

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

**SAMSUNG ELECTRONICS CO., LTD. AND
SAMSUNG ELECTRONICS AMERICA, INC.,**
Petitioners

v.

MAXELL, LTD.,
Patent Owner

Inter Partes Review No.: IPR2024-00717

**DECLARATION OF R. MICHAEL GUIDASH IN SUPPORT OF
PETITION FOR *INTER PARTES* REVIEW OF
U.S. PATENT NO. 11,223,757**

I hereby declare under penalty of perjury under the laws of the United States of America that the following is true and correct, and that all statements made of my own knowledge are true and that all statements made on information and belief are believed to be true. I understand that willful false statements are punishable by fine or imprisonment or both under Section 1001 of Title 18 of the United States Code.

Date: April 16, 2024


R. Michael Guidash

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EXHIBITS

Exhibit No.	Description
1001	U.S. Patent No. 11,223,757
1002	File History of U.S. Pat. 11,223,757
1003	Declaration of R. Michael Guidash
1004	U.S. Patent Publication No. 2014/0247368 (“Chinn”)
1005	Certified translation of Published JP Application JP2001305642A (“Takahashi”), which is referred to in EX1006
1006	Translator Certification by Sarah Dunham of Lango Translations dated February 23, 2024 for JP2001305642A, including the Japanese language version of JP2001305642A
1007	U.S. Patent No. 8,957,981
1008	U.S. Patent Publication No. 2010/0137026 (“Kim”)
1009	U.S. Patent Publication No. 2010/0026815 (“Yamamoto”)
1010	Declaration of Nathaniel E. Frank-White
1011	U.S. Patent Publication No. 2009/0167881 (“Thorn”)
1012	Appendix 4 to Patent Owner’s March 7, 2024 Corrected Infringement Contentions
1013	U.S. Patent Publication No. 2013/0124207 (“Sarin”)
1014	Casio Exilim EX-V7 Users Guide (“EX-V7”)

TABLE OF CLAIMS

[1pre] An image recording device configured to execute a plurality of different photographing processes, comprising:
[1a] an audio input interface configured to receive a command voice;
[1b] a touch display arranged on a first surface of the image recording device and configured to display an image signal and receive a touch operation instruction;
[1c] a first camera arranged on a same side of the touch display and configured to photograph an object and acquire a first image signal;
[1d] a second camera arranged on an opposite side of the touch display and configured to photograph an object and acquire a second image signal;
[1e] a recorder configured to record at least one of the first image signal or the second image signal on a storage; and
[1f] a controller,
[1g] wherein the controller is configured to: control such that, when the audio input interface receives the command voice giving a first instruction to start a recording of an image signal, the recorder starts a recording of the first image signal acquired by the first camera on the storage in response to the first instruction,
[1h] control such that, when the touch display receives the touch operation instruction giving a second instruction to start a recording of an image signal, the recorder starts a recording of the second image signal acquired by the second camera on the storage in response to the second instruction, and
[1i] control such that a first standby time of a case where the first camera is enabled and the second camera is disabled is longer than a second standby time of a case where the second camera is enabled and the first camera is disabled,
[1j] wherein the first standby time is a time from a recognition of the first instruction to a start of the recording of the first image signal acquired by the first camera, and the second standby time is a time from a recognition of the second instruction to a start of the recording of the second image signal acquired by the second camera.
[2] The image recording device according to claim 1, wherein the first camera is enabled in accordance with the command voice.
[3] The image recording device according to claim 1, wherein the first standby time is settable or selectable by a user.
[4] The image recording device according to claim 1, wherein the second standby time is settable or selectable by a user.
[5] The image recording device according to claim 1, wherein the controller causes an elapse state of the first standby time from the photographing trigger to

the recording start of the image signal to the recorder to be displayed on the touch display.
[6] The image recording device according to claim 1, wherein the controller causes an elapse state of the second standby time from the photographing trigger to the recording start of the image signal to the recorder to be displayed on the touch display.
[7] The image recording device according to claim 1, wherein the storage is an internal storage of the image recording device.
[8] The image recording device according to claim 1, wherein the storage is an external storage connected to the image recording device.
[9pre] The image recording device according to claim 1, further comprising,
[9a] a communication unit including circuitry and configured to perform communication with a server device on the Internet,
[9b] wherein the recorder is configured to record the first image signal input from the first camera or the second image signal from the second camera in the server device through the communication unit.
[10pre] The image recording device according to claim 1, further comprising,
[10a] a command voice storage configured to store a command voice for instructing photographing,
[10b] wherein the recorder is configured to perform control such that a command voice to be recorded in the command voice storage is received from the audio input interface and stored in the command voice storage as a command voice registration process, and
[10c] in the first photographing process, the recorder determines that the command voice instructs the photographing when the command voice input to the audio input interface is identical to the command voice stored in the command voice storage, and determines that the command voice does not instruct the photographing when the command voice input to the audio input interface is not identical to the command voice stored in the command voice storage.
[11pre] An image recording method of an image recording device, comprising:
[11a] photographing an object and acquiring an image signal by a first camera or a second camera, the first camera being arranged on the same face side of a touch display and configured to acquire a first image signal, the second camera being arranged on an opposite side of the touch display and configured to acquire a second image signal;
[11b] in a case that the first camera is used for photographing: receiving a command voice from an audio input interface;

[11c] determining whether or not the command voice includes a first instruction to start a recording of the first image signal;
[11d] performing a first standby process during a first predetermined time when the command voice includes the first instruction and when the first camera is enabled and the second camera is disabled; and
[11e] start recording the first image signal acquired by the first camera after the first predetermined time; and
[11f] in a case that the second camera is used for photographing: receiving a touch operation instruction from the touch display;
[11g] determining whether or not the touch operation instruction includes a second instruction to start a recording of the second image signal;
[11h] performing a second standby process during a second predetermined time when the touch operation instruction includes the second instruction and when the second camera is enabled and the first camera is disabled; and
[11i] start recording the second image signal acquired by the second camera after the second predetermined time,
[11j] wherein the first predetermined time is set to be longer than the second predetermined time, and
[11.k] wherein the first predetermined time is a time from a recognition of the first instruction to a start of the recording of the first image signal acquired by the first camera, and the second predetermined time is a time from a recognition of the second instruction to a start of the recording of the second image signal acquired by the second camera.

I. INTRODUCTION

I, R. Michael Guidash, declare as follows:

1. My name is R. Michael Guidash. I have been asked by Petitioners Samsung Electronics Co. Ltd. and Samsung Electronics America, Inc. to provide my expert opinions in support of the above-identified petition for *inter partes* review of U.S. Patent No. 11,223,757 (“’757 patent,” EX1001), challenging the validity of claims 1-11 (the “Challenged Claims”).

2. I currently hold the opinions set forth in this declaration.

3. In summary, it is my opinion that the references cited below render obvious the Challenged Claims. My detailed opinions on the claims are set forth below and in the attached claim chart.

4. I am being compensated for my time at the rate of \$600 per hour. This compensation is not contingent upon my performance, the outcome of this matter, or any issues involved in or related to this matter.

II. BACKGROUND AND QUALIFICATIONS

5. After graduating with a Bachelor of Science in Electrical Engineering from the University of Delaware in 1981, I started my career with Eastman Kodak as a product engineer for application specific integrated circuits (ASIC's) used to perform photometer functions, (e.g. auto-exposure, auto-focus and flash control), for Kodak film cameras. In this role, I was responsible for all aspects of IC test,

packaging, delivery, customer interface and failure analysis, yield and cost of the photometer ASICs. This required detailed knowledge of camera designs, functions and operation. This role continued until 1987 and included responsibility for copier output driver ASICs and photometer ASICs for Kodak DISC cameras and Instant Film cameras.

6. In 1986-1988, I began transitioning to the Kodak Research Laboratories and CCD wafer fabrication facility. During my time with the Kodak Research Laboratories and CCD wafer fabrication facility, I developed 2 μm and 1 μm CMOS processes, and a 30 V 4 μm Bipolar complementary metal-oxide-semiconductor (BiCMOS) process. These processes were used for gate arrays for many Kodak products and output driver ASICs for all of Kodak's copiers. During this time, I was also awarded entrance into the Special Opportunity Graduate Program that allowed me to obtain a Master's of Science in Electrical Engineering from the Rochester Institute of Technology. My Masters Thesis involved design and process integration of bipolar and CMOS transistors into an existing CCD (charge-coupled device) image sensor process.

7. In 1989, I initiated and began leading a Smart Sensor Group which developed BiCMOS-CCD processes to provide fully integrated CCD systems on a chip. I also served as product engineer and yield enhancement engineer for Kodak's high volume CCDs. During this time, I led product delivery and technology

development of all ASIC and smart sensor products used in Kodak copiers and other electronic products, and CCD sensor yield improvement for sensors used in Nikon digital SLR cameras. I developed a number of products during this time to include an interline CCD integrated with 2 μm CMOS on the same chip, the world's 1st pinned photodiode Active Pixel CMOS Sensor product, and linear CCD image sensor with on-chip timing and control. I also led and directed the CCD dark current and point defect reduction team.

8. In 1996, I formally started the CMOS Image Sensor group at Kodak. From 1996 to 2009, I managed the R&D and product development of CMOS Image Sensor (CIS) programs. As is further shown in my curriculum vitae, I was the inventor or co-inventor of many key patents in the field of CMOS image sensors including pinned photodiode pixels, camera-on-a-chip architecture, and shared amplifier pixel architectures. During this time, I led the development of the world's 1st pinned photodiode CIS product, Shared amplifier CIS pixel product, and the world's first $\frac{1}{2}$ inch optical format 1.3 megapixel CMOS image sensor into mass production, providing successful delivery to several compact digital camera products. I also led the development of one of the earliest 3D hybrid stacked BSI CIS architecture. This led to demonstration of very high performance, low dark current BSI prototype sensors with pixel sizes ranging from 0.9 μm to 5.0 μm . During development of these CIS devices, I worked closely with Kodak's and

external companies' digital camera developers, and these CIS devices were commercialized in Kodak consumer digital cameras, as well as other companies' low-cost compact digital cameras.

9. In 2001, product development was transferred to other individuals and my role was focused on CIS and R&D. During this time, I initiated and led a cross-functional camera R&D team directed at CIS and other Kodak technologies for novel co-optimized cameras and camera sub-systems, including cell phone camera modules with small form factors, improved low light response, and fast auto-focus. During this time, I interfaced with cell phone camera manufacturers regarding their requirements and presented our technological improvements and camera module and CIS roadmaps.

10. In 2009, when Kodak closed its CMOS Image Sensor Business, I transitioned into a role as an intellectual property technologist and coordinator. This role included managing remaining image sensor patent applications and office actions, managing broad electronic components patent applications and office actions, and providing technical support for intellectual property sales and licensing teams.

11. In 2012 I left Kodak and started my consulting company, providing technical consulting services for CMOS image sensors. In this role I provide

consulting services for processes, pixels, circuits, sensor architectures, systems and intellectual property to companies and clients.

12. I am a named inventor on over 100 issued US patents. The majority of these patents are directed toward technologies relevant to cameras and image sensors. One of those patents, U.S. Patent No. 8,957,981 (EX1007), is directed toward an “Imaging Device For Capturing Self-Portrait Images” and is discussed in further detail below.

13. My qualifications, publications, professional experience and expertise are set forth more fully in my curriculum vitae, attached as **Exhibit A**.

III. DOCUMENTS AND OTHER MATERIALS RELIED UPON

14. In forming the opinions set forth in this declaration, I have reviewed the documents in the following table:

Exhibit No.	Description
10015	U.S. Patent No. 11,223,757
10016	File History of U.S. Pat. 11,223,757
10017	U.S. Patent Publication No. 2014/0247368 (“Chinn”)
10018	Certified translation of Published JP Application JP2001305642A (“Takahashi”), which is referred to in EX1006
10019	Translator Certification by Sarah Dunham of Lango Translations dated February 23, 2024 for JP2001305642A, including the Japanese language version of JP2001305642A
10020	U.S. Patent Publication No. 2010/0137026 (“Kim”)
10021	U.S. Patent Publication No. 2010/0026815 (“Yamamoto”)

Exhibit No.	Description
1022	U.S. Patent Publication No. 2009/0167881 (“Thorn”)
1023	Appendix 4 to Patent Owner’s March 7, 2024 Corrected Infringement Contentions
1024	U.S. Patent Publication No. 2013/0124207 (“Sarin”)
1025	Casio Exilim EX-V7 Users Guide (“EX-V7”)
1026	Archived Casio Worldwide Manuals Listing (May 29, 2008) (https://web.archive.org/web/20080529054134/http://world.casio.com/qv/download/en/manual/)
1027	Casio Exilim EX-V7 Review (originally posted May 6, 2007) (https://www.dpreview.com/reviews/casioexv7/2)

15. Additionally, I have utilized my own experience and expertise, including regarding the knowledge and capabilities of a person of ordinary skill in the relevant art in the timeframe of the claimed priority date of the ’757 patent.

IV. STATUTORY GROUNDS FOR CHALLENGE

16. In this declaration, I offer opinions on the following grounds that are the basis for this IPR proceeding:

Ground(s)	Claims	Basis	Reference(s)
1	1-8, 10-11	§103	Chinn, Takahashi, EX-V7
2	9	§103	Chinn, Takahashi, EX-V7, Kim
3	1-3, 7-10	§103	Kim, Yamamoto, Thorn
4	4-6, 11	§103	Kim, Yamamoto, Thorn, Chinn

V. RELEVANT PATENT LAW AND LEGAL STANDARDS

A. Date of Invention

17. I have been asked to use the date of the filing of the earliest application to which priority is claimed (*i.e.*, September 12, 2013) as the date of invention for purposes of my analysis.

B. Anticipation

18. I am informed and understand that a patent claim is invalid under 35 U.S.C. §102 if a prior art disclosure teaches every element required by the claim, either expressly or inherently. The identical invention must be shown in as complete detail as is contained in the claim. When a claim covers several structures or compositions, either generically or as alternatives, the claim is deemed anticipated if any of the structures or compositions within the scope of the claim is known in the prior art.

C. Obviousness

19. I am informed and understand that a patent claim is invalid under 35 U.S.C. § 103 if the differences between the invention and the prior art are such that the subject matter as a whole would have been obvious at the time of the invention to a person having ordinary skill in the art to which the subject matter pertains. Obviousness, as has been explained to me, is based on (i) the scope and content of the prior art, (ii) the differences between the prior art and the claim, (iii) the level of ordinary skill in the art, and (iv) any secondary indicia of non-obviousness (*e.g.*,

“secondary considerations” such as commercial success in the market place of the claimed invention), to the extent that they exist.

20. I further understand that obviousness may be demonstrated by showing that it would have been obvious to combine the teachings of more than one item of prior art. In determining whether a piece of prior art could have been combined with other prior art or with other information within the knowledge of a person having ordinary skill in the art, the following are examples of approaches and rationales that may be considered:

- Combining prior art elements according to known methods to yield predictable results;
- Simple substitution of one known element for another to obtain predictable results;
- Use of a known technique to improve similar devices (methods, or products) in the same way;
- Applying a known technique to a known device (method or product) ready for improvement to yield predictable results;
- Applying a technique or approach that would have been obvious to try (choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success);

- Known work in one field of endeavor may prompt variations of it for use in either the same field or a different one based on design incentives or other market forces if the variations would have been predictable to a person having ordinary skill in the art; and
- Some teaching, suggestion, or motivation in the prior art that would have led one of ordinary skill to modify the prior art reference or to combine prior art reference teachings to arrive at the claimed invention.

21. I further understand that an invention may be obvious if one of ordinary skill in the art, facing a wide range of needs created by developments in the field, would have seen an obvious benefit to the solutions tried by the applicant. When there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, it may be obvious to a person of ordinary skill to try the known options. If a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique would have been obvious.

22. I further understand that a person of ordinary skill in the art is a hypothetical person who is presumed to be aware of all of the relevant art at the

time of the invention. The person of ordinary skill may be able to fit together the teachings of multiple patents and/or printed publications employing ordinary creativity and the common sense that familiar items may have uses in another context or beyond their primary purposes.

23. I also understand that when considering the obviousness of a patent claim, one should consider whether a teaching, suggestion, or motivation to combine the references exists so as to avoid impermissibly applying hindsight when combining or modifying the prior art. I understand this test should not be applied rigidly, but that the test can be important to avoid such hindsight.

24. I also understand that one of ordinary skill in the art must have a reasonable expectation of success in combining or modifying prior art references.

25. I also understand that all elements of a claim must be considered in an obviousness analysis.

D. Standard of Proof

26. I understand that the standard to prove unpatentability in an *inter partes* review proceeding is by a preponderance of the evidence, which means more likely than not.

VI. LEVEL OF ORDINARY SKILL IN THE ART

27. I have considered the level of ordinary skill in the art relevant to the '757 patent. I understand that factors such as the education level of those working

in the field, the sophistication of the technology, the types of problems encountered in the art, the prior art solutions to those problems, and the speed at which innovations are made may help establish the level of skill in the art.

28. After reviewing the '757 patent, the relevant portions of the prosecution history of the '757 patent, and cited references, it is my opinion that the relevant art of the '757 patent is in the field of touch and voice control of cameras.

29. Based upon my knowledge of this field, I conclude that a person of ordinary skill in the art ("POSITA") at the time of the earliest filing date of the '757 patent (September 12, 2013), and for that matter, at all subsequent times through the present, would have had a Bachelors' degree in electrical or computer engineering or a comparable field of study, plus approximately two to three years of professional experience with camera technology. Additional graduate education could substitute for professional experience, and significant experience in the field could substitute for formal education.

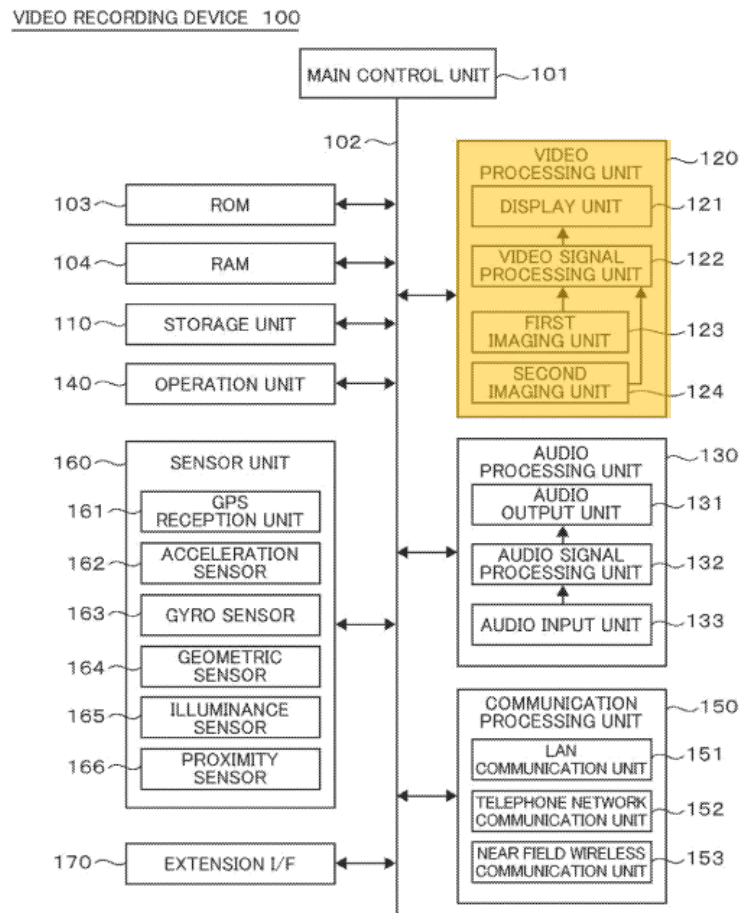
30. I am and was at the time of the earliest filing date at least a person of skill in the relevant art, of a level at least as high as or more than ordinarily skilled persons, and I am able to provide insight and opinions into the understandings of such persons at all relevant times by virtue of my education, training and experience.

VII. THE '757 PATENT AND ITS PROSECUTION HISTORY

A. Overview of the '757 Patent

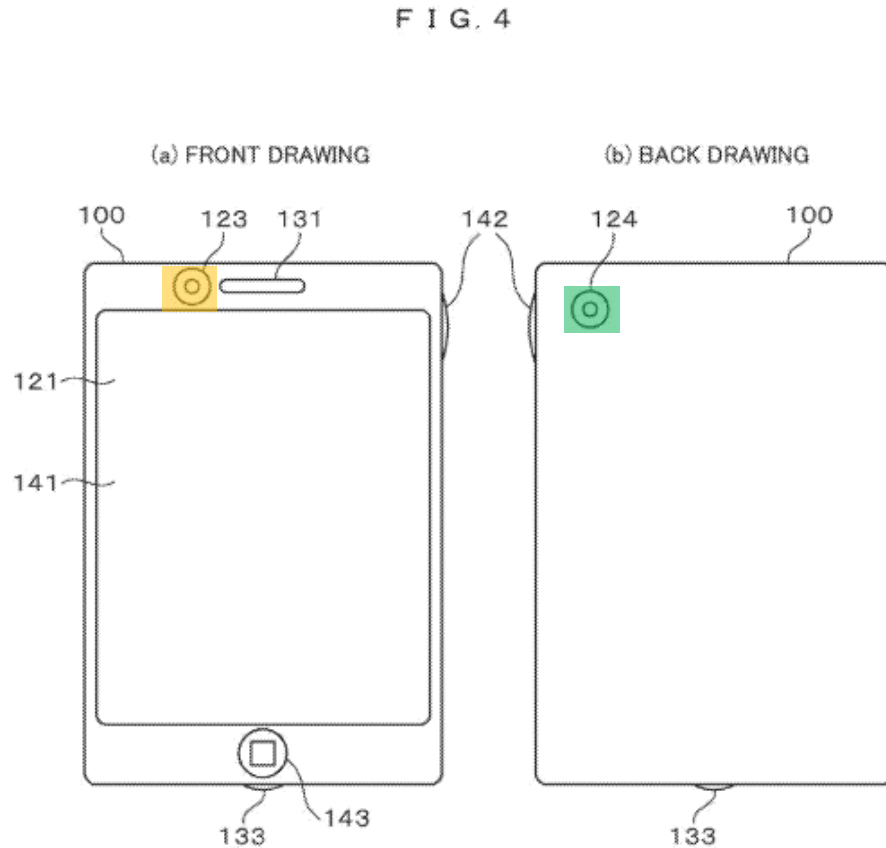
31. The '757 patent is directed to a “video recording device 100” including “a video processing unit 120; [and] an audio processing unit 130.” EX1001, 4:4-13; FIG. 1. As shown in FIG. 1 below, the video processing unit 120 includes a display unit 121, first imaging unit 123 and second imaging unit 124. EX1001, 4:46-60. The first and second imaging units are front and rear cameras that acquire images, such as photos or videos, of a subject. EX1001, 3:58-4:3; 4:55-60; 7:49-8:3.

FIG. 1



32. According to the '757 patent, “the first imaging unit 123 used as an in camera photographing the user himself, and the second imaging unit 124 used as an out camera photographing a subject disposed on the periphery are selectively used.” EX1001, 4:60-64. In the illustrated embodiment, “[t]he first imaging unit (camera unit) 123 is arranged on a same face (front face) as that of the display unit 121, and the second imaging unit (camera unit) 124 is arranged on a face (rear face) opposite to the display unit 121.” EX1001, 7:56-60; FIG. 4.

33. FIG. 4 of the '757 patent is reproduced below:

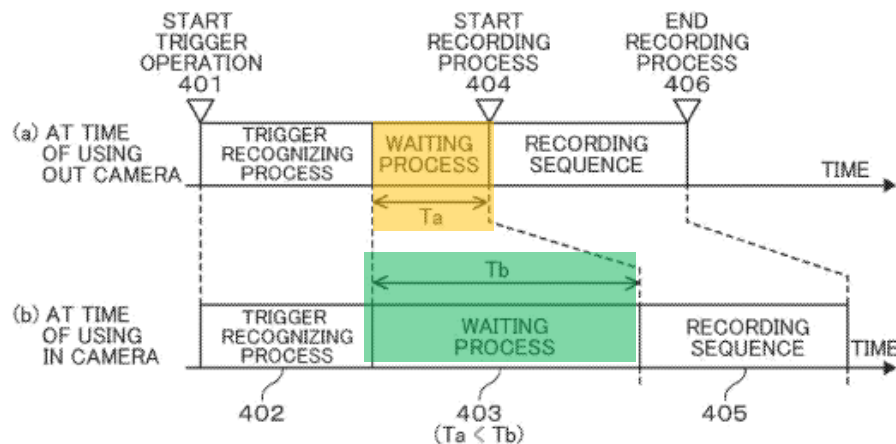


34. The '757 patent discloses an “operation for delaying the start of recording” its camera function, particularly when the user is taking an image of herself/himself (often referred to colloquially as a “selfie”) via a voice command. EX1001, 9:19-41. According to the '757 patent, unlike the general photographing process, where it is preferable that there be no delay between starting the process and obtaining the image, “in a case where the user himself is photographed (self-image photographing) using a camera that starts a recording process using a voice input as a trigger, such a delay time is not preferable since the user is photographed with his mouth in a state immediately after the utterance of a command voice in

that case.” EX1001, 9:23-33. According to the ’757 patent, “to avoid this, ... a predetermined delay time until the start of a recording process after the input of a command voice is provided.” EX1001, 9:33-35.

35. The purported “distinctive feature” of the ’757 is the use of different delays for the front and rear cameras. As shown in FIG. 9, the ’757 patent suggests using one delay (T_a) (outlined in red) when using the out (i.e., rear) camera and a separate, longer delay (T_b) (outlined in blue) when using the in (i.e., front) camera (e.g., when taking a selfie). EX1001, 9:56-10:6. The ’757 patent refers to these delays as “standby” times. EX1001, 9:56-10:6.

FIG. 9



36. As I discuss below in more detail, it is my opinion that this purportedly “distinctive feature” of the ’757 patent (and the problem it was designed to solve) was not novel at the time and was well known in the art prior to priority date of the ’757 patent.

B. Prosecution History and Priority Date

37. The '757 patent claims priority to U.S. Application no. 16/686,467 (the "'467 application"), which was filed on September 12, 2013. EX1001 (22), (63). For the purposes of this IPR only, Petitioners use a priority date of September 12, 2013 when evaluating what is prior art to the '757 patent.

38. During prosecution of the '467 application, the examiner rejected all claims over the combination of Desai and Konicek (mistakenly identified in the office action as Rees). EX1002, 84 (2/3/2020 Office Action at 5). The applicant responded by amending the claims to require that the standby time used for acquiring an image with the first camera is longer than the standby time used for acquiring an image with the second camera and arguing that Konicek did not disclose these limitations because Konicek's conventional camera device had only a single camera and whether or not a predetermined delay was executed depended on whether a front microphone or a rear microphone detected the voice command. EX1002, 68-69 (7/30/2020 response at 9-10).

