 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 screen 112, display controller 156, contact/motion 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 screen 112, display controller 156, contact/motion module 130, graphics module 132, text input module 134, GPS module 135, and browser module 147, map module 154 may be used 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 screen 112, display controller 156, contact/motion 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 instructions that allow the user to access, browse, receive (e.g., by streaming and/or download), play back (e.g., on the touch screen or on an external, connected display 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. Additional description of the online video application can be found in U.S. Provisional Patent Application No. 60/936,562, "Portable Multifunction Device, Method, and Graphical User Interface for Playing Online Videos," filed Jun. 20, 2007, and U.S. patent application Ser. No. 11/968,067, "Portable Multifunction Device, Method, and Graphical User Interface for Playing Online Videos," filed Dec. 31, 2007, the contents of which are hereby incorporated by reference in their entirety.

Each of the above-identified modules and applications corresponds to a set of executable instructions for performing one or more functions described above and the methods

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described in this application (e.g., the computer-implemented methods and other information processing methods described herein). These modules (e.g., sets of instructions) need not be implemented as separate software programs, procedures, or modules, and thus various subsets of these modules may be combined or otherwise rearranged in various embodiments. For example, video player module may be combined with music player module into a single module (e.g., video and music player module 152, FIG. 1A). In some embodiments, memory 102 may store a subset of the modules and data structures identified above. Furthermore, memory 102 may store 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 may be reduced.

The predefined set of functions that are performed exclusively through a touch screen and/or a touchpad optionally 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. 1B is a block diagram illustrating exemplary components for event handling in accordance with some embodiments. In some embodiments, memory 102 (in FIG. 1A) 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 137-151, 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 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 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

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interface 118 receives from I/O subsystem 106 includes information from touch-sensitive display 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, peripherals 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 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 may 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 may be called the hit view, and the set of events that are recognized as proper inputs may be 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 (e.g., 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 182.

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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** may utilize or call 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** include one or more respective event handlers **190**. Also, in some embodiments, one or 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 may 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 may also include 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 (e.g., **187-1**) 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 liftoff (touch end) for a predetermined phase, a second touch (touch begin) on the displayed object for a predetermined phase, and a second liftoff (touch end) for a predetermined phase. In another example, the definition for event **2** (**187-2**) is a dragging on a displayed object. The

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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 **112**, and liftoff 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 **186** 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 **112**, when a touch is detected on touch-sensitive display **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 (**186**) 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 may 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.

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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 player module. 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 with single or multiple keyboard presses or holds; contact movements such as taps, drags, scrolls, etc. on touchpads; 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. 2 illustrates a portable multifunction device 100 having a touch screen 112 in accordance with some embodiments. The touch screen optionally displays one or more graphics within user interface (UI) 200. In this embodiment, 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 application icon optionally does not select the corresponding application when the gesture corresponding to selection is a tap.

Device 100 may also include one or more physical buttons, such as "home" or menu button 204. As described previously, menu button 204 may be used to navigate to any application 136 in a set of applications that may be executed on device 100. Alternatively, in some embodiments, the menu button is implemented as a soft key in a GUI displayed on touch screen 112.

In one embodiment, device 100 includes touch screen 112, menu 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, headset 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;

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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 an alternative embodiment, 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 intensity of contacts on touch screen 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 exemplary 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 (CPUs) 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. 1A), 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. 1A). 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. 1A), 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. 1A) optionally does not store these modules.

Each of the above-identified elements in FIG. 3 may be 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 (e.g., sets of instructions) need not be implemented as separate software programs, procedures or modules, and thus various subsets of these modules may be combined or otherwise rearranged in various embodiments. In some embodiments, memory 370 may store a subset of the modules and data

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structures identified above. Furthermore, memory 370 may store additional modules and data structures not described above.

Attention is now directed towards embodiments of user interfaces that may be implemented on, for example, portable multifunction device 100.

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

Signal strength indicator(s) 402 for wireless communication(s), such as cellular and Wi-Fi signals;

Time 404;

Bluetooth indicator 405;

Battery status indicator 406;

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, also referred to as iPod (trademark of Apple Inc.) module 152, labeled "iPod;" 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 widget 149-2, labeled "Stocks;"

Icon 436 for map module 154, labeled "Maps;"

Icon 438 for weather widget 149-1, labeled "Weather;"

Icon 440 for alarm clock widget 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, labeled "Settings," which provides access to settings for device 100 and its various applications 136.

It should be noted that the icon labels illustrated in FIG. 4A are merely exemplary. For example, icon 422 for video and music player module 152 may optionally be labeled "Music" or "Music Player." 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. 4B illustrates an exemplary 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 (e.g., touch screen display 112). Device 300 also, optionally, includes one or more contact intensity sensors (e.g., one or more of sensors 357) for detecting intensity of contacts on touch-sensitive surface

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451 and/or one or more tactile output generators 359 for generating tactile outputs for a user of device 300.

Although some of the examples which 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. 4B. In some embodiments, the touch-sensitive surface (e.g., 451 in FIG. 4B) has a primary axis (e.g., 452 in FIG. 4B) that corresponds to a primary axis (e.g., 453 in FIG. 4B) on the display (e.g., 450). In accordance with these embodiments, the device detects contacts (e.g., 460 and 462 in FIG. 4B) with the touch-sensitive surface 451 at locations that correspond to respective locations on the display (e.g., in FIG. 4B, 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. 4B) are used by the device to manipulate the user interface on the display (e.g., 450 in FIG. 4B) 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), 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 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 here, the term "affordance" refers to a user-interactive graphical user interface object that may be displayed on the display screen of devices 100 and/or 300 (FIGS. 1A, 1B, and 3). For example, an image (e.g., icon), a button, and text (e.g., hyperlink) may each constitute an affordance.

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. 4B) 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. 1A or touch screen 112 in FIG. 4A) 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 "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, 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 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 threshold results in a third operation. In some embodiments, a comparison between the characteristic intensity and one or more thresholds is used to determine whether or not to perform one or more operations (e.g., whether to perform a respective operation 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, 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 intensity of a contact on the touch-sensitive surface may be characterized relative to one or more intensity thresholds, such as a contact-detection intensity threshold, a light press intensity threshold, a deep press intensity threshold, and/or one or more other intensity thresholds. 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 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.

An increase of characteristic intensity of the contact from an intensity below the light press intensity threshold to an intensity between the light press intensity threshold and the deep press intensity threshold 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 to an intensity above the deep press intensity threshold 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 to an intensity between the contact-detection intensity threshold and the light press intensity threshold 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 to an intensity below the contact-detection intensity threshold is sometimes referred to as detecting liftoff of the contact from the touch-surface. In some embodiments, the contact-detection intensity threshold is zero. In some embodiments, the contact-detection intensity threshold is greater than zero.

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)

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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., 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., 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., 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 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 descriptions 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 either: 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, and/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 used herein, the term “open application” or “executing application” refers to a software application with retained state information (e.g., as part of device/global internal state 157 and/or application internal state 192). An open or executing application may be any one of the following types of applications:

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an active application, which is currently displayed on a display screen of the device that the application is being used on;

a background application (or background processes) which is not currently displayed, but one or more processes for the application are being processed by one or more processors; and

a suspended or hibernated application, which is not running, but has state information that is stored in memory (volatile and non-volatile, respectively) and that can be used to resume execution of the application.

As used herein, the term “closed application” refers to software applications without retained state information (e.g., state information for closed applications is not stored in a memory of the device). Accordingly, closing an application includes stopping and/or removing application processes for the application and removing state information for the application from the memory of the device. Generally, opening a second application while in a first application does not close the first application. When the second application is displayed and the first application ceases to be displayed, the first application becomes a background application.

Attention is now directed to embodiments of message user interfaces for capturing, sending, and viewing or playing media and location data.

FIG. 5A depicts an exemplary message user interface that can be displayed by device 100. The message user interface includes a message region 502 for displaying messages sent between participants in a message conversation, along with a message compose field 504 for composing a message. Messages exchanged by the participants can be displayed inside bounded message areas 506. In some embodiments, a bounded message area is a contiguous region that is visually distinguished from a background of the application canvas.

In this embodiment, the message user interface includes two media affordances for capturing and sending media streams: an audio capture affordance 508 for capturing and sending an audio message, and a visual-media capture affordance 510 for capturing and sending an image or a video. In this embodiment, the visual-media capture affordance and the audio data capture affordance are displayed on either side of the message compose field. The message user interface also includes a virtual keyboard 512 for entering text in the message compose field 504. In some embodiments, as shown in FIG. 5B, in response to detecting a user input in the message compose field 504, device 100 can replace display of the audio capture affordance 508 with display of a send button 514 for sending a message.

As will be described in more detail below, device 100 can capture and send a variety of media—such as audio, video, and images—from within the messaging application.

Device 100 can record and send an audio message from within the messaging application. For example, as depicted by FIGS. 6A-6B, in response to detecting a contact on audio capture affordance 508, device 100 can display a visually distinguished region 616 containing a plurality of affordances 618, 620, 622 and begin to record an audio message using a microphone of device 100. The audio message may be a user speaking or singing, for example, or some other type of audio message that can be captured by device 100.

In the embodiment depicted in FIG. 6B, the visually distinguished region 616 contains a send affordance 618 for sending the captured audio message to a participant in the message conversation, a cancel affordance 620 for ceasing to record the audio message and forgoing sending the audio message to a participant, and a record affordance 622 for

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recording an audio message. In some embodiments, the send affordance is displayed near the media affordance on the display.

In this embodiment, the visually distinguished region **616** is displayed on the same side of the display as the audio capture affordance **508**, and is vertically centered on the location corresponding to the audio capture affordance **508**. Thus, as a user makes contact with the audio capture affordance **508**, the visually distinguished region **616** appears around the location of the audio capture affordance, with the record affordance **622** replacing the audio capture affordance **508**.

As shown in FIG. **6B**, the exemplary visually distinguished region **616** is bounded by an edge **626** of the display and a semi-circle **624** that begins and ends at the edge **626** of the display and encloses the send affordance **618**, the cancel affordance **620**, and the record affordance **622** against the edge of the display. The visually distinguished region **616** may provide the user with a visual indication that device **100** has entered a media capture mode.

In some embodiments, device **100** can continue to record an audio message as long as the contact is maintained at the location on the display corresponding to the record affordance. As depicted in FIGS. **7A-7B**, in response to detecting a swipe gesture on the display to the send affordance **618**, device **100** can stop recording the audio message and immediately send the recorded audio message to a participant in the message conversation. The swipe gesture may correspond to a movement of the contact on the display to the send affordance **618** followed by a liftoff of the contact at the send affordance **618**. In some embodiments, the movement of the contact is detected after the send affordance is displayed.

In some embodiments, in conjunction with sending media (such as an audio message) to a participant in the message conversation, a representation of the media is displayed in the message region. For example, as shown in FIG. **7B**, in some embodiments, device **100** can display a representation of a sent audio message in a bounded message area **708** that is inserted into the message conversation. In this embodiment, the representation of the audio message includes an image of a waveform **702** representing the audio message, a playback affordance **704** for playing the audio message, and a time duration **706** of the audio message. In some embodiments, the waveform may be generated based on the recorded audio message and depict specific characteristics of the audio content of the message. In some embodiments, the waveform may instead be iconic. In some embodiments, the length of the waveform may correspond to the length of the audio recording.

In some embodiments, while recording an audio message device **100** can display a representation of the audio message in a message compose field. The representation may be a waveform as described above, and may dynamically change shape as the user records an audio message to indicate the changing audio content being recorded.

In some embodiments, in response to detecting a contact on the playback affordance **704**, device **100** can play the audio message. In some embodiments, the color of the playback affordance may change after the audio message has been played to provide a visual indication to the user that the audio message has been played. In some embodiments, a portion of the playback affordance may change in appearance as a corresponding portion of the audio message is played, providing a visual indication of the elapsed playing time.

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In some embodiments, device **100** can display the waveform **702** representing the audio message in an initial color, and change the waveform color when the audio message is played to provide a visual indication to the user that the audio message has been played. In some embodiments, device **100** can change the color of a portion of the waveform **702** as a corresponding portion of the audio message is played, providing a visual representation of the elapsed playing time. The above-described audio message representations and color changes may be used to represent any audio message exchanged from within the messaging application, where it is represented in the message conversation, in the message compose field, or elsewhere.

In some embodiments, device **100** can stop recording the audio message in response to detecting the movement of the contact away from the audio capture affordance, either towards the send affordance or in another direction. In some embodiments, device **100** can send the recorded audio message in response to detecting a liftoff at the location corresponding to the send affordance **618** after the movement of the contact. The initial contact on the audio capture affordance and the subsequent movement of the contact to the send affordance may be performed by a user as a single, continuous contact on the display.

