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**Datasheet for the decision
of 11 July 2019**

Case Number: T 1058/14 - 3.5.04

Application Number: 10151652.4

Publication Number: 2219366

IPC: H04N5/232, H04N5/235

Language of the proceedings: EN

Title of invention:

Image capturing device, image capturing method, and image capturing program

Applicant:

Casio Computer Co., Ltd.

Headword:

Relevant legal provisions:

EPC Art. 56, 84, 123(2)

Keyword:

Amendments - added subject-matter - main request (yes)
Claims - clarity - first auxiliary request (no)
Inventive step - second auxiliary request (yes)

Decisions cited:

Catchword:



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Case Number: T 1058/14 - 3.5.04

D E C I S I O N
of Technical Board of Appeal 3.5.04
of 11 July 2019

Appellant: Casio Computer Co., Ltd.
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Representative: Grünecker Patent- und Rechtsanwälte
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Decision under appeal: **Decision of the Examining Division of the
European Patent Office posted on 5 December 2013
refusing European patent application
No. 10151652.4 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman C. Kunzelmann
Members: R. Gerdes
B. Müller

Summary of Facts and Submissions

- I. The appeal is directed against the decision by the examining division to refuse European patent application No. 10 151 652.4, published as European patent application EP 2 219 366 A1.
- II. The patent application was refused on the grounds that claim 1 of both the main request and the second auxiliary request contravened Article 123(2) EPC. Claim 1 of the first and second auxiliary requests was held to be unclear (Article 84 EPC) and the claimed subject-matter of all requests was found to lack an inventive step (Article 56 EPC). The following documents were cited in the decision:
- D1: US 2008/0170126 A1
D2: US 2006/0158523 A1
D3: US 2006/0017837 A1.
- III. The applicant appealed against this decision requesting that it be set aside and that a patent be granted on the basis of the main request on which the decision under appeal was based.
- IV. In a communication under Article 15(1) RPBA, which was annexed to the summons to oral proceedings, the board commented on the objections to the claims of the main request raised in the decision under appeal.
- V. By a reply to the summons dated 7 June 2019, the appellant submitted an amended set of claims of a first auxiliary request.
- VI. Oral proceedings were held before the board on 11 July 2019. At the end of the oral proceedings the

appellant requested that the decision under appeal be set aside and that a European patent be granted on the basis of the claims of the main request on which the decision under appeal was based, the claims of the first auxiliary request filed by letter dated 7 June 2019 or the claims of the second auxiliary request filed during the oral proceedings of 11 July 2019.

VII. Claim 1 of the main request reads as follows:

"An image capturing device, comprising:

an image capturing means (7a, A2) configured to acquire

images of a first group, the first group comprising a plurality of images in which a subject is photographed for a first exposure time, respectively, the plurality of images being consecutive in time, and

images of a second group, the second group comprising a plurality of images in which the subject is photographed for a second exposure time, respectively, the plurality of images being consecutive in time, wherein the second exposure time is shorter than the first exposure time,

wherein the image capturing means (7a, A10) is configured to acquire the images of the first group and the images of the second group in response to one photographing instruction;

a hand-blur determination means (7a, A10) configured to determine whether blur caused by hand movement of the image capturing device has occurred during acquisition

of the images of the first group by way of the image capturing means;

a selection means (7a, A11, A12) configured to selecting [sic] either one image acquired from the images of the first group or one image acquired from the images of the second group, in accordance with a determination result by the hand-blur determination means, and

a storage means configured to store one image selected by the selection means on a storage medium (11)."

VIII. Claim 1 of the first auxiliary request reads as follows (amendments to claim 1 of the main request are underlined; deletions are marked in strikethrough):

"An image capturing device, comprising:

an image capturing means (7a, A2) configured to ~~acquire~~ photograph

images of a first group, the first group comprising a plurality of images in which a subject is photographed for a first exposure time, respectively, the plurality of images being consecutive in time, ~~and~~

images of a second group, the second group comprising a plurality of images in which the subject is photographed for a second exposure time, respectively, the plurality of images being consecutive in time, wherein the second exposure time is shorter than the first exposure time, and

a third image in which a subject is photographed with a higher sensitivity than the sensitivity with which either the images of the first group are photographed or the images of the second group are photographed,

wherein the image capturing means (7a, A10) is configured to ~~acquire~~ photograph the images of the first group, ~~and~~ the images of the second group, and the third image in response to one photographing instruction;

a hand-blur determination means (7a, A10) configured to determine whether blur caused by hand movement of the image capturing device has occurred during ~~acquisition~~ photographing of the images of the first group by way of the image capturing means;

an image-blur determination means (7a, A8) configured to determine whether image blur of a subject has occurred during photographing of the images of the first group by way of the image capturing means due to the subject itself moving,

a selection means (7a, A11, A12) configured to ~~selecting,~~ if it is determined by the image blur determination means that no image blur has occurred, either ~~one~~ an image that is acquired from the images of the first group or ~~one~~ an image that is acquired from the images of the second group, in accordance with a determination result by the hand-blur determination means, and to select the third image if it is determined by the image-blur determination means that image blur has occurred, and

a storage means configured to store ~~one~~the image selected by the selection means on a storage medium (11)."