39. The examiner maintained the rejection, pointing out that Desai had two cameras and therefore the combination of Desai and Konicek rendered the pending claims obvious. EX1002, 45-46 (10/30/2020 Final Office Action at 2-3). The applicant responded by amending claim 1 as shown below and a similar amendment to claim 11 (EX1002, 34 (4/14/2021 Amendment at 3)):

~~PTOL-85)~~ control such that a first standby time from a recognition of the first instruction to a start of the recording of the first image signal acquired by the first camera is longer than a second standby time from a recognition of the second instruction to a start of the recording of the second image signal acquired by the second camera control such that a first standby time of a case where the first camera is enabled and the second camera is disabled is longer than a second standby time of a case where the second camera is enabled and the first camera is disabled,
wherein the first standby time is a time from a recognition of the first instruction to a start of the recording of the first image signal acquired by the first camera, and the second standby time is a time from a recognition of the second instruction to a start of the recording of the second image signal acquired by the second camera.

40. The applicant also argued that Konicek did not disclose what kind of delay was used for front and back cameras because Konicek only had a single camera, and Desai also did not disclose that concept. EX1002, 41-42 (4/14/2021 Amendment at 10-11). The examiner allowed the application in response to these arguments. EX1002, 11 (9/3/2021 Notice of Allowability).

VIII. CLAIM CONSTRUCTION

41. In this section I list terms that require construction and I have applied those constructions in my subsequent analysis. For all other terms, I applied the plain and ordinary meaning that a POSITA would have for the terms.

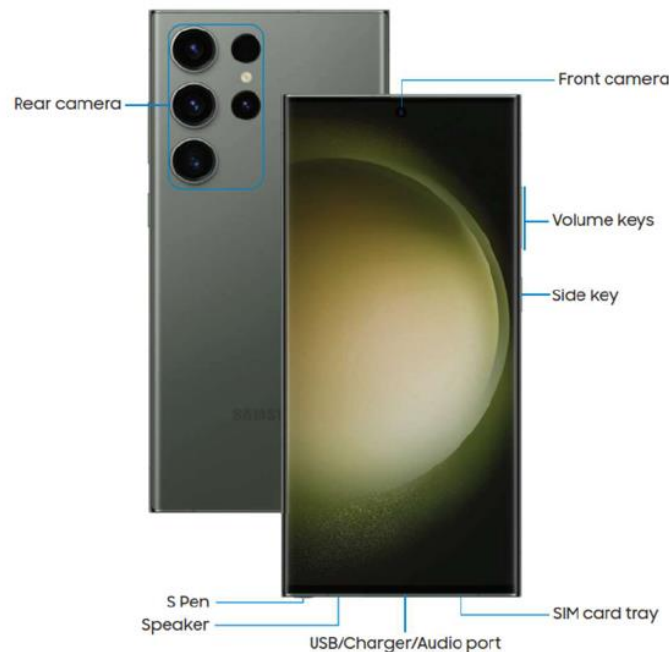
**B. “first camera arranged on a same side of the touch display” /
“first camera being arranged on the same face side of a touch
display” (claims 1, 11)**

42. Claim 1 recites a “first camera arranged on a same side of the touch display” and claim 11 similarly recites the “first camera being arranged on the same face side of a touch display.”

43. In the district court litigation between the same parties, PO apparently construes these terms as including a first/front camera that is “arranged on a same face (front face) [of the image recording device] as that of the display unit,” as discussed in the ’757 patent at 7:56-58. A similar disclosure can be found at EX1001, 2:55-57.

44. For example, as shown below, PO asserts that the Galaxy S23 Ultra infringes this limitation based on the following arrangement of components. EX1012, 64-66, 402-403. For example, PO asserts that “[f]or example, the Accused Samsung ’757 Products include a front facing camera that is on the same side as the front facing touch display screen.” EX1012, 65.

Galaxy S23 Ultra



45. I have adopted PO's apparent construction for the purposes of my analysis herein.

C. “second camera arranged on an opposite side of the touch display” / “second camera being arranged on an opposite side of the touch display” (claims 1, 11)

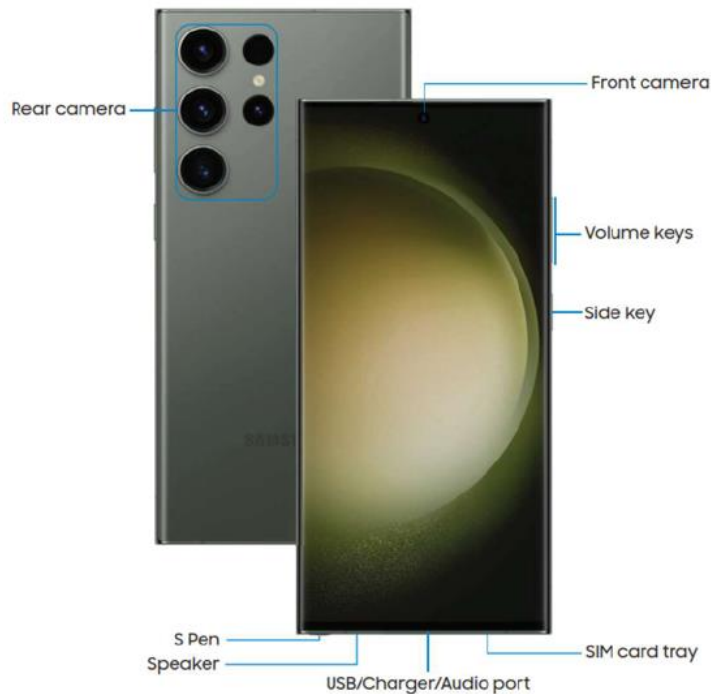
46. Claim 1 recites a “second camera arranged on an opposite side of the touch display” and claim 11 similarly recites the “second camera being arranged on an opposite side of the touch display.”

47. Similar to the “first camera” limitations discussed immediately above, PO apparently construes these terms as including a second/rear camera that is “arranged on a face (rear face) [of the image recording device] opposite to the

display unit” as discussed in the ’757 patent at 7:58-59. A similar disclosure can be found at EX1001, 2:58-59.

48. For example, as shown below, PO asserts that the Galaxy S23 Ultra infringes this limitation based on the following arrangement of components. EX1012, 81-83, 402-403. For example, PO asserts that “[f]or example, the Accused Samsung ’757 Products include one or more rear facing cameras located on the opposed side of the front facing touch display screen.” EX1012, 81.

Galaxy S23 Ultra



49. I have adopted PO’s construction for the purposes of my analysis herein.

IX. OVERVIEW OF THE PRIOR ART

A. Chinn (EX1004)

50. U.S. Patent Publication No. 2014/0247368 (“Chinn”) was filed on March 4, 2013, and published on September 4, 2014. I am informed that Chinn is prior art to the ’757 patent under AIA 35 U.S.C. § 102(a)(2).

51. Chinn discloses a camera device 100 comprising “a device activation button 101, touch screen display 105, front camera 110, ..., back camera 125, ..., microphone 150.” EX1004, ¶16. Chinn’s FIG. 1 is reproduced below:

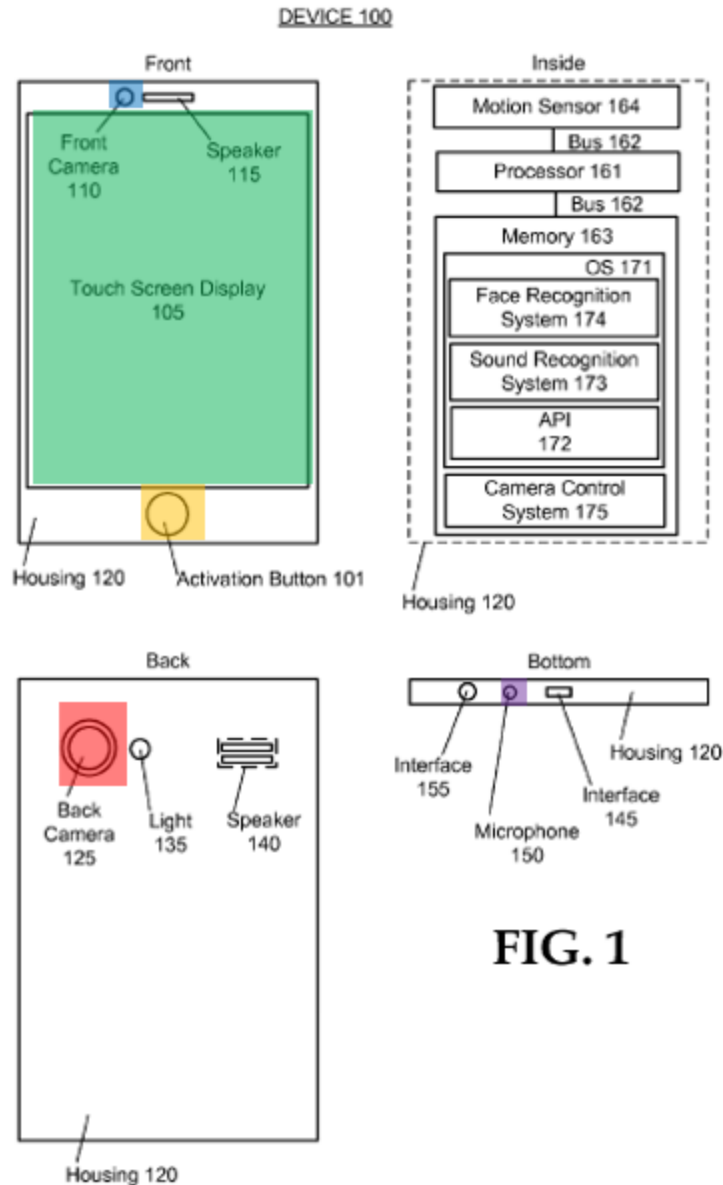


FIG. 1

52. Chinn discloses that “multiple camera activation controls may include a listening initiation control 231, a timer initiation control 232, and a camera activation control 233.” EX1004, ¶22. Chinn’s FIG. 2 is reproduced below:

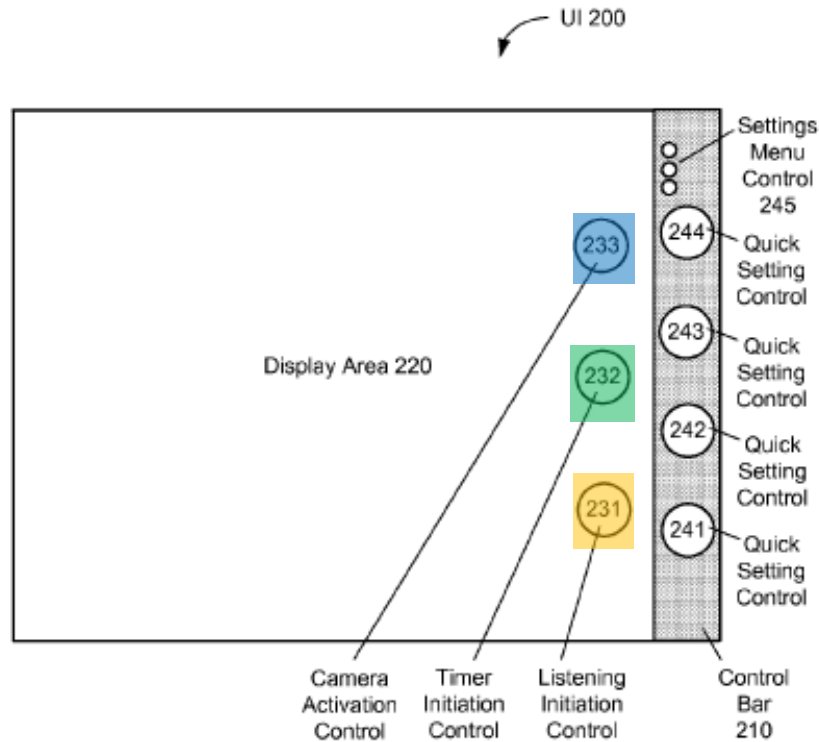


FIG. 2

53. As is discussed further with respect to Challenged Claim 1, Chinn discloses multiple photographic processes, including at least:

- voice activated photographic processes using the front and/or rear cameras, EX1004, ¶123 (“The camera control system 175 may be configured to activate the camera, which may be either or both of camera 110 and/or camera 125, to take a photograph or begin recording a video in response to the predetermined camera activation sound pattern.”); and

- shutter/non-voice activated photographic processes using the front and/or rear cameras. EX1004, ¶30 (“Camera activation control 233 may also be referred to herein as a shutter control... camera control system 175 may be configured to immediately activate the camera 125 in response to user selection of the camera activation control 233.”), where camera activation control 233 is a touch screen input as shown in Chinn’s FIG. 2.

B. Takahashi (EX1005)

54. Published JP Application JP2001305642A (“Takahashi”) was filed on April 25, 2000, and published on November 2, 2001. I am informed that Takahashi is prior art to the ’757 patent under AIA 35 U.S.C. §§ 102(a)(1) and (a)(2).

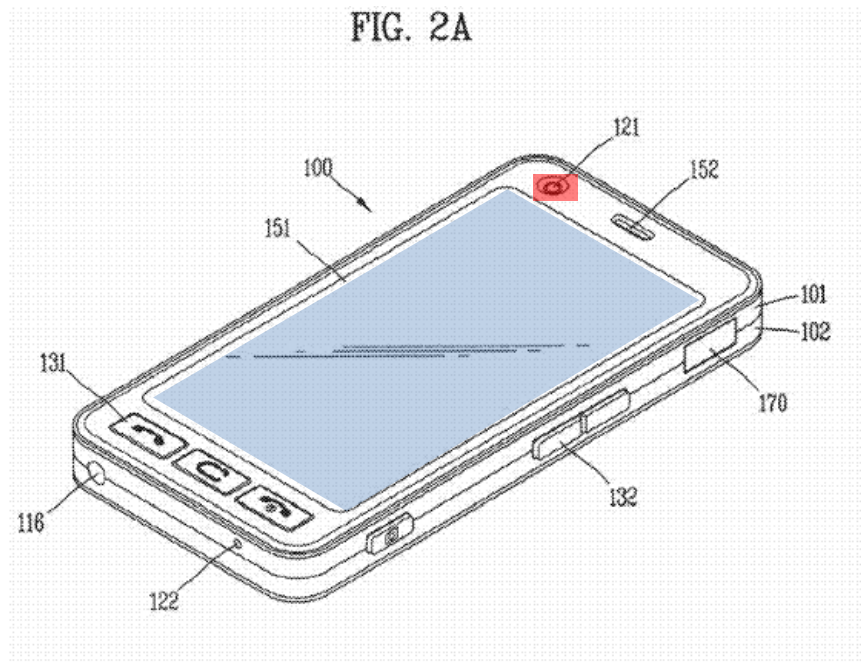
55. Takahashi is directed to solving the problem of “simply and reliably using voice audio input in cases where the photographer is the subject.” EX1005, Abstract, ¶9. Takahashi recognized that there were problems with voice activated selfies, years before the ’757 patent purportedly did and described the “problem: as follows: “even if the voice audio from the photography location is recognized by the camera, the shutter release operation would occur immediately, meaning the photographer would be photographed while speaking, making it impossible for him or her to be photographed with the desired facial expression or pose” EX1005, ¶8.

56. To overcome this known problem, Takahashi discloses a “photography standby state” for its voice-activated shooting mode, which is a delay that lets the photographer “adjust[] his or her facial expression from having spoken the voice audio to a state ready to be photographed and wait[] for the camera shutter to be released.” EX1005, ¶¶38-40. According to Takahashi, “[t]his makes it possible to be photographed accurately with the desired facial expression and while not in the middle of speaking.” EX1005, ¶41.

C. Kim (EX1008)

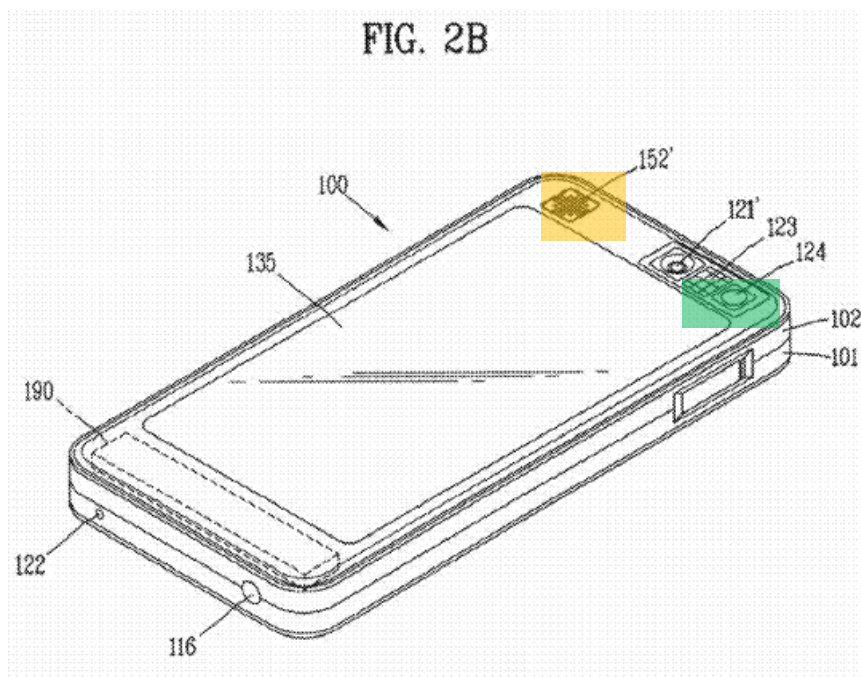
57. U.S. Patent Publication No. 2010/0137026 (“Kim”) was filed on April 9, 2009, and published on June 3, 2010. I am informed that Kim is prior art to the ’757 patent under AIA 35 U.S.C. §§ 102(a)(1) and 102(a)(2).

58. Kim discloses a mobile terminal 100 that includes a touch display 151 and a first camera 121 on a front case 101. EX1008, ¶91. Kim’s FIG. 2A is reproduced below and shows the touch display 151 and first camera 121:



59. Kim also discloses a camera 121' is provide in its rear case 102.

EX1008, ¶94. Kim's FIG. 2B is reproduced below and shows the camera 121':



60. Kim discloses different photographic processes involving front and rear cameras activated using the touch display area 151, voice recognition for

certain commands and functions and other manually activated commands, including video and image capture at different resolutions. EX1008, ¶95.

D. Yamamoto (EX1009)

61. U.S. Patent Publication No. 2010/0026815 (“Yamamoto”) was filed on July 24, 2009, and published on February 4, 2010. I am informed that Yamamoto is prior art to the ’757 patent under AIA 35 U.S.C. §§ 102(a)(1) and (a)(2).

62. Yamamoto discloses a “digital camera 200” providing multiple different photographic processes: a manually activated process using a “shutter button 201,” EX1009, ¶82 (“shutter button 201 is a shutter button used to issue a command for capturing an image”), and one or more voice activated processes enabled via “speech shutter on-off switch 202.” EX1009, ¶83 (“speech shutter on-off switch 202 is a switch that performs switching as to whether a function for executing an image capturing operation in accordance with a speech command is used.”).

63. Yamamoto discloses a 0.5 second delay before taking a voice activated image. EX1009, ¶249. In one example, Yamamoto discloses that when the voice command “Say Cheese” is uttered by the user, “an image is captured after a certain period of time (for example, 0.5 seconds) passes after ... ‘Say Cheese’ or the like has [been] uttered.” EX1009, ¶249.

E. EX-V7 (EX1014)

64. The EX-V7 was a product offered for sale and sold throughout the world by at least May 8, 2007 as indicated by the reviews in EX1010 at 5-9 and 10-12. The EX-V7 Users Guide (EX1014) was publicly available no later than May 29, 2008 as indicated by the listing of manuals at EX1010, 14. I also note that EX-V7 includes exemplary 2007 dates, which is a further indication that EX-V7 was publicly available at least as early as May 29, 2008. EX1014, 137 and 199. A POSITA interested in camera technology, including how to control an image sensor in an image capture device such as a camera and/or mobile phone including a camera, would have known to review manuals for commercially available digital cameras, and would further have known that such manuals would have been available on websites for well-known digital camera manufactures such as Casio, Fujifilm, Nikon, Canon, Panasonic, Samsung, Kodak, and Sony. Indeed, in my prior art patent discussed above, a commercially available Casio camera in the EX family (the Casio EX-P505) is discussed, and documents for other commercially available Fuji FinePix Z33WP and Canon Powershot SX210 IS cameras, including a user manual available on the Fujifilms' U.S. website, are cited. EX1007, at page 2 and col. 2, lines 7-9. I am informed that EX-V7 is prior art to the '757 patent under AIA 35 U.S.C. § 102(a)(1) in view of the foregoing.

65. EX-V7 discloses a 2-second self-timer “to prevent blur due to hand movement.” EX1014, p. 77:

 2 sec	2-second self-timer • When shooting under conditions that slow down the shutter speed, you can use this setting to prevent blur due to hand movement.
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F. Thorn (EX1011)

66. U.S. Patent Publication No. 2009/0167881 (“Thorn”) was filed on January 2, 2008, and published on July 2, 2009. I am informed that Thorn is prior art to the ’757 patent under AIA 35 U.S.C. §§ 102(a)(1) and (a)(2).

67. Thorn discloses waiting a predetermined amount of time (e.g., a length between about 100 milliseconds and about 200 milliseconds) if a subject blinks when an image capture command is detected. EX1011, ¶58-60.

X. GROUND 1: THE COMBINATION OF CHINN, TAKAHASHI AND EX-V7 RENDERS CHALLENGED CLAIMS 1-8 AND 10-11 OBVIOUS

A. Motivation to Combine Chinn with Takahashi and EX-V7

68. In my opinion, it would have been obvious to a POSITA to combine Chinn with Takahashi and EX-V7 by configuring a mobile phone with front and rear cameras as taught by Chinn to respond to a voice command to capture an image using the front camera after a first standby time as taught by Chinn and Takahashi, and to respond to a touch command to capture an image using the rear

camera as taught by Chinn, with the first standby time being longer than a second standby time as taught by Chinn and EX-V7. A POSITA, in my opinion, would have been motivated to, and capable of, doing so.

69. Chinn and Takahashi both relate to image capture devices (imaging devices) with manual and voice activated photographic processes. EX1004, ¶¶4, 23, 30; EX1005, ¶17. EX-V7 also relates to an imaging device, and allows manual activation of a camera. EX1014, pp. 15-17. Chinn, Takahashi and EX-V7 thus have manual activation technology (e.g., Chinn's touch display activation and Takahashi and EX-V7's shutter-controlled activation), and/or voice activation technology (microphone and processing circuitry/software) already installed, making their devices particularly suitable for each other. EX1004, ¶¶4, 16, 22, 23; EX1005, ¶18; EX1014, pp. 15-17. Moreover, both Chinn and Takahashi disclose delayed image capture after a voice command is given. EX1004, ¶¶2, 25, and 51 (use of "pre-amble" before image taking in response to voice command); EX1005, ¶¶39, 40 (use of a standby state before image taking in response to voice command). A POSITA therefore, in my opinion, would have been motivated to look at Takahashi and EX-V7 to improve Chinn, and vice-versa.

70. In my opinion, a POSITA would have understood that having a delay between the utterance of the voice command and the taking of the image would allow a user time to pose between speaking the command and taking the image.

This concept is disclosed one of my prior art patents, which discloses voice activation for an image capture when taking a selfie as shown in Fig. 3 as shown below and which further discloses that, in some embodiments, a “time delay is provided between when the user initiates the image capture event and when the digital image is captured, in order to reduce camera vibrations or allow the photographer time to pose.” EX1007, 11:16-31.

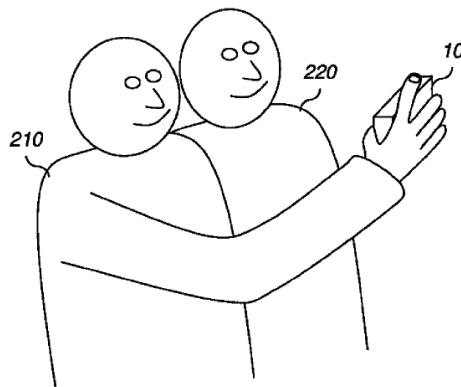


FIG. 3

71. Indeed, Takahashi explained the reason for such a delay in even greater detail years before the '757 patent. Takahashi explicitly states that a delay is necessary for ensuring that a “desired facial expression and while not in the middle of speaking” can be accurately captured during a selfie photographic process. EX1005, ¶41.

72. Takahashi is directed to solving the problem of “simply and reliably using voice audio input in cases where the photographer is the subject.” EX1005,

Abstract, ¶9. Takahashi discloses that “even if the voice audio from the photography location is recognized by the camera, the shutter release operation would occur immediately, meaning the photographer would be photographed while speaking, making it impossible for him or her to be photographed with the desired facial expression or pose” EX1005, ¶8. Takahashi explicitly states that this “is a problem.” EX1005, ¶8.

73. To overcome this “problem,” Takahashi introduces a delay that is a time from a recognition of a voice command to the start of the image capture. Takahashi discloses that in voice shooting mode, the user may utter a voice command such as “take a picture.” EX1005, ¶38. If the voice command is recognized by the camera’s control circuit, Takahashi discloses that a “timer circuit 102” is activated. EX1005, ¶39. As a result, “timer circuit 102 then begins measuring a prescribed set time or an adjusted set time, and once that amount of time has elapsed, sends the result to the main control circuit 126.” EX1005, ¶39. “While this is happening, the camera 10 is standing by to take the photograph.” EX1005, ¶39. During this time, the photographer “adjusts his or her facial expression from having spoken the voice audio to a state ready to be photographed and waits for the camera shutter to be released.” EX1005, ¶39. The main “control circuit 126 receives the time measurement result from the timer circuit 102, cancels the *photography standby state*, and launches the shutter drive circuit 120 ... to

drive the shutter release, at which point an image of the subject is captured.”

EX1005, ¶40. According to Takahashi, “[r]ecognition of the second voice audio pattern launches the timer circuit 102 and releases the shutter after a prescribed amount of time has elapsed, giving the photographer time to adjust his or her facial expression and pose during that time. This makes it possible to be photographed accurately with the desired facial expression and while not in the middle of speaking.” EX1005, ¶41.

74. Likewise, Chinn, Takahashi and EX-V7 are concerned with the benefits of a delay between manual shutter activation and image capture. For example, Chinn recognizes the use of 2-second timer to delay manual activation of its rear camera, EX1004, ¶48, and EX-V7 explicitly discloses a 2-second self-timer “to prevent blur due to hand movement.” EX1014, p. 77. My above-referenced patent similarly discloses the concept of a delay to reduce camera vibrations. EX1007, 11:16-31. Thus, in my opinion, EX-V7 provides the motivation to implement such a delay in the Chinn-Takahashi device. The 2-second delay is a time from a recognition of the manual activation instruction to the start of the image capture.