As depicted in FIGS. **7C-7D**, in some embodiments, if device **100** detects a swipe gesture on the display to the cancel affordance **618**, device **100** can cease to record the audio message, remove the visually distinguished region **616** from the display, re-display the audio capture affordance **508**, and forgo sending the audio message to a participant. In some embodiments, as discussed earlier with respect to the send affordance, the swipe gesture may correspond to a single, continuous movement of the contact starting from the initial contact on the audio capture affordance **508** across the display to the cancel affordance **620**, followed by a liftoff at the cancel affordance **620**.

In some embodiments, as depicted in FIG. **8**, in response to detecting a movement of the contact on the display away from the record affordance, device **100** can expand the visually distinguished region **616**. In some embodiments, the visually distinguished region expands in accordance with movement of the contact (e.g., the expansion of the visually distinguished region is proportional to the movement of the contact while the visually distinguished region is expanding). In some embodiments, the send affordance **618** and the cancel affordance **620** displayed inside the visually distinguished region **616** can move outwards in accordance with the expansion of the visually distinguished region **616**. Expanding the visually distinguished region may provide the user with an indication that device **100** has detected a movement away from the location of the record affordance, and may also provide the user with a larger area of the display for performing a swipe gesture, potentially making it easier for the user to control the trajectory or destination of the swipe gesture.

In some embodiments, as shown in FIG. **9A**, if device **100** detects that a liftoff of the contact from the display without detecting a previous movement of the contact to the send affordance or the cancel affordance, device **100** can stop recording the audio message, display a representation of the audio message in the message compose field **504**, and replace the audio capture affordance with a send button **906** for sending the recorded audio message to a participant in the message conversation.

As previously discussed with respect to FIG. **7A**, the representation of the recorded audio message displayed in the message compose field can include an image of a

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waveform **702** representing the recorded audio message, a duration **706** of the recorded audio message, and a playback affordance **704** for playing the recorded audio message.

As shown in FIG. 9B, in response to detecting a contact on the send button **906**, device **100** can send the recorded audio message to a participant in the message conversation and replace the send button **906** with the audio capture affordance **508**. As shown in FIG. 9B, in some embodiments, after sending the audio message in response to a contact on the send button, device **100** can display a representation of the sent audio message in a bounded message area **908** that is inserted into the message conversation.

Thus, as described above with respect to FIGS. 5A-9B, device **100** can display message user interfaces in a messaging application that enable a user to record and send an audio message from within the messaging application, without requiring the user to launch a separate application. Furthermore, in some embodiments, the user can record and send audio message using a single, continuous gesture on the display, comprising an initial contact on the audio capture affordance followed by a movement to the send affordance and a liftoff. This approach increases efficiency of the user interface and reduces the cognitive burden on the user.

Device **100** can also capture and send camera images from within the messaging application. As shown in FIGS. 10A-10B, in response to detecting a contact on the visual-media capture affordance **510**, device **100** can display a camera user interface. The camera user interface includes a media preview **1010** from a camera sensor on device **100**, and a visually distinguished region **1002** containing an image affordance **1004** for capturing an image using the camera sensor and a record affordance **1006**. The visual-media capture affordance **510** is replaced with a cancel affordance **1008**. In some embodiments, the media preview replaces display of the message region.

In this embodiment, the visually distinguished region **1002** appears on the same side of the display as the visual-media capture affordance **510**, and is vertically centered on the location corresponding to the visual-media capture affordance **510**. Thus, as a user makes contact with the visual-media capture affordance **510**, the visually distinguished region **1002** appears around the location of the visual-media capture affordance, and the cancel affordance replaces the visual-media capture affordance.

As depicted in FIGS. 11A-11B, in response to detecting a swipe gesture on the display to the image affordance **1004**, device **100** can capture an image shown in the preview and send the image as a message to a participant. The swipe gesture may correspond to a movement of the contact across the display to the image affordance **1004**, followed by a liftoff at the image affordance **1004**. In some embodiments, device **100** can capture the image in response to detecting the movement, and send the image in response to the liftoff.

As shown in FIG. 11B, in some embodiments, after sending the image as a message, device **100** can cease to display the preview and re-display the message region, message compose field, and media affordances. Device **100** can display a thumbnail **1104** representing the captured image in a bounded message area **1106** that is inserted into the displayed message conversation.

FIGS. 11C-11E depict another technique device **100** can use for quick capture and send of an image from within the messaging application. As depicted in FIGS. 11A-11B, in response to detecting a contact on the visual media affordance, device **100** can expand the message compose field and display a camera preview in the message compose field. In response to detecting a liftoff of the contact from the

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visual media affordance, device **100** can capture an image. In some embodiments, the image may be displayed in the message compose field, and a user may enter text in the message compose field adjacent to the captured image. In some embodiments, the captured image may be sent as a message to a participant in response to detecting the liftoff from the visual-media affordance, or in response to detecting a contact on the send button. As depicted in FIG. 11C, after sending the image, device **100** can display a thumbnail representing the image in a bounded message area that is inserted into the displayed message conversation.

Device **100** can also capture and send a video from within the messaging application. As previously described with respect to FIG. 10A, in response to detecting a contact on the visual-media capture affordance **510**, device **100** can display a camera preview and a visually distinguished region with an image affordance for capturing an image, a record affordance for capturing a video, and a cancel affordance for cancelling the media capture.

As depicted in FIGS. 12A-12B, in response to detecting a contact on the record affordance **1006**, device **100** can begin recording a video, replace the record affordance with a stop affordance **1212** for ceasing to record the video, and replace the image affordance **1004** with a send affordance **1210** for sending the video to a participant. In some embodiments, device **100** can begin recording the video in response to detecting a movement of the contact onto the record affordance **1006**, or in response to a touch or tap on the record affordance **1006**. In some embodiments, while device **100** is recording a video, device **100** can display an indication of the elapsed recording time **1208**.

As depicted in FIGS. 13A-13C, in some embodiments, if device **100** detects that the contact has been lifted off of the display while device **100** is recording a video without detecting a contact on the send affordance **1410**, device **100** can continue to record the video and replace display of the record affordance **1006** with display of a stop affordance **1212**. While device **100** is recording the video, in response to detecting a contact on the stop affordance **1212**, device **100** can stop recording the video and replace the stop affordance **1212** with a playback affordance **1314** for viewing the recorded video data before sending to a recipient.

In response to detecting a contact on the send affordance **1210**, device **100** can stop recording the video (if recording has not already been stopped) and send the recorded video to a participant in the message conversation. In some embodiments, as shown in FIG. 14, device **100** can insert a thumbnail **1402** of the video into the message conversation between the participants, and remove display of visually distinguished region, including the record affordance and the send affordance. In some embodiments, inserting the thumbnail includes displaying the thumbnail **1402** and a playback affordance **1414** in a bounded message area **1406** in the message region. In some embodiments, in response to detecting a contact on the playback affordance **1414** in the bounded message area **1406**, device **100** can play the video within the boundaries of the bounded message area **1406**. In some embodiments, in response to detecting a contact on the playback affordance **1414**, device **100** can play the video in a full-screen mode.

Returning to FIG. 12A, in some embodiments, device **100** can stop recording the video in response to detecting a liftoff from the record affordance **1006** while device **100** is recording the video. In some embodiments, after detecting the liftoff from the record affordance **1006** and stopping the recording of the video, device **100** can replace display of the record affordance **1006** with display of a playback affordance

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dance **1314** for viewing the video before it is sent to the recipient, as depicted in FIG. **13C**.

Thus, in some embodiments, while the visually distinguished region is displayed, a swipe upwards to the image affordance captures and sends an image, while a swipe over to the record affordance followed by a swipe upwards towards the send affordance captures and sends a video.

In some embodiments, the visual-media capture affordance **510** depicted in FIG. **10A** can be used for selecting one or more existing images or videos to add to the message conversation. These images may have been captured using an application other than the messaging application; for example, such images or videos may have been captured using a camera application executing on device **100** or executing on a remote device, or may have been captured by another user using a different application either on device **100** or on a remote device. Such existing images or videos may be stored in the memory of device **100** or accessed from a remote storage location.

FIG. **15A** displays an exemplary media selector interface that device **100** can display in response to detecting a request to add media to a conversation, such as a contact on the visual-media capture affordance **510**. The media selector interface can enable a user to select one or more existing images, videos, or audio files to add to the message conversation. In some embodiments, the media selector interface is displayed below the message region while a message conversation is displayed. The media selector interface includes a filmstrip **1502** with several thumbnails **1504** representing existing images or videos. In some embodiments, the thumbnails **1504** represent the most recently captured or accessed images, videos, or audio files. In some embodiments, in response to detecting a swipe gesture on a location associated with a filmstrip **1502**, device **100** can scroll the filmstrip in accordance with the swipe gesture.

In some embodiments, in response to detecting a contact on a particular thumbnail **1504**, device **100** can send the image, video, or audio file associated with the thumbnail to a participant in the message conversation and insert a representation **1506** of the image, video, or audio file into the conversation, as depicted in the example of FIG. **15B**.

In some embodiments, in response to detecting a contact on a particular thumbnail **1504** in the filmstrip **1502**, device **100** can display an image or video represented by the thumbnail. In some embodiments, the image or video can be displayed in a larger version of the image represented by the thumbnail, such as in a full-screen view.

In some embodiments, one thumbnail in a filmstrip **1502** can represent a camera preview. In response to detecting a selection of the thumbnail representing the preview, device **100** can capture a new image using a camera on device **100** and send the new image to a participant in the conversation.

FIGS. **16A-16B** depict another embodiment of a media selector interface for adding media to a conversation. In this embodiment, the filmstrip **1602** is displayed below the message compose field **1606**. In response to detecting a selection of a thumbnail **1604** in the filmstrip, device **100** can display a representation **1608** of the selected thumbnail in the message compose field **1606** and replace display of the audio capture affordance with display of a send button **1610** for sending the image to a participant in the message conversation. In response to detecting a contact on the send button **1610**, device **100** can send the image to the participant, and insert a representation of the sent image into the conversation, as previously shown and described with respect to FIG. **11B**.

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In some embodiments, device **100** can detect selection of two or more thumbnails **1604** in a filmstrip followed by a selection of the send button **1610**. In response to detecting this sequence of selections, device **100** can send two or more images or videos corresponding to the selected thumbnails to a participant in the message conversation.

FIGS. **17A-17C** depict another embodiment of a media selector interface for adding media to a conversation. As depicted in FIG. **17A**, device **100** can display a filmstrip **1702** with thumbnails **1704** along with a photo library button **1706** for selecting an image or video from a library, a take photo button **1710** for capturing a new photo or video, and a cancel button **1708** for cancelling and exiting the display of the media selector interface. In some examples, the thumbnails **1704** in the filmstrip represent the most recently captured or accessed images or videos.

In response to detecting a selection of the photo library button **1706**, device **100** can display a list of photo libraries **1712**, **1714**. In response to detecting a selection of a photo library in the list, device **100** can display another filmstrip **1716** with thumbnails **1718** of images or videos from the selected photo library. In response to detecting a selection of a particular thumbnail **1718**, device **100** can display the image or video represented by the thumbnail or send the corresponding image or video to a participant in the conversation, as described above with respect to FIG. **15A**.

Turning to FIGS. **18A-18C**, as depicted in FIG. **18B**, in response to detecting a selection of the take photo button **1710** for taking a new photo or video, device **100** can display a user interface for capturing a new image or video. The user interface can include a live camera preview **1802** and a capture button **1804** for capturing the image. As depicted in FIG. **18C**, in response to detecting a selection of the capture button **1804**, device **100** can capture the image shown in the preview and display the captured image on the display with a retake button **1806** for retaking the image (e.g., for capturing another image) and a use button **1808** for sending the captured image to a participant. In response to detecting a contact on the use button **1808**, device **100** can immediately send the captured image to the participant and return to the display of the message conversation. In some embodiments, device **100** can insert a representation of the sent image into the conversation, as described earlier with respect to FIG. **11B**.

In some embodiments, the visual-media capture affordance can be used for both adding existing media to a conversation and for capturing new media to add to the conversation. Returning to FIG. **10A**, in some embodiments, in response to detecting a contact at a location on the display corresponding to the visual-media capture affordance **510**, device **100** can determine the duration of the contact. If the duration is greater than a threshold duration—for example, if the contact is a touch-and-hold on the visual-media capture affordance—device **100** can respond as described above with respect to FIGS. **10A-13C**, and display user interfaces for capturing and sending an image or video from within the messaging application. However, if the duration of the contact does not exceed the threshold duration—for example, if the contact is a short tap on the visual-media capture affordance **510**—then device **100** can display media selector interfaces for selecting one or more existing images or videos to add to the message conversation. The threshold duration may be in the range of 0.5 seconds to 10 seconds, for example.

