



US009466127B2

(12) **United States Patent**
Lindahl et al.

(10) **Patent No.:** **US 9,466,127 B2**
(45) **Date of Patent:** **Oct. 11, 2016**

(54) **IMAGE ALTERATION TECHNIQUES**

(75) Inventors: **Aram Lindahl**, Menlo Park, CA (US);
Kelvin Chiu, Mountain View, CA (US)

(73) Assignee: **Apple Inc.**, Cupertino, CA (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 317 days.

(21) Appl. No.: **12/895,725**

(22) Filed: **Sep. 30, 2010**

(65) **Prior Publication Data**

US 2012/0081382 A1 Apr. 5, 2012

(51) **Int. Cl.**
G09G 5/00 (2006.01)
G06T 11/00 (2006.01)

(52) **U.S. Cl.**
CPC **G06T 11/00** (2013.01)

(58) **Field of Classification Search**
CPC G06T 11/001; G06T 15/04
USPC 345/581, 619, 473
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

5,758,043	A *	5/1998	Takizawa et al.	358/1.16
5,886,697	A *	3/1999	Naughton et al.	345/473
5,917,488	A	6/1999	Anderson et al.	
6,044,408	A *	3/2000	Engstrom et al.	719/328
6,122,411	A *	9/2000	Shen et al.	382/299
6,369,822	B1	4/2002	Peevers	
6,473,085	B1 *	10/2002	Brock et al.	345/502
6,847,467	B2	1/2005	Obrador	
7,050,102	B1	5/2006	Vincent	
7,187,401	B2	3/2007	Alhadeif et al.	
7,412,360	B2 *	8/2008	Surazhsky et al.	703/2
7,586,032	B2	9/2009	Louis	
7,830,381	B2 *	11/2010	Lundstrom et al.	345/428
7,924,328	B2	4/2011	Cazier	
7,969,447	B2 *	6/2011	Scheepers et al.	345/582

8,015,245	B2	9/2011	Milic-Frayling	
8,051,376	B2	11/2011	Adhikari	
8,073,203	B2	12/2011	Tang	
8,099,462	B2	1/2012	Sheng	
2005/0273331	A1 *	12/2005	Lu	704/246
2006/0072019	A1	4/2006	Stavely et al.	
2006/0181537	A1	8/2006	Vasan	
2007/0283269	A1 *	12/2007	Obrador et al.	715/723
2008/0012856	A1 *	1/2008	Yu et al.	345/424
2008/0089525	A1	4/2008	Kauko	
2008/0298705	A1 *	12/2008	Jeong	382/254
2009/0163182	A1	6/2009	Gatti	
2009/0184849	A1	7/2009	Nasiri	
2009/0207175	A1 *	8/2009	Warner	345/473

(Continued)

OTHER PUBLICATIONS

Adobe, "After Effects / Effects and animation presets overview", http://help.adobe.com/en_US/aftereffects/cs/using/WS3878526689cb91655866c1103906c6dea-7c30a.html.*

Adobe, "ADOBE® AFTER EFFECTS® CS4 help".*

"Photoshop Water Tutorial" http://www.secondpicture.com/tutorials/digital_image_processing/photoshop_water_tutorial.html.*

"Animated Spiral Tutorial", <http://www.hypnoticaddiction.com/tutorials/63-animated-spiral-tutorial.html>.*

Yufen Feng, "Research on Dynamic Water Surface and Ripple Animation", I.J. Information Technology and Computer Science, 2010, 1, 18-24.*

(Continued)

Primary Examiner — Devona Faulk

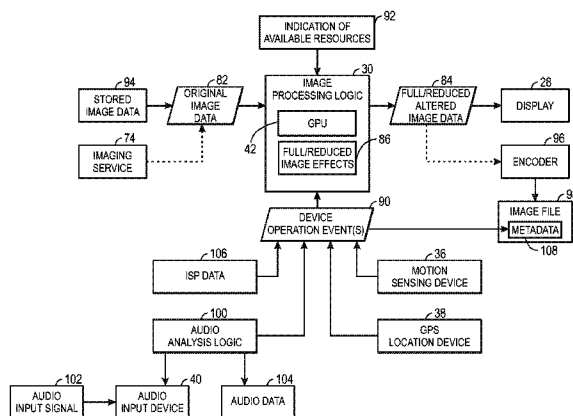
Assistant Examiner — Jin Ge

(74) Attorney, Agent, or Firm — Blank Rome LLP

(57) **ABSTRACT**

Various techniques relating to the alteration of image data are provided herein. An electronic device capable of carrying out such techniques may include data processing circuitry configured to receive image data and detect the occurrence of a device operation event (e.g., an audio event, a motion event, a location event, or an image event, and so forth). The data processing circuitry may alter the image data using a full-quality version or a reduced-quality version of an image alteration effect associated with the device operation event, depending on currently available resources.

