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Datasheet for the decision of 16 February 2016

Case Number: T 0857/11 - 3.5.04

Application Number: 06744874.6

Publication Number: 2016759

IPC: H04N5/225

Language of the proceedings: EN

Title of invention:
OPTICAL IMAGE RECORDING DEVICE WITH SMALL HEIGHT AND HIGH RESOLUTION

Applicant:
Nokia Technologies Oy

Headword:

Relevant legal provisions:
EPC 1973 Art. 84
EPC Art. 123(2)

Keyword:
Claims - clarity (no)
Amendments - added subject-matter (yes)
Content of cross-referenced document incorporated in claim

Decisions cited:
T 0689/90, T 0196/92, T 1497/06, T 1415/07

Catchword:

Europäisches Patentamt
European Patent Office
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Case Number: T 0857/11 - 3.5.04

D E C I S I O N
of Technical Board of Appeal 3.5.04
of 16 February 2016

Appellant: (Applicant)	Nokia Technologies Oy Karaportti 3 02610 Espoo (FI)
Representative:	Cohausz & Florack Patent- & Rechtsanwälte Partnerschaftsgesellschaft mbB Bleichstraße 14 40211 Düsseldorf (DE)
Decision under appeal:	**Decision of the Examining Division of the European Patent Office posted on 3 December 2010 refusing European patent application No. 06744874.6 pursuant to Article 97(2) EPC.**

Composition of the Board:

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

Summary of Facts and Submissions

I. The appeal is against the decision of the examining division to refuse European patent application No. 06 744 874.6 under Article 97(2) of the European Patent Convention (EPC).

II. The application was refused on the grounds that claim 1 of all requests then on file was not clear (Article 84 EPC) and its subject-matter did not involve an inventive step (Article 56 EPC) in view of documents

D1: US 5 194 959 A and
D2: US 6 850 279 B1.

III. The applicant appealed against this decision and requested that the decision be set aside. With the statement of grounds of appeal, the appellant filed claims according to a new main and auxiliary request. It indicated that the new main request corresponded to the first auxiliary request underlying the decision under appeal. Oral proceedings were requested as a precaution.

IV. The board issued a communication pursuant to Article 15(1) of the Rules of Procedure of the Boards of Appeal (RPBA), annexed to a summons to oral proceedings. It indicated that the appellant should be prepared to discuss the technical meaning of the expressions "comparatively small" and "comparatively broad", and whether "comparatively" related to a comparison with an unspecified conventional size camera. With respect to the issue of inventive step, the board indicated that it tended to agree with the reasons given in the decision under appeal.

V. With a letter of reply dated 7 January 2016, the appellant filed claims of a new main and new first to fifth auxiliary requests, with corresponding arguments. It requested that the decision be set aside and that a patent be granted on the basis of the claims of the main request or the first, second, third, fourth or fifth auxiliary request. The appellant also informed the board that it would not be attending the oral proceedings.

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

"Flat optical camera module for a mobile phone comprising

- a housing (1) having a comparatively small height (h) and at least one comparatively broad optical image information entering surface (2),
- an optical path unit including a first lens array (3a, 3b), a second lens array (4a, 4b) and an optical image recording device including an image sensor (5a, 5b), while in the optical path unit the first lens array (3a, 3b) is guiding the entering optical information to the optical axis of the second lens array (4a, 4b) extending substantially perpendicular to the height (h) of the housing (1) and the optical image information is received by the image sensor (5a, 5b), and
- the flat optical camera module for a mobile phone further including electrical means coupled to the image sensor (5a, 5b) for processing and storing the image data,

characterised in that at least two different optical path units (3a, 3b, 4a, 4b, 5a, 5b) are comprised, each of which is processing and recording at least a respective part of the entering optical information, in that each of the optical path units comprises a two-

dimensional planar image sensor (5a, 5b), particularly a CCD or CMOS sensor, one dimension of which is extending along the height (h) of the housing, and each of the image sensors comprising its electrical connections (14b) at the side extending along the height (h) of the housing (1) so that its optically active area is used along the entire height (h) of the housing (1), and in that combining means are provided in the flat optical camera module for a mobile phone for electrically combining the signals recorded in the respective optical image recording devices."

VII. Claim 1 of the first auxiliary request corresponds to claim 1 of the main request, with the first bullet point in the precharacterising portion being replaced by

"• a housing (1) having a comparatively small height (h) and at least one comparatively broad optical image information entering surface (2) so that the camera module has a flat configuration compared with conventional size cameras,".