The user interfaces depicted in FIGS. **5A-12B** depict media affordances and a message compose field displayed horizontally across a middle portion of the display on device

100, with each media affordance (the visual-media capture affordance and the audio capture affordance) displayed along an opposite edge of the display, on either side of the message compose field. Such locations may be appropriate when a virtual keyboard is displayed on the display for entering a message to the recipient, as depicted for example in FIGS. 5A-6B. However, the media affordances and message compose field need not be displayed in the locations or orientations shown in FIGS. 5A-12B. FIGS. 19A-19B depict exemplary alternative locations at which device 100 can display the audio capture affordance 508, visual-media capture affordance 510, and message compose field 504. Such alternative locations may be appropriate when a virtual keyboard is not displayed on the display, and may provide for a larger message region for displaying a message conversation.

As depicted in FIG. 19A, in some embodiments, device 100 can display audio capture affordance 508 at a corner of the display. As shown in FIG. 20, in response to detecting a contact on audio capture affordance in the corner, device 100 can display a visually distinguished region 2002 that is bounded by an arc 2004 that begins and ends at two different edges 2006, 2008 of the touch-sensitive display, rather than displaying a semi-circle that begins and ends at the same edge of the display as described earlier with respect to FIGS. 5A-12B. As previously described with respect to FIG. 8, in response to detecting a movement of the contact on the display away from the location of the audio capture affordance 508, device 100 can expand the visually distinguished region 2002. In some embodiments, the locations of the affordances displayed inside the visually distinguished region can move outwards in accordance with the expansion of the visually distinguished region.

In some embodiments, a hit region on the display can be assigned to a media affordance, such that a contact anywhere on the hit region can be interpreted by device 100 as a contact on the media affordance. In some embodiments, a hit region can be larger than the displayed media affordance. As depicted in FIGS. 19C-19D, in some embodiments, a hit region 1902 for a media affordance can be larger when a virtual keyboard is not displayed, such as in FIG. 19D, than when the virtual keyboard is displayed, such as in FIG. 19C. For example, when the virtual keyboard is displayed, the hit region for the media affordance may be slightly larger than the media affordance (e.g., 5, 10, 15, or 20% larger than the media affordance) and when the virtual keyboard is not displayed, the hit region for the media affordance may encompass up to half of the bottom quarter of the display. This approach may allow the user to more easily invoke detection of a contact on the media affordance when there is sufficient room on the display to allow for a larger hit region.

Device 100 can also play a received audio message. In some embodiments, as shown in FIGS. 21A-21B, in response to receiving an audio message from a first participant, device 100 can display a representation 2108 of the audio message in the message conversation. In this embodiment, the representation includes an image depicting a waveform 2102 representing the audio message, a playback affordance 2104 for playing the audio message, and a duration of the audio message 2106. In some embodiments, the representation can be displayed within a bounded message region. In response to detecting a contact on the playback affordance 2104, device 100 can play the audio message.

In some embodiments, after displaying the representation 2108 of the audio message, device 100 can play the audio message in response to detecting a raising of the device.

Device 100 can detect that a user has raised device 100 by, for example, using one or more device motion or orientation sensors to detect movement of device 100 and/or using a proximity sensor or ambient light sensor to detect the proximity of device 100 to the user's ear. Returning to FIG. 21A, in some embodiments, device 100 may prompt the user to play the audio message in this manner by displaying an instruction 2110 instructing a user to raise device 100 to listen to the message.

As depicted in FIGS. 22A-22C, in some embodiments, device 100 can record a second audio message in response to detecting a raising of device 100. For example, if device 100 has played the received audio message (which may be indicated, as depicted in FIG. 22A, by displaying the waveform or playback affordance in a different color) and device 100 detects a raising of device 100, device 100 can begin recording the second audio message. If device 100 has played the received audio message in response to detecting a raising of the device (rather than, for example, in response to detecting a contact on the playback affordance) then device 100 may record the second audio message only after detecting a lowering of device 100 prior to detecting a second raising of device 100. In other words, a user may raise device 100 to listen to an audio message, lower device 100, and then raise device 100 again to record a new audio message. In some embodiments, device 100 can prompt the user to raise device 100 to record a message by displaying an instruction instructing a user to raise device 100 to record an audio message.

If, while recording the second audio message, device 100 detects a lowering of device 100, device 100 can stop recording the second audio message and send the second audio message to the first participant. Lowering of the device may be detected by, for example, using one or more device motion/orientation sensors to detect movement of the device and/or using a proximity sensor or ambient light sensor to detect an end of the proximity of the device to the user's ear. Thus, as described with respect to FIGS. 22A-22B, after receiving and listening to an audio message from a participant in the message conversation, the user can respond by raising device 100 to record a second audio message, and then lowering device 100 to automatically send the second audio message to the participant. In some embodiments, as depicted in FIG. 22C, device 100 can insert a representation of the sent second audio message into the conversation. In some embodiments, device 100 can determine that a recorded message should not be sent based on characteristics of the message (e.g., no detected human speech, or message duration is too long therefore indicative of accidental-messaging and thus a waste of computing resources). This aspect is shown in FIG. 22D. As depicted, device 100 displays message affordance 2214 indicating that a message has been recorded, but the message is not automatically sent upon lowering of the device. Rather, device 100 displays affordance 2216, which, when selected, sends the message to the designated contact.

As depicted in FIG. 23A, in some embodiments, device 100 can display an affordance 2302 indicating a received message while device 100 is operating in a locked state. A locked state may be a state in which device 100 limits user interaction with device 100.

As depicted in FIG. 23B, in response to detecting a swipe gesture in a first direction on the affordance 2302, device 100 can display a reply affordance 2304 for replying to the message. As shown in FIG. 23C, in response to detecting a contact on the reply affordance 2304, device 100 can display an instruction 2306 instructing the user to raise the elec-

tronic device to record an audio message to send in a response message. In response to detecting a raising of device **100**, device **100** can begin recording an audio message as previously described with respect to FIGS. **22A-22B**, and similarly, in response to a subsequent lowering of the device, device **100** can send the audio message as described above with respect to FIG. **22C**.

Returning to FIG. **23A**, in response to detecting a swipe gesture on the affordance **2302** in the opposite direction, device **100** can prompt the user to unlock device **100** and, after device **100** is unlocked, device **100** can display the received message as part of a displayed message conversation.

In some embodiments, as shown in FIG. **24A**, device **100** can display a notification **2402** of a received audio message in a notification area **2404** of the display. As shown in FIG. **24B**, in response to detecting a contact on the notification **2402** or the notification area **2404**, such as a downward drag or a tap, device **100** can display a user interface with a play affordance **2406** for playing the audio message, an audio capture affordance **508** for recording a reply audio message, and a cancel affordance **2408** for exiting the user interface. In some embodiments, as shown in FIG. **24C**, in response to detecting a contact on the audio capture affordance **508**, device **100** can display a visually distinguished region **2410** with a plurality of affordances for recording and sending an audio message, as shown and described with respect to FIGS. **6B** and **20**, for example.

Similar to the above-described processes for recording audio messages, in some embodiments, device **100** can play, record, and send video messages in response to detecting raising and lowering of device **100**. In such embodiments, device **100** may use facial recognition techniques to determine whether device **100** has been raised into a suitable position for playback or recording of a video message.

In some embodiments, media captured by device **100** using the user interfaces described above may include meta-data. Such meta-data may include a representation of a location of device **100**, for example. In some embodiments, device **100** can provide an option to allow a user to designate whether to prevent sending the meta-data with the media.

As previously discussed, device **100** can send and receive messages containing media (such as audio, video, or image), text, or both. In some embodiments, if device **100** receives multiple messages within a time interval, and the received messages meet a message grouping criteria, device **100** can represent the messages within a single, group bounded message area rather than representing the messages in multiple bounded message areas. The time interval may range from 10 seconds to ten minutes, for example.

Grouping representations of messages in this manner can reduce the amount of area required in the message region for displaying messages, and may reduce the clutter associated with receiving multiple messages. Grouping may be particularly useful for audio messages, which can be compressed into relatively small representations for display.

In some embodiments, the message grouping criteria can include a criterion that is met when the number of messages exceeds a numeric threshold. For example, if device **100** receives some number of consecutive messages within the time interval, and the number exceeds the numeric threshold, device **100** can determine that the messages satisfy the message grouping criteria and display representations of the messages within a single group bounded message area. The numeric threshold may be 3, 5, 7, or 10 messages received within the time interval, for example.

In some embodiments, the message grouping criteria includes a criterion that is met when the received messages are spaced apart from each other by less than a threshold amount of time. For example, consecutive messages that are spaced apart from each other by less than 30, 20, 10, or 5 seconds may meet the message grouping criteria. For example, if device **100** receives a text message followed by an audio message less than 30 seconds later, device **100** can determine that the messages meet the message grouping criteria and display a grouped representation of the messages in the conversation.

In some embodiments, the message grouping criteria can be based on the type of message received. For example, if device **100** receives multiple consecutive audio messages within the time interval, device **100** can determine that the messages satisfy the message grouping criteria. If, however, device **100** receives intervening messages that are not audio messages, device **100** can determine that the received messages do not satisfy the message grouping criteria and display representations of the received messages in separate bounded message areas.

In some embodiments, the message grouping criteria can be based on the sender of the message. For example, consecutive messages received from a single participant in the message conversation may satisfy the message grouping criteria, but consecutive messages received from different participants may not satisfy the message grouping criteria.

In some embodiments, the message grouping criteria can be based on whether the messages all have the same read status. In some embodiments, the read status corresponds to whether the message has been read, played, or viewed. For example, consecutive audio messages that are all unread (e.g., un-played) may satisfy the message grouping criteria, but consecutive audio messages having different read statuses—that is, some of which have been played, and some of which have not been played—may not satisfy the message grouping criteria.

FIG. **25A** depicts an example of displaying representations of multiple audio messages that meet a message grouping criteria in a grouped bounded message area **2502**. In some embodiments, device **100** can display a play-all affordance **2504** for playing all of the grouped audio messages, in addition to or instead of displaying a playback affordance **2506** for each individual audio message. In some embodiments, device **100** can play back all of the grouped audio messages in response to detecting a raising of device **100**. In some embodiments, device **100** can display an instruction instructing a user to raise device **100** to play all of the multiple grouped audio messages.

In the embodiment depicted in FIG. **25A**, each of the audio messages is represented by a separate waveform image. However, in some embodiments, device **100** can display a single, composite waveform representing the multiple grouped audio messages.

FIG. **25B** depicts an example of displaying multiple audio messages that do not meet the message grouping criteria in a plurality of bounded message areas **2508**.

In some embodiments, in response to detecting a contact on a grouped bounded message area **2502**, such as shown in FIG. **25A**, device **100** can display the audio messages represented by the grouped bounded message area **2502** in separate bounded message areas **2508**, such as shown in FIG. **25B**.

FIG. **25C** depicts an example of displaying a thumbnail representation of multiple image messages **2510** that meet the message grouping criteria in a grouped bounded message area **2512**. FIG. **25D** depicts an example of displaying

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representations of multiple image messages that do not meet the message grouping criteria in a plurality of bounded message areas **2514**.

In some embodiments, in response to detecting a contact on a grouped bounded message area **2512**, such as shown in FIG. **25C**, device **100** can display representations of the image messages in separate bounded message areas **2514**, such as shown in FIG. **25D**.

As shown in FIG. **25E**, in some embodiments, in response to detecting a contact on a grouped bounded message area **2512** representing multiple image or video messages, device **100** can display thumbnails **2518** representing the images or videos in a filmstrip **2516** on the display. In some embodiments, the thumbnails **2518** displayed in the filmstrip **2516** may be larger than the thumbnails displayed in the bounded message area, and may be scrollable.

Because the user interfaces described above make it easy for participants to exchange media in a message conversation, in some cases, participants may exchange many media messages within a conversation session. For example, participants may exchange multiple short audio messages during the course of a message conversation. In some cases, such exchanged messages may be intended as quick, informal communications that do not need to be retained, and may clutter the participants' message conversation display. Accordingly, in some embodiments, device **100** can schedule messages that cease to be displayed in a conversation based upon satisfaction of some expiration criteria. In some embodiments, ceasing to display a message includes deleting the message from device **100**. The purpose of the automatic deletion is not privacy, but rather, avoiding cluttering the conversation with transient messages.

In some embodiments, the expiration criteria may be based on whether the message contains any media content, or based on which type of media content a message contains. For example, audio messages may have a different expiration criteria than video messages. In some embodiments, text messages do not have any expiration criteria and are therefore never automatically deleted.