75. Chinn discloses a two-camera system with front and rear cameras, while Takahashi and EX-V7 disclose a one-camera system. EX1004, FIG. 1; EX1005, FIG. 1; EX1014, pp. 15-17. In the Chinn device, the front camera

typically would be used for a selfie to allow the user to see the image to be captured on the front display. In my opinion, a POSITA would have found it obvious, and would have been motivated, to configure the length of the standby time for a front camera selfie in such a device to be longer than a delay for a rear-camera, touch-initiated photograph. Takahashi teaches that a delay is required due to facial movement, and it is common sense that this delay would be longer than that required for a standard touch initiated photograph where it is desired to capture the moment and scene that is presently being viewed. Chinn discloses embodiments in which the camera control system 175 is configured for a 10 second standby time after detecting a “set time: 10 seconds” voice command. EX1004, ¶27. Chinn also discloses several shorter standby times for a rear camera in response to a touch activation of a control button 233, including 0, 2, 3 and 5 second standby times.” EX1004, ¶¶30, 39, 48 and Figs. 2-4. EX-V7 also discloses a 2-second self-timer “to prevent blur due to hand movement.” EX1014, p. 77. A POSITA, in my opinion, would have found it obvious to select a 10 second standby time for a front-camera 110, voice-activated selfie (to give the user time after speaking the voice command to obtain a desired facial expression) and, e.g., a 0 or 2 second standby time for a rear-camera 125, touch-activated photo (to prevent blur due to hand movement) in light of these disclosures. Additional motivation for a non-zero standby time for a touch-activated rear-camera photo is

that a touch activation can cause the camera/smartphone to shake transiently, and distort images as taught e.g., by Sarin, EX1013 at ¶1, and adding a standby time of, e.g., 2 seconds as taught by Chinn and EX-V7, gives a user holding the phone time to suppress the transitory shaking caused by the touch activation prior to image capture. The two second time period for stabilization in both the Chinn and EX-V7 makes sense because, while a touchscreen activation in Chinn's device would typically require less force than depressing the shutter button in the EX-V7, a consumer digital camera such as the EX-V7 is typically firmly held with two hands whereas Chinn's mobile device is typically firmly held with a single hand and loosely held by the other hand in order to touch the designated area on the touch screen when taking a photograph.

76. In my opinion, adding such standby times would simply involve applying a known technique (i.e., delay timer and shooting standby state as taught by Takahashi and EX-V7) to a known device ready for improvement (Chinn's two camera device) to yield predictable results (a selfie with desired facial features and photographs without blurred images). It is my understanding that these are appropriate rationales for this combination.

77. In addition, it is my opinion that a POSITA would have had a reasonable expectation of success in combining Chinn, Takahashi and EX-V7 as discussed above as Chinn already had the technology to do so (e.g., voice

activation, selection of the front camera, delay timer), and these modifications involved only routine skill.

B. Claim 1

1. [1pre] “An image recording device configured to execute a plurality of different photographing processes, comprising:”

78. To the extent the preamble is limiting, Chinn discloses it. Chinn discloses different photographing processes in the sense that different cameras (front/rear) are used to take photographs, and different methods (voice/touch) are used to initiate image capture. Specifically, Chinn discloses a camera device 100 comprising “a device activation button 101, touch screen display 105, front camera 110, ..., back camera 125, ..., microphone 150.” EX1004, ¶16; FIG. 1.

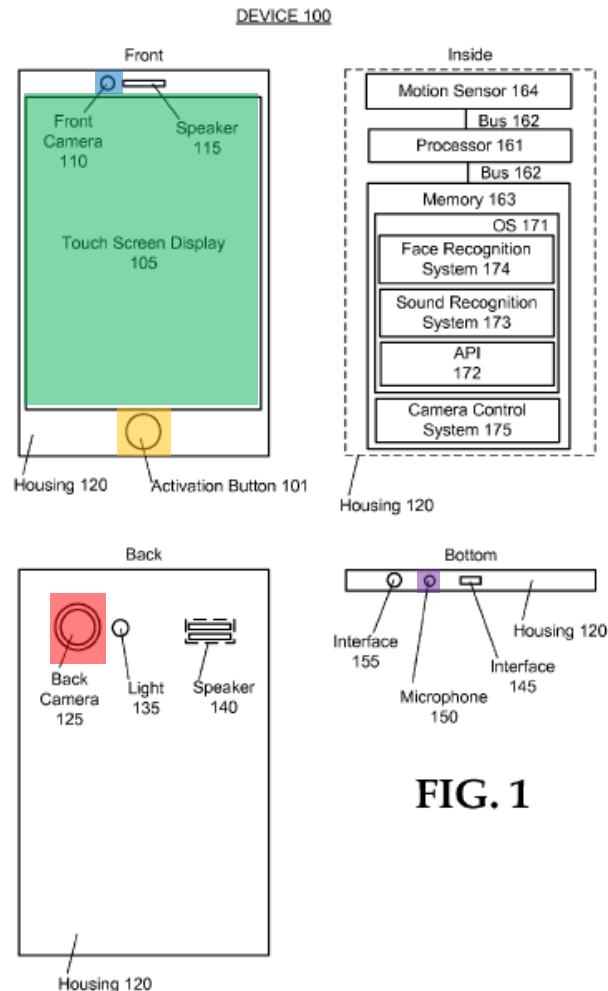


FIG. 1

EX1004, FIG. 1.

79. An “Operating System (OS) 171 and camera control system 175” are stored in a memory 163 of the device 100. EX1004, ¶16. The “OS 171 includes API 172, [and] a sound recognition system 173.” EX1004, ¶16. “The camera control system may be configured to provide any of a variety of voice-interactive features, such as a voice-activated shutter, ... and/or a variety of other features, including both voice-interactive as well as other, non voice-interactive features.” EX1004, ¶15.

80. As shown below, “[c]amera control system 175 may be configured to present UI 200 on a display such as touch screen display 105. Camera control system 175 may be configured [to] receive commands from a user via UI 200, and to execute received commands with the device 100.” EX1004, ¶22. Chinn discloses that “multiple camera activation controls may include a listening initiation control 231, a timer initiation control 232, and a camera activation control 233.” EX1004, ¶22.

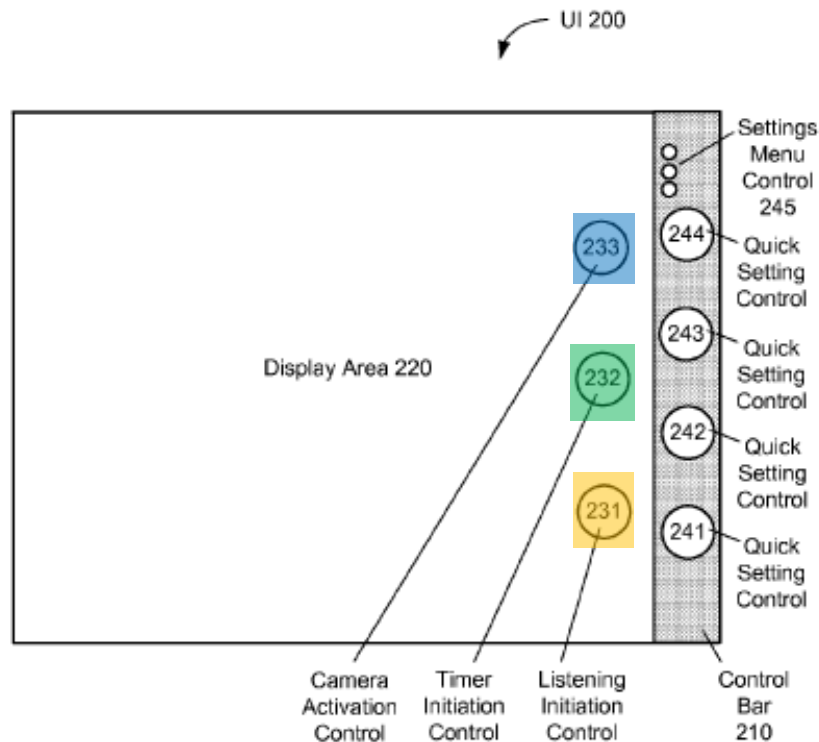


FIG. 2

EX1004, FIG. 2.

81. Different photographic processes disclosed by Chinn include at least:

- voice activated photographic processes using the front and/or rear cameras, EX1004, ¶23 (“The camera control system 175 may be configured to activate the camera, which may be either or both of camera 110 and/or camera 125, to take a photograph or begin recording a video in response to the predetermined camera activation sound pattern.”); and
- shutter/non-voice activated photographic processes using the front and/or rear cameras. EX1004, ¶30 (“Camera activation control 233 may also be referred to herein as a shutter control... camera control system 175 may be configured to immediately activate the camera 125 in response to user selection of the camera activation control 233.”), where camera activation control 233 is a touch screen input as shown in Chinn’s FIG. 2.

2. [1a] “an audio input interface configured to receive a command voice;”

82. Chinn discloses this limitation or renders it obvious in view of Takahashi. For example, Chinn discloses a camera device 100 comprising a “microphone 150” and “a sound recognition system 173.” EX1004, ¶16; FIG. 1.

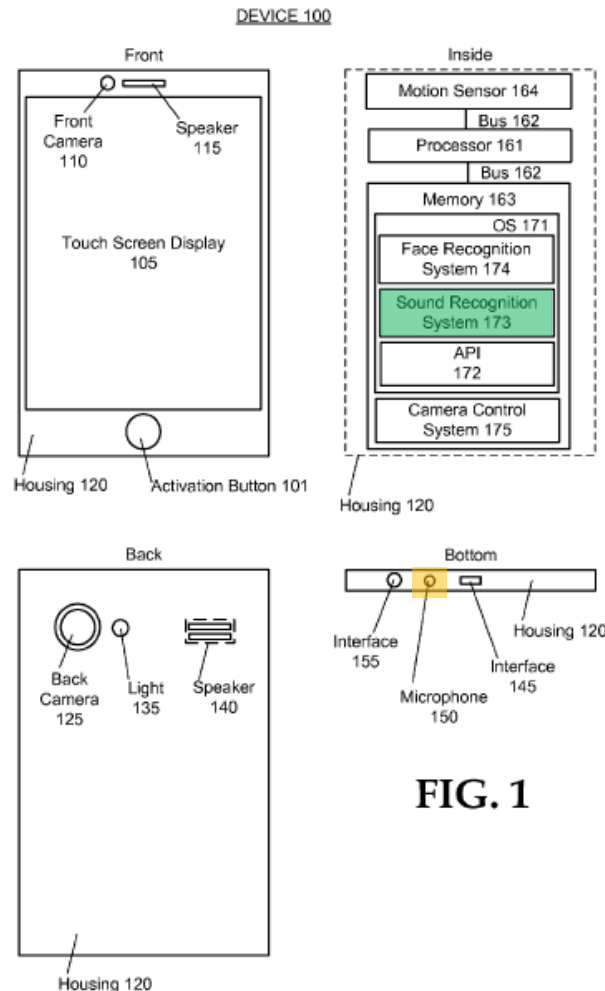


FIG. 1

EX1004, FIG. 1.

83. The microphone 150 is used to receive, and the sound recognition system 173 is configured to detect, a command voice such as e.g., “set timer”:

The camera control system 175 may be configured to initiate listening by device 100 to sound data received via the microphone 150 in response to user activation of the listening initiation control 231, and the sound recognition system 173 may be configured to recognize a predetermined camera activation sound pattern in the received sound data. The camera control system 175 may be configured to activate

the camera, which may be either or both of camera 110 and/or camera 125, to take a photograph or begin recording a video in response to the predetermined camera activation sound pattern. ... the predetermined camera activation sound pattern may comprise three or more syllables, such as the words “ready click”. The camera control system 175 may be configured to activate the camera 125 to take a photograph or begin recording a video in response to the words “ready click”.

EX1004, ¶23.

In some embodiments, camera control system 175 may be configured to receive, recognize, and respond to additional voice commands. For example, after user activation of the listening initiation control 231, camera control system 175 may respond to the predetermined camera activation sound pattern by activating the camera 125 as described above, and camera control system 175 may respond to any of a variety of other voice commands, *such as a “set timer” command*, a “set flash” command, a “set focus” command, a “set ISO or “set speed” command, and/or a “set scene” command.

EX1004, ¶25. “For example, in response to a “set timer: 10 seconds command, camera control 175 may output an audible notification by speaker 140 such as ‘timer set’, and camera control system 175 may then proceed to output an audible countdown to camera activation.” EX1004, ¶27.

84. To the extent PO argues that that “command voice” is associated with the specific voice of a user, it is my opinion that Takahashi discloses a registration process to obtain the speech pattern of a particular user. Takahashi discloses a

“voice recognition pattern registration circuit 106 [which] is a storage circuit which stores voice recognition patterns input from the voice recognition input circuit 122 when the mode dial 20 has been switched to the position indicating voice audio registration mode.” EX1005, ¶22. The voice pattern registration circuit 106 has a storage element. EX1005, ¶22. According to Takahashi, “a second voice audio pattern for taking a photograph, e.g., a voice audio pattern of the photographer saying ‘take the picture’ or the like, are registered ahead of time in the storage element as instruction patterns in voice audio photography mode.” EX1005, ¶22.

3. [1b] “a touch display arranged on a first surface of the image recording device and configured to display an image signal and receive a touch operation instruction;”

85. Chinn discloses this limitation. Chinn discloses a camera device 100 comprising a “touch screen display 105.” EX1004, ¶16; FIG. 1. As shown below, the touch screen display 105 is arranged on a first (i.e., front) surface of the device 100:

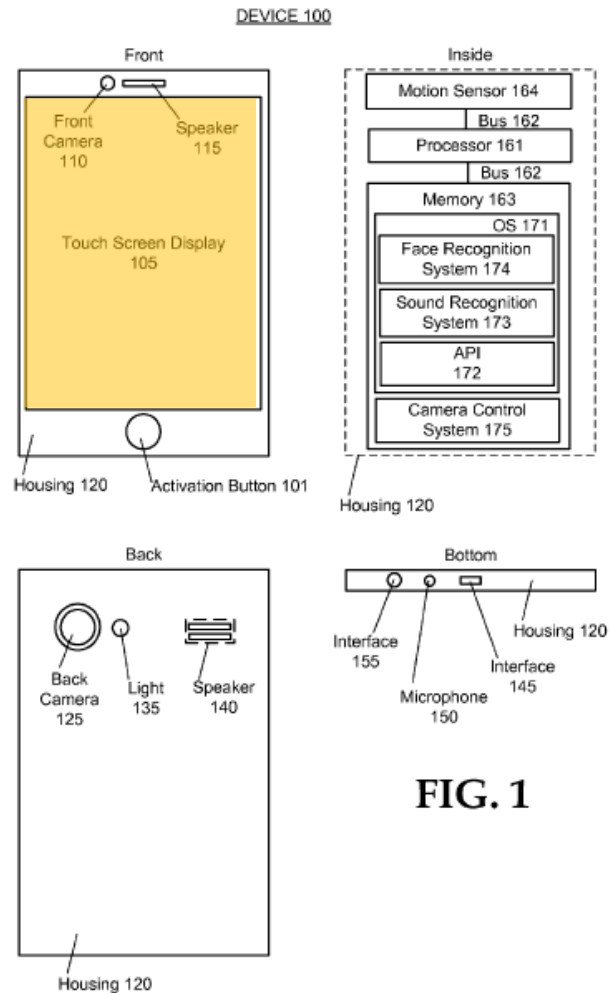


FIG. 1

EX1004, FIG. 1.

86. According to Chinn, UI 200 is displayed on the touch screen display 105. EX1004, ¶22; FIG. 2.

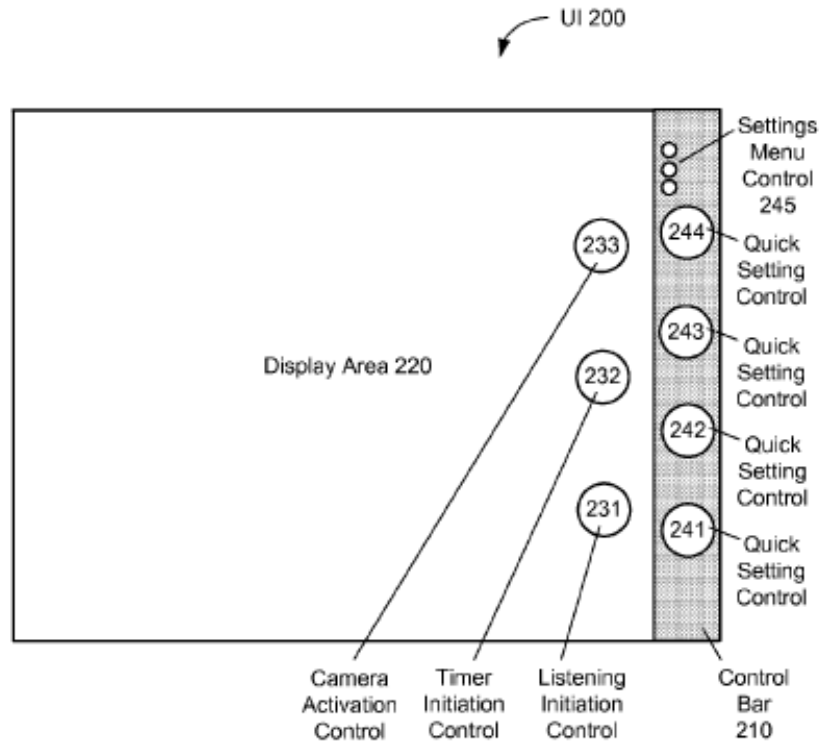


FIG. 2

EX1004, FIG. 2.

87. The “UI 200 comprises a display area 220 that “may be configured to display an image from a camera.” EX1004, ¶22. Moreover, “[c]amera control system 175 may be configured receive commands from a user via UI 200, and to execute received commands with the device 100.” EX1004, ¶22. Those commands include touch commands associated with the touch-sensitive buttons 231-233 and 241-245 shown in FIG. 2.

4. [1c] “a first camera arranged on a same side of the touch display and configured to photograph an object and acquire a first image signal;”

88. Chinn discloses or renders obvious this limitation. Chinn discloses a camera device 100 comprising a “front camera 110.” EX1004, ¶16; FIG. 1. As shown below, the front camera 110 is arranged on the same (i.e., front) side of the device 100 having the touch screen display 105:

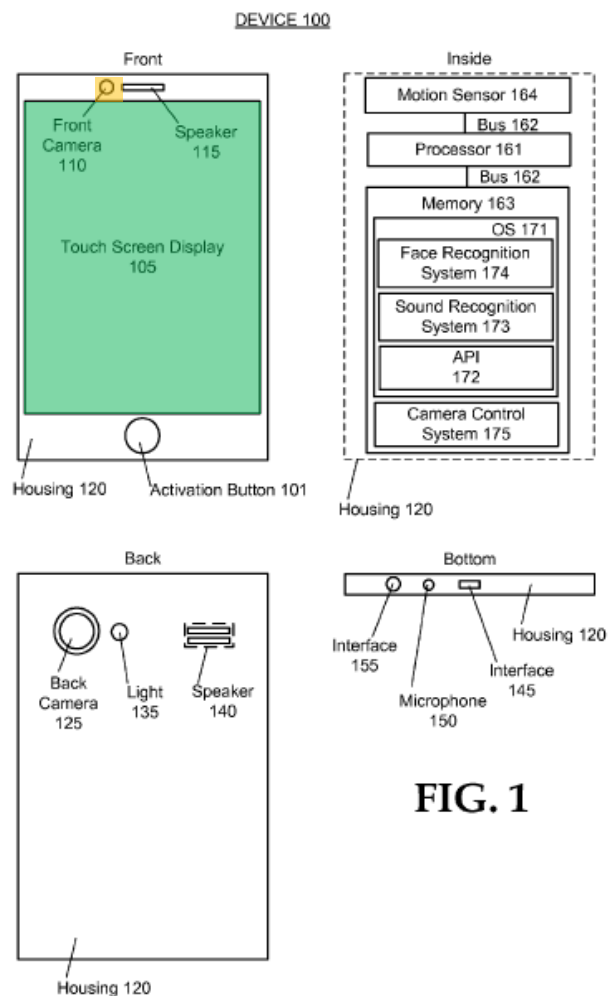


FIG. 1

EX1004, FIG. 1.

89. According to Chinn, “[t]he camera control system 175 may be configured to activate the camera,” including camera 110, “to take a photograph or begin recording a video in response to the predetermined camera activation sound pattern.” EX1004, ¶23. In my opinion, a POSITA would have understood that the taking of a photograph or recording of a video by the front camera 110 (i.e., first camera) would include “acquir[ing] a first image signal” because a digital camera uses a signal to transmit image information, whether to a screen or a storage device. The image is comprised of pixels, and the image sensor in the camera converts incident light into electrical charge to produce a voltage that corresponds the amount of incident light on that pixel. Each pixel’s voltage is then readout and converted to a digital signal by an analog-to-digital converter. These digital signals are then transferred to a storage device and/or an interface to display the image on a screen.

5. [1d] “a second camera arranged on an opposite side of the touch display and configured to photograph an object and acquire a second image signal;”

90. Chinn discloses or renders obvious this limitation. Chinn discloses a camera device 100 comprising a “back camera 125.” EX1004, ¶16; FIG. 1. As shown below, the back camera 125 is arranged on an opposite side (i.e., back) of the device 100 side (i.e., front) that has the touch screen display 105:

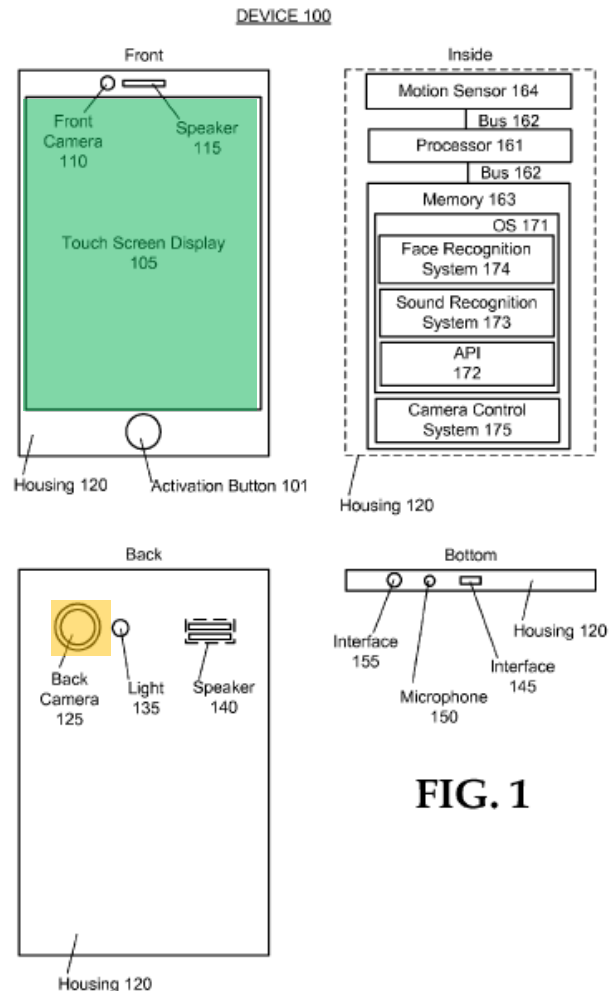


FIG. 1

EX1004, FIG. 1.

91. According to Chinn, “camera control system 175 may be configured to immediately activate the camera 125 in response to user selection of the camera activation control 233.” EX1004, ¶30.

92. A POSITA, in my opinion, would have understood that the taking of a photograph or recording of a video by the back camera 125 (i.e., second camera) would “acquire a second image signal.” The image is comprised of pixels, and the image sensor in the camera converts incident light into electrical charge to produce a

voltage that corresponds the amount of incident light on that pixel. Each pixel's voltage is then read out and converted to a digital signal by an analog-to-digital converter. These digital signals are then transferred to a storage device and/or an interface to display the image on a screen.

6. [1e] “a recorder configured to record at least one of the first image signal or the second image signal on a storage; and”

93. Chinn discloses or renders obvious this limitation. Chinn discloses that “[t]he camera control system 175 may be configured to activate the camera, which may be either or both of camera 110 and/or camera 125, to take a photograph or begin recording a video in response to the predetermined camera activation sound pattern.” EX1004, ¶23. Moreover, Chinn discloses that “camera control system 175 may be configured to immediately activate the camera 125 in response to user selection of the camera activation control 233.” EX1004, ¶30.

94. The portion of the camera control system 175 responsible for taking a photograph and/or recording a video is the claimed “recorder.” Chinn discloses that the “display area 220 may be configured to display an image from a camera, e.g., camera 125.” EX1004, ¶22. Moreover, Chinn discloses that “[i]mage data from display area 220 may comprise, e.g., image data from a portion of memory 163, or a dedicated graphics memory, which may be used for display area 220.” EX1004, ¶66. Memory 163 or the graphics memory are the claimed storage. In my opinion, a POSITA would have understood that the display of a photograph in the

display area 220 requires storing an image signal from the camera in the graphics memory, and that recording of a photograph or a video would require storing image signals from the camera in use (i.e., either the claimed first image signal or second image signal) in storage (e.g., memory 163 or graphics memory).

7. [1f] “a controller,”

95. Chinn discloses, or when modified by Takahashi and EX-V7, renders obvious “a controller” adapted to perform limitations [1g]-[1j] discussed further below. Specifically, in my opinion, Chinn discloses a camera control system 175, which is a controller adapted to perform limitations [1g]-[1j] discussed further below. To the extent that a “controller” is construed as meaning a physical device such as a processor, Chinn discloses that the camera control system 175 may be an app installed on a smart phone (EX1004, ¶16), and a POSITA would have understood that such a smart phone must have a processor to execute such an “app” (i.e., software application).

8. [1g] “wherein the controller is configured to: control such that, when the audio input interface receives the command voice giving a first instruction to start a recording of an image signal, the recorder starts a recording of the first image signal acquired by the first camera on the storage in response to the first instruction,”

96. Chinn discloses or renders obvious this limitation. Chinn discloses the camera control system 175 (i.e., controller) is configured to respond to a voice command (e.g., “set timer: 10 seconds” or “ready click”) received by the

microphone 150 and detected by the sound recognition system 173 to activate the front camera 110 “to take a photograph or begin recording a video in response to the predetermined camera activation sound pattern”. EX1004, ¶23.¹ Front camera 110 is the claimed “first camera.” See limitation [1c]. The portion of the camera control system 175 responsible for taking a photograph and/or recording a video is the claimed “recorder.” See limitation [1e]. In my opinion, a POSITA would have understood that the taking of a photograph or recording of a video with the front camera 110 (i.e., first camera) in response to a “set timer: 10 seconds” voice command (i.e., the command voice giving a first instruction) would require storing an image signal (i.e., the claimed first image signal) in storage (e.g., memory 163 or graphics memory).

9. **[1h] “control such that, when the touch display receives the touch operation instruction giving a second instruction to start a recording of an image signal, the recorder starts a recording of the second image signal acquired by the second**

¹ ¶23 expressly states that the camera control system 125 can be configured such that either or both of front camera 110 and/or rear camera 125 take a photograph or record a video in response to a voice command, and ¶32 further explains how a user can select the front and/or rear cameras via the camera selection control 242 shown in Fig. 2. In my opinion, a POSITA would understand from these disclosures that the camera selected via camera selection control 242 by the user will respond to the voice command in some embodiments.