- IX. Claim 1 of the second auxiliary request corresponds to claim 1 of the first auxiliary request, with the last part of the claim being amended as follows:

"... a selection means (7a, A11, A12) configured to select, if it is determined by the image-blur determination means that no image blur has occurred, either an image ~~that is acquired from the images~~ of the first group or an image that is acquired from the images of the second group, in accordance with a determination result by the hand-blur determination means, and to select the third image if it is determined by the image-blur determination means that image blur has occurred,

an image processing means (7a, 7h, A12) for synthesizing the images of the second group to generate a new image, wherein the image that is acquired from the images of the second group is the new image, and

a storage means configured to store the image selected by the selection means on a storage medium (11)."

- X. The appellant's arguments, as far as relevant to the present decision, may be summarised as follows:

The skilled person would have understood from the application as filed that the steps for eliminating hand-blur and image/subject-blur were separate and that hand-blur could be suppressed separately and independently of image/subject-blur (see Figure 2 and paragraphs [0005] and [0034]). Claim 1 as originally

filed did not refer to a third image, which was a further indication for the skilled person that the image-blur suppression was not required for the invention. Consequently, the selection means of claim 1 focused on steps A10 to A12 of Figure 2.

Regarding the clarity of claim 1 of the first auxiliary request the appellant argued that claim 1 had been clarified by replacing the term "acquire" with "photograph" in cases where no processing of the photographed images was involved. Claim 3 confirmed that an acquired image was not necessarily a raw image but one which could be synthesised from other images.

Regarding the inventive step of the claimed subject-matter, the appellant argued that none of the documents on file disclosed taking a series of images consisting of two groups with different exposure times and a third image. According to claim 1 of the second auxiliary request these images were processed such that hand-blur and image/subject-blur were detected and adequate images were selected to be stored.

Reasons for the Decision

1. The appeal is admissible.

The disclosed invention

2. The application relates to an image capturing device, a corresponding method and a program.

In order to improve image quality in view of blur caused by movement of a subject (subject- or image-blur) and movement of the photographer's hand (hand-

blur), the application proposes to take a sequence of images with different sensitivities and exposure times if the user presses the shutter button of the camera (see page 1, lines 9 to 11 and page 8, lines 16 to page 9, line 14 of the application as filed). These images are processed so as detect the presence of hand-blur and/or image-blur in the images. Depending on the results, suitable images are selected or combined to provide an output image of improved quality (see Figure 2 and page 14, line 14 to page 15, line 17).

Main request, amendments, Article 123(2) EPC

3. According to Article 123(2) EPC the European patent application may not be amended in such a way that it contains subject-matter which extends beyond the content of the application as filed. It follows from several rulings of the Enlarged Board of Appeal that the applicable criterion to decide whether an amendment extends the content of the application as filed is what a skilled person would derive directly and unambiguously, using common general knowledge, and seen objectively and relative to the date of filing, from the whole of the description, claims and drawings as filed (see for example G 2/10, Reasons, point 4.3 and Case Law of the Boards of Appeal of the European Patent Office, 8th edition, 2016, section II.E.1.2).
- 3.1 The feature of "an image-blur determination means (7a, A8) for determining whether image blur of a subject has occurred during acquisition of the images of the first group by way of the image capturing means" of claim 1 as originally filed has been deleted from present claim 1. In addition, claim 1 initially specified a "selection means (7a, A11, A12) for selecting ... in accordance with a determination result by the hand-blur

determination means and a determination result by the image-blur determination means". In present claim 1, the dependence of the selection on the image-blur determination has been deleted.

3.2 With reference to paragraphs [0005] and [0034] of the application as published (corresponding to page 2, line 20 to page 3, line 3 and page 16, lines 4 to 14) and Figure 2, the appellant argued that the skilled person would have understood from the application as filed that the steps for eliminating hand-blur and image/subject-blur were separate and that hand-blur could be suppressed separately and independently of image/subject-blur. Hand-blur suppression was described in steps A10 to A12 of Figure 2, which were separate from the test for subject-blur in step A8 and the selection of the first image in step A9. Claim 1 as originally filed did not refer to the third image, which was a further indication for the skilled person that the image blur suppression was not required for the invention. The elimination of the above features from claim 1 as originally filed was therefore justified.