In some embodiments, the expiration criteria may be based on a time interval. In some embodiments, the time interval may be measured starting from the time the media is captured (e.g., for the conversation participant who captured the media), or from the time the media has been played (e.g., for the conversation participant who received the media). In some embodiments, the expiration criteria for a message may be different for a first participant than for a second participant. In some embodiments, the time interval may be 1 minute, 2 minutes, 3 minutes, 4 minutes, 5 minutes, or 10 minutes, for example.

In some embodiments, the expiration criteria may be based on whether the media object was captured using the message user interfaces described above with respect to FIGS. **5A-24**, or captured using a different application, such as a camera application. In some embodiments, media captured and added to the conversation using the quick media capture approach described with respect to FIGS. **5A-14**, which may be intended as informal, transitory communications, may have a different expiration criteria than media added to the conversation using a different approach, such as a media selector interface as described with respect to FIGS. **15A-18C**.

A person of skill in the art will understand that the above-described exemplary expiration criteria can be combined or modified in many ways.

In some embodiments, as shown in FIG. **26**, device **100** can provide an indication of the expiration criteria **2602** in

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the representation of the message. In the embodiment shown in FIG. **26**, the indication of the expiration criteria **2602** comprises the time interval after which the message will cease to be displayed in the message conversation.

As depicted in FIG. **26**, in some embodiments, device **100** can display a keep affordance **2604** for keeping a message that would otherwise be deleted after the expiration criteria are satisfied. In response to detecting a selection of the keep affordance **2604**, device **100** can ignore the expiration criteria and continue to display the message in the conversation. In some embodiments, in response to detecting a contact on the keep affordance **2604**, device **100** can cease to display the indication of the expiration criteria and/or cease to display the keep affordance.

In some embodiments, media messages added to a conversation using the interfaces described in FIGS. **5A-14**, which may be intended as informal, transitory communications, are not added to a media library (such as a camera roll or audio library) when sent or received, but media messages added to a conversation using the interfaces described in FIGS. **15A-18C** are added to the media library. In some embodiments, keeping a media message (by selecting the keep affordance, for example) adds the media to the media library.

In some embodiments, a message having an associated expiration criteria that is sent from a first participant to a second participant in a message conversation may be kept by the first participant, by the second participant, by both or by neither.

As depicted in FIG. **27A**, after sending an audio message from a first participant to a second participant in a message conversation, device **100** can provide, to the first participant, an indication **2702** that the audio message has been delivered to the second participant. As depicted in FIG. **27B**, in response to detecting that the second participant has played at least a portion of the audio message, device **100** can provide, to the first participant, an indication **2704** that the audio message has been played. As shown in FIG. **27C**, in response to detecting that the second participant has selected a keep affordance associated with the audio message, device **100** can provide, to the first participant, an indication **2706** that the second participant has kept the message. In some embodiments, the indicator that the message has been kept replaces an indicator that the message has been delivered or played/viewed/read.

Device **100** can also send static location information or share dynamic location information between two or more participants in a message conversation, and display the location information of the two or more participants on a map.

As shown in FIG. **28A**, while displaying a message conversation, device **100** can display a details affordance **2702** for displaying additional details about a message conversation. As shown in FIG. **28B**, in some embodiments, in response to detecting a contact on the details affordance, device **100** can display representations (such as thumbnails or waveforms) of media that has been exchanged during the conversation, a send-location affordance **2706** for sending the current location information of device **100** to one or more participants in the conversation, and a share-location affordance **2708** for sharing location information of device **100** with one or more participants for a predetermined period of time.

In response to detecting a selection of the send-location affordance **2706**, device **100** can provide a participant in the message conversation with current location information for device **100**. As shown in FIG. **28C**, in some embodiments,

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device **100** can insert a map **2710** depicting the current location information into the conversation. In some embodiments, the location information sent in response to detecting the contact on the send-location affordance **2706** is static, and is not subsequently updated in accordance with changes in the location of device **100**.

As shown in FIGS. **29A-29B**, in some embodiments, in response to detecting a selection of the share-location affordance **2708**, device **100** can display a user interface **2902** for selecting a predetermined time period during which the location information will be shared. In response to detecting a selection of one of the predetermined time periods, device **100** can provide a participant in the message conversation with information enabling the participant to determine the location of device **100** during the selected time period. In some embodiments, providing the information causes a remote electronic device used by the participant receiving the information to prompt the participant to share their location with the user of device **100**. In some embodiments, after the selected time period has elapsed, device **100** can cease to share the location information with the participant.

In some embodiments, enabling a participant to determine the location of device **100** includes enabling the participant to request information about the location of device **100** from a location server to which device **100** sends location information.

As depicted in FIG. **29C**, in some embodiments, while sharing location information, device **100** can display a stop-sharing affordance **2904** for ceasing to share the location information with the participant before the time period has elapsed.

In some embodiments, device **100** can receive location information from another participant in the message conversation. In response to receiving the location information, as shown in FIG. **30A**, device **100** can prompt the user of device **100** to share their location information with the other participant. In response to detecting that the user has selected to share their location information, device **100** can provide the other participant with information enabling the participant to determine the location of device **100**. As discussed previously with respect to FIG. **29B**, device **100** can allow the user to select a predetermined time period for which the location information will be shared.

As discussed above, in some embodiments, device **100** can receive shared location information from a participant in a message conversation. In some embodiments, the location information comprises the location of an external device. In response to receiving the location information, device **100** can display a map depicting both the location of the electronic device and the location of the external device.

As shown in FIG. **31**, in some embodiments, device **100** can receive shared location information from multiple participants in a message conversation, and display a map **3102** depicting the locations **3104** of the multiple participants and the location of device **100** (**3106**) on the same map. In some embodiments, device **100** can display information **3108** about each of the participants whose locations are displayed on the map.

In some embodiments, any one of multiple participants in a conversation can add or remove one or more other participants from the conversation, or can change the name of the message conversation.

As depicted in FIG. **32**, in some embodiments, in response to detecting a contact on a map in a message conversation, device **100** can display a larger version of the map **3204**. In response to detecting a contact on the larger map, device **100** can display a satellite image **3206** of location information

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shared by a participant in a message conversation, a map image **3208** of the location information, and affordances for displaying directions to **3210** or directions from **3212** the location information.

Thus, as described above with respect to FIGS. **28** and **29**, device **100** can provide message user interfaces that allow participants to easily send their current location to each other or share their location with each other for a predetermined period of time.

In some embodiments, after the predetermined time period has elapsed, device **100** may change the color of the displayed map to indicate that it is no longer being updated with the location information. In response to detecting a contact on the map after the predetermined time period has elapsed, device **100** can display an affordance indicating that the location information is no longer being shared.

FIG. **33** is a flow diagram illustrating process **3300** for quick capture and send of media. Process **3300** may be performed at an electronic device with a display and a touch-sensitive surface, like device **100** (FIG. **2**). At block **3302**, the device displays on its touch-sensitive display a media affordance and a message region for displaying messages sent between participants in a message conversation. At block **3304**, the device detects a gesture on the touch-sensitive surface that includes detecting a contact at a location on the touch-sensitive surface that corresponds to a location of the media affordance on the display. At block **3306**, in response to detecting the contact, the device displays on its touch-sensitive display a send affordance. In block **3308**, the device detects a continuation of the gesture that includes detecting movement of the contact across the touch-sensitive surface followed by detecting liftoff of the contact from the touch-sensitive surface. At block **3310**, the device determines whether the contact moved to a location on the touch-sensitive surface that corresponds to a location of the send affordance on the display. At block **3312**, in accordance with a determination that the contact moved to the location on the touch-sensitive surface that corresponds to the location of the send affordance, and in response to detecting the liftoff, the device sends media captured in response to at least a portion of the gesture to a participant in the message conversation. Optionally, in some embodiments, in response to detecting the contact shown in block **3304**, the device may display a cancel affordance on the display, determine whether the contact moved to a location on the touch-sensitive surface that corresponds to a location of the cancel affordance on the display, and, in accordance with a determination that the contact moved to the location on the touch-sensitive surface that corresponds to the location of the cancel affordance, followed by the liftoff, the device may forgo sending the captured media to the participant. In some embodiments, in accordance with a determination that the contact did not move to the location on the touch-sensitive surface that corresponds to the location of the send affordance nor to the location on the touch-sensitive surface that corresponds to the location of the cancel affordance, and in response to detecting the liftoff, the device may display an image in the message compose field, the image having a waveform representing the captured media (represented by B in FIG. **33**). In some embodiments, in accordance with a determination that the contact did not move to the location on the touch-sensitive surface that corresponds to the location of the send affordance nor to the location on the touch-sensitive surface that corresponds to the location of the cancel affordance, and in response to detecting the movement, the device can cease to capture the media (represented by B' in FIG. **33**).

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Note that details of the processes described above with respect to process 3300 (e.g., FIGS. 33 and 5A-14) are also applicable in an analogous manner to the other processes described herein. For example, processes 3400, 3500, 3600, 3700, 3800, 3900, 4000, 4600, and 4900 may include one or more of the characteristics of the various processes described above with reference to process 3300. For brevity, these details are not repeated in the descriptions of the other processes. The various methods and techniques described above with reference to process (method) 3300 may be optionally implemented as one or more units, such as those described with regard to FIG. 50.

FIG. 34 is a flow diagram illustrating process 3400 for quick video capture. Process 3400 may be performed at an electronic device with a display and a touch-sensitive surface, like device 100 (FIG. 2). At block 3402, the device displays on the display a media affordance and a message region for displaying messages sent between participants in a message conversation. At block 3404, the device detects a first input corresponding to a location of the media affordance on the display on the touch-sensitive surface. At block 3406, in response to detecting the first input, the device displays a record affordance and a send affordance. At block 3408, the device detects a second input corresponding to a location of the record affordance on the display on the touch-sensitive surface. At block 3434, in response to detecting the second input, the device begins to record a video. At block 3412, the device detects a third input corresponding to a location of the send affordance on the display on the touch-sensitive surface. At block 3414, in response to detecting the third input, the device sends the recorded video to a participant and removes the send affordance and the record affordance from the display. Optionally, at block 3414, the device may, in response to detecting the third input, insert a thumbnail representation of the recorded video into the displayed message conversation.

Note that details of the processes described above with respect to process 3400 (e.g., FIGS. 34, 10A-10B, and 12A-14) are also applicable in an analogous manner to the other processes described herein. For example, processes 3300, 3500, 3600, 3700, 3800, 3900, 4000, 4600, and 4900 may include one or more of the characteristics of the various processes described above with reference to process 3400. For brevity, these details are not repeated in the descriptions of the other processes. The various methods and techniques described above with reference to process (method) 3400 may be optionally implemented as one or more units, such as those described with regard to FIG. 50.

FIG. 35 is a flow diagram illustrating process 3500 for responding to an audio message by raising an electronic device. Process 3500 may be performed at an electronic device with a display and a touch-sensitive surface, like device 100 (FIG. 2). At block 3502, the device displays a representation of a first audio message received from a first participant in a message conversation. At block 3504, the device detects a request to play the first audio message. Optionally at block 3504, in some embodiments, the device detects the request to play the first audio message by detecting a separate raising of the device while the representation of the first audio message is displayed. Optionally at block 3504, in some embodiments, the device detects the request to play the first audio message by detecting a contact at a location on the touch-sensitive surface that corresponds to the location of the displayed representation of the first audio message. At block 3506, in response to detecting the request, the device plays the first audio message. At block 3508, after playing the first audio message, the device

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detects a raising of the device. At block 3510, in response to detecting the raising of the device, the device records a second audio message. Optionally, at block 3510, while recording the second audio message, the device may detect a lowering of the device, and in response to detecting the lowering of the device, the device may cease to record the second audio message. At block 3512, after recording the second audio message, the device sends the second audio message to the first participant. Optionally, at block 3512, in response to detecting the lowering of the device, and after ceasing to record the second audio message, the device may send the second audio message to the first participant.

Note that details of the processes described above with respect to process 3500 (e.g., FIGS. 35 and 21A-24C) are also applicable in an analogous manner to the other processes described herein. For example, processes 3300, 3400, 3600, 3700, 3800, 3900, 4000, 4600, and 4900 may include one or more of the characteristics of the various processes described above with reference to process 3500. For brevity, these details are not repeated in the descriptions of the other processes. The various methods and techniques described above with reference to process (method) 3500 may be optionally implemented as one or more units, such as those described with regard to FIG. 50.