**camera on the storage in response to the second instruction,
and”**

97. Chinn discloses or renders obvious this limitation. Chinn discloses that the “camera control system 175 may be configured to present UI 200 on a display such as touch screen display 105, ... receive commands from a user via UI 200, and to execute received commands with the device 100.” EX1004, ¶22. A portion of the UI 200 is configured to display “a camera activation control 233.” EX1004, ¶22; FIG. 2.

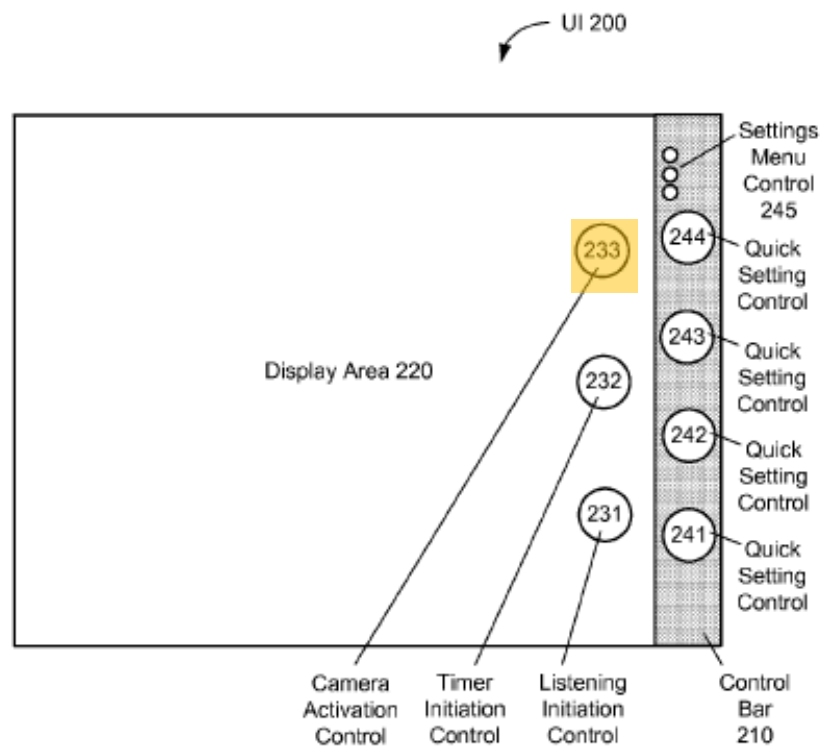


FIG. 2

98. “Camera activation control 233” is a “shutter control.” EX1004, ¶30. According to Chinn, “camera control system 175 may be configured to

immediately activate the rear camera 125 in response to user selection of the camera activation control 233.” EX1004, ¶30. The activated rear/back camera 125 is the claimed “second camera.” See limitation [1d]. The portion of the camera control system 175 responsible for taking a photograph and/or recording a video is the claimed “recorder.” See limitation [1e]. In my opinion, a POSITA would have understood that the taking of a photograph or recording of a video with the rear/back camera 125 (i.e., second camera) in response to the user selection of the camera activation control 233 (i.e., the touch operation instruction giving the second instruction) would require storing an image signal (i.e., the claimed second image signal) in storage (e.g., memory 163 or graphics memory).

10. [1i] “control such that a first standby time of a case where the first camera is enabled and the second camera is disabled is longer than a second standby time of a case where the second camera is enabled and the first camera is disabled,”

99. The Chinn-Takahashi-EX-V7 combination renders obvious this limitation for the following reasons.

Enabled/Disabled First/Second Camera

100. Chinn discloses or renders obvious activating the front camera 110 (i.e., first camera) to output image signals when a voice command is received and the front camera is selected via, e.g., via the camera selection control 242. See limitation [1g]. A POSITA, in my opinion, would have understood that the need to

activate the front camera 110 means that it was previously disabled. It is also my opinion that a POSITA would have understood that because only the front camera 110 is activated, the back camera 125 (i.e., second camera) would remain disabled. To the extent not expressly disclosed in Chinn, it is my opinion that a POSITA would have found it obvious to configure Chinn's camera control system 175 to keep rear camera 125 disabled while capturing an image using the front camera 110 and vice-versa. Given that a camera module is relatively high power consumption component in a mobile device, at least one significant benefit of doing so would be to reduce power consumption and increase battery life.

101. Likewise, Chinn discloses activating the back camera 125 (i.e., second camera) in response to the user selection of the camera activation control 233 on the touch panel 105/UI 200 when the back camera is selected via the camera selection control 242. *See* limitation [1h]. In my opinion, a POSITA would have understood that the need to activate the back camera 125 means that it was previously disabled. It is also my opinion that a POSITA would have understood or at least found obvious that because only the back camera 125 is activated, the front camera 110 (i.e., first camera) remains disabled. Given that a camera module is relatively high power consumption component in a mobile device, at least one significant benefit of doing so would be to reduce power consumption and increase battery life.

First Standby Time > Second Standby Time

102. For the reasons discussed above in Section X.A, a POSITA would have found it obvious to configure the camera control system 175 in the Chinn-Takahashi-EX-V7 combination for a 10 second standby time after detecting a “set timer: 10 seconds” voice command to capture selfie using the front camera, and for a 2 second standby time after detecting a touch command via camera activation control 233 to capture an image using the rear camera when the rear camera has been selected via control 242. Thus, the Chinn-Takahashi-EX-V7 combination renders obvious a “first standby time ... where the first camera is enabled and the second camera is disabled [that] is longer than a second standby time ... where the second camera is enabled and the first camera is disabled.”

11. [1j] **“wherein the first standby time is a time from a recognition of the first instruction to a start of the recording of the first image signal acquired by the first camera, and the second standby time is a time from a recognition of the second instruction to a start of the recording of the second image signal acquired by the second camera.”**

103. The Chinn-Takahashi-EX-V7 combination renders obvious that “the first standby time is a time from a recognition of the first instruction to a start of the recording of the first image signal acquired by the first camera, and the second standby time is a time from a recognition of the second instruction to a start of the recording of the second image signal acquired by the second camera” for at least the reasons set forth above for limitation [1i]. See above §§X.B.10, X.A.

C. Claim 2 “The image recording device according to claim 1, wherein the first camera is enabled in accordance with the command voice.”

104. The Chinn-Takahashi-EX-V7 combination renders obvious the image recording device according to claim 1. *See above §X.B.* Moreover, Chinn discloses this limitation. Chinn discloses the camera control system 175 (i.e., controller) is configured to respond to a voice command (e.g., “set timer: 10 seconds”) received by the microphone 150 and detected by the sound recognition system 173 “to activate the camera,” which may be the front camera 110 “to take a photograph or begin recording a video in response to the predetermined camera activation sound pattern.” EX1004, ¶¶23, 27. Front camera 110 is the claimed “first camera.” *See limitation [1c]; see also §X.B.10.*

D. Claim 3 “The image recording device according to claim 1, wherein the first standby time is settable or selectable by a user.”

105. The Chinn-Takahashi-EX-V7 combination renders obvious the image recording device according to claim 1. *See above §X.B.* Chinn alone or in view of Takahashi renders obvious that “the first standby time is settable or selectable by a user.” Chinn discloses that “camera control system 175 may be configured to receive, recognize, and respond to additional voice commands.” EX1004, ¶25. “For example, after user activation of the listening initiation control 231, camera control system 175 may respond to the predetermined camera activation sound pattern by activating the camera 125 as described above, and camera control

system 175 may respond to any of a variety of other voice commands, such as a “set timer” command.” EX1004, ¶25. In my opinion, a POSITA would have understood that the timer being set by the user in the “listening” mode of the device 100, would correspond to the first standby time for the first camera (front camera 110) being used in the voice operated mode.

106. To the extent PO argues that Chinn does not explicitly disclose that the first standby time is settable or selectable by the user, it is my opinion that Takahashi overcomes this alleged deficiency. For example, Takahashi discloses a timer circuit 102 “is a time measurement circuit which measures ... a prescribed shutter release standby time in voice audio photography mode.” EX1005, ¶20. According to Takahashi, “a prescribed amount of time is set ahead of time for *voice audio photography mode*, but this set amount of time *can be adjusted to be variably longer or shorter by operating the adjustment buttons 26 and 28.*” EX1005, ¶20. Thus, Takahashi also discloses that “the first standby time is settable or selectable by a user.”

E. Claim 4 “The image recording device according to claim 1, wherein the second standby time is settable or selectable by a user.”

107. The Chinn-Takahashi-EX-V7 combination renders obvious the image recording device according to claim 1. *See above §X.B.* Chinn also discloses or renders obvious that “the second standby time is settable or selectable by a user.”

For example, Chinn discloses a UI 300 that has a first menu category that “provides controls for selecting actions by camera control system 175 when a shutter control 233 is pressed.” EX1004, ¶36. One example control is a “selectable ‘start 3 sec ready countdown’ control 303.” EX1004, ¶36; FIG. 3.

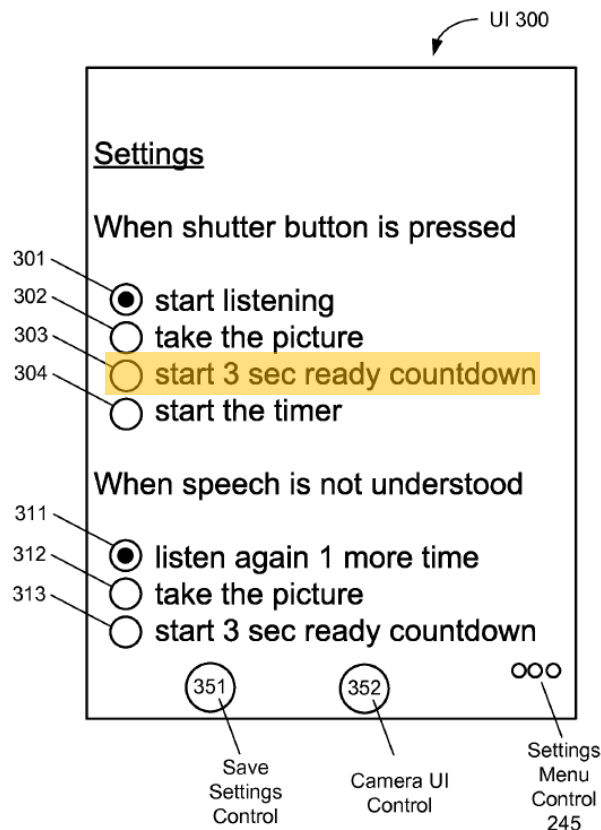


FIG. 3

EX1004, FIG. 3.

108. “When the ‘start 3 sec ready countdown’ control 303 is selected, the camera control system 175 may modify its response to user selection of shutter control 233, so that camera control system 175 starts a countdown (such as a three

second countdown or any other countdown duration) and then takes a picture/initiates video recording in response to user selection of shutter control 233.” EX1004, ¶39. In my opinion, a POSITA would have understood that the countdown being set/selectable by the user for “shutter control 233” would correspond to the second standby time for the second camera (back camera 125) being used in the manual touch operation.

109. As another example, Chinn discloses at ¶40 that the time associated with the “start the timer” setting 304 shown above in Fig. 3 in response to a touch of the camera activation control 233 of Fig. 2 will result in a standby time that “may also be user configurable as described herein, e.g., in connection with controls 411-414” of Fig. 4 (the configurable times include an option for 2 seconds in some embodiments as discussed at ¶48):

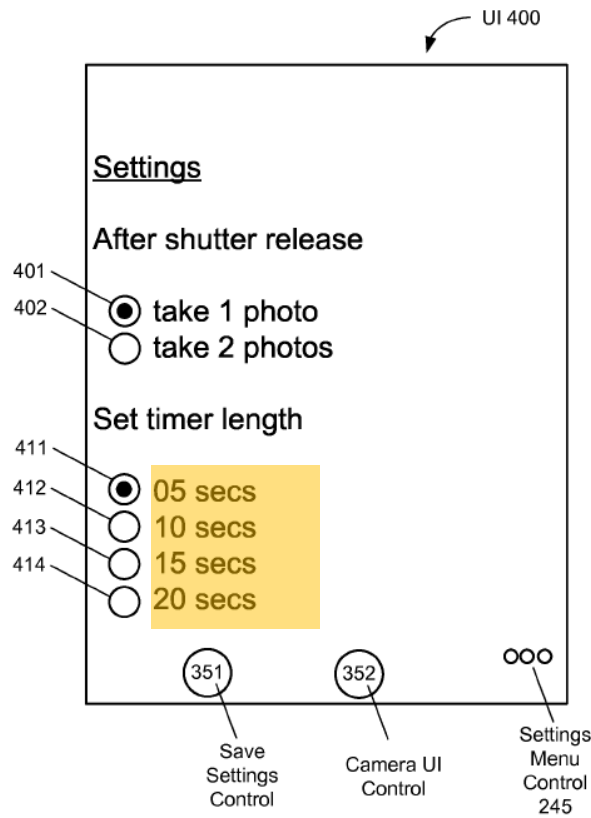


FIG. 4

- F. Claim 5 “The image recording device according to claim 1, wherein the controller causes an elapse state of the first standby time from the photographing trigger to the recording start of the image signal to the recorder to be displayed on the touch display.”**

110. The Chinn-Takahashi-EX-V7 combination renders obvious the image recording device according to claim 1. See above § X.B. Chinn also renders obvious this limitation. Chinn discloses that “in response to a ‘set timer: 10 seconds’ command, camera control system 175 may output an audible notification by speaker 140 such as ‘timer set’, and camera control system 175 may then proceed to output an audible countdown to camera activation.” EX1004, ¶27. Thus,

one operation performed by the Chinn device 100 is an audible countdown (i.e., elapsed state) of a timer before the first camera (front camera 110) is activated via the voice command.

111. Chinn explicitly discloses displaying status messages 702 on UI 200:

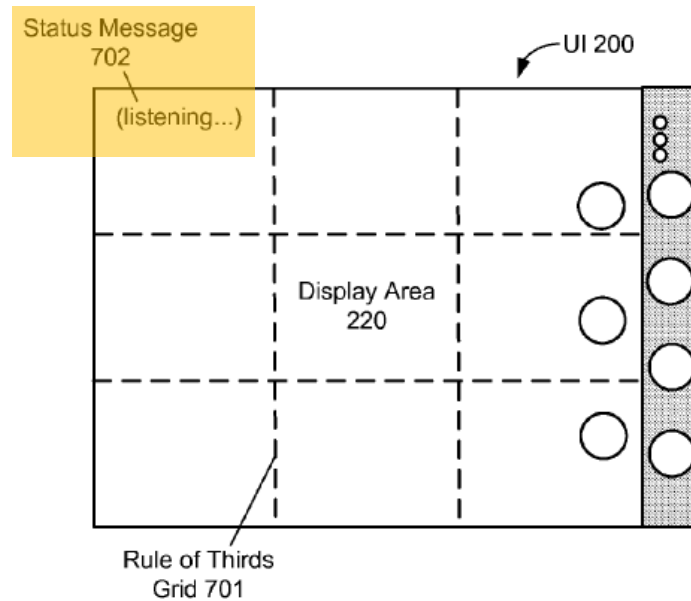


FIG. 7A

EX1004, FIG. 7A.

112. Chinn further discloses a status message 702 in UI 200. EX1004, ¶56. Chinn explicitly discloses that “status messages reflecting other operations which may be performed by camera control system 175 may also be displayed.” EX1004, ¶56. A POSITA, in my opinion, would have understood that the audible countdown disclosed by Chinn is an operation performed by the camera control system 175.

113. Moreover, in my opinion, a POSITA would have found it obvious to display the countdown on UI 200 (e.g., as a status message 702) so that the user is informed of this information even in a noisy environment in which the audible countdown discussed above could not easily be heard. It would have been obvious to a POSITA to try this modification as it was one of a few possible design options (e.g., display notification, audible notification, haptic notification) and was already known in the art as taught by Sarin at ¶43 (EX1013). In my opinion, a POSITA would have had a reasonable expectation of success in implementing a displayed countdown on UI 200 (e.g., as a status message 702) as UI 200 and camera control system 175 were already adapted to display messages related to any operation performed by the camera control system 175, which would have yielded predictable results.

G. Claim 6 “The image recording device according to claim 1, wherein the controller causes an elapse state of the second standby time from the photographing trigger to the recording start of the image signal to the recorder to be displayed on the touch display.”

114. The Chinn-Takahashi-EX-V7 combination renders obvious the image recording device according to claim 1. *See above* §X.B. Chinn also renders obvious this limitation.

115. Chinn discloses that “in response to a ‘set timer: 10 seconds’ command, camera control system 175 may output an audible notification by

speaker 140 such as ‘timer set’, and camera control system 175 may then proceed to output an audible countdown to camera activation.” EX1004, ¶27. Thus, one operation performed by the Chinn device 100 is an audible countdown (i.e., elapsed state) of a timer before the second camera (back camera 175) is activated by the touch operation (camera activation control 233).

116. Chinn explicitly discloses displaying status messages 702 on UI 200:

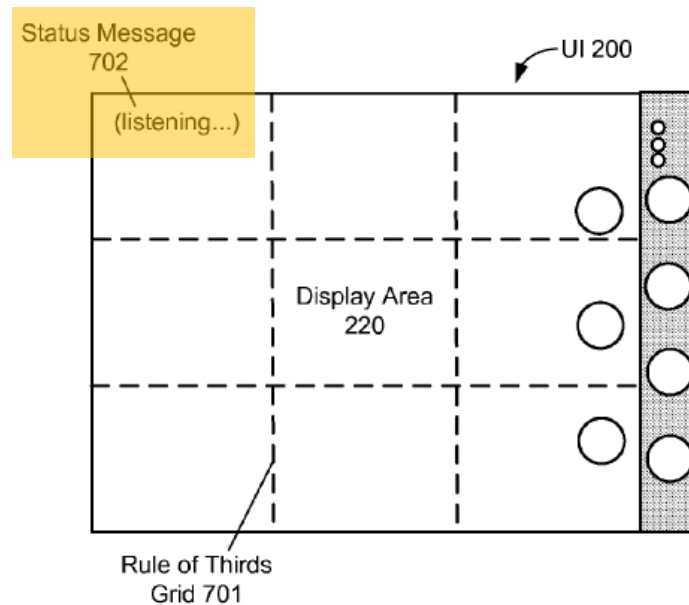


FIG. 7A

EX1004, FIG. 7A.

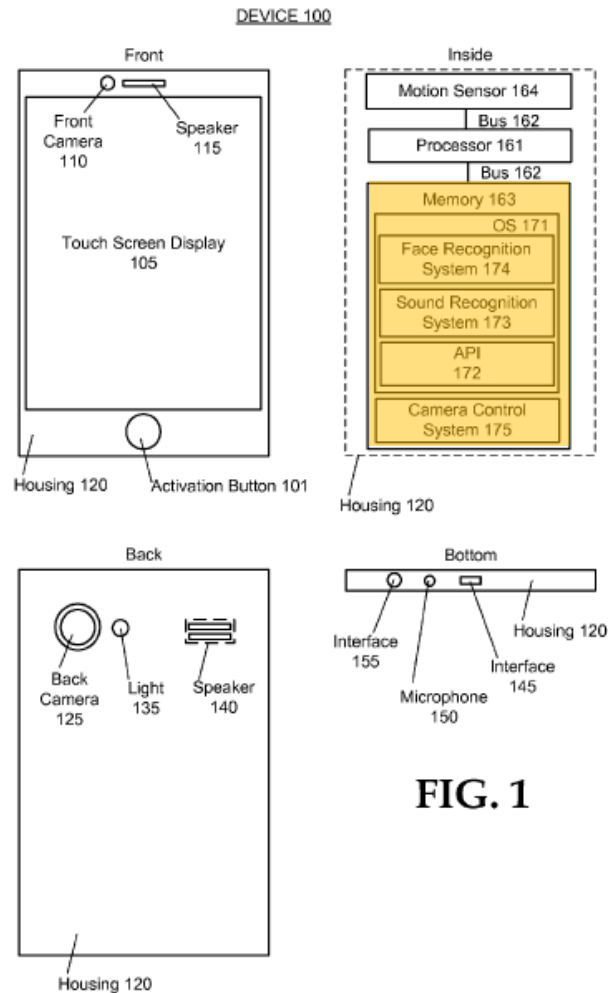
117. Chinn explicitly discloses that “status messages reflecting other operations which may be performed by camera control system 175 may also be displayed.” EX1004, ¶56. In my opinion, a POSITA would have understood that

the audible countdown disclosed by Chinn is an operation performed by the camera control system 175.

118. In addition, it is also my opinion that a POSITA would have found it obvious to display the countdown on UI 200 (e.g., as a status message 702) so that the user is informed of this information even in a noisy environment in which the audible countdown discussed above could not easily be heard. It would have been obvious to a POSITA to try this modification as it was one of a few possible design options (e.g., display notification, audible notification, haptic notification). In my opinion, a POSITA would have had a reasonable expectation of success in implementing a displayed countdown on UI 200 (e.g., as a status message 702) as UI 200 and camera control system 175 were already adapted to display messages related to any operation performed by the camera control system 175, which would have yielded predictable results.

H. Claim 7 “The image recording device according to claim 1, wherein the storage is an internal storage of the image recording device.”

119. The Chinn-Takahashi-EX-V7 combination renders obvious the image recording device according to claim 1. *See above §X.B.* Chinn also discloses this limitation. Specifically, Chinn discloses memory 163 or graphics memory of the touch display 105 as the claimed storage. *See above §X.B.6.* As shown below, the memory 163 and graphics memory are “inside” (i.e., internal) to the device 100.



I. Claim 8 “The image recording device according to claim 1, wherein the storage is an external storage connected to the image recording device.”

120. The Chinn-Takahashi-EX-V7 combination renders obvious the image recording device according to claim 1. *See above §X.B.* The Chinn-Takahashi-EX-V7 combination renders obvious the storage as being an external storage connected to the image recording device (device 100). Specifically, EX-V7 discloses the use of a removable memory card to store captured images.

■ **Loading a Memory Card into the Camera**

When a memory card is loaded, the camera stores images you shoot on the card.

NOTE

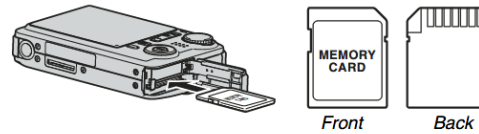
- Though the camera has built-in memory, using a memory card provides additional capacity you can use to store more images, high-quality and large-size images, and longer movies.
- The camera will store images in its built-in memory if there is no memory card loaded. If you prefer to use built-in memory, skip this procedure and go to "Shooting a Snapshot" on page 15.
- For information about memory card capacity, see page 269.

1. Open the battery cover.



While pressing lightly on the cover, slide it in the direction indicated by the arrow to open.

2. Load a memory card into the camera.



With the front of the memory card facing upwards (toward the monitor screen side of the camera), slide it into the slot and press until it clicks securely into place.

3. Close the battery cover.



EX1014, p. 13. In my opinion, it would have been obvious to a POSITA to incorporate this feature into the Chinn-Takahashi-EX-V7 combination to provide the user with additional storage, and a POSITA would have had a reasonable expectation of success in implementing this feature as it involved only routine skill.

J. Claim 10

1. [10pre] "The image recording device according to claim 1, further comprising,"

121. The Chinn-Takahashi-EX-V7 combination renders obvious the image recording device according to claim 1. *See above §X.B.1.*

2. [10a] "a command voice storage configured to store a command voice for instructing photographing,"

122. The Chinn-Takahashi-EX-V7 combination renders obvious this limitation. For example, Chinn discloses that the "camera control system 175 may

be configured to activate ... camera 110 and/or camera 125, to take a photograph or begin recording a video in response to the predetermined camera activation sound pattern” such as “ready click.” EX1004, ¶23.

123. Chinn does not explicitly disclose being configured to store a “command voice.” Takahashi, in my opinion, does. For example, Takahashi discloses a registration process to obtain the speech pattern of a particular user. Takahashi discloses a “voice recognition pattern registration circuit 106 [which] is a storage circuit which stores voice recognition patterns input from the voice recognition input circuit 122 when the mode dial 20 has been switched to the position indicating voice audio registration mode.” EX1005, ¶22. The voice pattern registration circuit 106 has a storage element. EX1005, ¶22. According to Takahashi, “a second voice audio pattern for taking a photograph, e.g., a voice audio pattern of the photographer saying ‘take the picture’ or the like, are registered ahead of time in the storage element as instruction patterns in voice audio photography mode.” EX1005, ¶22.

3. [10b] “wherein the recorder is configured to perform control such that a command voice to be recorded in the command voice storage is received from the audio input interface and stored in the command voice storage as a command voice registration process, and”

124. The Chinn-Takahashi-EX-V7 combination renders obvious that “the recorder is configured to perform control such that a command voice to be

recorded in the command voice storage [Takahashi's voice pattern registration circuit 106] is received from the audio input interface [Chinn's microphone 150, sound recognition system 173; Takahashi's microphone 16 and voice input circuit 122] and stored in the command voice storage as a command voice registration process [Takahashi's "voice audio registration mode"].” See above §X.B.2, §X.J.2 and below §X.J.4.

4. **[10c] “in the first photographing process, the recorder determines that the command voice instructs the photographing when the command voice input to the audio input interface is identical to the command voice stored in the command voice storage, and determines that the command voice does not instruct the photographing when the command voice input to the audio input interface is not identical to the command voice stored in the command voice storage.”**

125. The Chinn-Takahashi-EX-V7 combination renders obvious that “in the first photographing process, the recorder determines that the command voice instructs the photographing when the command voice input to the audio input interface is identical to the command voice stored in the command voice storage.”

126. Chinn discloses that “[t]he camera control system 175 may be configured to activate the camera ... to take a photograph or begin recording a video in response to the predetermined camera activation sound pattern” such as e.g., “set timer: 10 seconds” or “ready click.” EX1004, ¶¶23, 27.

127. Chinn does not explicitly disclose being configured to compare a received command voice input to the audio input interface to a command voice stored in the command voice storage. Takahashi, however, does. For example, Takahashi discloses that the “voice audio recognition circuit 124 is a pattern detection circuit for detecting whether or not the voice audio signals from the voice audio input circuit 122 include the prescribed voice audio patterns in voice audio photography mode.” EX1005, ¶30. According to Takahashi, “voice audio recognition circuit 124 is a voice audio cross-referencing circuit which sequentially cross-references the voice audio patterns input under the control of the main control circuit 126 with the first and second voice audio patterns registered ahead of time in the voice audio pattern registration circuit 106.” EX1005, ¶30. The second voice pattern is used to take the image and corresponds to the command voice instruction.

128. For example, when the photographer utters the second voice pattern, the “voice audio is sent from the microphone 16 to the voice audio recognition circuit 124 via the voice audio input circuit 122” and is “cross-referenced with the second voice audio pattern registered ahead of time in the voice audio pattern registration circuit 106.” EX1005, ¶38. When the voice is recognized (i.e., the input voice matches the stored second voice pattern), the main control circuit 126 begins the photographic process. EX1005, ¶39.