3.3 The board cannot agree with this assessment. The summary of the invention and claim 1 as originally filed refer to "a selection means ... for selecting ... in accordance with a determination result by the hand-blur determination means **and** a determination result by the image-blur determination means", (emphasis added by the board). The further independent claims 9 and 10 specify corresponding method steps. Moreover, the only embodiment of the invention, the operation of which is described in detail on pages 8 to 14 with reference to Figure 2, discloses suppression of subject-blur and hand-blur. The essentials of that embodiment are

summarised on page 14, line 14 to page 15, line 17. This summary refers to "blur caused by hand movement" and "subject-blur". The advantage of the method is summarised twice on page 15, lines 2 to 4 and lines 9 to 11: "Therefore, it is possible to select an optimal image having less blur depending on the photographing situation and to perform output thereof." In both cases, the previous sentence refers to both hand-blur and subject-blur.

The appellant's argument that paragraphs [0005] and [0034] of the application as published referred only to hand-blur suppression did not convince the board. These passages concern problems with hand-blur suppression in prior-art devices. They neither indicate that these devices did not perform subject-blur suppression nor do they provide an indication that the selection means of the invention may be adapted to perform a selection considering only hand-blur. Moreover, the lack of a reference to a third image in claim 1 does not provide a clear indication that subject-blur was optional for the invention. At best it could be understood as a hint to perform subject-blur suppression based on another image of the first or second group of images.

- 3.4 Hence, when considering the whole of the description, claims and drawings as filed, the board arrives at the conclusion that the teaching of the application is directed at a solution for reducing blur generated by both hand movement and subject movement.
- 3.5 It follows that claim 1 of the main request contains added subject-matter which extends beyond the content of the application as filed, contrary to Article 123(2) EPC.

First auxiliary request, clarity, Article 84 EPC

4. According to Article 84 EPC, the claims must define the matter for which protection is sought. They must be clear and concise and be supported by the description.

4.1 In claim 1 of the first auxiliary request some occurrences of the term "acquire" have been replaced by the word "photograph". In addition, claim 1 specifies a third image that is photographed and an image-blur determination means. Finally, the definition of the selection means has been amended to include the selection of the third image if image-blur has occurred.

4.2 Amended claim 1 specifies "a selection means ... configured to select ... either an image that is acquired from the images of the first group or an image that is acquired from the images of the second group ... and to select the third image if it is determined by the image-blur determination means that image blur has occurred".

4.3 The amendments relating to the photographing of the images of the first and second groups as well as of the third image "in response to one photographing instruction" clarify claim 1 in the sense that the claimed image capturing device takes a series of shots resulting in the above images.

In contrast, the definition of the selection means is ambiguous. Usually the term "acquire", when used in the context of cameras, takes the meaning of "to locate and hold (a desired object) in a detector" (see online dictionary Merriam Webster, <https://www.merriam->

webster.com/dictionary/acquire), i.e. it may be understood to relate to "capturing an image", similarly to the verb "to photograph".

However, against the backdrop of the only embodiment in the description - and as argued by the appellant - selecting "an image that is acquired from the images of the second group" has to be understood as involving a multiplane addition of the images of that group (see page 13, lines 8 to 14; page 14, lines 14 to 20 and page 15, lines 11 to 15). Acquiring an image can therefore be construed as implying post-processing of a captured image or even a group of images to synthesise a new image from one or more captured images. As argued by the appellant this interpretation is confirmed by dependent claim 3 of the present request, which specifies that the "image acquired from the images of the second group" was generated by synthesising the images of the second group. By analogy, however, based on this broad interpretation the feature of selecting "an image that is acquired from the images of the first group" in claim 1 would have to be construed such that post-processing may be carried out on the images of the first group. There is no support for that interpretation in the application. Hence, in view of the usual understanding of the term and the lack of support in the description for the broad interpretation as regards the first group of images, it is questionable whether the skilled person would understand claim 1 in that sense.

- 4.4 For the interpretation of the term "to acquire", the appellant relied on the specification in claim 3 and argued that it followed from claim 3 that an acquired image was not necessarily a raw image but one which could be synthesised from several images. The board is

not convinced by that argument. Whereas a dependent claim may render an independent claim on which it depends unclear, for example by providing information changing the meaning of features of the independent claim, a dependent claim cannot render an independent claim clear. For the sake of legal certainty, an independent claim has to be clear in itself without relying on dependent claims for clarification. The board also notes that a dependent claim might be deleted in the course of post-grant proceedings such as limitation or opposition proceedings, which may leave the independent claim without its (clarifying) dependent claim.

- 4.5 Hence, the board concludes that claim 1 of the appellant's first auxiliary request is not clear, contrary to the requirements of Article 84 EPC.