FIG. 36 is a flow diagram illustrating process 3600 for message grouping. Process 3600 may be performed at an electronic device with a display and a touch-sensitive surface, like device 100 (FIG. 2). At block 3602, the device receives a plurality of messages from a first participant within a time interval. At block 3604, the device determines whether the plurality of messages meets message grouping criteria. In some embodiments, message grouping criteria may include a criterion that is met when the number of messages in the plurality of messages exceeds a numeric threshold. In some embodiments, message grouping criteria may include a criterion that is met when the plurality of messages are spaced apart from each other by less than a threshold amount of time. In some embodiments, message grouping criteria may include a criterion that is met when the plurality of messages are sequentially adjacent messages. In some embodiments, sequentially adjacent messages may include messages having the same read status without any intervening received messages with a different read status. At block 3606, in accordance with a determination that the plurality of messages meets the message grouping criteria, the device displays a single group bounded message area representing the plurality of messages. Optionally, at block 3606, in some embodiments where the grouped bounded message area represents at least two audio messages, the device may receive a request to sequentially play the at least two audio messages and, in response to receiving the request, sequentially play the at least two audio messages. At block 3608, in accordance with a determination that the plurality of messages does not meet the message grouping criteria, the device displays a plurality of separate bounded message areas representing the plurality of messages.

Note that details of the processes described above with respect to process 3600 (e.g., FIGS. 36 and 25A-25E) are also applicable in an analogous manner to the other processes described herein. For example, processes 3300, 3400, 3500, 3700, 3800, 3900, 4000, 4600, and 4900 may include one or more of the characteristics of the various processes described above with reference to process 3600. For brevity, these details are not repeated in the descriptions of the other processes. The various methods and techniques described above with reference to process (method) 3600 may be

optionally implemented as one or more units, such as those described with regard to FIG. 50.

FIG. 37 is a flow diagram illustrating process 3700 for managing message display based upon expiration criteria. Process 3700 may be performed at an electronic device with a display and a touch-sensitive surface, like device 100 (FIG. 2). At block 3702, the device receives a first message. At block 3704, the device displays a representation of the first message, which is scheduled to be deleted upon satisfaction of expiration criteria, on the display. In some embodiments, the expiration criteria may be based on a time interval. In some embodiments, the expiration criteria may be based on whether the first message contains media. In some embodiments, the expiration criteria may be based on whether the media was captured using a quick media capture approach, such as described with respect to FIGS. 5A-14, or using another approach. At block 3706, the device displays an affordance for keeping the first message. At block 3708, in accordance with a determination that the affordance was selected prior to the satisfaction of the expiration criteria, the device keeps the first message. Optionally, at block 3708, if the first message contains media, in accordance with a determination that the affordance was selected prior to the satisfaction of the expiration criteria, the device may save the media in a media library. In some embodiments, device 100 only saves media that was captured using a quick media capture approach, such as described with respect to FIGS. 5A-14. In some embodiments, if the first message contains media and the expiration is based on a time interval, the time interval may be measured starting from a time after the media is played. In some embodiments, if the first message contains media and the expiration is based on a time interval, the time interval may be measured starting from a time when the media is created. At block 3710, in accordance with a determination that the expiration criteria has been satisfied without detecting selection of the affordance, the device ceases to display the representation of the first message on the display. Optionally, at block 3710, the device may receive a second message that is not deleted based on the expiration criteria.

Note that details of the processes described above with respect to process 3700 (e.g., FIGS. 37 and 26-27C) are also applicable in an analogous manner to the other processes described herein. For example, processes 3300, 3400, 3500, 3600, 3800, 3900, 4000, 4600, and 4900 may include one or more of the characteristics of the various processes described above with reference to process 3700. For brevity, these details are not repeated in the descriptions of the other processes. The various methods and techniques described above with reference to process (method) 3700 may be optionally implemented as one or more units, such as those described with regard to FIG. 50.

FIG. 38 is a flow diagram illustrating process 3800 for location sharing. Process 3800 may be performed at an electronic device with a display and a touch-sensitive surface, like device 100 (FIG. 2). At block 3802, the device displays on the display a message region for displaying messages sent between a first participant and a second participant in a message conversation. At block 3804, the device displays a share-location affordance for sharing the location of the first participant with the second participant as the location changes over at least a predetermined time period. At block 3806, the device detects a contact at a location on the touch-sensitive display that corresponds to a location of the share-location affordance on the display. At block 3808, in response to detecting the contact at the location on the touch-sensitive display that corresponds to

the location of the share-location affordance, the device provides the second participant with information enabling the second participant to determine a current location of the first participant during at least the predetermined time period. In some embodiments, the device may allow the user to select a time period. Optionally, at block 3808, in response to detecting the contact at the location corresponding to the share-location affordance, the device may display at least two affordances corresponding to at least two predetermined time periods, detect a contact at a location on the touch-sensitive surface corresponding to a location of one of the at least two affordances on the display, and, in response to detecting the contact at the location on the touch-sensitive surface corresponding to the location of one of the at least two affordances on the display, provide the second participant with information enabling the second participant to determine the current location of the first participant during the predetermined time period corresponding to the one of the at least two affordances. Optionally, at block 3808, the device may receive from the second participant location information dynamically indicating a location of a first external device and display, on the display, a location of the electronic device and the location of the first external device on a map. Optionally, at block 3808, the device may add a third participant to the message conversation, receive from the third participant location information indicating a location of a second external device, and display, on the display, the location of the second external device on the map. Optionally, at block 3808, the device may display, on the display together with the message conversation, a details affordance, detect a contact at a location on the touch-sensitive surface that corresponds to a location of the details affordance on the display, and, in response to detecting the contact at the location on the touch-sensitive surface that corresponds to the location of the details affordance on the display, display the map showing the location of two or more participants in the message conversation that have shared their location.

Note that details of the processes described above with respect to process 3800 (e.g., FIGS. 38 and 28A-32C) are also applicable in an analogous manner to the processes described herein. For example, processes 3300, 3400, 3500, 3600, 3700, 3900, 4000, 4600, and 4900 may include one or more of the characteristics of the various processes described above with reference to process 3800. For brevity, these details are not repeated in the descriptions of the other processes. The various methods and techniques described above with reference to process (method) 3800 may be optionally implemented as one or more units, such as those described with regard to FIG. 50.

FIG. 39 is a flow diagram illustrating process 3900 for adding media to a message conversation. Process 3900 may be performed at an electronic device with a display, a touch-sensitive surface, and a camera sensor. At block 3902, the device displays on the display, a message region for displaying a message conversation. At block 3904, the device receives a request to add media to the message conversation. At block 3906, in response to receiving the request, the device displays a media selection interface concurrently with at least a portion of the message conversation, the media selection interface including a plurality of affordances, at least a subset of which includes thumbnail representations of media available for adding to the message conversation, for selecting media for addition to the message conversation. At block 3908, the device detects selection of a respective affordance from the plurality of affordances. At block 3910, in response to detecting selection of the respec-

tive affordance, the device selects corresponding media for addition to the message conversation. Optionally, at block 3910, in response to selection of the respective affordance, the device may add the media to the message conversation. Optionally, at block 3910, if the plurality of affordances includes a live preview affordance, the device may detect a contact at a location on the touch-sensitive display that corresponds to a location of the live preview affordance on the display and, in response to detecting the contact at the location on the touch-sensitive surface that corresponds to the location of the live camera preview, capture a new image based on the live camera preview and select the new image for addition to the message conversation.

Note that details of the processes described above with respect to process 3900 (e.g., FIGS. 39 and 15A-18C) are also applicable in an analogous manner to the processes described herein. For example, processes 3300, 3400, 3500, 3600, 3700, 3800, 4000, 4600, and 4900 may include one or more of the characteristics of the various processes described above with reference to process 3900. For brevity, these details are not repeated in the descriptions of the other processes. The various methods and techniques described above with reference to process (method) 3900 may be optionally implemented as one or more units, such as those described with regard to FIG. 50.

FIG. 40 is a flow diagram illustrating process 4000 for initiating an audio operation. Process 4000 is performed at an electronic device (e.g., device 100) with a display (e.g., display 112 of device 100) and a microphone (e.g., microphone 113 of device 100). At block 4002, the device detects a change in device context based on movement of the electronic device and one or more proximity sensor readings (e.g., by rising motion as depicted in FIG. 21B). At block 4004, the device determines, in response to detecting the change in device context, whether the device meets audio-operation criteria. For example, the audio-operation criteria include a criterion that is met when the movement of the electronic device satisfies movement criteria and the proximity sensor reading(s) satisfy a proximity criteria. At block 4006, the device, in accordance with a determination that the change in device context satisfies the audio-operation criteria, initiates an audio operation. At block 4008, the device, in accordance with a determination that the change in device context does not satisfy the audio-operation criteria, forgoes initiating the audio operation.

Advantageously, process 4000 enables users to initiate an audio operation with a simple gesture (e.g., by raising a phone to the user's ear). Process 4000 reduces the need for users to inspect the device and select affordances thereon in order to initiate audio operations such as the sending of audio messages. Further, movement criteria and proximity criteria combine to beneficially reduce the amount of erroneous audio operations. The increased efficiency of the user interface and the reduced occurrence and duration of erroneous audio operations both reduce energy usage by the device, which is particularly important for battery powered devices where reduced energy usage increases battery life.

In some embodiments, a movement criteria is met when the device takes the upward trajectories illustrated in FIGS. 21A-22C. In some embodiments, movement of the device is tracked using one or more of accelerometer 168 and optional sensors on device 100 (FIG. 1A). In some embodiments, a movement criterion is met when the device is in an orientation distinct from a predetermined orientation(s) (e.g., met when the device is not upside down). In some embodiments, the movement criterion is met when the device takes a generally upward trajectory or a trajectory that is upward

with the device rotating from having its display close to parallel with the Earth's surface (e.g., when the user is viewing the indication of the communication on the display) to its display being close to vertical with the earth's surface (e.g., when the user has raised the device to place it next to the user's ear to listen to or record an audio message).

In some embodiments, a proximity criteria is met when the phone is at the user's face as shown in FIG. 21B. In some embodiments, proximity sensor readings are provided by proximity sensor 166 of device 100 and the proximity criteria is met when the sensor indicates close proximity (e.g., within a few inches) with an object, which may be a user's face.

FIGS. 41A and 41B are flow diagrams illustrating optional sub-processes within block 4002 of process 4000 (FIG. 40). In some embodiments, one or more of optional processes 4102-4106 depicted in FIG. 41A are performed in block 4002 (FIG. 40). At block 4102, the device receives a communication, for example, an audio message, a text message, a voicemail, a phone call. At block 4104, in response to receiving the communication and before detecting the change in device context (e.g., before block 4004 of process 4000 in FIG. 40), the device provides an indication that the communication was received. Possible indications include a visual notification (e.g., a message received banner or an application-specific display such as a message bubble), a tactile notification (e.g., vibration), or an audio notification (e.g., a beep, or a ringtone). Possible indications include those that are displayed in a user interface locked state as well as those displayed in a user interface unlocked state. In some embodiments, displaying the indication that the communication was received involves launching a messaging application. A messaging application is one that is configured to process short messages via services such as SMS and MMS, and/or text messages via services such as iMessage® provided by Apple, Inc. of Cupertino, Calif., for example.

At block 4106, the device plays an audio component of the received communication, prior to detecting the change in context of the device. For example, if the communication includes a message with an audio component that has not been played by the device, e.g., a new audio message, then the audio operation includes playing the audio component of the message. As another example, if the communication includes a voicemail message, then plays the voicemail message.

Turning to FIG. 41B, in some embodiments, optional processes 4108 and 4110 are performed at block 4002 (FIG. 40). At block 4108, prior to detecting a change in device context, the device detects that it is in an audio messaging context. For example, the device determines that it is in the messaging-context when an incoming messaging having an audio component is received (optionally within some window of recency). As another example, the device determines that it is in the message-context when a messaging application is active. At block 4110, the device detects a change in device context only when the electronic device is in an audio messaging context (e.g., when a communication application is open or a communication has been recently received). An advantageous effect of processes 4108 and 4110 is that the accelerometers and/or proximity sensors needed to detect a raise-to-talk movement may be powered-down (or at least not actively monitored) when the device is out of the audio context, thereby reducing power usage (e.g., reducing the resources used to monitor changes in device context as well as reducing the resources used to record and process audio from false positive detections), and thus conserves power and extends battery life for the device.

In some embodiments, as discussed above, at block 4110 the device monitors for changes in device context only when the electronic device is in an audio messaging context. In some embodiments, the device does not monitor for changes in device context that satisfy the audio-operation criteria, even when a multimedia messaging application is open, unless a currently selected conversation in the multimedia messaging application includes at least one message that has an audio component (e.g., an audio component recorded and sent by the user or one of the other participants of the conversation). As noted above, reducing the situations in which the device monitors for changes in device context reduces power usage of the device, thereby conserving power and extending battery life for battery operated devices. Additionally, reducing the situations in which the device monitors for changes in device context reduces the likelihood of false positive initiation of audio operations (e.g., starting to record audio when the user lifts the device and puts it on a dresser while in a news application), thereby improving the overall quality of the user experience.