23 Claims, 18 Drawing Sheets



Liontricks Ltd

(56)

References Cited

U.S. PATENT DOCUMENTS

2009/0219168 A1 9/2009 Loper
2009/0284541 A1 11/2009 Liu
2010/0045796 A1* 2/2010 Fraley et al. 348/143
2010/0066763 A1 3/2010 MacDougall
2010/0085379 A1 4/2010 Hishikawa
2010/0134485 A1* 6/2010 Bhogal et al. 345/419
2010/0177247 A1* 7/2010 Sekulovski et al. 348/602
2010/0191459 A1* 7/2010 Carter et al. 701/208
2010/0214483 A1* 8/2010 Gann et al. 348/578
2010/0286972 A1* 11/2010 Callegari 703/10

2010/0303146 A1* 12/2010 Kamay 375/240.02
2010/0315423 A1* 12/2010 Ahn et al. 345/426
2012/0081382 A1* 4/2012 Lindahl et al. 345/581

OTHER PUBLICATIONS

GPU Gems Chapter 1.*
GPU Gem Chapter 2.*
Adobe, "After Effects Help / Managing and animating shape paths and masks", <http://helpx.adobe.com/after-effects/using/animating-shape-paths-masks.html>.
U.S. Appl. No. 12/541,597, filed Aug. 14, 2009, Aram Lindahl et al.
U.S. Appl. No. 12/556,380, filed Sep. 9, 2009, Lindahl.