*Second auxiliary request
Amendments, Article 123(2) EPC*

5. Compared with the claims of the main request, i.e. the sole request on which the decision under appeal was based, claim 1 of the second auxiliary request has been restricted by replacing some occurrences of the term "acquire" by the word "photograph". These amendments are based, for example, on page 3, lines 8 to 10 and page 14, lines 18 to 26. In addition, based on page 14, lines 14 to 16 and page 8, line 24 to page 9, line 4, claim 1 now specifies a third image that is photographed with a higher sensitivity. Claim 1 also reintroduces the image-blur determination means from claim 1 as originally filed. The definition of the selection means has been amended to include selecting an image of the first group, an image synthesised from the images of the second group, or the third image

under the conditions which are presented in Figure 2, steps A8 to A12 together with page 12, line 4 to page 13, line 14 and claim 3 of the application as filed. Dependent claim 3 has accordingly been deleted. The further independent claims 6 and 7 and dependent claims 2 to 5 have been aligned with claim 1.

Hence, the board finds that the claims of the appellant's second auxiliary request do not contain subject-matter which extends beyond the content of the application as filed and that they thus comply with Article 123(2) EPC.

Clarity, Article 84 EPC

6. By including the feature of claim 3 of the first auxiliary request in claim 1 and reformulating the selection means such that "either an image of the first group or an image that is acquired from the images from the second group..." is selected, the lack of clarity of claim 1 of the first auxiliary request has been overcome (see point 4 above). The board sees no other lack of clarity in the present set of claims. Hence, the claims conform with Article 84 EPC.

Inventive step, Article 56 EPC

7. The examining division rejected claim 1 of the then main request for lack of inventive step in view of the common general knowledge.
 - 7.1 It considered the subject-matter of claim 1 of the then valid main request as corresponding to an automation of a routine well known to the person skilled in the art. The skilled person (a photographer) would routinely capture images with shorter exposure when motion blur

might happen; the skilled person was also familiar with the associated trade-offs and would have selected the image with the longer exposure time if it exhibited no blur. Otherwise, the skilled person would have selected an image with a shorter exposure time. Hence, the automation of this routine could not be considered to involve an inventive step.

A means to determine whether blurring had happened was the only feature in claim 1 that was not available to the skilled person; however, this feature was anticipated for example in D1, which disclosed a sharpness measure (D1, paragraph [0037]) to select a reference image having the least blur among several input images (D1, paragraphs [0093] to [0095]). Accordingly, the subject-matter of claim 1 was rendered obvious by the combination of the knowledge of the person skilled in the art and the disclosure of D1 (see decision under appeal, Reasons, points 12 and 13).

7.2 Present claim 1 contains several additional features compared with claim 1 of the main request on which the decision under appeal is based; see point 5 above. At least in combination these features cannot be considered obvious from the common general knowledge.

7.3 D1 may alternatively be considered as the closest prior art with respect to the subject-matter of claim 1. It relates to a camera capable of providing image stabilisation against motion of the camera (see paragraphs [0003] and [0062]). To stabilise the output image, multiple images are captured, each with a short exposure time, and then combined to provide an output image (see paragraphs [0084] and [0088]). Hence, D1 discloses an image capturing means configured to photograph images of a group which are synthesised to

compensate for hand-blur. D1 also discloses the storage means (Figure 8: 252) for storing the output image of claim 1.

7.4 Hence, claim 1 differs from D1 at least on account of the capturing of a further (first) group of images having a longer exposure time than the images of the second group, and of a third image photographed with a higher sensitivity than those of the first and second groups. Moreover, D1 does not disclose those features of claim 1 which relate to image-blur determination and the selecting of the third image in case of image-blur. Selecting an image of the first group in accordance with the determination result by the hand-blur determination means is not disclosed in D1 either.

7.5 The combination of features in claim 1 makes it possible to provide an image of improved quality in terms of image-blur and hand-blur. The corresponding technical problem is regarded as providing an image of improved quality in terms of image-blur and hand-blur.

7.6 None of the further cited documents D2 and D3 discloses the above distinguishing features. There is also no suggestion to that effect in these documents.

7.7 Hence, the subject-matter of claim 1 and of the further independent claims 6 and 7 is not rendered obvious by the cited documents. Nor can the board see any other document or combination of documents on file by which the skilled person would have arrived at the claimed subject-matter.

7.8 It follows that the subject-matter of the present set of claims involves an inventive step (Article 56 EPC).

Conclusion

8. The board sees no obstacle to granting a patent on the basis of the claims of the second auxiliary request. However, the description needs to be duly adapted. Hence, the board considers it appropriate to remit the case to the department of first instance with the order to grant a patent with the claims of the second auxiliary request and a description to be adapted thereto.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the examining division with the order to grant a European patent with the following claims and a description to be adapted thereto:

Claims 1-7 of the second auxiliary request received during the oral proceedings of 11 July 2019.

The Registrar:

The Chairman:



K. Boelicke

C. Kunzelmann

Decision electronically authenticated