FIGS. 42A-43C are flow diagrams illustrating optional sub-processes within block 4004 of process 4000 (FIG. 40). Turning to FIG. 42A, in some embodiments, optional process 4202 is performed at block 4004 (FIG. 40). At block 4202, the device determines whether the message was received within a predefined time interval before detecting the change in device context, and playing the audio component of the message includes playing the audio component of the message if the message was received within the predefined time interval. If the message was not received within the time interval, block 4202 (and thus block 4004) provides an outcome of “no” and processing proceeds to block 4008 (FIG. 40), where the device forgoes the opportunity to initiate an audio operation such as recording a new audio message. If the message was received within the time interval, block 4202 provides an outcome of “yes” and, if other requirements within block 4004 are also met, then processing proceeds to block 4006 (FIG. 40), where the device may initiate an audio operation such as recording a new audio message. As an example, the newly recorded audio message is a response to the received communication.

Turning to FIG. 42B, in some embodiments, optional process 4204 is performed at block 4004 of process 4000 (FIG. 40). Recall that in some embodiments, before arriving at process 4204, the device has played the audio component of a received communication. In these situations, the device may perform optional block 4204 to determine whether a detected change in device context occurred within a predetermined time interval of playing the audio message. If the change in device context occurred outside the time interval, block 4204 (and thus block 4004) provides an outcome of “no” and processing proceeds to block 4008 (FIG. 40), where the device forgoes the opportunity to initiate an audio operation such as recording a new audio message. If the change in context was detected within the predetermined time interval from the time at which the audio component was played, block 4204 provides an outcome of “yes” and, if other requirements within block 4004 are also met, then processing proceeds to block 4006, where the device may initiate an audio operation such as recording a new message.

Turning to FIG. 43A, in some embodiments, optional process 4302 is performed at block 4004 of process 4000 (FIG. 40). At block 4302, the device determines an end of the movement and an orientation of the electronic device at the end of the movement. For example, determining an end of movement includes determining that, after moving above a predefined threshold speed (e.g., 0.75 ft s^{-1} , 1 ft s^{-1} , 1.5 ft

s^{-1} , 2 ft s^{-1}), the device has moved above a threshold amount (e.g., a noise filter value as determined by one of ordinary skill in the art in view of the exact accelerometer used) for no more than a time period (e.g., 0.5 s , 0.75 s , 1 s , 1.25 s , 1.5 s). For example, determining an orientation of the device includes determining whether the device is in a predetermined orientation (e.g., face-down or face-up, microphone down, or microphone up). In some embodiments, the movement criteria is met when the electronic device is not in a predetermined orientation (e.g., face-down) at the end of the movement.

Advantageously, this feature has the effect of reducing instances of erroneous audio operations. Because some device orientations are improbably associated with an audio operation, preventing audio operations when the device is in those orientations reduces the instances of erroneous audio operations. The increased efficiency of the user interface and the reduced occurrence and duration of erroneous audio operations both reduce energy usage by the device, which is particularly important for battery powered devices where reduced energy usage increases battery life.

In some embodiments, the electronic device includes a speaker (e.g., speaker 111, FIG. 2) positioned on a surface of the device and, in the predetermined orientation, the surface faces down (e.g., relative to gravity). In some embodiments, the electronic device includes a speaker and, in the predetermined orientation, the microphone is positioned above the earpiece (e.g., relative to gravity). If the device orientation at the end of the movement does not meet the movement criteria, block 4302 (and thus block 4004) provides an outcome of “no” and processing proceeds to block 4008 (FIG. 40), where the device forgoes the opportunity to initiate an audio operation such as recording a new audio message. If the device orientation at the end of the movement meets the movement criteria, block 4302 provides an outcome of “yes” and, if other requirements within block 4004 are also met, then processing proceeds to block 4006, where the device may initiate an audio operation such as recording a new message.

Turning to FIG. 43B, in some embodiments, optional process 4304 is performed at block 4004 of process 4000 (FIG. 40). At block 4304, the device determines whether a proximity sensor reading indicates detection of an object in proximity to the electronic device within a predetermined time interval after movement satisfying the movement criteria was detected. An object in proximity is optionally within, e.g. 0.01 , 0.02 , 0.05 , 1 , 2 , or 5 inches, or another reasonable threshold, of the device. The predetermined time interval includes, for example, 0.5 , 0.75 , 1 , 1.25 , or 1.5 seconds. If the proximity sensor reading was detected outside the time interval, block 4304 (and thus block 4004) provides an outcome of “no” and processing proceeds to block 4008 (FIG. 40), where the device forgoes the opportunity to initiate an audio operation such as recording a new audio message. If the proximity sensor reading was detected within the time interval, block 4304 provides an outcome of “yes” and, if other requirements within block 4004 are also met, then processing proceeds to block 4006, where the device may initiate an audio operation such as recording a new message.

Turning to FIG. 43C, in some embodiments, optional process 4306 is performed at block 4004 of process 4000 (FIG. 40). At block 4306, the device determines whether the electronic device is in the predetermined orientation within a predetermined time interval (e.g., 3 seconds) of the determination that the movement satisfies the movement criteria and the one or more proximity sensor readings satisfy the

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proximity criteria. If the device is in the predetermined orientation with the predetermined time interval, the device does not meet the audio operation criteria, in which case block 4306 (and thus block 4004) provides an outcome of “no” and processing proceeds to block 4008 (FIG. 40), where the device foregoes the opportunity to initiate an operation such as recording a new audio message. If the device is not in the predetermined orientation within the time interval, block 4304 provides an outcome of “yes” and, if other requirements within block 4004 are also met, then processing proceeds to block 4006, where the device may initiate an audio operation such as recording a new message.

FIGS. 44A-45C are flow diagrams illustrating optional sub-processes within block 4006 of process 4000 (FIG. 40). In some embodiments, block 4006 includes optional processes 4402-4406 depicted in FIG. 44A. At block 4402 (FIG. 44A), after initiating the audio operation, the device determines whether the electronic device is in a predetermined orientation. If yes, processing proceeds to block 4404, where the device ends the audio operation, in accordance with a determination that the electronic device is in the predetermined orientation. Ending the audio operation optionally includes ceasing to playback audio and/or ceasing to record audio; optionally, deleting any already recorded audio; optionally, storing the already recorded audio and prompting a user to deliver the recorded audio. If no, processing proceeds to block 4406, the device forgoes ending the audio operation, in accordance with a determination that the electronic device is not in the predetermined orientation.

In some embodiments, the electronic device includes a speaker (e.g., speaker 111 of device 100) positioned on a surface of the device and, in the predetermined orientation, the surface faces down (e.g., relative to gravity). In some embodiments, the electronic device includes an earpiece and, in the predetermined orientation, the microphone is positioned above the earpiece (e.g., relative to gravity).

Turning to FIG. 44B, in some embodiments, optional processes 4408-4410 are performed at block 4006 of process 4000 (FIG. 40). At block 4408, after initiating the audio operation, the device detects a characteristic movement of the electronic device is above a predetermined threshold. The characteristic movement may be based on accelerometer output over time (average), peak output, output duration, or repetition. An exemplary characteristic movement that is an improbable audio messaging scenario is the wiping phone on sleeve. At block 4410, in response to detecting a characteristic movement of the electronic device is above a predetermined threshold, the device ends the audio operation. Ending the audio operation optionally includes ceasing to playback audio and/or ceasing to record audio; optionally, deleting any already recorded audio; optionally, storing the already recorded audio and prompting a user to deliver the recorded audio.

These features, which are directed to the ability to end an audio operation after it has begun, have the advantageous effect of reducing impacts to the user experience due to erroneous audio operations. It is beneficial to initiate audio operations quickly, to thereby improve responsiveness and enhance the user's experience. In such situations, many things may look like a user intended to initiate an audio operation. For example, raising a phone and putting it in a pocket may trigger movement criteria and proximity sensor criteria. The characteristic movements and predetermined orientations above are improbably associated with an audio. Ending the audio operation when those movements and/or orientations are detected advantageously reduce the number of erroneous audio operations, while not affecting the user's

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perception of the device's responsiveness. The increased efficiency of the user interface and the reduced occurrence and duration of erroneous audio operations both reduce energy usage by the device, which is particularly important for battery powered devices where reduced energy usage increases battery life.

Turning to FIG. 44C, in some embodiments, block 4006 of process 4000 (FIG. 40) includes optional processes 4412-4416. Recall, as discussed above, the device may initiate recording of a new message as a result of upstream processing. At block 4412, the device determines whether the message includes speech. To detect speech, the device optionally compares a detected signal to known characteristics of speech waveforms: if recorded data includes known characteristic(s) of speech waveforms, the device determines the message includes speech; if no such characteristic(s) in the data, the device determines the message does not include speech. At block 4414, the device ends recording of the message in accordance with a determination that the message does not include speech. Ending the audio operation optionally includes ceasing to playback audio and/or ceasing to record audio; optionally, deleting any already recorded audio; optionally, storing the already recorded audio and prompting a user to deliver the recorded audio. At block 4416, the device forgoes ending recording of the message, in accordance with a determination that the message does include speech.

Turning to FIG. 45A, in some embodiments, optional processes 4502-4504 are performed at block 4006 of process 4000 (FIG. 40). After playing a voicemail message, the device, at block 4502, detects a pump motion of the electronic device. The pump motion optionally includes a downward motion, followed by an upward motion (e.g., a motion that meets the audio-operation criteria). An exemplary pump motion is illustrated in FIGS. 22A-22C. At block 4504, the device initiates, in response to detecting the pump motion, a phone call to a phone number associated with the voicemail message (e.g., the device makes a return phone call).

Turning to FIG. 45B, in some embodiments, optional processes 4506-4510 are performed at block 4006 of process 4000 (FIG. 40). At block 4506, the device determines that audio play-back criteria have been met. At block 4508, the device plays, in accordance with a determination that audio-playback criteria have been met, audio corresponding to a received communication. In some embodiments, the audio-playback criteria include a criterion that is met when the communication includes audio component that has not been previously played on the device. In some embodiments, the audio-playback criteria include a criterion that is met when the communication was received within a predetermined time period from when the change in device context was detected. In some embodiments, the audio-playback criteria include a criterion that is met when the communication corresponds to a communication alert that was displayed on the display of the device when the change in device context was detected (e.g., a pop-up notification on a user interface lock screen, a pop-up notification overlaid on another user interface displayed on the display, or message in a conversation). At block 4508, the device forgoes playback, in accordance with a determination that audio-playback criteria has not been met.

Turning to FIG. 45C, in some embodiments, optional processes 4512-4516 are performed at block 4006 of process 4000 (FIG. 40). At block 4512, the device determines that audio recording criteria have been met. At block 4514, the device records, in accordance with determination that audio-recording criteria have been met, audio for a response to the

received communication. In some embodiments, the audio-record criteria include a criterion that is met when a user interface for a communication application is displayed on the display (e.g., a phone-dialer application, a conversation of a multi-media messaging application in which at least one audio message has been sent or received). In some embodiments, the audio-record criteria include a criterion that is met when an audio component of a message was played within a predetermined time period of when the change in device context was detected. At block 4516, the device forgoes recording, in accordance with a determination that audio-recording criteria has not been met.

Note that details of the processes described above with respect to process 4000 (e.g., FIGS. 40-45, 21, and 22) are also applicable in an analogous manner to the processes described herein. For example, processes 3300, 3400, 3500, 3600, 3700, 3800, 3900, 4600, and 4900 may include one or more of the characteristics of the various processes described above with reference to process 4000. For brevity, these details are not repeated in the descriptions of the other processes. The various methods and techniques described above with reference to process (method) 4000 may be optionally implemented as one or more units, such as those described with regard to FIG. 50.

FIG. 46 is a flow diagram illustrating process 4600 for sending a message. Process 4600 is performed at an electronic device (e.g., device 100) with a display (e.g., display 112 of device 100) and at least one microphone (e.g., microphone 113 of device 100), in some embodiments. At block 4602, the device detects one or more conditions that are interpreted as a request to record an audio message for a designated contact. A designated contact optionally includes a person in Contacts, e-mail, and a phone number associated with a received message or voicemail. However, an application that is responsive to voice input, without more, should not be considered a "contact." A designated contact is a contact that is identified (e.g., designated) by a user or by device 100. At block 4604, the device generates an audio recording using the at least one microphone, in response to detecting the one or more conditions. At block 4606, the device determines whether the audio recording meets rejection criteria. At block 4608, the device sends the audio recording to the designated contact, in accordance with a determination that the rejection criteria is not satisfied. At block 4610, the device forgoes sending the audio recording to the designated contact, in accordance with a determination that the rejection criteria is satisfied.