VIII. Claim 1 of the second auxiliary request corresponds to claim 1 of the first auxiliary request, with the last feature (starting with "and in that combining means are provided") being replaced by

"in that combining means are provided in the flat optical camera module for a mobile phone for electrically combining the signals recorded in the respective optical image recording devices, in that at least a pair of optical path units (3a, 3b, 4a, 4b, 5a, 5b) being arranged anti-parallel to each other is comprised, each of which optical path units is processing its respective image entering along a

respective viewing cone (10a, 10b) allocated to the corresponding first lens array (3a, 3b), and in that the combining means are provided to composite *(sic)* the complete image information."

IX. Claim 1 of the third auxiliary request corresponds to claim 1 of the second auxiliary request, with the first bullet point in the precharacterising portion being replaced by

"• a housing (1) having a comparatively small height (h) and at least one comparatively broad optical image information entering surface (2) so that the camera module has a flat configuration compared with conventional size cameras that are cameras for which the height of the camera is dependent on the dimensions of the lens system used and is totally dependent on the focal length thereof,".

X. Claim 1 of the fourth auxiliary request corresponds to claim 1 of the third auxiliary request, with the last feature of the characterising portion (i.e. "and in that the combining means are provided to composite the complete image information") being replaced by:

"in that the combining means are provided to composite the complete image information, in that the flat optical camera module for a mobile phone comprises an optical zoom, and in that each of the first lens arrays (3a, 3b) of the at least two different optical path units (3a, 3b, 4a, 4b, 5a, 5b) has a reflective surface, wherein the angle of the reflective surface, said angle corresponding to the viewing angle of the respective first lens array (3a, 3b), is adjustable."

XI. Claim 1 of the fifth auxiliary request corresponds to claim 1 of the fourth auxiliary request, with the last feature reading

"in that the combining means are provided to composite the complete image information, in that the flat optical camera module for a mobile phone comprises an optical zoom, in that each of the first lens arrays (3a, 3b) of the at least two different optical path units (3a, 3b, 4a, 4b, 5a, 5b) has a reflective surface, wherein the angle of the reflective surface, said angle corresponding to the viewing angle of the respective first lens array (3a, 3b), is adjustable, and in that the first and second lens arrays are completely accommodated within the housing (1)."

XII. The board held oral proceedings on 16 February 2016 in the appellant's absence, in accordance with Rule 71(2) EPC 1973 and Article 15(3) RPBA. The chairman noted that the appellant requested that the decision under appeal be set aside and that a patent be granted on the basis of the claims of the main request or the first, second, third, fourth or fifth auxiliary request, to be examined in this order, all requests having been filed with the letter of 7 January 2016.

At the end of the oral proceedings, the chairman announced the board's decision.

XIII. The reasons for the decision under appeal, as far as relevant for the board's decision, may be summarised as follows:

The relative terms "comparatively small" and "comparatively broad" had no generally recognised meaning. It was not clear to what the height and the

optical image information entering surface were being compared. This rendered the definition of the claimed subject-matter unclear. The reference to "conventional sized cameras" on page 1, last paragraph and figure 2 of the application did not make it any clearer, because the term "conventional camera" was not defined at all. At the priority date of the present application, a huge range of cameras had been available, from large studio cameras to miniaturised surveillance cameras.

XIV. The appellant's arguments may be summarised as follows:

The examining division had erred in its assessment that the relative terms "comparatively small" and "comparatively broad" led to a lack of clarity of the claim. According to decision T 545/01, it was established case law of the boards of appeal that the use of relative terms in a claim could be accepted where the skilled person was able to understand the meaning of this term in a given context. Page 1 of the present application made it clear that D2 disclosed an image recording device having a camera housing with a comparatively broad surface and a comparatively small height, and that the basic set-up according to the claim preamble corresponded to the basic camera set-up taught by D2. The person skilled in the art would derive from the description that the comparatively small height and the comparatively broad optical image information entering surface were merely an effect of the arrangement of the optical components, and that the relevant conventional size cameras did not take advantage of this arrangement. This arrangement was such that the optical axis of the second lens array extended perpendicularly to the height of the housing. Thus the height of the housing could be reduced.

In the context of the present application, a "conventional size camera" was a camera in which the lens or lenses and the image sensor shared the same optical axis, such as for instance portable consumer cameras. In such cameras, the height of the housing that comprised the lens or lenses and the image sensor was essentially determined by the height of the lens system arranged in front of the image sensor.