129. Moreover, the Chinn-Takahashi-EX-V7 combination discloses that, in the first photographing process, the recorder “determines that the command voice does not instruct the photographing when the command voice input to the audio input interface is not identical to the command voice stored in the command voice storage.” Specifically, Chinn discloses several options when it is determined that a sound pattern other than the predetermined camera activation sound pattern is received, including performing a “listen again one more time” operation without recording the image or video. EX1004, ¶¶41, 42 and Fig. 3.

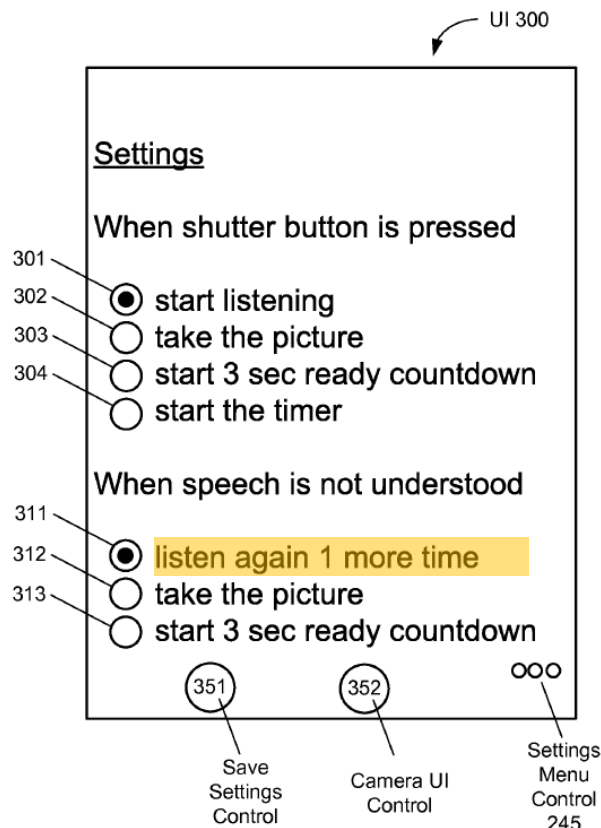


FIG. 3

130. As set forth above, Takahashi discloses that when the photographer utters the second voice pattern, the “voice audio is sent from the microphone 16 to the voice audio recognition circuit 124 via the voice audio input circuit 122” and is “cross-referenced with the second voice audio pattern registered ahead of time in the voice audio pattern registration circuit 106.” EX1005, ¶38. When the voice is not recognized (i.e., the input voice does not match the stored second voice pattern), the main control circuit 126 does not take a photograph, but instead returns to the step for listening for the photographer’s voice and second voice pattern. EX1005, ¶39.

K. Claim 11

1. [11pre] “An image recording method of an image recording device, comprising:”

131. To the extent the preamble is limiting, Chinn discloses an “image recording method of an image recording device.” See above §X.B.1.

2. [11a] “photographing an object and acquiring an image signal by a first camera or a second camera, the first camera being arranged on the same face side of a touch display and configured to acquire a first image signal, the second camera being arranged on an opposite side of the touch display and configured to acquire a second image signal;”

132. Chinn discloses or renders obvious this limitation. See above §§X.B.4, X.B.5.

3. **[11b] “in a case that the first camera is used for photographing: receiving a command voice from an audio input interface;”**

133. Chinn discloses or renders obvious this limitation. *See above §§X.B.2, X.B.4.*

4. **[11c] “determining whether or not the command voice includes a first instruction to start a recording of the first image signal;”**

134. Chinn discloses or renders obvious this limitation. *See above §§X.B.2, X.B.8.*

5. **[11d] “performing a first standby process during a first predetermined time when the command voice includes the first instruction and when the first camera is enabled and the second camera is disabled; and”**

135. The Chinn-Takahashi-EX-V7 combination renders obvious this limitation. *See above §X.B.10.*

6. **[11e] “start recording the first image signal acquired by the first camera after the first predetermined time; and”**

136. The Chinn-Takahashi-EX-V7 combination renders obvious this limitation. *See above §§X.B.6, X.B.10.*

7. **[11f] “in a case that the second camera is used for photographing: receiving a touch operation instruction from the touch display;”**

137. Chinn discloses or renders obvious this limitation. *See above §§X.B.3, X.B.5.*

8. **[11g] “determining whether or not the touch operation instruction includes a second instruction to start a recording of the second image signal;”**

138. Chinn discloses or renders obvious this limitation. See above §§X.B.3, X.B.9.

9. **[11h] “performing a second standby process during a second predetermined time when the touch operation instruction includes the second instruction and when the second camera is enabled and the first camera is disabled; and”**

139. The Chinn-Takahashi-EX-V7 combination renders obvious this limitation. See above §§X.B.9, X.B.10.

10. **[11i] “start recording the second image signal acquired by the second camera after the second predetermined time,”**

140. The Chinn-Takahashi-EX-V7 combination renders obvious this limitation. See above §§ X.B.6, X.B.9, X.B.10. Specifically, Chinn discloses a “selectable ‘start 3 sec ready countdown’ control 303” when the shutter control 233 is pressed. EX1004, ¶36.

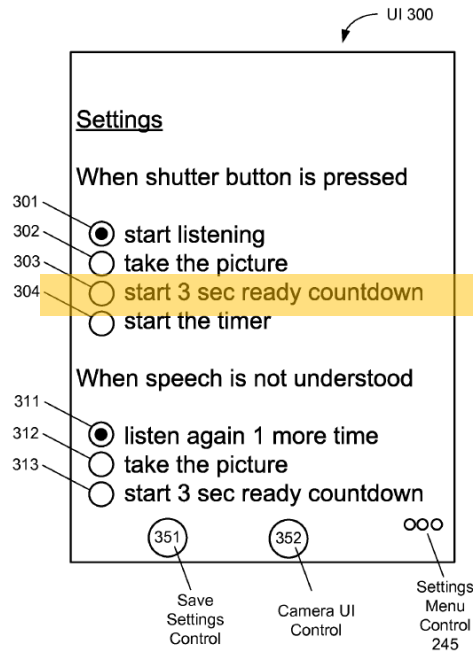


FIG. 3

EX1004, FIG. 3.

141. “When the ‘start 3 sec ready countdown’ control 303 is selected, ... camera control system 175 starts a countdown (such as a three second countdown or any other countdown duration) and then takes a picture/initiates video recording in response to user selection of shutter control 233.” EX1004, ¶39. The rear camera 12 is used to take the picture in some embodiments. EX1004, ¶44. In my opinion, the selected countdown is the second predetermined time.

11. [11j] “wherein the first predetermined time is set to be longer than the second predetermined time, and”

142. The Chinn-Takahashi-EX-V7 combination renders obvious this limitation. See above §X.B.10.

12. [11k] “wherein the first predetermined time is a time from a recognition of the first instruction to a start of the recording of the first image signal acquired by the first camera, and the second predetermined time is a time from a recognition of the second instruction to a start of the recording of the second image signal acquired by the second camera.”

143. The Chinn-Takahashi-EX-V7 combination renders obvious this limitation. See above §X.B.11.

XI. GROUND 2: THE COMBINATION OF CHINN, TAKAHASHI, EX-V7 AND KIM RENDERS CHALLENGED CLAIM 9 OBVIOUS

A. Motivation to Combine Chinn-Takahashi-EX-V7 With Kim

144. In my opinion, it would have been obvious to a POSITA to combine the Chinn-Takahashi-EX-V7 device with Kim and a POSITA would have been motivated and capable of doing so. All four references relate to mobile devices with image taking capabilities. EX1004, Abstract, ¶¶15, 23; EX1005, Abstract, ¶10; EX1008, ¶¶91, 94, 95; EX1014, pp. 15-17. All four references involve and require image storage to maintain obtained images and satisfy their end users. EX1004, ¶66; EX1005, ¶31; EX1008, ¶¶44, 80, 81; EX1014, pp. 13-14. A POSITA therefore would have been motivated to look at Kim to improve the Chinn-Takahashi-EX-V7 device, and vice versa.

145. The Chinn-Takahashi-EX-V7 device does not appear to have online/Internet storage. EX1004, ¶16, FIG. 1; EX1005, ¶31, FIG. 2; EX1014, pp. 13-14. A POSITA would have understood that the Chinn-Takahashi-EX-V7 device would benefit from the use of additional storage such as e.g., externally connected

storage and/or cloud storage. Kim discloses this type of storage. For example, Kim discloses a mobile terminal 100 that includes “a memory 160 ... [and] a controller 180.” EX1008, ¶44; FIG. 1. Kim also discloses that the “memory unit 160 is generally used to store various types of data to support the processing, control, and storage requirements of the mobile terminal 100.” EX1008, ¶80. Examples include “still pictures, moving pictures, and the like.” EX1008, ¶80. Kim further discloses that its “mobile terminal 100 is able to operate in association with a web storage for performing a storage function of the memory 160 on Internet.” EX1008, ¶81.

146. Benefits of modifying the Chinn-Takahashi-EX-V7 device with Kim’s additional external storage options, including cloud storage, include freeing up the memory on the device itself for other purposes and using a larger external storage to store more images.

147. In my opinion, a POSITA would have been motivated to implement the additional storage options from Kim into the Chinn-Takahashi-EX-V7 device as doing so would simply involve applying a known technique (i.e., cloud based storage as taught by Kim) to a known device ready for improvement (Chinn-Takahashi-EX-V7’s device with only internal memory or memory cards) to yield predictable results (reduced storage on the device while obtaining additional external storage). It is my understanding that these are appropriate rationales for this combination.

148. It is also my opinion that a POSITA would have had a reasonable expectation of success in modifying the Chinn-Takahashi-EX-V7 device with Kim's additional storage as the technology to do so was already in existence and successfully implemented in similar devices (e.g., Kim's device).

B. Claim 9

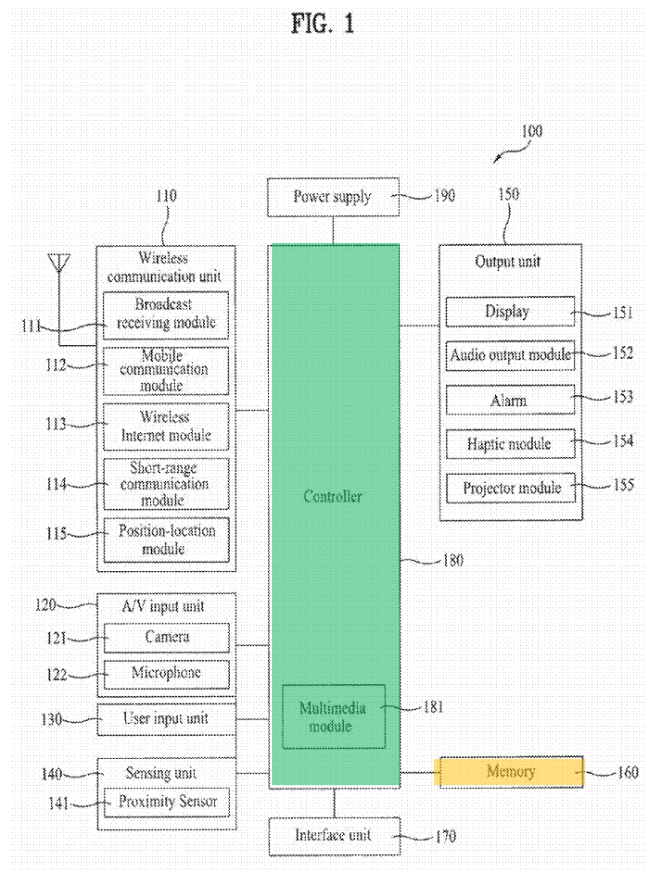
1. [9pre] The image recording device according to claim 1, further comprising,

149. The Chinn-Takahashi-EX-V7 combination renders obvious the image recording device according to claim 1. *See above §X.B.*

2. [9a] a communication unit including circuitry and configured to perform communication with a server device on the Internet,

150. The Chinn-Takahashi-EX-V7 combination does not explicitly disclose or render obvious this limitation. Kim, however, does.

151. Kim discloses a mobile terminal 100 that includes "a memory 160 ... [and] a controller 180." EX1008, ¶44; FIG. 1. Kim also discloses that the "memory unit 160 is generally used to store various types of data to support the processing, control, and storage requirements of the mobile terminal 100." EX1008, ¶80. Examples include "still pictures, moving pictures, and the like." EX1008, ¶80.



EX1008, FIG. 1.

152. Kim further discloses that its “mobile terminal 100 is able to operate in association with a web storage for performing a storage function of the memory 160 on Internet.” EX1008, ¶81. Kim further discloses that its wireless communication unit 110 includes a “wireless Internet module 113[that] supports Internet access for the mobile terminal 100.” EX1008, ¶¶45, 51.

153. As such, Kim discloses the claimed “communication unit” (e.g., wireless communication unit 110 with the wireless Internet module 113). Kim further discloses that the wireless communication unit 110 includes a “mobile communication module 112 transmits/receives wireless signals to/from one or

more network entities, such as base station, external terminal, server, and the like.” EX1008, ¶¶45, 50. Thus, Kim discloses that its wireless communication unit 110 communicates with a server. Moreover, because Kim discloses “web storage” (i.e., “a storage function of the memory 160 on Internet”), it is my opinion that a POSITA would have understood that Kim’s “web storage” would have used the wireless Internet module 113 to communicate with, and perform storage of data including video and photos from the memory 160 on, a server device connected to the Internet.

3. [9b] wherein the recorder is configured to record the first image signal input from the first camera or the second image signal from the second camera in the server device through the communication unit.

154. While Chinn discloses or renders obvious the storage of claim 1, above §X.B.6, it does not explicitly disclose or render obvious this limitation. However, Kim does. Specifically, Kim discloses that its “mobile terminal 100 is able to operate in association with a web storage for performing a storage function of the memory 160 on Internet.” EX1008, ¶81. In my opinion, a POSITA would have found it obvious from the teachings of Kim and Chinn-Takahashi to “record the first image signal input from the first camera or the second image signal from the second camera in the server device through the communication unit”; i.e., to record photos stored in the memory 160, as part of the “web storage” function.

XII. GROUND 3: THE COMBINATION OF KIM, YAMAMOTO AND THORN RENDERS CHALLENGED CLAIMS 1-3 AND 7-10 OBVIOUS

A. Motivation to Combine Kim With Yamamoto and Thorn

155. In my opinion, it would have been obvious to a POSITA to combine Kim with Yamamoto and Thorn, and a POSITA would have been motivated and capable of doing so. For starters, all three references relate to imaging devices. EX1008, ¶54; EX1009, ¶31; EX1011, ¶¶36-37.

156. Kim and Yamamoto both relate to imaging devices with manual and voice activated commands including commands for commanding a camera to capture an image. EX1008, ¶¶54, 56, 64, 66, 160-165; EX1009, ¶¶5, 31, 48, 55, 82-83, Both devices have manual activation technology, *see below* §§XII.B.3, XII.B.9, and voice activation technology, *see below* §§XII.B.2, XII.B.8, already installed, making their devices particularly suitable for each other. A POSITA therefore would have been motivated to look at Yamamoto to improve Kim, and vice versa. Similarly, Thorn discloses manual image capture, EX1011, ¶37, and a POSITA would have been motivated to look at Thorn to improve Kim's and Yamamoto's manual imaging taking, and vice versa.

157. Moreover, all three references are concerned with ensuring that their respective users obtain the images they desire. EX1008, ¶¶60, 120, 160-166; EX1009, ¶¶5, 6, 8, 251, 382; EX1011, ¶¶3-8. In my opinion, a POSITA would

have understood that one way to improve Kim's images taken with the front facing camera 121 (e.g., selfie) would be to implement a delay between the utterance of the voice command and the taking of the image, which would allow the photographer to pose before the image is taken. Yamamoto discloses such a delay, among other voice activated processes. EX1009, ¶249. The implementation of a voice activated selfie, including a standby time delay, would have merely amounted to another voice command/operation on the Kim terminal 100, which was already implementing voice commands. EX1008, ¶¶56, 160-164.

158. In addition, it is also my opinion that a POSITA would have understood that one way to improve Kim-Yamamoto's images taken with the back facing camera 121' (e.g., manual activated photographs) would be to ensure that the subject is not blinking when the image is taken. Thorn discloses waiting a predetermined second standby time of a length between about 100 milliseconds and about 200 milliseconds if a subject blinks when the image capture command is detected. EX1011, ¶60. The implementation of blink detection and an associated standby time delay as taught by Thorn in the Kim-Yamamoto device, would have merely amounted to another back camera control function on the Kim-Yamamoto device, which was already performing back camera control functions. EX1008, ¶¶54, 94, 150; EX1009, ¶¶211, 220, 281.

159. Kim discloses a two-camera system: front and back cameras, while Yamamoto and Thorn disclose a one-camera system. EX1008, ¶¶91, 94, 95; EX1009, ¶¶31-34; EX1011, ¶37. In the Kim device, the front camera 121 is described as being used to show the user during a video call as well as being used for a “photographing mode.” EX1008, ¶¶54, 95. As such, Kim is already adapted to image the user with its front camera 121 and could readily implement a voice activated a selfie as taught by Yamamoto. A POSITA, in my opinion, would have been able to implement Yamamoto’s delayed voice activated image processes (e.g., “Say Cheese”) to delay image taking with Kim’s front camera as doing so would simply involve applying a known technique (i.e., delay/timer between voice utterance and image taking as taught by Yamamoto) to a known device ready for improvement (Kim’s two camera device) to yield predictable results (a properly taken selfie). It is my understanding that these are appropriate rationales for this combination.

160. Additionally, it is my opinion that a POSITA would have had a reasonable expectation of success in modifying Kim with Yamamoto as Kim already had the technology to do so (e.g., voice activation, selection of the front camera, imaging of the user, delay timer).

161. Also, the Kim-Yamamoto device is adapted to take images with its back camera 121’ and could readably implement a non-zero standby delay when

using that camera, and also when using the front camera 121 (although this is not necessary for this challenge), as taught by Thorn. In my opinion, a POSITA would have been able to implement Thorn's blink detection and delayed image capture processes to delay image taking with Kim's back camera 121' (and also the front camera 121) as doing so would simply involve applying a known technique (i.e., delay between a shutter activation and image taking as taught by Thorn) to a known device ready for improvement (Kim's two camera device) to yield predictable results (a properly taken image). It is my understanding that these are appropriate rationales for this combination.

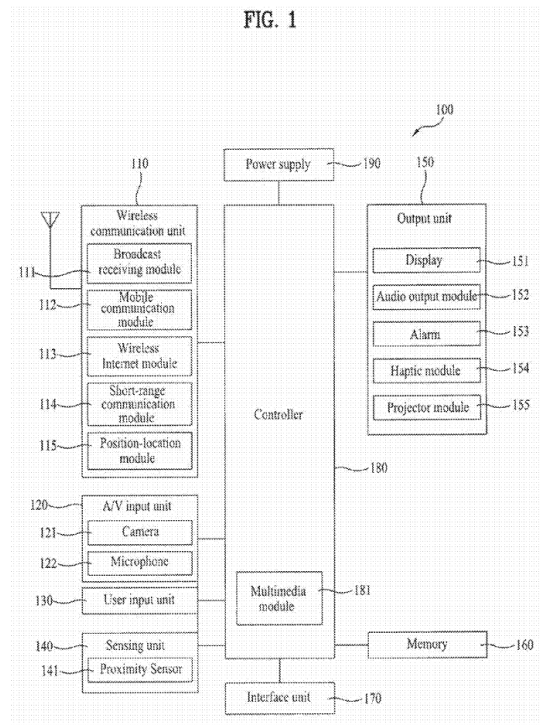
162. In my opinion, a POSITA would have had a reasonable expectation of success in modifying Kim-Yamamoto with Thorn as Kim-Yamamoto already had the technology to do so (e.g., manual activation of a back camera image and associated control functionality).

B. Claim 1

1. [1pre] **"An image recording device configured to execute a plurality of different photographing processes, comprising:"**

163. To the extent the preamble is limiting, the Kim discloses or Kim in view of Yamamoto renders obvious an "image recording device configured to execute a plurality of different photographing processes." Kim discloses a mobile terminal 100 that includes "a wireless communication unit 110, an A/V

(audio/video) input unit 120, a user input unit 130, a sensing unit 140, an output unit 150, a memory 160, an interface unit 170, [and] a controller 180.” EX1008, ¶44; FIG. 1.

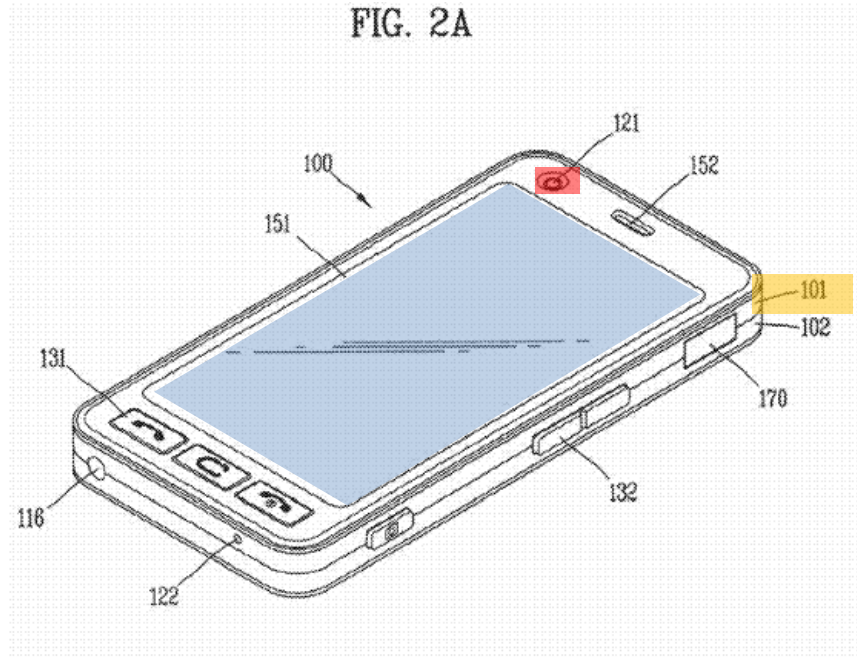


EX1008, FIG. 1.

164. According to Kim, the display 151 may be a “touchscreen” where the “display 151 and a sensor for detecting a touch action (hereinafter called ‘touch sensor’)” allows the display 151 to be “an input device as well as an output device.” EX1008, ¶64. “If a touch input is made to the touch sensor, signal(s) corresponding to the touch is transferred to a touch controller. The touch controller processes the signal(s) and then transfers the processed signal(s) to the controller 180.” EX1008, ¶66. Kim also discloses that microphone 122 receives an external

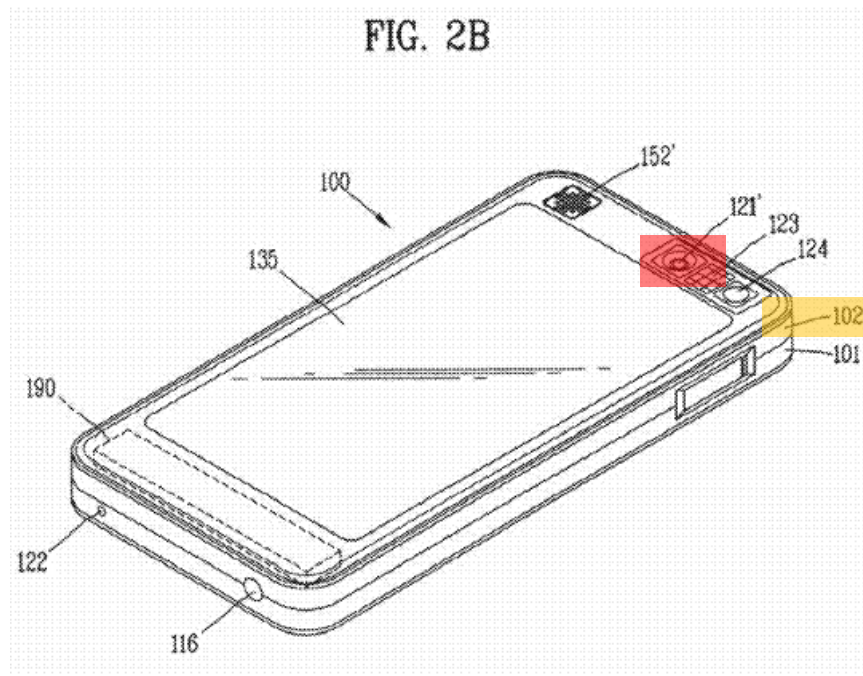
audio signal while the mobile terminal 100 is in a particular mode, including “voice recognition,” EX1008, ¶56, and various voice activated operations such as e.g., an image display “area setting control.” EX1008, ¶¶160-165.

165. Moreover, the Kim mobile terminal 100 includes a housing that “can be divided into a front case 101 and a rear case 102.” EX1008, ¶90; FIGS. 2A, 2B. A touch display 151 and a first camera 121 are located in the front case 101. EX1008, ¶91.



EX1008, FIG. 2A.

166. A camera 121' is provide in the rear case 102. EX1008, ¶94.



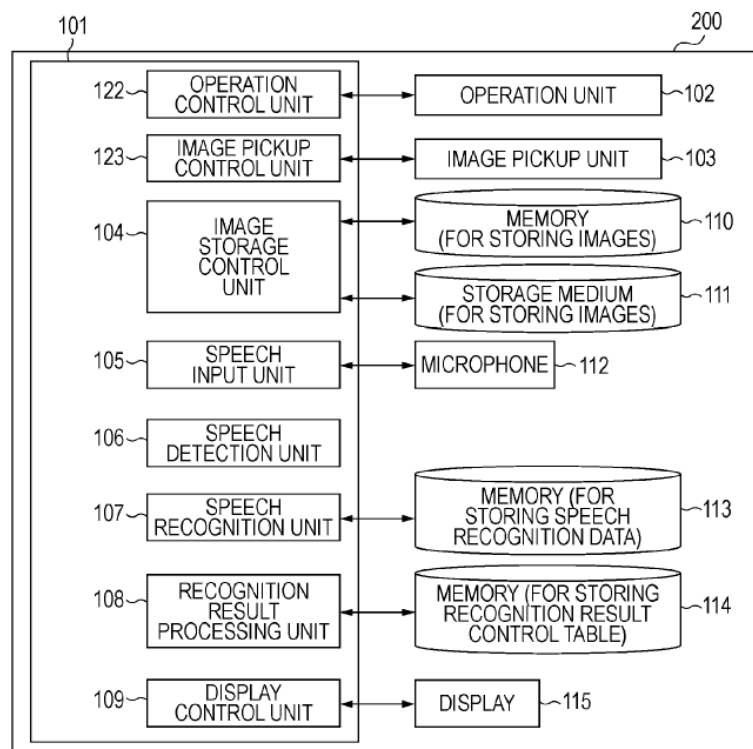
EX1008, FIG. 2B.