Advantageously, process 4600 can reduce sending of erroneous messages. By monitoring an in-progress audio recording for rejection criteria, the device beneficially determines that a user has inadvertently activated an audio recording or changed his or her mind during the recording. This has the effect of improving customer satisfaction with a messaging system. The increased efficiency of the user interface and the reduced occurrence and duration of erroneous audio operations both reduce energy usage by the device, which is particularly important for battery powered devices where reduced energy usage increases battery life.

The one or more conditions in block 4602 optionally include a change in device context or a user input such as a raising gesture described in greater detail above with reference to process 4000 (FIG. 40), or other input while in a messaging context such as having a multimedia messaging application displayed on the display.

In some embodiments, the rejection criteria in block 4606 is met when the duration of the audio recording exceeds a

predetermined duration of time (e.g., 15 seconds). This feature advantageously prevents sending audio recordings when the user is distracted.

FIG. 47A-47D are flow diagrams illustrating optional sub-processes within block 4606 of process 4600 (FIG. 46). Turning to FIG. 47A, in some embodiments, optional process 4702 is performed at block 4606 of process 4600 (FIG. 46). At block 4702, the device detects whether speech is present in the audio recording. The rejection criteria is met when the audio recording is determined not to include more than a threshold amount. A threshold amount is optionally an absolute amount or a relative amount such as percentage. In some embodiments, the threshold amount is an energy threshold, such as short-time energy and zero-crossing rate. In some embodiments, the threshold amount is based on a speech model. In some embodiments, the rejection criteria is met when no sound (above a noise filter threshold) is detected.

Attention is now directed to rejection criteria based on a position of the device. In some embodiments, the rejection criteria is met when the electronic device is within a distance threshold from a sound source. Optionally, the device determines whether the electronic device is within the distance threshold by determining whether a proximity sensor (e.g., proximity sensor 166 of device 100) of the device has detected an object within the distance threshold of the device.

Turning to FIG. 47B, in some embodiments, optional process 4704 is performed at block 4606 of process 4600 (FIG. 46). At block 4704, the device determines whether the electronic device is within a distance threshold of a sound source by analyzing a waveform produced by combining signals captured by a first microphone and a second microphone (for example, evaluating, via beamforming, base attenuation in the formed beam, where the evaluation is optionally based on equalization of a near field beam). If the device is not within the distance threshold, block 4704 (and thus block 4606) produces an output of "no," processing proceeds to block 4610 where the device ends the recording that is in progress. If the device is within the distance threshold, block 4704 provides an outcome of "yes" and, if other requirements within block 4604 are also met, then processing proceeds to block 4608, where the device optionally continues to record and send the recorded message.

Turning to FIG. 47C, in some embodiments, optional process 4706 is performed at block 4606 of process 4600 (FIG. 46). At block 4706, the device determines whether the electronic device is within the distance threshold by determining whether a sound pressure level at the at least one microphone exceeds a sound pressure level threshold. In some embodiments, the sound pressure level threshold is based on a function (e.g., average over time, reference levels for whispering, speaking loudly, speaking softly, normal tone, etc.) of sound pressure levels previously detected by the electronic device. If the device is not within the distance threshold, block 4706 (and thus block 4606) produces an output of "no," processing proceeds to block 4610 where the device ends the recording that is in progress. If the device is within the distance threshold, block 4704 provides an outcome of "yes" and, if other requirements within block 4604 are also met, then processing proceeds to block 4608, where the device may continue to record and send the recorded message.

Turning to FIG. 47D, in some embodiments, optional process 4708 is performed at block 4606 of process (FIG. 46). At block 4708, the device determines whether the electronic device is within the distance threshold by com-

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paring (e.g., calculating a ratio of direct speech energy to reverberation energy, and comparing the ratio to a threshold) a sound pressure level to a reverberation level detected by the at least one microphones. If the ratio is indicative of far-field acoustics, processing proceeds to block **4610** where the device ends the recording that is in progress. If the ratio is indicative of near-field acoustics, and if other requirements within block **4604** are also met, then processing proceeds to block **4608**, where the device may continue to record and send the recorded message.

Although the description herein is offered primarily with respect to an audio operation, it should be appreciated that the systems and methods described can be extended to other operations. For example, determining the position of a phone can be utilized in other applications and can be presented as platform service to provide information on whether the phone is near a user or far away from a user. Such information can be used, for example, to set a volume of a ringtone.

In some embodiments, the rejection criteria is based on an orientation of the electronic device. In some embodiments, the electronic device includes a speaker (e.g., speaker **111** of device **100**) positioned on a surface of the device and the rejection criteria is met when the surface faces down (e.g., relative to gravity). In some embodiments, the electronic device includes an earpiece and the rejection criteria is met when the microphone is positioned above the earpiece (e.g., relative to gravity).

In some embodiments, the rejection criteria is met when a characteristic movement of the electronic device exceeds a threshold. The characteristic movement optionally includes a gyroscope and/or accelerometer output over time (average), peak movement, duration of movement, or repetition in movement (such as wiping phone on sleeve).

In some embodiments, determining whether the audio recording meets rejection criteria is in response to detecting one or more conditions that are interpreted as a request to send the audio recording to the designated contact. In some embodiments, the determination is performed after recording the audio (e.g., after a brief segment of audio has been recorded). In some embodiments, the determination is performed while recording the audio (e.g., so as to terminate recording of a long audio segment when the user does not intend to be recording audio).

FIG. **48A-48B** are flow diagrams illustrating optional sub-processes within block **4610** of process **4600** (FIG. **46**) in some embodiments. Turning to FIG. **48A**, optional process **4802** may be performed at block **4610** of process **4600** (FIG. **46**). At block **4802**, when the audio recording satisfies the rejection criteria, the device concurrently displays a representation of a draft message that includes the audio recording and a send affordance. (This aspect is illustrated on device **100** in FIG. **22D**). Upon detecting a user selection of the send affordance, the device sends the draft message to the designated contact.

Turning to FIG. **48B**, in some embodiments, optional processes **4804-4808** are performed at block **4610** of process **4600** (FIG. **46**). At block **4804** (FIG. **48B**), when the audio recording satisfies the rejection criteria, the device determines whether an elapsed time between detecting the one or more conditions (e.g. receiving the user input or starting to record the audio) and determining that the audio recording satisfies rejection criteria exceeds a time threshold. At block **4806**, the device, in accordance with a determination that the elapsed time exceeds the time threshold, displays a representation of a draft message that includes the audio recording (for example, the user interface of device **100** in FIG.

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22D). At block **4808**, the device deletes, in accordance with a determination that the elapsed time does not exceed the time threshold, the audio recording without displaying the representation of the draft message. For example, if the recording of the audio message is determined to be an error shortly after starting to record the audio or shortly after finishing recording the audio, then the audio message is deleted and the user is not bothered with displaying a draft audio message. In this instance, there is a high likelihood that the recording was initiated in error and this embodiment eliminates the need to bother a user with a likely unintended recording. However, if the recording of the audio message is determined to be an error more than the threshold time after recording the audio or after starting to record the audio, the audio message is saved as a draft that is available for sending by the user, so as to avoid confusing or frustrating the user.

Note that details of the processes described above with respect to process **4600** (e.g., FIGS. **46-48**, **21**, and **22**) are also applicable in an analogous manner to the processes described herein. For example, processes **3300**, **3400**, **3500**, **3600**, **3700**, **3800**, **3900**, **4000**, and **4900** may include one or more of the characteristics of the various processes described above with reference to process **4600**. For brevity, these details are not repeated in the descriptions of the other processes. The various methods and techniques described above with reference to process (method) **4600** may be optionally implemented as one or more units, such as those described with regard to FIG. **50**.

FIG. **49** is a flow diagram illustrating process **4900** for capturing and sending media. Process **4900** may be performed at an electronic device with a display and a touch-sensitive surface, like device **100** (FIG. **2**). At block **4902**, the device displays on the display, a media affordance, a message compose field, and a message region for displaying messages sent between participants in a message conversation. At block **4904**, the device detects a contact at a location that corresponds to the location of the media affordance. At block **4906**, in response to detecting the contact, the device displays a media preview in the message compose field. At block **4908**, the device detects a liftoff of the contact. At block **4910**, in response to detecting the liftoff, the device captures the media displayed in the media preview, and sends the captured media to a participant in the message conversation. Optionally, the device displays a send button for sending the message. The captured media is sent to the participant in response to detecting a contact at a location corresponding to the send button. Optionally, the captured media is sent in response to detecting the liftoff. Optionally, in response to detecting the liftoff, a representation of the captured media is displayed in the message compose field. The device detects user entry of additional content in the message compose field. The additional content and the captured media are sent to the participant in response to detecting the contact.

Note that details of the processes described above with respect to process **4900** (e.g., FIGS. **49** and **11C-E**) are also applicable in an analogous manner to the processes described herein. For example, processes **3300**, **3400**, **3500**, **3600**, **3700**, **3800**, **3900**, **4000**, and **4600** may include one or more of the characteristics of the various processes described above with reference to process **4900**. For brevity, these details are not repeated in the descriptions of the other processes. The various methods and techniques described above with reference to process (method) **4900** may be optionally implemented as one or more units, such as those described with regard to FIG. **50**.

The operations described above with reference to FIGS. 33-49 are, optionally, implemented by components depicted in FIGS. 1A, 1B, 3, and 50. For example, detection operations, display operations, and determination operations are, optionally implemented by one or more of 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 corresponds to a predefined event or sub-event, such as selection of an object on a user interface. 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 utilizes 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, 3, and 50.

The operations in the information processing methods described above are optionally implemented by running one or more functional modules in information processing apparatus such as general purpose processors or application specific chips. These modules, combinations of these modules, and/or their combination with general hardware (e.g., as described above with respect to FIGS. 1A, 1B, 3, and 50) are all included within the scope of protection of the invention.

FIG. 50 shows exemplary functional blocks of an electronic device 5000 that, in some embodiments, performs the features described above. As shown in FIG. 50, an electronic device 5000 includes a display unit 5002 configured to display graphical objects; a touch-sensitive surface unit 5004 configured to receive user gestures; one or more RF units 5006 configured to detect and communicate with external electronic devices; and a processing unit 5008 coupled to display unit 5002, touch-sensitive surface unit 5004, and RF unit(s) 5006. In some embodiments, processing unit 5008 is configured to support an operating system 5010 for launching and running one or more applications 5012.

In some embodiments, the processing unit 5008 includes a display enabling unit 5014, a detecting unit 5016, a determining unit 5018, and an obtaining unit 5020.

In some embodiments, the display enabling unit 5014 is configured to cause a display of a user interface (or portions of a user interface) in conjunction with the display unit 5002. For example, the display enabling unit 5014 is optionally used for: displaying messages sent between participants in a message conversation; displaying a send affordance, a cancel affordance, and a record affordance; displaying a visually distinguished region; displaying a representation of a first audio message received from a first participant in a message conversation; displaying a single group bounded message area representing the plurality of messages; displaying a representation of the first message on the display, wherein the first message is scheduled to be deleted upon satisfaction of expiration criteria; displaying an affordance for keeping the first message; displaying a share-location affordance for sharing the location of the first participant with the second participant as the location changes over at least a predeter-

mined time period; displaying a user send message affordance; displaying a representation of a draft message; displaying a media selection interface concurrently with at least a portion of the message conversation, wherein the media selection interface includes a plurality of affordances for selecting media for addition to the message conversation, at least a subset of the plurality of affordances including thumbnail representations of media available for adding to the message conversation; displaying a media preview in the message compose field.

In some embodiments, the detecting unit 5016 is configured to receive input, e.g., through the use of touch-sensitive surface unit 5004. For example, the detecting unit 5016 is optionally used for: detecting a contact and detecting a swipe.

In some embodiments, the determining unit 5018 is configured to make determinations. For example, determining unit 5018 is optionally used for: determining whether the contact moved to a location on the touch-sensitive surface that corresponds to a location of the send affordance; and determining whether the plurality of messages meets message grouping criteria.

In some embodiments, the obtaining unit 5020 is configured to obtain information. For example, the obtaining unit 5020 is optionally used for obtaining movement or proximity sensor readings of the external device.

In some embodiments, the media capture unit 5022 is configured to capture media. For example, the media capture unit 5022 may be used for: sending media captured in response to at least a portion of the gesture to a participant in the message conversation; beginning to record a video; and recording a second audio message.