The explicit definition of the "conventional size cameras" in claim 1 of the third to fifth auxiliary requests was based on the reference to D2 given in the application as filed. It was pertinent case law, clarified e.g. in decisions T 196/92 and T 689/90, that features mentioned in a cross-referenced document could be incorporated into the wording of a claim if the application as filed left no doubt that such features contributed to achieving the technical aim of the invention and were precisely defined and identifiable within the total technical information contained in the reference document.

Reasons for the Decision

1. The appeal is admissible

2. Main request: clarity (Article 84 EPC 1973)

2.1 It is undisputed that in the present case the key issue for the assessment of the clarity of claim 1 is the technical meaning of the expressions "comparatively small height" and "comparatively broad optical image information entering surface". These expressions are used in claim 1 to define the kind of optical camera module for which protection is sought. In the analysis

below it is assumed *arguendo,* and in the appellant's favour, that the description may be used in the examination as to clarity. The question whether and, if so, to which extent such use is possible, is left open.

2.2 Considering the wording of claim 1 alone, there are two comparable dimensions specified in claim 1, namely the height (h) of the housing and the breadth of the optical image information entering surface (2). These dimensions and their relationship further specify the feature that the optical camera module is "flat".

2.2.1 Such a relationship of dimensions is consistent with the disclosure in some other parts of the application. Indeed, a comparison of the height (h) of the housing and the dimensions (length and width) of the optical image information entering surface (2) of the camera module illustrated in figures 2 and 3 indicates that the height (h) of the housing of the camera module of the invention is smaller than the dimensions of the optical image information entering surface (2). The same holds true (at least in respect of the length of the optical image information entering surface (2)) for the prior-art camera module illustrated in figure 1. Also, the description is at least in part consistent with this relation of dimensions. In respect of figure 1, it states on page 6: "The housing 1 has a three-dimensional shape with a **relatively small** height h, a length l and a width w (not to be seen). The housing 1 comprises two **relatively broad** surfaces extending along the length l of the housing 1" (emphasis added by the board). And in respect of figure 2, it states on page 7: "Basically, the embodiment according to the present invention includes a housing 1 similar to that of Figure 1, but in which

two different, independently operating optical path units, generally designated as a, b are comprised."

2.3 However, claim 1 does not explicitly specify that the expressions "comparatively small height" and "comparatively broad optical image information entering surface" define that the relevant comparison is between the height and breadth of the optical camera module.

2.4 On the contrary, page 1 of the description states:

"US 6,850,279 B1 [i. e. D2] discloses an optical image recording device according to the preamble.

The optical image recording device according to the prior art comprises a camera housing with 'comparatively' broad surfaces and a 'comparatively' small height, while 'comparatively' means that cameras of that kind have a flat configuration compared with conventional size cameras. In this type of camera according to the prior art mentioned above, the lens system is completely accommodated within the housing such that the optical image recording system at all times has a low height and a robust structure. Thus, this type of camera can easily be kept in a wallet or a small handbag designed for carrying credit cards. Such a camera has, compared to other prior art cameras, e.g. card type cameras, the advantage that the lens system does not have to be removed from the housing before being inserted in such a wallet or handbag."

2.5 According to this statement, the relevant comparison is with undefined "conventional size cameras". This statement explains that the optical camera module has a flatter configuration than conventional size cameras

which are not flat enough to be easily kept in a wallet.

2.5.1 This does not necessarily mean, however, that the optical camera module of the present application is flat enough for the camera to be easily kept in a wallet. For instance, a further indication concerning the flatness of the camera module is given on page 5, third paragraph, according to which the camera module becomes so thin that "it can be placed next to e.g. the battery, the engine, the loudspeaker or the vibrator of the mobile phone without increasing the thickness of the phone".

2.6 Thus, both in the wording of claim 1 alone and in the description, there is uncertainty as with what the "comparatively small height" and the "comparatively broad optical image information entering surface" referred to in claim 1 have to be compared. And this uncertainty is increased by the fact that "conventional size cameras" do not have a defined size or set-up.

2.7 The appellant's argument based on case law which allowed the use of a relative term in a claim when the skilled person was able to understand the meaning of the term in the context of the application did not convince the board, since in the present case the meaning of the relevant terms in the context of the application is uncertain.

2.8 The argument that it was clear from page 1 of the description that the basic set-up according to the claim preamble corresponded to the basic camera set-up taught by D2 did not convince the board that the uncertainty discussed above was resolved.

2.8.1 The basic camera set-up discussed in D2 is illustrated in figures 2 to 4 of D2, which are similar to the set-up of figure 1 of the present application. In particular, figure 2A illustrates the height of the housing and figure 2B the length and width of the optical image information entering surface. It can be seen from these figures that the height of the housing in D2 is smaller than the dimensions of the optical image information entering surface.