167. “The camera 121’ has a photographing direction that is substantially opposite to that of the front camera 121 ... and may have a resolution differing from that of the front camera 121.” EX1008, ¶94. The “front camera 121 has a low resolution sufficient to capture and transmit a picture of use’s face for a video call, while the rear camera 121’ has a higher resolution for capturing a general subject for photography.” EX1008, ¶95. The front camera 121 can also be used in a photographing mode. EX1008, ¶54.

168. Kim discloses different photographic processes involving front and rear cameras activated using the touch display area 151, voice and other commands, including video and image capture at different resolutions. EX1008, ¶¶54, 95.

169. Yamamoto discloses a “digital camera 200” that includes a “control unit 101, an operation unit 102, an image pickup unit 103, a memory (for storing images) 110, and a storage medium (for storing images) 111,” “a microphone 112, a memory (for storing speech recognition data) 113, a memory (for storing a recognition result control table) 114, and a display 115.” EX1009, ¶¶32-33; FIG. 1.

FIG. 1



EX1009, FIG. 1.

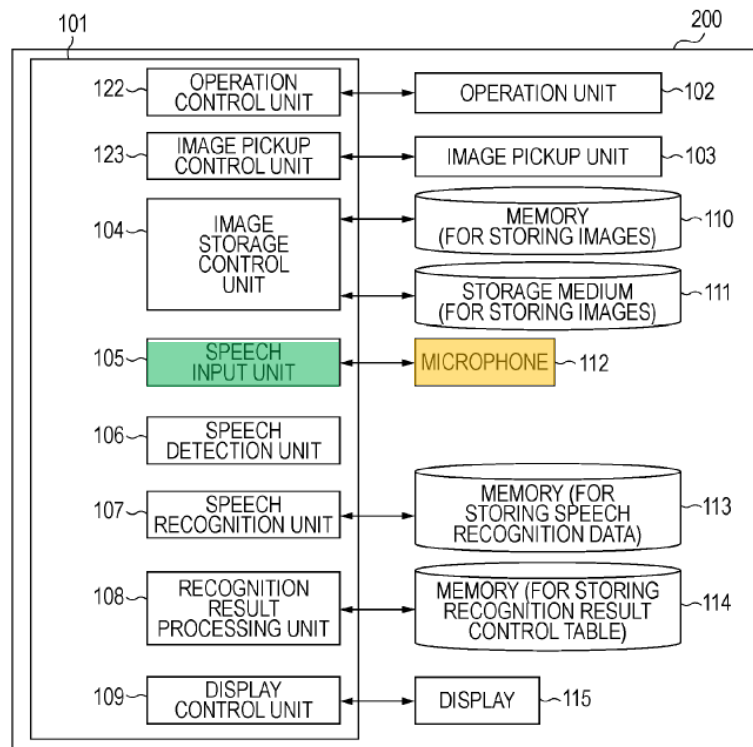
170. Yamamoto discloses additional photographic processes: a manually activated process using a “shutter button 201,” EX1009 ¶82 (“shutter button 201 is a shutter button used to issue a command for capturing an image”), and one or more voice activated processes enabled via “speech shutter on-off switch 202.”

EX1009 ¶83 (“speech shutter on-off switch 202 is a switch that performs switching as to whether a function for executing an image capturing operation in accordance with a speech command is used.”).

2. [1a] “an audio input interface configured to receive a command voice;”

171. Kim alone or in view of Yamamoto renders obvious “an audio input interface configured to receive a command voice.” Kim discloses “a microphone 122 for receiving an input of a speech signal for an area setting control.” EX1008, ¶160. Kim discloses “voice recognition,” EX1008, ¶56, and implementing various voice commands, EX1008, ¶160-164, but does not explicitly disclose receiving a command voice to be used to activate a camera, but Yamamoto does. Yamamoto discloses a “digital camera 200” that includes “a microphone 112,” EX1009, ¶33, and a “speech input unit 105 ... for converting a sound input via the microphone 112 into a digital audio signal and outputting the digital audio signal.” EX1009, ¶41; FIG. 1.

FIG. 1



172. Yamamoto discloses receiving several types of voice commands from a user to initiate respective processes for the device 200 as shown below in the “voice recognition result control table”:

FIG. 10

COMMAND	PROCESSING
Shoot	HOLD IMAGE CAPTURED AT TIME OF START OF UTTERANCE
Go	HOLD IMAGE CAPTURED AT TIME OF START OF UTTERANCE
Cheese	HOLD IMAGE CAPTURED AT TIME OF END OF UTTERANCE
Say Cheese	HOLD IMAGE CAPTURED AT TIME AT WHICH CERTAIN PERIOD OF TIME HAS PASSED FROM TIME OF END OF UTTERANCE
Five Four Three	HOLD IMAGE CAPTURED AT TIME AT WHICH CERTAIN PERIOD OF TIME HAS PASSED FROM TIME OF START OF UTTERANCE
Spot Metering	ACTIVATE SPOT METERING
Center Metering	ACTIVATE CENTER-WEIGHTED METERING
Use a Flash	ACTIVATE STROBE LIGHT
No Flash	DEACTIVATE STROBE LIGHT

904 1002

EX1009, FIG. 10.

173. According to Yamamoto, “‘Shoot’, ‘Go’, ‘Cheese’, ‘Say Cheese’, and ‘Five Four Three’ are speech commands for starting an image capturing operation.” EX1009, ¶205. To the extent PO argues that that “command voice” is associated with a voice of a user, it is my opinion that Yamamoto also discloses distinguishing between sounds and voices in its processing. EX1009, ¶209 (“laugh, a sound caused when a train passes, or the like”).

174. Moreover, Yamamoto discloses “a memory (for storing speech recognition data) 113,” EX1009, ¶33, which is used “to execute speech recognition.” EX1009, ¶67. A “speech recognition unit 107” includes “an acoustic

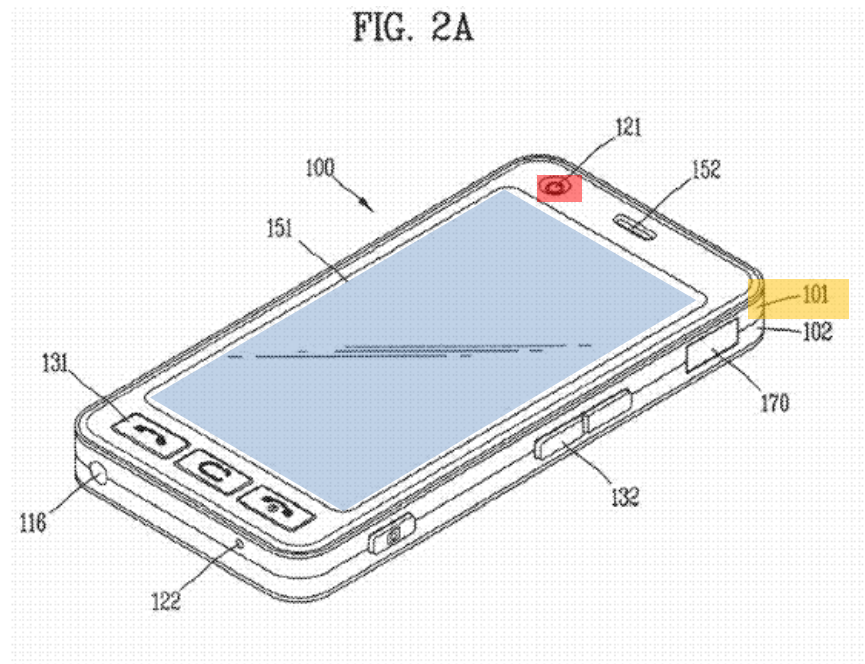
analysis unit and a search unit, and recognizes a command (what is called a speech command) included in a period for which a user utters.” EX1009, ¶47. A

“command is a combination of sounds that can be recognized by the speech recognition unit 107. An example of the command is ‘Shoot’.” EX1009, ¶48.

175. In my opinion, a POSITA would have understood that performing an acoustic analysis of input voice data to stored voice data (speech recognition data) would include detecting the user’s voice issuing the command, otherwise there is no reason to record the user’s voice. This process is used to determine a “speech recognition result” and if one of Yamamoto’s voice processes illustrated in FIG. 10 needs to be performed. EX1009, ¶¶55, 467-476.

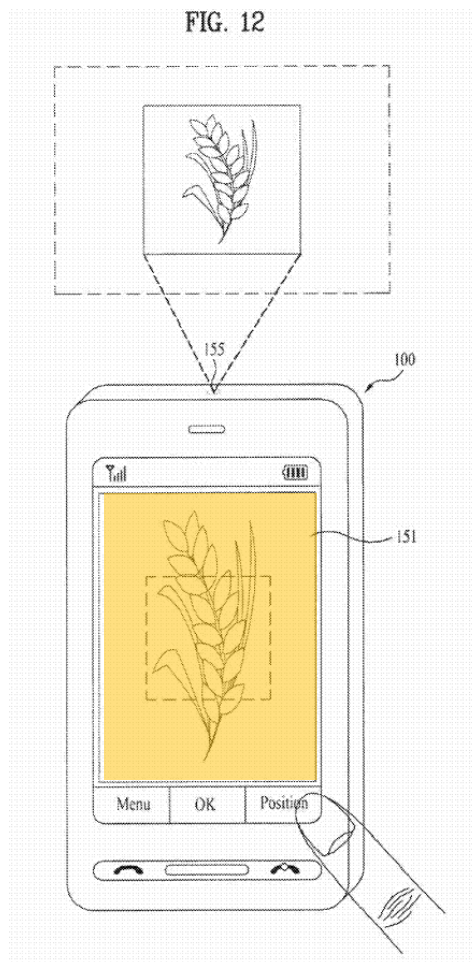
3. [1b] “a touch display arranged on a first surface of the image recording device and configured to display an image signal and receive a touch operation instruction;”

176. Kim discloses “a touch display arranged on a first surface of the image recording device and configured to display an image signal and receive a touch operation instruction.” Kim discloses that a touch display 151 and a first camera 121 are located in the front case 101. EX1008, ¶91



EX1008, FIG. 2A.

177. Kim discloses that “the display 151 may additionally or alternatively display images.” EX1008, ¶60. The images displayed on display 151 include images (photos and videos) from a camera. *E.g.*, EX1008, ¶¶54, 60.

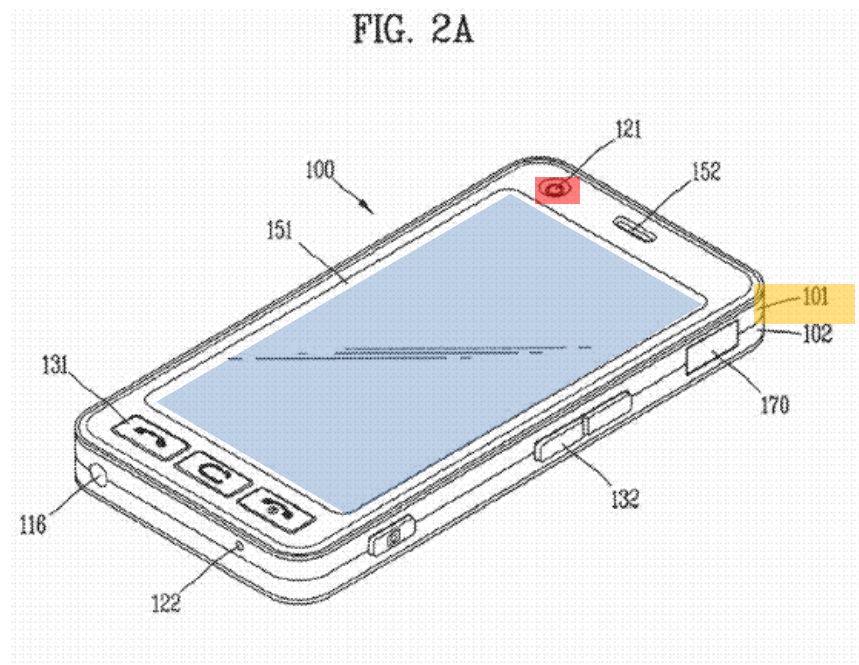


EX1008, FIG. 12.

178. Kim discloses that the display 151 can be a touchscreen with a touch sensor so that the display can be used for both input and output. EX1008, ¶64. Kim discloses that “[i]f a touch input is made to the touch sensor, signal(s) corresponding to the touch is transferred to a touch controller. The touch controller processes the signal(s) and then transfers the processed signal(s) to the controller 180.” EX1008, ¶66. Kim discloses “touch” operations (touch operation instructions) performed by a user using “soft keys,” long touches and drag operations. EX1008, ¶104, 117-120.

4. [1c] “a first camera arranged on a same side of the touch display and configured to photograph an object and acquire a first image signal;”

179. Kim discloses or renders obvious “a first camera arranged on a same side of the touch display and configured to photograph an object and acquire a first image signal.” Kim discloses a touch display on a first side/surface of its device 100. See above §XII.B.3. Kim also discloses that the mobile terminal 100 includes a housing that “can be divided into a front case 101 and a rear case 102.” EX1008, ¶90; FIGS. 2A, 2B. A touch display 151 and a first camera 121 are located in the front case 101. EX1008, ¶91.



EX1008, FIG. 2A.

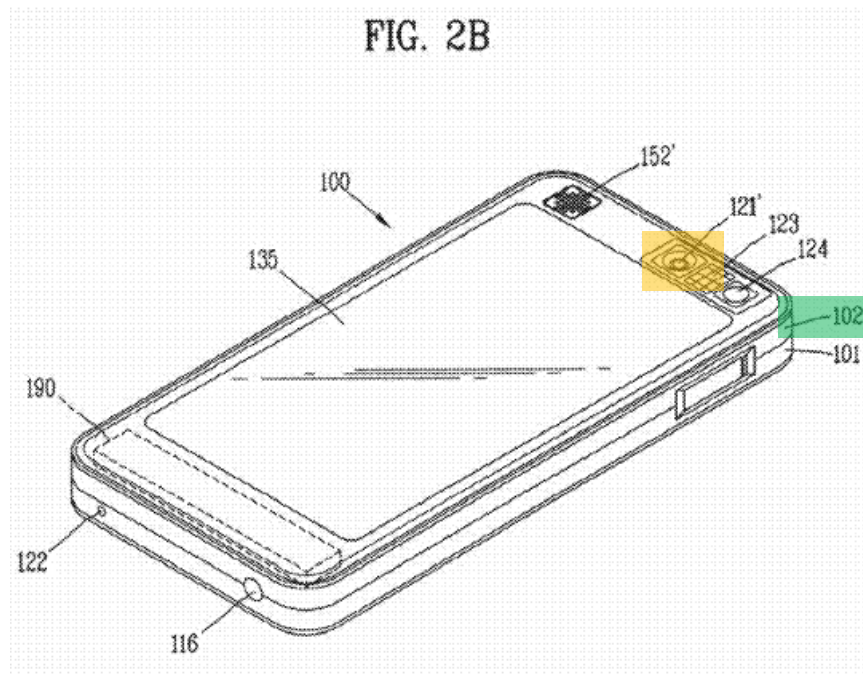
180. Kim discloses that camera 121 captures and processes “image frames of still pictures or video, which are obtained by an image sensor in a video call

mode or a photographing mode. The processed image frames can be displayed on the display 151.” EX1008, ¶54. As one example, Kim discloses that the “front camera 121 has a low resolution sufficient to capture and transmit a picture of use’s face for a video call.” EX1008, ¶95

181. In my opinion, a POSITA would have understood that when the front camera 121 is activated and used to photograph an object (e.g., user) to obtain “image frames,” a first image signal would also have been acquired. The image is comprised of pixels, and the image sensor in the camera converts incident light into electrical charge to produce a voltage that corresponds the amount of incident light on that pixel. Each pixel’s voltage is then readout and converted to a digital signal by an analog-to-digital converter. These digital signals are then transferred to a storage device and/or an interface to display the image on a screen.

5. [1d] “a second camera arranged on an opposite side of the touch display and configured to photograph an object and acquire a second image signal;”

182. Kim discloses or renders obvious “a second camera arranged on an opposite side of the touch display and configured to photograph an object and acquire a second image signal.” Kim discloses a touch display 151 on a first side/surface of its mobile terminal 100. See above §XII.B.3. Kim also discloses that a camera 121’ is provided in the rear case 102. EX1008, ¶94.



EX1008, FIG. 2B.

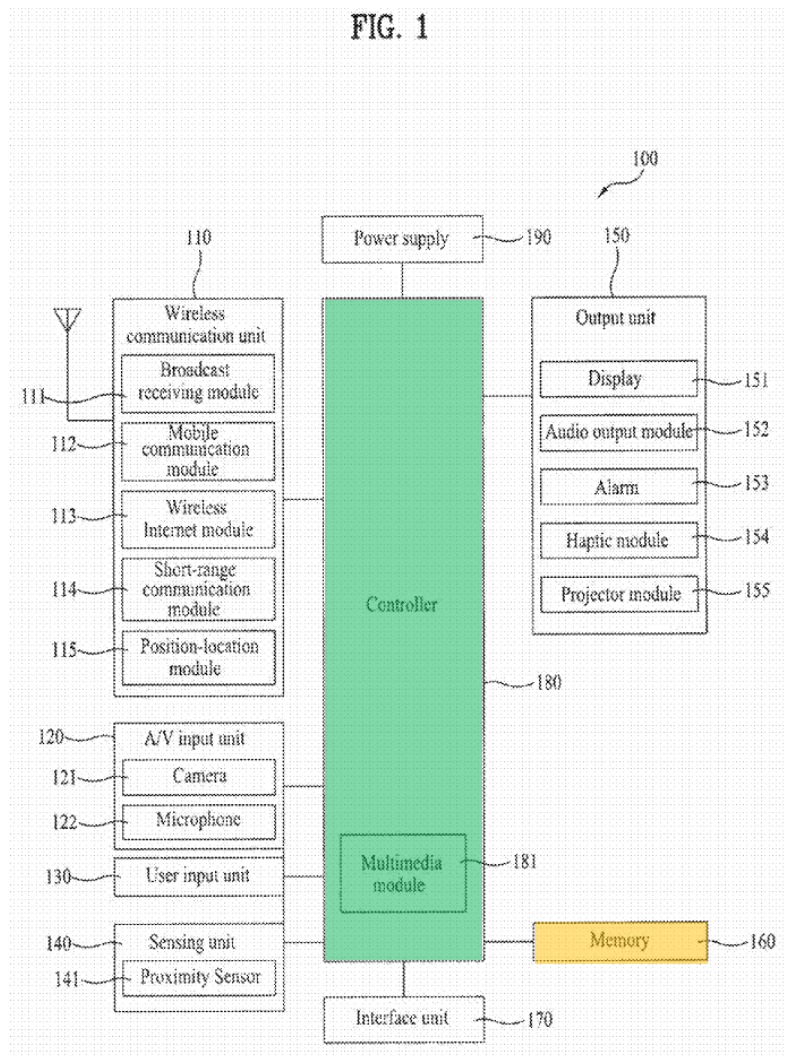
183. “The camera 121’ has a photographing direction that is substantially opposite to that of the front camera 121.” EX1008, ¶94. Kim discloses that the “rear camera 121’ has a higher resolution [with respect to front camera 121] for capturing a general subject for photography.” EX1008, ¶95.

184. A POSITA in my opinion would have understood that the taking of a photograph by the back camera 121’ (i.e., second camera) would “acquire a second image signal.” The image is comprised of pixels, and the image sensor in the camera converts incident light into electrical charge to produce a voltage that corresponds the amount of incident light on that pixel. Each pixel’s voltage is then readout and converted to a digital signal by an analog-to-digital converter. These

digital signals are then transferred to a storage device and/or an interface to display the image on a screen.

6. [1e] “a recorder configured to record at least one of the first image signal or the second image signal on a storage; and”

185. Kim discloses or render obvious in view of Yamamoto “a recorder configured to record at least one of the first image signal or the second image signal on a storage.” Kim discloses a mobile terminal 100 that includes “a memory 160 ... [and] a controller 180.” EX1008, ¶44; FIG. 1.



EX1008, FIG. 1.

186. Kim discloses that the “memory unit 160 is generally used to store various types of data ... include[ing] ... “still pictures, moving pictures, and the like.” EX1008, ¶80. The storage disclosed by Kim includes “any type or combination of suitable volatile and non-volatile memory or storage devices including hard disk, random access memory (RAM) ... flash memory, magnetic or optical disk, multimedia card micro type memory, card-type memory, such as SD memory, XD memory, and the like, or other similar memory or data storage device.” EX1008, ¶81.

187. Yamamoto also discloses “a memory (for storing images) 110, and a storage medium (for storing images) 111.” EX1009, ¶32.

188. In my opinion, a POSITA would have understood that storing “still pictures, moving pictures, and the like,” EX1008, ¶80, and/or images, EX1009, ¶32, would require storing an image signal (i.e., either the claimed first image signal or second image signal) in the storage (e.g., memory unit 160’s volatile and non-volatile memory or storage devices).

7. [1f] “a controller,”

189. Kim discloses “a controller” or renders it obvious when modified by Yamamoto and Thorn. Specifically, Kim discloses that its “controller 180 typically controls the overall operations of the mobile terminal 100” including “the

control and processing associated with voice calls, data communications, video calls, and the like.” EX1008, ¶85. The Kim controller 180, when modified by the teachings of Yamamoto, is a controller adapted to perform limitations [1g]-[1j] discussed further below.

8. **[1g] “wherein the controller is configured to: control such that, when the audio input interface receives the command voice giving a first instruction to start a recording of an image signal, the recorder starts a recording of the first image signal acquired by the first camera on the storage in response to the first instruction,”**

190. Kim alone or in view of Yamamoto renders obvious this limitation. Kim discloses that microphone 122 receives an external audio signal while the mobile terminal 100 is in a particular mode, including “voice recognition,” EX1008, ¶56, and various voice activated operations such as e.g., an image display “area setting control.” EX1008, ¶¶160-165. Kim also discloses a front camera 121 (the claimed first camera) configured to acquire a first image signal. See above §XII.B.4. Kim further discloses its recorder being configured to record at least one of the first image signal or the second image signal on a storage. See above §XII.B.6.

191. While Kim discloses various voice activated commands, EX1008, ¶¶160-165, and using the front camera to image the user (e.g., video call), Kim does not explicitly disclose receiving a command voice for activating the front camera 121 such as would be performed for a selfie. A POSITA, however, would

have understood the selection of the front camera to image the user, as taught by Kim, and activating the front camera in response to a voice command as it was well-known process at the time as disclosed by Chinn. For example, Chinn at ¶23 expressly states that the camera control system 125 can be configured such that either or both of front camera 110 and/or rear camera 125 take a photograph or record a video in response to a voice command, and ¶32 further explains how a user can select the front and/or rear cameras via the camera selection control 242 shown in Fig. 2. In my opinion, a POSITA would understand from these disclosures that the camera selected via camera selection control 242 by the user will respond to the voice command in some embodiments.

192. Yamamoto discloses receiving a command voice for activating the first (front) camera, particularly when taking an image of the user. *See above* §XII.B.2. For example, Yamamoto discloses receiving several types of voice commands from a user to initiate respective processing for the device 200 as shown below:

FIG. 10

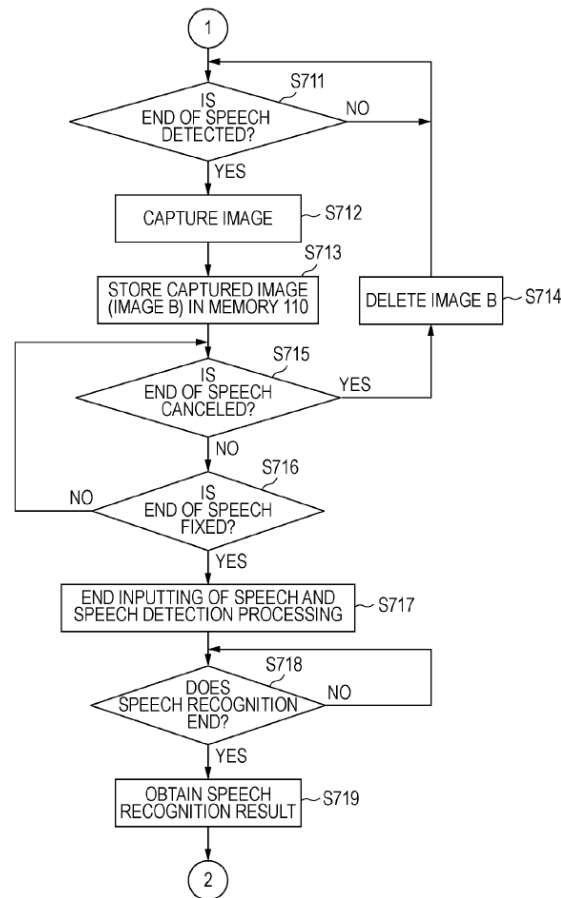
COMMAND	PROCESSING
Shoot	HOLD IMAGE CAPTURED AT TIME OF START OF UTTERANCE
Go	HOLD IMAGE CAPTURED AT TIME OF START OF UTTERANCE
Cheese	HOLD IMAGE CAPTURED AT TIME OF END OF UTTERANCE
Say Cheese	HOLD IMAGE CAPTURED AT TIME AT WHICH CERTAIN PERIOD OF TIME HAS PASSED FROM TIME OF END OF UTTERANCE
Five Four Three	HOLD IMAGE CAPTURED AT TIME AT WHICH CERTAIN PERIOD OF TIME HAS PASSED FROM TIME OF START OF UTTERANCE
Spot Metering	ACTIVATE SPOT METERING
Center Metering	ACTIVATE CENTER-WEIGHTED METERING
Use a Flash	ACTIVATE STROBE LIGHT
No Flash	DEACTIVATE STROBE LIGHT

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EX1009, FIG. 10.

193. According to Yamamoto, “‘Shoot’, ‘Go’, ‘Cheese’, ‘Say Cheese’, and ‘Five Four Three’ are speech commands for starting an image capturing operation.” EX1009, ¶205. According to Yamamoto, when the voice command is “Say Cheese,” “an image is captured after a certain period of time (for example, 0.5 seconds) passes after ... ‘Say Cheese’ or the like has [been] uttered.” EX1009, ¶249. Yamamoto discloses that “the image storage control unit 104 stores second image data of an image captured ... in the memory (for storing images) 110.” EX1009, ¶248.

FIG. 7



EX1009, FIG. 7.

194. A POSITA in my opinion would have understood that the taking of an image with the front facing camera (i.e., first camera) in response to the e.g., “Say Cheese” voice command (i.e., the command voice giving a first instruction) and storing the image (e.g., in Kim’s memory unit 160’s volatile and non-volatile memory or storage devices) would require storing an image signal (i.e., the claimed first image signal) in the storage.

9. [1h] “control such that, when the touch display receives the touch operation instruction giving a second instruction to start a recording of an image signal, the recorder starts a

recording of the second image signal acquired by the second camera on the storage in response to the second instruction, and”

195. Kim discloses or renders obvious this limitation. For example, Kim discloses a back camera 121' (the claimed second camera) configured to acquire a second image signal. *See* above §XII.B.5. Kim further discloses its recorder being configured to record at least one of the first image signal or the second image signal on a storage. *See* above §XII.B.6.