* cited by examiner

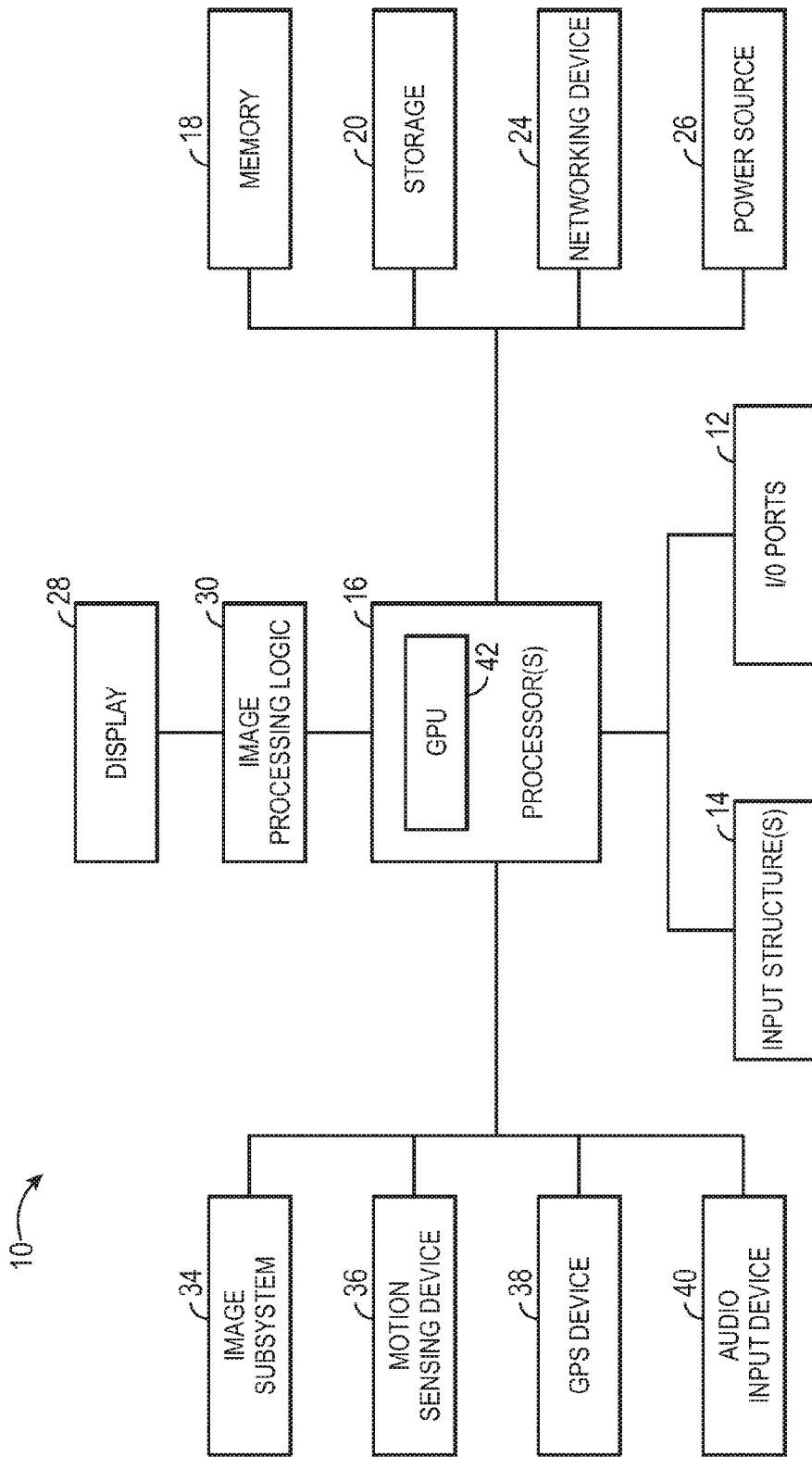


FIG. 1

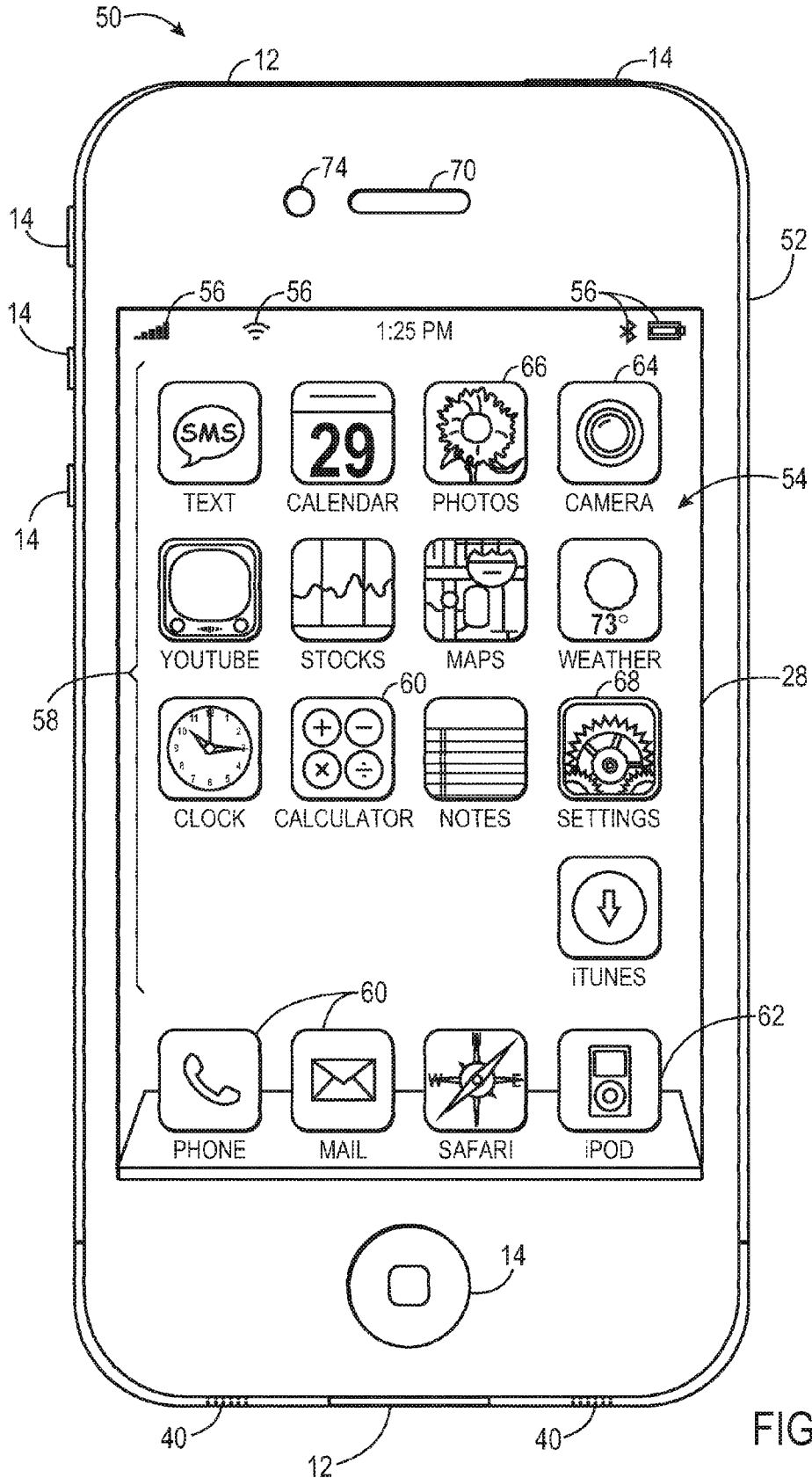


FIG. 2

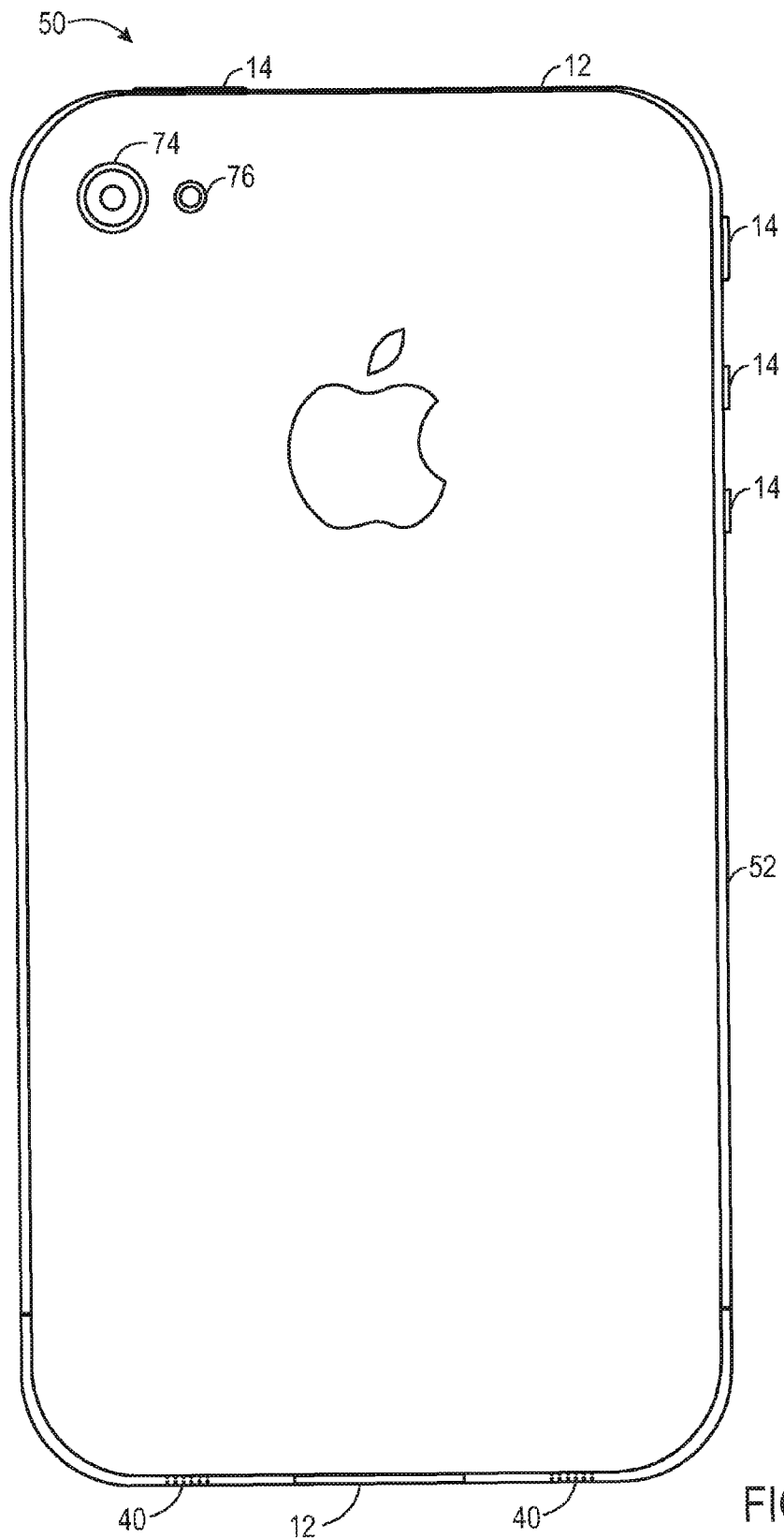


FIG. 3

Explore Litigation Insights

Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

Real-Time Litigation Alerts



Keep your litigation team up-to-date with **real-time alerts** and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

Advanced Docket Research



With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

Analytics At Your Fingertips



Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

LAW FIRMS

Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

FINANCIAL INSTITUTIONS

Litigation and bankruptcy checks for companies and debtors.

E-DISCOVERY AND LEGAL VENDORS

Sync your system to PACER to automate legal marketing.