In some embodiments, the message expire unit 5024 is configured to determine whether messages meet a message expiration criteria and remove expired messages from a conversation. For example, the message expire unit 5024 may be used for: displaying a representation of the first message on the display, wherein the first message is scheduled to be deleted upon satisfaction of expiration criteria; in accordance with a determination that the affordance was selected prior to the satisfaction of the expiration criteria, keeping the first message; and in accordance with a determination that the expiration criteria has been satisfied without detecting selection of the affordance, ceasing to display the representation of the first message on the display.

In some embodiments, the message grouping unit 5026 is configured to determine whether messages meet a message grouping criteria. For example, the message grouping unit 5026 may be used for: determining whether the plurality of messages meets message grouping criteria; in accordance with a determination that the plurality of messages does not meet the message grouping criteria, displaying a plurality of separate bounded message areas representing the plurality of messages; and in accordance with a determination that the plurality of messages meets the message grouping criteria, displaying a single group bounded message area representing the plurality of messages.

In some embodiments, the position detecting unit 5028 is configured to detect the position of the device. For example, the position detecting unit 5028 may be used for: detecting a request to play the first audio message; detecting a raising of the device; in response to detecting the raising of the device, recording a second audio message; and after recording the second audio message, sending the second audio message to the first participant.

In some embodiments, the location sharing unit 5030 is configured to share location information. For example, the

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location sharing unit **5030** may be used for: detecting a selection of the share-location affordance; and in response to detecting the selection of the share-location affordance: providing the second participant with information enabling the second participant to determine a current location of the first participant during at least the predetermined time period.

In some embodiments, the media selector unit **5032** is configured to provide interfaces for selecting media to add to a conversation. For example, the media selector unit **5032** may be used for: receiving a request to add media to the message conversation; in response to receiving the request, displaying a media selection interface concurrently with at least a portion of the message conversation, wherein the media selection interface includes a plurality of affordances for selecting media for addition to the message conversation, at least a subset of the plurality of affordances including thumbnail representations of media available for adding to the message conversation; detecting selection of a respective affordance from the plurality of affordances; and in response to detecting selection of the respective affordance, selecting corresponding media for addition to the message conversation.

The units of FIG. **50** are optionally used to implement the various techniques and methods described above with respect to FIGS. **5A-49**.

The functional blocks of the device **5000** are, optionally, implemented by hardware, software, or a combination of hardware and software to carry out the principles of the various described examples. It is understood by persons of skill in the art that the functional blocks described in FIG. **50** are, optionally, combined or separated into sub-blocks to implement the principles of the various described examples. Therefore, the description herein optionally supports any possible combination or separation or further definition of the functional blocks described herein.

Although the disclosure and examples have been fully described with reference to the accompanying figures, it is to be noted that various changes and modifications will become apparent to those skilled in the art. Such changes and modifications are to be understood as being included within the scope of the disclosure and examples as defined by the appended claims.

What is claimed is:

1. An electronic device, comprising:

one or more processors;

at least one microphone;

a memory; and

one or more programs, wherein the one or more programs are stored in the memory and configured to be executed by the one or more processors, the one or more programs including instructions for:

detecting one or more conditions that are interpreted as a request to record an audio message for a designated contact;

in response to detecting the one or more conditions, generating an audio recording using the at least one microphone;

determining whether the audio recording meets rejection criteria;

in accordance with a determination that the rejection criteria is not satisfied, sending the audio recording to the designated contact; and

in accordance with a determination that the rejection criteria is satisfied:

forgoing sending of the audio recording to the designated contact;

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determining whether an elapsed time between detecting the one or more conditions and determining that the audio recording satisfies the rejection criteria exceeds a time threshold;

in accordance with a determination that the elapsed time exceeds the time threshold, displaying a representation of a draft message that includes the audio recording; and

in accordance with a determination that the elapsed time does not exceed the time threshold, deleting the audio recording without displaying the representation of the draft message.

2. The electronic device of claim **1**, wherein the rejection criteria is met when a duration of the audio recording exceeds a predetermined duration of time.

3. The electronic device of claim **1**, the one or more programs including instructions for:

detecting whether speech is present in the audio recording, wherein the rejection criteria is met when the audio recording is determined not to include more than a threshold amount of human speech.

4. The electronic device of claim **1**, wherein the rejection criteria is based on a position of the electronic device.

5. The electronic device of claim **1**, wherein the rejection criteria is met when the electronic device is within a distance threshold from a sound source.

6. The electronic device of claim **5**, the one or more programs including instructions for:

determining whether the electronic device is within the distance threshold by determining whether a proximity sensor of the electronic device has detected an object within the distance threshold of the electronic device.

7. The electronic device of claim **5**, the one or more programs including instructions for:

determining whether the electronic device is within the distance threshold by analyzing a waveform produced by combining signals captured by the at least one microphones, the at least one microphones comprising a first microphone and a second microphone.

8. The electronic device of claim **5**, the one or more programs including instructions for:

determining whether the electronic device is within the distance threshold by determining whether a sound pressure level at the at least one microphone exceeds a sound pressure level threshold.

9. The electronic device of claim **8**, wherein the sound pressure level threshold is based on a function of sound pressure levels previously detected by the electronic device.

10. The electronic device of claim **5**, the one or more programs including instructions for:

determining whether the electronic device is within the distance threshold by comparing a sound pressure level to a reverberation level detected by the at least one microphones.

11. The electronic device of claim **1**, wherein the rejection criteria is based on an orientation of the electronic device.

12. The electronic device of claim **1**, wherein the electronic device comprises a speaker, and wherein the speaker is positioned on a surface of the electronic device, and wherein the rejection criteria is met when the surface faces down.

13. The electronic device of claim **1**, wherein the electronic device comprises a speaker, and wherein the rejection criteria is met when an orientation of the electronic device places the microphone above the speaker.

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14. The electronic device of claim 1, wherein the rejection criteria is met when a characteristic movement of the electronic device exceeds a threshold.

15. The electronic device of claim 1, the one or more programs including instructions for:

when the audio recording satisfies the rejection criteria, concurrently displaying:

a representation of a draft message that includes the audio recording; and

a send affordance, wherein the send affordance, when selected by a user, causes the electronic device to send the draft message to the designated contact.

16. A non-transitory computer-readable storage medium storing one or more programs configured to be executed by one or more processors of an electronic device with at least one microphone, the one or more programs including instructions for:

detecting one or more conditions that are interpreted as a request to record an audio message for a designated contact;

in response to detecting the one or more conditions, generating an audio recording using the at least one microphone;

determining whether the audio recording meets rejection criteria; in accordance with a determination that the rejection criteria is not satisfied, sending the audio recording to the designated contact; and

in accordance with a determination that the rejection criteria is satisfied:

forgoing sending of the audio recording to the designated contact;

determining whether an elapsed time between detecting the one or more conditions and determining that the audio recording satisfies the rejection criteria exceeds a time threshold;

in accordance with a determination that the elapsed time exceeds the time threshold, displaying a representation of a draft message that includes the audio recording; and

in accordance with a determination that the elapsed time does not exceed the time threshold, deleting the audio recording without displaying the representation of the draft message.

17. The non-transitory computer-readable storage medium storing of claim 16, wherein the rejection criteria is met when a duration of the audio recording exceeds a predetermined duration of time.

18. The non-transitory computer-readable storage medium storing of claim 16, the one or more programs including instructions for:

detecting whether speech is present in the audio recording, wherein the rejection criteria is met when the audio recording is determined not to include more than a threshold amount of human speech.

19. The non-transitory computer-readable storage medium storing of claim 16, wherein the rejection criteria is based on a position of the electronic device.

20. The non-transitory computer-readable storage medium storing of claim 16, wherein the rejection criteria is met when the electronic device is within a distance threshold from a sound source.

21. The non-transitory computer-readable storage medium storing of claim 20, the one or more programs including instructions for:

determining whether the electronic device is within the distance threshold by determining whether a proximity

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sensor of the electronic device has detected an object within the distance threshold of the electronic device.

22. The non-transitory computer-readable storage medium storing of claim 20, the one or more programs including instructions for:

determining whether the electronic device is within the distance threshold by analyzing a waveform produced by combining signals captured by the at least one microphones, the at least one microphones comprising a first microphone and a second microphone.

23. The non-transitory computer-readable storage medium storing of claim 20, the one or more programs including instructions for:

determining whether the electronic device is within the distance threshold by determining whether a sound pressure level at the at least one microphone exceeds a sound pressure level threshold.

24. The non-transitory computer-readable storage medium storing of claim 23, wherein the sound pressure level threshold is based on a function of sound pressure levels previously detected by the electronic device.

25. The non-transitory computer-readable storage medium storing of claim 20, the one or more programs including instructions for:

determining whether the electronic device is within the distance threshold by comparing a sound pressure level to a reverberation level detected by the at least one microphones.

26. The non-transitory computer-readable storage medium storing of claim 16, wherein the rejection criteria is based on an orientation of the electronic device.

27. The non-transitory computer-readable storage medium storing of claim 16, wherein the electronic device comprises a speaker, and wherein the speaker is positioned on a surface of the electronic device, and wherein the rejection criteria is met when the surface faces down.

28. The non-transitory computer-readable storage medium storing of claim 16, wherein the electronic device comprises a speaker, and wherein the rejection criteria is met when an orientation of the electronic device places the microphone above the speaker.

29. The non-transitory computer-readable storage medium storing of claim 16, wherein the rejection criteria is met when a characteristic movement of the electronic device exceeds a threshold.

30. The non-transitory computer-readable storage medium storing of claim 16, the one or more programs including instructions for:

when the audio recording satisfies the rejection criteria, concurrently displaying:

a representation of a draft message that includes the audio recording; and

a send affordance, wherein the send affordance, when selected by a user, causes the electronic device to send the draft message to the designated contact.

31. A method, comprising:

at an electronic device comprising at least one microphone:

detecting one or more conditions that are interpreted as a request to record an audio message for a designated contact;

in response to detecting the one or more conditions, generating an audio recording using the at least one microphone;

determining whether the audio recording meets rejection criteria; in accordance with a determination that

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the rejection criteria is not satisfied, sending the audio recording to the designated contact; and in accordance with a determination that the rejection criteria is satisfied:
 forgoing sending of the audio recording to the designated contact;
 determining whether an elapsed time between detecting the one or more conditions and determining that the audio recording satisfies the rejection criteria exceeds a time threshold;
 in accordance with a determination that the elapsed time does not exceed the time threshold, displaying a representation of a draft message that includes the audio recording; and
 in accordance with a determination that the elapsed time exceeds the time threshold, deleting the audio recording without displaying the representation of the draft message.

32. The method of claim 31, wherein the rejection criteria is met when a duration of the audio recording exceeds a predetermined duration of time.

33. The method of claim 31, further comprising:
 detecting whether speech is present in the audio recording, wherein the rejection criteria is met when the audio recording is determined not to include more than a threshold amount of human speech.

34. The method of claim 31, wherein the rejection criteria is based on a position of the electronic device.

35. The method of claim 31, wherein the rejection criteria is met when the electronic device is within a distance threshold from a sound source.

36. The method of claim 35, further comprising:
 determining whether the electronic device is within the distance threshold by determining whether a proximity sensor of the electronic device has detected an object within the distance threshold of the electronic device.

37. The method of claim 35, further comprising:
 determining whether the electronic device is within the distance threshold by analyzing a waveform produced by combining signals captured by the at least one

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microphones, the at least one microphones comprising a first microphone and a second microphone.

38. The method of claim 35, further comprising:
 determining whether the electronic device is within the distance threshold by determining whether a sound pressure level at the at least one microphone exceeds a sound pressure level threshold.

39. The method of claim 38, wherein the sound pressure level threshold is based on a function of sound pressure levels previously detected by the electronic device.

40. The method of claim 35, further comprising:
 determining whether the electronic device is within the distance threshold by comparing a sound pressure level to a reverberation level detected by the at least one microphones.

41. The method of claim 31, wherein the rejection criteria is based on an orientation of the electronic device.

42. The method of claim 31, wherein the electronic device comprises a speaker, and wherein the speaker is positioned on a surface of the electronic device, and wherein the rejection criteria is met when the surface faces down.

43. The method of claim 31, wherein the electronic device comprises a speaker, and wherein the rejection criteria is met when an orientation of the electronic device places the microphone above the speaker.

44. The method of claim 31, wherein the rejection criteria is met when a characteristic movement of the electronic device exceeds a threshold.

45. The method of claim 31, further comprising:
 when the audio recording satisfies the rejection criteria, concurrently displaying:
 a representation of a draft message that includes the audio recording; and
 a send affordance, wherein the send affordance, when selected by a user, causes the electronic device to send the draft message to the designated contact.

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