196. Regarding touch operation instructions, Kim discloses that “[i]f a touch input is made to the touch sensor, signal(s) corresponding to the touch is transferred to a touch controller. The touch controller processes the signal(s) and then transfers the processed signal(s) to the controller 180.” EX1008, ¶66. Kim discloses “touch” operations (touch operation instructions) performed by a user using “soft keys,” long touches and drag operations. EX1008, ¶104, 117-120.

197. Kim discloses activating the back camera 121' for a photographing process that does not use the image of the user. EX1008, ¶95. Kim does not appear to explicitly disclose activating the back camera 121' when the touch display receives a touch operation instruction giving a second instruction to start a recording of an image signal. A POSITA, however, would have understood the need to activate Kim's back camera in response to a touch activation, particularly when the user is not the subject of the image, as it was already known in the art as

disclosed e.g., by Yamamoto. According to Yamamoto, “In FIGS. 2A and 2B, the digital camera 200 includes a shutter button 201.” EX1004 ¶80.” “The shutter button 201 is a shutter button used to issue a command for capturing an image.” EX1009, ¶82. Yamamoto teaches activation of a camera to capture an image using a touch input mechanism.

198. In my opinion, a POSITA would have found it obvious to activate Kim’s back camera 121’ when the touch display receives a touch operation instruction giving a second instruction to start a recording of an image signal as this type of camera activation was well known in the art at the time and Kim already had the technology to do so. The use of the touch display to activate the back camera 121’ would have been obvious to try as it was one of a very limited number of options to activate a camera (e.g., shutter, touch display, audio input).

199. Moreover, it is my opinion that a POSITA would have understood that the taking of an image with the back facing camera 121’ (i.e., second camera) and storing the image (e.g., Kim’s memory unit 160’s volatile and non-volatile memory or storage devices) would require storing an image signal (i.e., the claimed second image signal) in storage.

10. [1i] “control such that a first standby time of a case where the first camera is enabled and the second camera is disabled is longer than a second standby time of a case

where the second camera is enabled and the first camera is disabled”

200. The Kim-Yamamoto-Thorn combination renders obvious this limitation for the following reasons.

Enabled/Disabled First/Second Camera

201. The Kim-Yamamoto-Thorn combination discloses activating the front camera (i.e., first camera) when the e.g., “Say Cheese” voice command is received. *See* limitation [1g]. In my opinion, a POSITA would have understood that the need to activate the front camera means that it was previously inactive/disabled. Moreover, a POSITA would have also understood that because only the front camera is activated, the back camera (i.e., second camera) would remain disabled. At least one benefit of doing so would be to reduce power consumption and increase battery life.

202. Likewise, Kim teaches activating the back camera 121' (i.e., second camera) EX1009, 94-95, in response to the user performing an image capture input signal on the touch display 130. *See* limitation [1h]. In my opinion, a POSITA would have understood that the need to activate the back camera means that it was previously disabled. In addition, it is my opinion that a POSITA would have understood that because only the back camera is activated, the front camera (i.e., first camera) remains disabled. Given that a camera module is relatively high

power consumption component in a mobile device, at least one significant benefit of doing so would be to reduce power consumption and increase battery life.

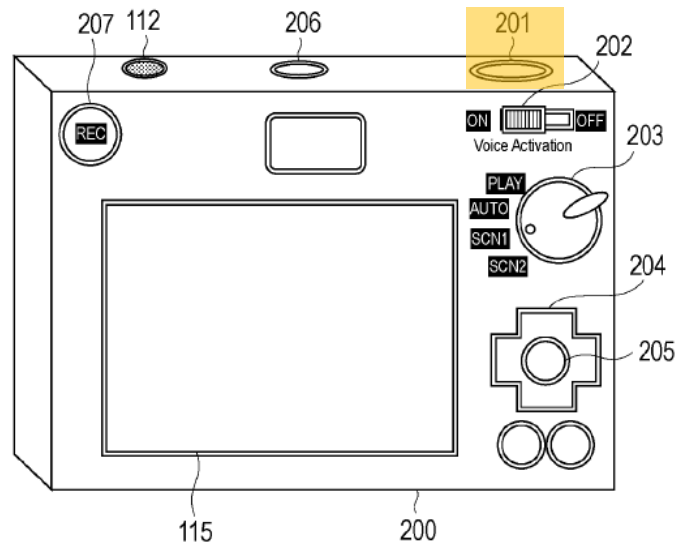
First Standby Time > Second Standby Time

203. The Kim-Yamamoto-Thorn combination discloses starting a recording of the first image signal acquired by the first camera on the storage in response to the first instruction. *See above* §XII.B.5.

204. According to Yamamoto, when the voice command is “Say Cheese,” “an image is captured after a certain period of time (for example, 0.5 seconds) passes after ... ‘Say Cheese’ or the like has [been] uttered.” EX1009, ¶249. As such, Yamamoto discloses a 0.5 second delay before taking a voice activated image, which corresponds to the “first standby time.”

205. Kim does not disclose introducing any delays between the manual selection and the taking/recording of an image with the back facing camera 121’ (second camera). Likewise, Yamamoto discloses a manually operated “shutter button 201” to capture images manually and does not disclose introducing any delays between the manual operation of the shutter button 201 and the taking/recording of an image. EX1009, ¶82. To the extent that this limitation is satisfied by a 0 second standby time, Kim and Yamamoto disclose it or render it obvious.

FIG. 2B



EX1009, FIG. 2B.

206. To the extent that this limitation requires a second standby time greater than 0, but less than the 0.5 seconds associated with the first standby time disclosed by Yamamoto, it is my opinion that Thorn discloses such a second standby time.

207. Thorn discloses calculating an average blink time for a subject about to be photographed based on the subject's blink history, and discloses typical values of these average times as being between about 100 milliseconds and 300 milliseconds, with a default of 250 milliseconds being used if not enough data has been collected. EX1011, ¶¶45, 60. These values are predetermined values based on blink history calculated prior to the touch command for the back facing camera 121' (second camera). Thorn also discloses the use of other predetermined time

periods: “[i]n another embodiment, the delay may be a *predetermined amount of time*, such as about 100 ms, about 150 ms, about 250 ms or some other length of time.” EX1011, ¶ 60 (emphasis added). Thorn further discloses adding a standby period equal to the average blink time after a command to take a photograph if the subject is blinking at that moment. EX1011, ¶¶58-60 and FIG. 5, steps 36, 38, 44:

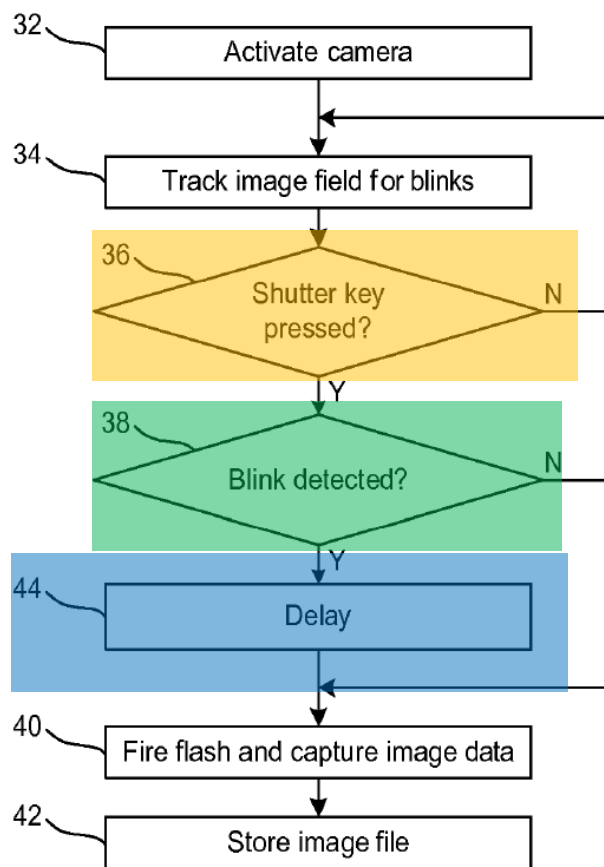


FIG. 5

208. Thus, Thorn discloses waiting a predetermined second standby time of a length between about 100 milliseconds and about 200 milliseconds if a subject blinks when the image capture command is detected, and this second standby time is less than the 0.5 second (500 millisecond) first standby time used for the

Yamamoto “Say Cheese” voice command-activated front camera image capture. Thorn’s predetermined standby time that is only performed if a blink is detected when a touch command to enable the rear camera to capture an image is recognized is “a second standby time of *a case* where the second camera is enabled and the first camera is disabled” as recited by this limitation: a case where the subject is blinking when the touch command is recognized. Thus, Thorn’s disclosure of applying the predetermined standby time only when a blink is detected is sufficient to disclose this limitation.

209. Thus, the Kim-Yamamoto-Thorn combination renders this limitation obvious.

11. [1j] **“control such that a first standby time of a case where the first camera is enabled and the second camera is disabled is longer than a second standby time of a case where the second camera is enabled and the first camera is disabled.”**

210. The Kim-Yamamoto-Thorn combination renders obvious that “the first standby time is a time from a recognition of the first instruction to a start of the recording of the first image signal acquired by the first camera, and the second standby time is a time from a recognition of the second instruction to a start of the recording of the second image signal acquired by the second camera” for at least the reasons set forth above for limitation [1i]. *See above* §§XII.B.8, XII.B.10.

C. Claim 2 “The image recording device according to claim 1, wherein the first camera is enabled in accordance with the command voice.”

211. The Kim-Yamamoto-Thorn combination renders obvious the image recording device according to claim 1. See above §XII.B. The Kim-Yamamoto-Thorn combination also renders obvious that “the first camera is enabled in accordance with the command voice.” Specifically, Yamamoto discloses that when the voice command is “Say Cheese,” “an image is captured after a certain period of time (for example, 0.5 seconds) passes after ... ‘Say Cheese’ or the like has [been] uttered,” EX1009, ¶249; see above §§XII.B.4, XII.B.10.

D. Claim 3 “The image recording device according to claim 1, wherein the first standby time is settable or selectable by a user.”

212. The Kim-Yamamoto-Thorn combination renders obvious the image recording device according to claim 1. See above §XII.B. Moreover, Yamamoto discloses that the delay/standby time can be set by the user e.g., by uttering “Shoot”, “Say Cheese,” “Five Four Three.” EX1009, ¶¶346, 350; FIG. 10. Each command has a different standby time: “Shoot” – 0; “Say Cheese” – 0.5 seconds; “Five Four Three” – “certain period of time corresponding to a time period for which ‘Two One Zero’ is uttered.” EX1009, ¶¶346, 350. Thus, the first standby time is settable by the user based on the voice command used to activate the selfie process.

FIG. 10

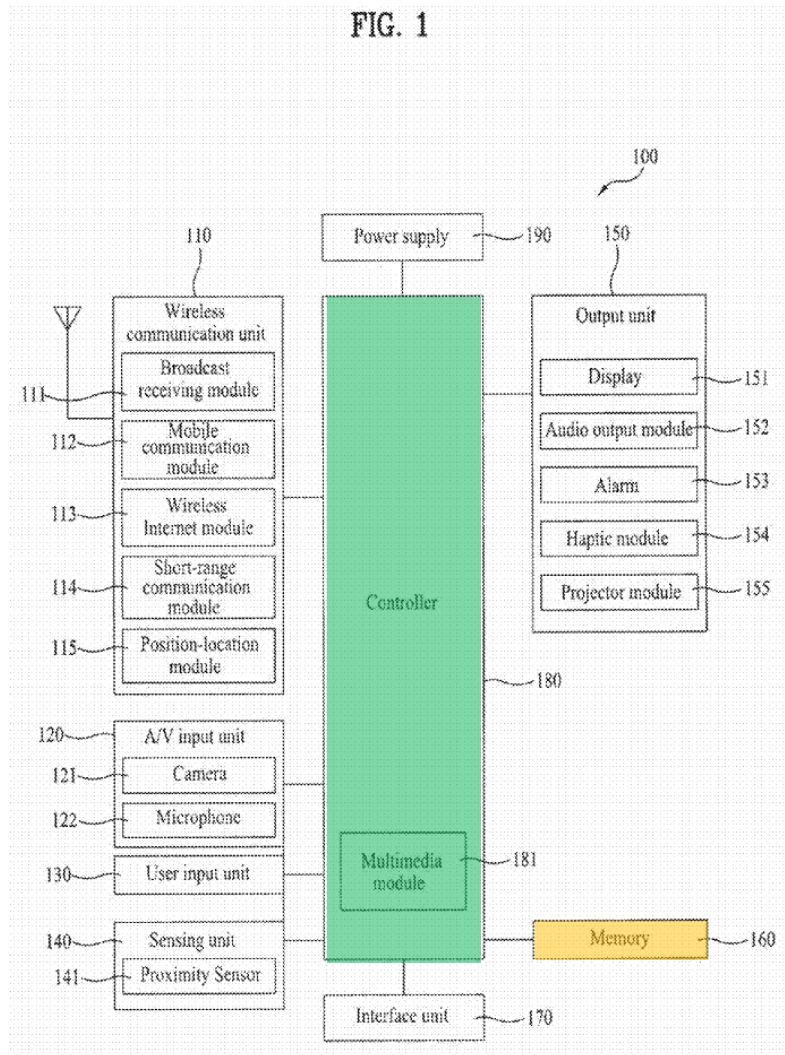
COMMAND	PROCESSING
Shoot	HOLD IMAGE CAPTURED AT TIME OF START OF UTTERANCE
Go	HOLD IMAGE CAPTURED AT TIME OF START OF UTTERANCE
Cheese	HOLD IMAGE CAPTURED AT TIME OF END OF UTTERANCE
Say Cheese	HOLD IMAGE CAPTURED AT TIME AT WHICH CERTAIN PERIOD OF TIME HAS PASSED FROM TIME OF END OF UTTERANCE
Five Four Three	HOLD IMAGE CAPTURED AT TIME AT WHICH CERTAIN PERIOD OF TIME HAS PASSED FROM TIME OF START OF UTTERANCE
Spot Metering	ACTIVATE SPOT METERING
Center Metering	ACTIVATE CENTER-WEIGHTED METERING
Use a Flash	ACTIVATE STROBE LIGHT
No Flash	DEACTIVATE STROBE LIGHT

904 1002

EX1009, FIG. 10.

E. Claim 7 “The image recording device according to claim 1, wherein the storage is an internal storage of the image recording device.”

213. The Kim-Yamamoto-Thorn combination renders obvious the image recording device according to claim 1. *See* above §XII.B. Kim also discloses that “the storage is an internal storage of the image recording device.” For example, Kim discloses a mobile terminal 100 that includes “a memory 160 ... [and] a controller 180.” EX1008, ¶44; FIG. 1.



EX1008, FIG. 1.

214. The storage disclosed by Kim includes “any type or combination of suitable volatile and non-volatile memory or storage devices including ... random access memory (RAM), static random access memory (SRAM), electrically erasable programmable read-only memory (EEPROM), erasable programmable read-only memory (EPROM), programmable read-only memory (PROM), read-

only memory (ROM)....” EX1008, ¶81. These storage devices are internal to the terminal 100.

F. Claim 8 “The image recording device according to claim 1, wherein the storage is an external storage connected to the image recording device.”

215. The Kim-Yamamoto-Thorn combination renders obvious the image recording device according to claim 1. See above §XII.B. Kim alone or in view of Yamamoto also renders obvious that “the storage is an external storage connected to the image recording device.” According to Kim, the memory 160 may include “optical disk, multimedia card micro type memory, card-type memory, such as SD memory, XD memory, and the like” and that “[t]he mobile terminal 100 is able to operate in association with a web storage for performing a storage function of the memory 160 on Internet.” EX1008, ¶81. As such, the storage used by the memory 160 may be provided external to the digital device satisfying this claim limitation.

216. Additionally, Yamamoto discloses the use of “nonvolatile memory [that] may also be an external storage medium that can be connected to an information processing apparatus via an interface such as a local area network (LAN) adapter, or a universal serial bus (USB) adapter.” EX1009, ¶75. In my opinion, a POSITA would have understood that this externally connected storage could be used to store first or second image signals.

G. Claim 9

1. [9pre] “The image recording device according to claim 1, further comprising,”

217. The Kim-Yamamoto-Thorn combination renders obvious the image recording device according to claim 1. See above §XII.B.1.

2. [9a] “a communication unit including circuitry and configured to perform communication with a server device on the Internet,”

218. Kim discloses or renders obvious “a communication unit including circuitry and configured to perform communication with a server device on the Internet.” Kim discloses that its “mobile terminal 100 is able to operate in association with a web storage for performing a storage function of the memory 160 on Internet.” EX1008, ¶81. Kim further discloses that its wireless communication unit 110 includes a “wireless Internet module 113[that] supports Internet access for the mobile terminal 100.” EX1008, ¶¶45, 51.

219. As such, Kim discloses the claimed “communication unit” (e.g., wireless communication unit 110 with the wireless Internet module 113). Kim further discloses that the wireless communication unit 110 includes a “mobile communication module 112 transmits/receives wireless signals to/from one or more network entities, such as base station, external terminal, server, and the like.” EX1008, ¶¶45, 50. Thus, Kim discloses that its wireless communication unit 110 communicates with a server. Moreover, because Kim discloses “web storage” (i.e.,

“a storage function of the memory 160 on Internet”), it is my opinion that a POSITA would have understood that Kim’s “web storage” would have used the wireless Internet module 113 to communicate with, and perform storage on, a server device connected to the Internet.

3. [9b] “wherein the recorder is configured to record the first image signal input from the first camera or the second image signal from the second camera in the server device through the communication unit.”

220. Kim discloses “a communication unit including circuitry and configured to perform communication with a server device on the Internet. *See* above §XII.G.2. The Kim-Yamamoto-Thorn combination also discloses its recorder storing first and second image signals in an external storage. *See* above §XII.F. Specifically, Kim discloses that its “mobile terminal 100 is able to operate in association with a web storage for performing a storage function of the memory 160 on Internet.” EX1008, ¶81. In my opinion, a POSITA would have found it obvious from the teachings of Kim and Yamamoto to “record the first image signal input from the first camera or the second image signal from the second camera in the server device through the communication unit” as part of Kim’s “web storage” function.

H. Claim 10

1. [10pre] “The image recording device according to claim 1, further comprising,”

221. The Kim-Yamamoto-Thorn combination renders obvious the image recording device according to claim 1. See above §XII.B.

2. [10a] “a command voice storage configured to store a command voice for instructing photographing,”

222. The Kim-Yamamoto-Thorn combination renders obvious “a command voice storage configured to store a command voice for instructing photographing.” For example, Yamamoto discloses “a memory (for storing speech recognition data) 113.” EX1009, ¶33. According to Yamamoto, the “memory (for storing speech recognition data) 113 stores data to execute speech recognition.” EX1009, ¶67. A “speech recognition unit 107” includes “an acoustic analysis unit and a search unit, and recognizes a command (what is called a speech command) included in a period for which a user utters.” EX1009, ¶47. A “command is a combination of sounds that can be recognized by the speech recognition unit 107. An example of the command is ‘Shoot’.” EX1009, ¶48.

223. In my opinion, a POSITA would have understood that performing an acoustic analysis of input voice data to stored voice data (speech recognition data) would include detecting the user’s voice issuing the command. This process is used to determine a “speech recognition result” and if one of Yamamoto’s voice processes illustrated in FIG. 10 needs to be performed. EX1009, ¶¶55, 467-476.

FIG. 10

COMMAND	PROCESSING
Shoot	HOLD IMAGE CAPTURED AT TIME OF START OF UTTERANCE
Go	HOLD IMAGE CAPTURED AT TIME OF START OF UTTERANCE
Cheese	HOLD IMAGE CAPTURED AT TIME OF END OF UTTERANCE
Say Cheese	HOLD IMAGE CAPTURED AT TIME AT WHICH CERTAIN PERIOD OF TIME HAS PASSED FROM TIME OF END OF UTTERANCE
Five Four Three	HOLD IMAGE CAPTURED AT TIME AT WHICH CERTAIN PERIOD OF TIME HAS PASSED FROM TIME OF START OF UTTERANCE
Spot Metering	ACTIVATE SPOT METERING
Center Metering	ACTIVATE CENTER-WEIGHTED METERING
Use a Flash	ACTIVATE STROBE LIGHT
No Flash	DEACTIVATE STROBE LIGHT

EX1009, FIG. 10.

3. [10b] “wherein the recorder is configured to perform control such that a command voice to be recorded in the command voice storage is received from the audio input interface and stored in the command voice storage as a command voice registration process, and”

224. The Kim-Yamamoto-Thorn combination renders obvious that “the recorder is configured to perform control such that a command voice to be recorded in the command voice storage is received from the audio input interface and stored in the command voice storage as a command voice registration process.” Yamamoto discloses storing a command voice for instructing photographing (speech recognition data) in a command voice storage (memory 113). *See* above §XII.H.2.

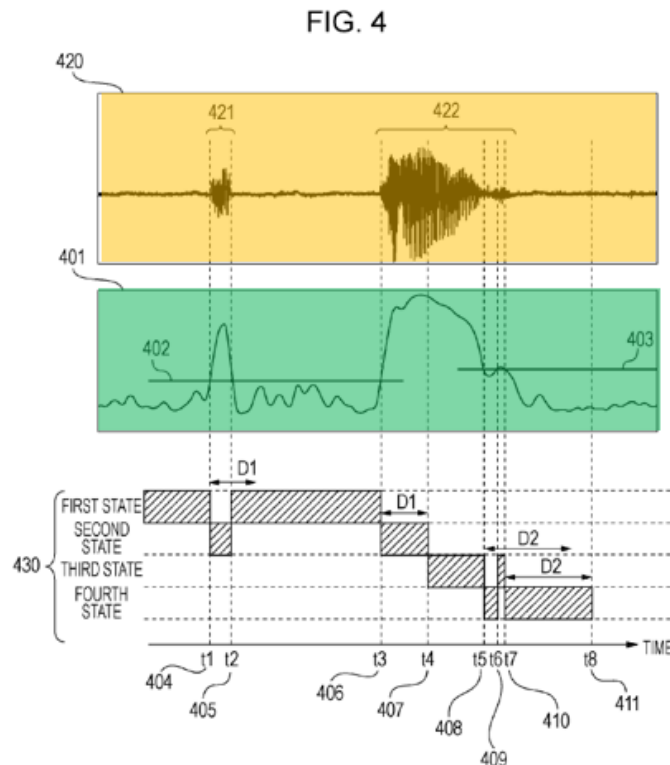
225. While Yamamoto does not classify the storage of the speech recognition data as being performed during a “command voice registration process,” it is my opinion that a POSITA would have understood that Yamamoto’s process is the same as or equivalent to the claimed “command voice registration process.” Indeed, Yamamoto’s storing of the speech recognition data is performed during a separate process that is not used during image capture. Moreover, registration processes were well known at the time. See above §X.J.3.

4. **[10c] “in the first photographing process, the recorder determines that the command voice instructs the photographing when the command voice input to the audio input interface is identical to the command voice stored in the command voice storage, and determines that the command voice does not instruct the photographing when the command voice input to the audio input interface is not identical to the command voice stored in the command voice storage.”**

226. The Kim-Yamamoto-Thorn combination renders obvious that “in the first photographing process, the recorder determines that the command voice instructs the photographing when the command voice input to the audio input interface is identical to the command voice stored in the command voice storage.” Yamamoto discloses that the “speech recognition unit 107 includes ... an acoustic analysis unit and a search unit, and recognizes a command (what is called a speech command) included in a period for which a user utters.” EX1009, ¶47. According

to Yamamoto, “a command is a combination of sounds that can be recognized by the speech recognition unit 107.” EX1009, ¶48 (“Shoot” voice command).

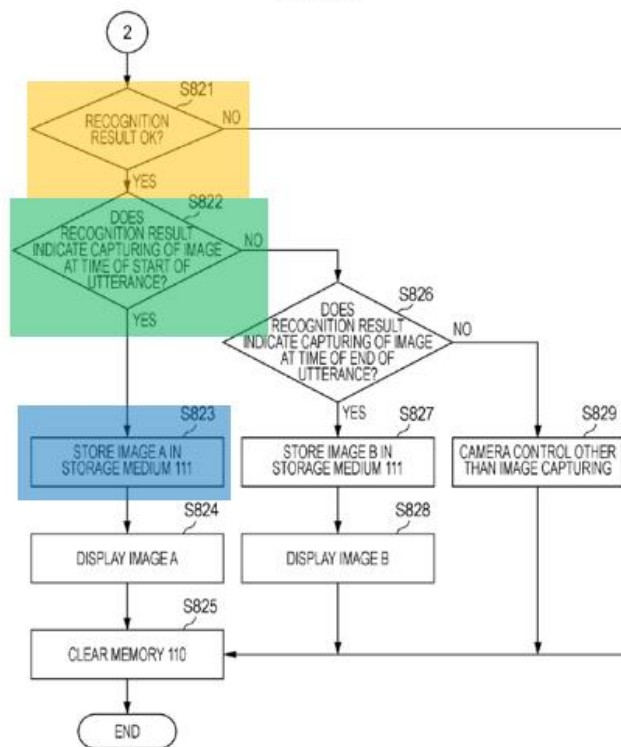
227. Yamamoto discloses performing an “acoustic analysis” between currently a received voice pattern and data (e.g., speech recognition data) and models stored in the memory 113. EX1009, ¶¶50-54. As one example, portions of the received audio signal 420 are compared to previously stored portions of a command (e.g., shoot) audio pattern 401 (referred to as being “obtained ... an existing method”):



EX1009, FIG. 4; *see also* ¶¶115-120.

228. As shown below in Yamamoto FIG. 8, once a recognition result is obtained, a “recognition result processing unit 108 determines whether to receive or discard a command corresponding to a recognition score in the obtained recognition result.” EX1009, ¶262 (S821). “If an obtained recognition score is greater than or equal to a predetermined threshold and a corresponding command is received (YES in step S821),” control of the digital camera 200 is determined by “control corresponding to the command included in the recognition result.” EX1009, ¶264 (S822). A capture image is stored at S823. EX1009, ¶265.

FIG. 8



EX1009, FIG. 8.

229. Moreover, the Kim-Yamamoto-Thorn combination discloses that, in the first photographing process, the recorder “determines that the command voice does not instruct the photographing when the command voice input to the audio input interface is not identical to the command voice stored in the command voice storage.” Specifically, Yamamoto discloses that if the recognition result is not Okay (i.e., a NO at S821), the result is discarded and the memory (for storing images) 110 is cleared.” EX1009, ¶¶373; 354 (“if utterance which is not intended to trigger capturing of an image is recognized in processing in step S821 of FIG. 8, the recognition result is discarded and the erroneously captured image is deleted.”).

XIII. GROUND 4: THE COMBINATION OF KIM, YAMAMOTO, THORN AND CHINN RENDERS CHALLENGED CLAIMS 4-6 AND 11 OBVIOUS

A. MOTIVATION to Combine Kim-Yamamoto-Thorn and Chinn

230. In my opinion, it would have been obvious to a POSITA to combine the Kim-Yamamoto-Thorn device with Chinn and a POSITA would have been motivated and capable of doing so. For starters, all four references relate to imaging devices. EX1004, ¶¶15-16; EX1008, ¶54; EX1009, ¶31; EX1011, ¶¶36-37. The Kim-Yamamoto-Thorn device allow manual and voice activated commands. EX1008, ¶¶56, 64, 66, 160-165; EX1009, ¶¶82-83; EX1004, ¶¶22, 23, 30. As discussed above the Kim-Yamamoto-Thorn device and Chinn have manual activation technology, *see above* §§X.B.3, X.B.9, XII.B.3, XII.B.9, and voice

activation technology, *see above* §§X.B.2, X.B.8, XII.B.2, XII.B.8, already installed, making their devices particularly suitable for each other. In my opinion, a POSITA therefore would have been motivated to look at Chinn to improve the Kim-Yamamoto-Thorn device, and vice versa.

231. The Kim-Yamamoto-Thorn device and Chinn allow images to be taken with a rear facing camera. *see above* §§X.B.3, XII.B.3. Moreover, all four references are concerned with ensuring that their respective users obtain the images they desire. EX1004, ¶¶29, 57, 61; EX1008, ¶¶60, 120, 160-166; EX1009, ¶¶5, 6, 8, 251, 382; EX1011, ¶¶3-5. In my opinion, a POSITA would have understood that one way to improve Kim-Yamamoto-Thorn's images taken with its rear facing camera 121' would be to implement a selectable delay between the manual activation of the device and the taking of the image, which would allow the photographer to stabilize the camera, among other things, before the image is taken. Chinn discloses such a delay. EX1004, ¶30. The implementation of a selectable delayed image capture (i.e., selectable standby time), would have merely amounted to another touch command/operation on the Kim-Yamamoto-Thorn device, which was already implementing touch commands for its photographic processes. EX1008, ¶¶93, 104, 113.

232. The Kim-Yamamoto-Thorn device and the Chinn device are two camera systems with front and back cameras. *See above* §§X.B.4, X.B.5, XII.B.4,

XII.B.5. The Kim-Yamamoto-Thorn device and the Chinn device activate the rear camera via a touch display operation. *See above §§X.B.3, X.B.8, XII.B.3, XII.B.8.* In my opinion, a POSITA would have been able to implement Chinn's selectable delayed touch display activated image process to delay image taking with the Kim-Yamamoto-Thorn rear camera as doing so would simply involve applying a known technique (i.e., selectable delay/timer between the touch operation and image taking as taught by Chinn) to a known device ready for improvement (Kim-Yamamoto-Thorn's rear camera of a two camera device) to yield predictable results (a properly taken image with the rear camera). It is my understanding that these are appropriate rationales for this combination.

233. In my opinion, a POSITA would have had a reasonable expectation of success in modifying the Kim-Yamamoto-Thorn device as the device already had the technology to do so (e.g., touch display activation, selection of the rear camera, delay timer).

B. Claim 4 “The image recording device according to claim 1, wherein the second standby time is settable or selectable by a user.”

234. The Kim-Yamamoto-Thorn combination renders obvious the image recording device according to claim 1. *See above §XII.B.* The Kim-Yamamoto-Thorn combination renders obvious a second standby time, *see above §XII.B.10,* but does not explicitly disclose that the second standby time is settable or

selectable by a user. Chinn, however, does. *See* above §X.E. As such, the Kim-Yamamoto-Thorn-Chinn combination renders claim 4 obvious.

C. Claim 5 “The image recording device according to claim 1, wherein the controller causes an elapse state of the first standby time from the photographing trigger to the recording start of the image signal to the recorder to be displayed on the touch display.”

235. The Kim-Yamamoto-Thorn combination renders obvious the image recording device according to claim 1. *See* above §XII.B. The Kim-Yamamoto-Thorn combination renders obvious a first standby time, above §XII.B.10, but does not explicitly disclose that the controller causes an elapse state of the first standby time from the photographing trigger to the recording start of the image signal to the recorder to be displayed on the touch display. Chinn, however, does. *See* above §X.F. As such, the Kim-Yamamoto-Thorn-Chinn combination renders claim 5 obvious.

D. Claim 6 “The image recording device according to claim 1, wherein the controller causes an elapse state of the second standby time from the photographing trigger to the recording start of the image signal to the recorder to be displayed on the touch display.”

236. The Kim-Yamamoto-Thorn combination renders obvious the image recording device according to claim 1. *See* above §XII.B. The Kim-Yamamoto-Thorn combination renders obvious a first standby time, above §XII.B.10, but does not explicitly disclose that the controller causes an elapse state of the second standby time from the photographing trigger to the recording start of the image

signal to the recorder to be displayed on the touch display. Chinn, however, does. See above §X.G. As such, the Kim-Yamamoto-Thorn-Chinn combination renders claim 4 obvious.

E. Claim 11

1. [11pre] “An image recording method of an image recording device, comprising”

237. To the extent the preamble is limiting, the Kim-Yamamoto-Thorn-Chinn combination renders obvious an “image recording method of an image recording device.” See above §XII.B.1.

2. [11a] “photographing an object and acquiring an image signal by a first camera or a second camera, the first camera being arranged on the same face side of a touch display and configured to acquire a first image signal, the second camera being arranged on an opposite side of the touch display and configured to acquire a second image signal;”

238. Kim discloses or renders obvious “photographing an object and acquiring an image signal by a first camera or a second camera, the first camera being arranged on the same face side of a touch display and configured to acquire a first image signal, the second camera being arranged on an opposite side of the touch display and configured to acquire a second image signal.” See above §§XII.B.4, XII.B.5.

3. **[11b] “in a case that the first camera is used for photographing: receiving a command voice from an audio input interface;”**

239. Kim alone or in view of Yamamoto renders obvious “in a case that the first camera is used for photographing: receiving a command voice from an audio input interface.” *See* above §§XII.B.2, XII.B.4.

4. **[11c] “determining whether or not the command voice includes a first instruction to start a recording of the first image signal;”**

240. Kim alone or in view of Yamamoto renders obvious “determining whether or not the command voice includes a first instruction to start a recording of the first image signal.” *See* above §§XII.B.2, XII.B.8.

5. **[11d] “performing a first standby process during a first predetermined time when the command voice includes the first instruction and when the first camera is enabled and the second camera is disabled; and”**

241. The Kim-Yamamoto-Thorn-Chinn combination renders obvious “performing a first standby process during a first predetermined time when the command voice includes the first instruction and when the first camera is enabled and the second camera is disabled.” *See* above §XII.B.10.

6. **[11e] “start recording the first image signal acquired by the first camera after the first predetermined time; and”**

242. The Kim-Yamamoto-Thorn-Chinn combination renders obvious “start recording the first image signal acquired by the first camera after the first predetermined time.” *See* above §§XII.B.6, XII.B.10.

7. **[11f] “in a case that the second camera is used for photographing: receiving a touch operation instruction from the touch display;”**

243. Kim discloses or renders obvious “in a case that the second camera is used for photographing: receiving a touch operation instruction from the touch display.” *See* above §§XII.B.3, XII.B.5.

8. **[11g] “determining whether or not the touch operation instruction includes a second instruction to start a recording of the second image signal;”**

244. Kim discloses or renders obvious “determining whether or not the touch operation instruction includes a second instruction to start a recording of the second image signal.” *See* above §§XII.B.3, XII.B.9.

9. **[11h] “performing a second standby process during a second predetermined time when the touch operation instruction includes the second instruction and when the second camera is enabled and the first camera is disabled; and”**

245. The Kim-Yamamoto-Thorn-Chinn combination renders obvious “performing a second standby process during a second predetermined time when the touch operation instruction includes the second instruction and when the second camera is enabled and the first camera is disabled.” *See* above §§XII.B.9, XII.B.10.

10. [11i] “start recording the second image signal acquired by the second camera after the second predetermined time,”

246. The Kim-Yamamoto-Thorn-Chinn combination renders obvious “start recording the second image signal acquired by the second camera after the second predetermined time.” See above §§XII.B.6, XII.B.9, XII.B.10. Specifically, Chinn discloses a “selectable ‘start 3 sec ready countdown’ control 303” when the shutter control 233 is pressed. EX1004, ¶36.

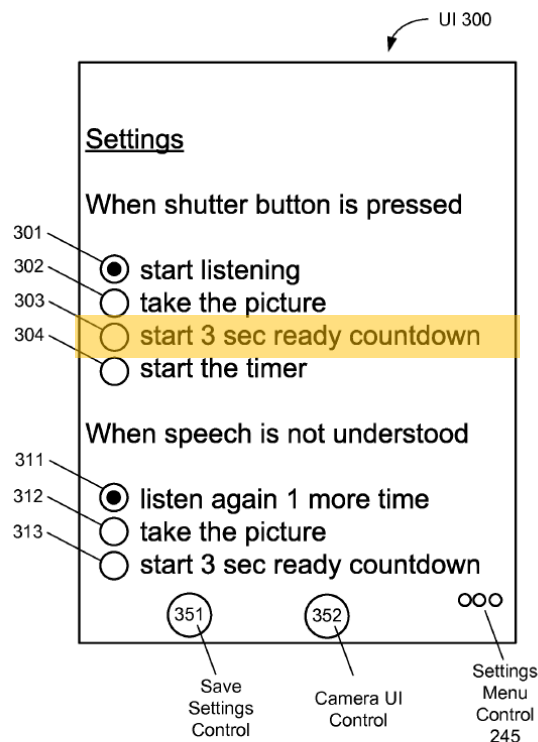


FIG. 3

EX1004, FIG. 3.

247. “When the ‘start 3 sec ready countdown’ control 303 is selected, ... camera control system 175 starts a countdown (such as a three second countdown

or any other countdown duration) and then takes a picture/initiates video recording in response to user selection of shutter control 233.” EX1004, ¶39. The selected countdown is the second predetermined time.

11. [11j] “wherein the first predetermined time is set to be longer than the second predetermined time, and”

248. The Kim-Yamamoto-Thorn-Chinn combination renders obvious that “the first predetermined time is set to be longer than the second predetermined time.” See above §XII.B.10.

12. [11k] “wherein the first predetermined time is a time from a recognition of the first instruction to a start of the recording of the first image signal acquired by the first camera, and the second predetermined time is a time from a recognition of the second instruction to a start of the recording of the second image signal acquired by the second camera.”

249. The Kim-Yamamoto-Thorn-Chinn combination renders obvious that “the first predetermined time is a time from a recognition of the first instruction to a start of the recording of the first image signal acquired by the first camera, and the second predetermined time is a time from a recognition of the second instruction to a start of the recording of the second image signal acquired by the second camera.” See above §XII.B.11.

XIV. CONCLUSION

250. Claims 1-11 of the ’757 patent are unpatentable for the reasons discussed above.

Brief Biography: Mr. Guidash received a BS in Electrical Engineering from the University of Delaware in 1981, and an MS in Electrical Engineering from Rochester Institute of Technology in 1991. Michael joined Kodak in 1981 as a Product Engineer for photometer ASIC's for Kodak film cameras. In 1986, he transferred to the Kodak Research Laboratories and CCD wafer fabrication facility. From 1986 – 1989, he developed 2um and 1um CMOS processes, and a 30V 4um BiCMOS process. These processes were used for gate arrays for many Kodak products, and output drivers Kodak copiers. From 1989 – 1996, Mr. Guidash managed the Smart Sensor Group which developed BiCMOS-CCD processes to provide fully integrated CCD systems on a chip. From 1993 – 1996, he also served as product and yield enhancement engineer for Kodak's high volume CCD's. In 1996 Michael helped form and led the CMOS Image Sensor (CIS) group. From 1996 to 2009, he managed the R&D and product development of CIS programs. Kodak closed the CIS business in August of 2009. From August of 2009 through April of 2012, Mr. Guidash worked as intellectual property technologist and coordinator. This included technical coordination of CIS patent applications and office actions, electronic components patent applications and office actions, and technical support for IP sales and licensing teams. Mr. Guidash left Kodak in May of 2012 to start a technology consulting company in the field of CIS. From 2012 to present, Mr. Guidash has continued development and innovation in CIS pixel and process technology, including pMOS pixels, Multi-bit binary pixels, low noise and high speed sensor readout design, high dynamic range image sensors, and BSI processes. He has authored or co-authored 34 papers/presentations in the fields of integrated circuits and image sensors. He has 118 issued patents and several active patent applications in the field of image sensors.

Career Highlights:

- **Chief Technologist and Innovator:** Initiated and led development efforts in CIS at Kodak in pixel and process design. Inventor of many key patents in the field of CMOS Image sensors including Pinned Photodiode Pixels, Camera-on-a-Chip architecture, and shared amplifier pixel architectures. Continued to innovate and invent to drive CIS cost reduction, features and performance. Applies strategic thinking to align business goals with short and long term technology and product plans. Known as a creative thinker and innovator, providing vision and leadership to bring ideas and concepts to the marketplace.
- **Technology Development Management:** Provided vision, roadmap and direction for a broad set of elements in circuit design, pixel architecture, process integration, and sensor/camera systems. Possesses technical and interpersonal skills to assemble, manage and motivate diverse cross-functional teams, that efficiently and successfully deliver to schedule.
- **Product Development:** Provided technical voice to market attack and business plans. Guided ideas and concepts from invention phase through R&D and through commercialization.
- **Technical Due Diligence:** Provided technical guidance and analysis for development partner selection, technology and resource acquisitions, and litigations.
- **Partner Management:** Negotiated, coordinated and directed 3rd party technology providers and external development partners, including foundries. Directed integration of CIS processes into 6 foundries.
- **Technical Skills:** CCD and CIS operation, design, device integration and fabrication technologies. Image sensor and ASIC yield enhancement; yield team management; rigorous and methodical problem solver, efficiently finding root causes and solutions for yield crises and problems.
- **Patents & Publications:** 118 issued patents; 34 publications

Professional Experience:

R.M. Guidash Consulting LLC: President, (May 2012 - Present)

Technical consulting services for CMOS Image Sensors (CIS):

- Process, pixels, circuits, sensor architectures, systems and IP. General and customized tutorials and advisement. Short and long term projects and problem solving.
- Development of CIS design and process technology, including pMOS pixels, multi-bit binary pixels, low noise and high speed sensor readout design, high dynamic range pixels, dark current and bright point reduction, and BSI device structures.

Eastman Kodak: Scientist and IP Specialist; Office of the CTO, (2010 - April 2012)

Post closure of Kodak CIS Business - Patent generation; patent application management; technical support for patent attorneys; technical support for IP sales and licensing teams.

- Continued patent generation for digital capture; technical support for pending patent applications; technical support for IP sales & licensing teams; Key member of team that sold CIS patents.

Eastman Kodak: Chief Technologist & Manager – CIS R&D; Image Sensor Division, (2001 - 2009)

Managed group of ~25 people in R&D of CIS technology elements, including pixel and process development, chip level architectures, analog readout architectures, and camera/module systems.

- Developed/demonstrated new technologies including Kodak panchromatic CFA patterns and processing, pMOS hole detector pixel, 3D hybrid stacked devices, and low read noise analog circuits. Designed and demonstrated 3D hybrid stacked BSI 1.4um pixel sensor in 2007-2008.
- Led team to file over 100 patent applications. Filed patent applications on and led development of 1st 3D hybrid stacked BSI CIS architecture. This led to demonstration of very high performance, low dark current BSI prototype sensors with pixel sizes ranging from 0.9um to 5.0um.
- Initiated and led a cross-functional camera R&D team directed at CIS and other Kodak technologies for novel co-optimized cameras and camera sub-systems.
- Provided technical guidance and analysis for selection and initiation of foundry and R&D partners.
- Managed directed technical interface with external partners in design, process and pixel development (IBM, TSMC, Ziptronix and others).

Eastman Kodak: Chief Technologist & Mgr. - CIS R&D/Prod. Dev; Image Sensor Division, ('95 - '01)

Managed and directed group of 10-15 people in all elements of CIS R&D and product development.

- Pioneered and championed CIS initiatives at Kodak.
- Inventor and co-inventor of many key patents in the field of CMOS Image sensors including Pinned Photodiode Pixels, Camera-on-a-Chip architecture, and shared amplifier pixel architectures.
- Led the development teams to key achievements; World's 1st commercialized pinned photodiode CIS, Megapixel CIS device, and Shared amplifier CIS pixel product.
- Led transfer of world's first commercial 1/2" optical format 1.3 megapixel CMOS image sensor into mass production, providing successful delivery to several compact digital camera products.
- Managed and directed technical interface with external partners in design, process and pixel development, (JPL, Photobit, Motorola, Intel, Tower Semiconductor).
- Initiated and directed a cross-functional team including resources from Motorola and other Kodak organizations to develop a small, low cost image module for cell phone applications. This effort won the 1997 Team Achievement Award at Kodak through development of a CIS cell phone module.

Eastman Kodak: Development Engineer – Smart Sensors; Image Sensor Division, (1989 – 1995)

- Led product delivery and technology development of all ASIC and smart sensor products. Performed all device modeling, device and process integration.
- Developed and demonstrated Interline CCD integrated with 2um CMOS on the same chip
- Led team to design and demonstrate first reported pinned PD Active Pixel CMOS Sensor, and linear CCD image sensor with on-chip timing and control.
- Led/coordinated world's 1st commercial megapixel CCD yield enhancement team at commercialization ramp up of DC40 digital camera. Brought yield from 0% to 60% in ~3 months assisting on-time launch of DC40 camera.
- Led/coordinated CCD yield enhancement team at commercialization ramp up of world's 1st USB peripheral, Kodak TCAM1. Brought yield from 0% to 50% in ~3 months.
- Led & directed CCD dark current and point defect reduction team.

Eastman Kodak: Product Engineer; Integrated Circuits Fabrication, Elmgrove Plant, (1984 – 1988)

Product Engineer for all Kodak Copier Output Driver IC's, DISC camera IC's, and Instant Camera IC's. Delivering ~6M devices per year. Responsible for all aspects of IC test, delivery, yield and cost.

- Developed software for device and statistical yield modeling
- Led and delivered on development of Smart Integrated Chemically Sensitive Field Effect Transistors for Kodak Harrow.
- Awarded Special Opportunity Graduate Program for MSEE degree. (RIT)

Eastman Kodak: Product Engineer; Integrated Circuits Fabrication, Elmgrove Plant, (1981 -1983)

- Product Engineer for all Kodak Instant Camera photometer IC's: brought yield of 5 new devices from 0% to 45% in ~4 months. Reached final yields of ~85%. Responsible for all aspects of IC test, packaging, delivery, customer interface and failure analysis, yield and cost.

Education:

M.S. (Electrical Engineering), Rochester Institute of Technology, 1991

B.S. (Electrical Engineering), University of Delaware, 1981

Publications and Presentations:

- 1 L.J. D'Luna, K.A. Parulski, T.J. Kenney, R.H. Hibbard, R.M. Guidash, P.R. Shelley, W.A. Cook, G.W. Brown, T.J. Tredwell; "A digital video signal processor for color image sensors" IEEE International Solid-State Circuits Conference, 1989 ISSCC. Digest of Technical Papers
- 2 W.A. Cook, K.A. Parulski, L.J. D'Luna, G.W. Brown, R.M. Guidash; "A digital signal processor for linear sensors"; IEEE Proceedings of the Custom Integrated Circuits Conference 1990 | Conference Paper
- 3 L. D'Luna, W. Cook, M. Guidash, G. Brown, T. Tredwell, J. Fischer, T. Tarn; "An 8x8 discrete cosine transform chip with pixel rate clocks"; IEEE ASIC Seminar; Sept. 1990
- 4 J.A. Vincent, W.A. Cook, L.J. D'Luna, G.W. Brown, R.M. Guidash; "A customizable timing controller for electronic imaging applications"; Proceedings of the IEEE 1991 Custom Integrated Circuits Conference
- 5 G. Ting, R.M. Guidash, P. Lee, C. Anagnostopoulos; "A Low Cost Smart-Power BiCMOS Driver Chip for Medium Power Applications"; IEEE ASIC Conference Proceedings; p. 466-469 [1994]
- 6 L. D'Luna, K. Parulski, D. Maslyn, M. Hadley, T. Kenney, R. Hibbard, M. Guidash, P. Lee, C. Anagnostopoulos; "A digital video signal post-processor for color image sensors"; IEEE ASIC Conference [1994]
- 7 P. Lee, R. Gee, M. Guidash, T. Lee, E. Fossum; "An active pixel sensor fabricated using CMOS/CCD process technology; 1995 IEEE Workshop on CCD's and Advanced Image Sensors.
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13 M. Guidash, M. Mattern; “High-performance CMOS image sensor design, a combination of disciplines”, New York Microelectronics Design Conference, Rochester NY, Sept 2003

14 J. Zhang, S. Cooper, A. LaPietra, M. Mattern, M. Guidash, E. Friedman; “A low power thyristor-based CMOS programmable delay element. ISCAS (1) 2004; p. 769-772

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16 F. Chu, M. Guidash, J. Compton, S. Coppola, W. Hintz; “Improving low-light CMOS performance with 4-transistor 4-shared architecture and charge domain binning; SPIE proceedings Vol 6069; pp. 25-33; 2006

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US Patents: (118 issued)

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10,356,350	10,306,169	10,277,843	10,257,448	10,249,660	10,165,209	10,154,220	10,136,090
10,104,318	10,103,190	10,070,084	10,002,895	9,894,304	9,883,130	9,681,071	9,667,898
9,521,349	9,521,351	9,491,391	9,462,181	9,432,597	9,380,245	9,264,639	9,241,118
9,070,611	9,001,251	8,957,981	8,946,612	8,836,784	8,829,637	8,736,728	8,730,362
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8,164,682	8,158,453	8,101,450	8,076,749	8,049,256	8,018,016	7,973,876	7,969,469
7,859,581	7,858,915	7,830,435	7,705,900	7,675,097	7,674,648	7,443,431	7,361,877
7,342,213	7,238,926	7,092,017	6,730,899	6,730,897	6,721,008	6,714,239	6,710,804
6,680,498	6,657,665	6,624,850	6,587,146	6,552,323	6,504,195	6,486,504	6,466,266
6,423,994	6,365,926	6,352,869	6,323,476	6,307,195	6,297,070	6,259,124	6,218,692
6,218,656	6,184,928	6,160,281	6,127,697	6,107,655	6,100,556	6,100,551	6,069,377
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5,621,230	5,591,997	5,387,536	5,338,946	5,881,184	5,872,371		

Organizations:

- Member IEEE
- International Image Sensor Workshop; Member Technical Program Committee 2017, 2019, 2021, 2023
- Board of Directors – International Image Sensor Society 2018 – 2023
- Guest Editor in Chief: 2022 Solid State Image Sensors Special Issue, IEEE Trans. on Electron Devices

Awards:

- Eastman Kodak Company – Distinguished Inventor
- Rambus – Qualified as a Gold Distinguished Inventor
- CMOS Image Sensor work at Kodak awarded a 2019 - 2020 Technical Emmy
- 2022 Kepner-Tregoe Problem Solving Excellence Award

Expert Consultant Cases:

(italic text indicates client; listed as Plaintiff vs. Defendant(s) or Petitioner vs. Patent Owner)

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2. Imperium Holdings vs. *Motorola Mobility, Kyocera, Sony Mobile*; Infringement analysis; Civil Action No. 4:11-cv-00163-RC-ALM; February 2013
3. Cal-Tech vs. *Omnivision Technologies*; Validity Analysis; December 2013
4. HSM LLC vs. *ST Microelectronics et. al.*; Infringement and Validity Analysis; April-October 2014
5. Fujian Newland Computer Co. Ltd. vs. *Hand Held Products Inc.*; Validity Analysis; Case IPR2013-00595; August 2014
6. Fujian Newland Computer Co. Ltd. vs. *Honeywell Inc.*; Validity analysis; Chinese Invalidity; May 2017
7. *Kyocera* vs. e-Watch;; Validity Analysis; 2 IPR Petitions; December 2014
8. *Aptina, ON Semi* vs. Collabo Innovations; Infringement and Validity Analysis; Case No. 1:14-cv-01093-SLR; April-October 2015
9. *Sony Corp.* vs. Collabo Innovations Inc.; Validity Analysis; IPR2016-00939, IPR2016-00940, IPR2016-0094, IPR2017-00958, IPR2017-00960; January 2016-May 2017
10. Hamamatsu vs. *SiOnyx*; Validity Analysis; IPR2016-01910; 2017;
11. *SiOnyx* vs. Hamamatsu; Infringement Analysis; Civil Action No. 15-cv-13488-FDS; 2018
12. *Lenovo* vs. Photonic Imaging Solutions; IPR2019-01075
13. *Honeywell Inc.* vs. Opticon Inc., ITC Inv. No. 337-TA-1165; Infringement Analysis; July 2019
14. *SmartSens Technology Inc.* vs. Omnivision Technologies Inc.; IPR2019-01263; Validity Analysis; April 2019
15. *Honeywell Inc.* vs. Zebra Technologies Corp. , ITC Inv. No. 337-TA-1285; Infringement Analysis; April 2021
16. *Hand Held Products, Inc. and Metrologic Instruments, Inc.* -v- Zebra Technologies Europe Limited and Zebra Technologies Corp., Claim No. HP2021000036;
17. Symbol Technologies LLC and Zebra Technologies Europe Limited -v- *Honeywell International Inc. and (2) Honeywell Control Systems Limited*, Claim No. HP-2022-000001
18. VisionX Technologies, LLC v. *Sony Corporation*; Validity Analysis; 2 IPR declarations; Fall 2022
19. Greenthread LLC v. *Sony Group Corporation*; Validity Analysis; 4 IPR declaration; Fall 2022

Expert Consultant Depositions or Trial Testimony:

1. Imperium Holdings vs. *Motorola Mobility, Kyocera, Sony Mobile*; Deposition testimony, Civil Action No. 4:11-cv-00163-RC-ALM; February 2013
2. Fujian Newland Computer Co. Ltd. vs. *Hand Held Products Inc.* ; Deposition testimony; Case IPR2013-00595; August 2014, May 2015
3. *Sony* vs. Collabo Innovations Inc.; Deposition testimony; (Total of 5 depositions 1/2017 – 10/2017)
4. Hamamatsu vs. *SiOnyx*; Deposition testimony; IPR2016-01910; July 2017
5. *SiOnyx* vs. Hamamatsu; Deposition testimony; 1:15-cv-13488; April 2018
6. Fujian Newland Computer Co. Ltd. vs. *Hand Held Products Inc.* ; Trial testimony; Chinese Invalidity case; May 2017
7. Fujian Newland Computer Co. Ltd. vs. *Hand Held Products Inc.* ; Trial testimony; Chinese Invalidty case; August 2018
8. *Honeywell Inc.* vs. Opticon Inc., ITC Inv. No. 337-TA-1165; Deposition testimony; December 2019
9. *SmartSens Technology Inc.* vs. Omnivision Technologies Inc.; IPR2019-01263; Deposition testimony; February 2020, June 2020, September 2020
10. *Honeywell Inc.* vs. Zebra Technologies Corporation, ITC Inv. No. 337-TA-1285; Infringement Deposition testimony; May 2022