2.8.2 However, D2 also discloses, in the "background of the invention", that conventional cameras and electronic cameras are available in many different designs and sizes, and that portable cameras are usually miniaturised so that they can be carried in a bag or pocket. Nevertheless, their size and shape make them impractical to carry as easily as other personal items such as a credit card or driver's licence (D2, column 1, lines 10 to 18). Indeed, D2 refers explicitly to a "compact, flat configuration" and "a compact, flat camera which can be kept in a wallet or a small handbag designed for carrying credit cards" (column 2, lines 53 to 58). Thus the camera of D2 may be designed to be flat in comparison with prior-art portable cameras.

2.8.3 Hence, D2 does not establish an unambiguous reference with which a "comparatively small height" of the housing and the "comparatively broad optical image information entering surface" referred to in claim 1 are to be compared.

2.9 The argument that the disputed expressions merely explicitly stated the effect of the arrangement of the optical components in D2, in which arrangement the optical axis of the second lens array extended

perpendicularly to the height of the housing, did not convince the board, either.

2.9.1 First, it is true that the present application makes it clear that it is an object of the invention to improve the optical image recording device mentioned in the preamble in such a way that it is optimised with respect to both its mechanical construction and optical resolution (see page 2, last complete paragraph), and that D2 discloses an optical image recording device according to the preamble. However, this merely means that one example of a prior-art document disclosing an optical image recording device according to the preamble is D2. The discussion of D2, and the intended optimisation with respect to mechanical construction and optical resolution, are formulated in such general terms that they do not allow the person skilled in the art to determine technical features of the optical image recording device of D2 which, in addition to those explicitly mentioned in the preamble of claim 1, are implicitly features of claim 1 of the present application.

2.9.2 Second, this argument boils down to an assertion that the disputed features are merely an explanation of the effects of the features of the optical path unit in the second bullet point of claim 1. However, the presentation of the disputed features in the application gives the person skilled in the art the information that they define some (unclear) technical limitation of the shape of the housing (see points 2.2 to 2.6 above).

2.9.3 Third, it is true that folding the optical axis into a direction substantially perpendicular to the height of the housing may allow the height of the housing to be

reduced, and that the embodiments of D2 illustrated in the figures make use of this effect. However, not all of the cameras of D2 necessarily have the optical axis arranged perpendicularly to the height of the housing, because the folding of the optical axis by an angle of less than 180 degrees may be sufficient to reduce the height (see D2, column 3, lines 55 to 63). Thus the arrangement of the optical components in D2 is not limited to the arrangement specified in the preamble of claim 1 of the present application. Moreover, other factors may also have an influence on the required height of the housing. Examples are the dimensions and properties of the optical path unit (see the discussion of the front lens group in D2, column 4, and of the S-Ratio and height-ratio in D2, column 6, line 55 to column 7, line 34) and the dimensions of any further elements that may be accommodated in the housing (see column 9, lines 48 to 51 or the embodiment of figure 5 having the image sensor extending along the height of the housing). The discussion of D2 in the present application does not clearly identify which of these factors, if any, are implicit features of the claimed invention.

2.10 In view of the above, the board finds that the technical meaning of the expressions "comparatively small height" and "comparatively broad optical image information entering surface" in claim 1 is not clear. Hence claim 1 does not comply with Article 84 EPC 1973.

3. First auxiliary request: clarity (Article 84 EPC 1973)

3.1 Claim 1 of the first auxiliary request specifies that the housing has a comparatively small height (h) and at least one comparatively broad optical image information entering surface (2) **so that the camera module has a**

flat configuration compared with conventional size cameras (emphasis added by the board).

3.2 Thus the flat optical camera module of claim 1 is specified to have a flatter configuration than conventional size cameras. However, as discussed in points 2.6 and 2.8.2 above, a conventional size camera does not have a defined size or set-up. Thus, the "flat configuration" referred to in claim 1 is not clearly defined.

3.3 The appellant's arguments in respect of clarity of claim 1 of the first auxiliary request are the same as those in respect of claim 1 of the main request (see points 2.7 to 2.10 above).

3.4 In view of the above, the board finds that claim 1 of the first auxiliary request does not meet the clarity requirement of Article 84 EPC 1973.

4. Second auxiliary request: clarity (Article 84 EPC 1973)

4.1 Claim 1 of the second auxiliary request specifies, in addition to the features of claim 1 of the first auxiliary request, that "a pair of optical path units ... being arranged anti-parallel to each other is comprised".

4.2 The anti-parallel arrangement of the optical path units does not clarify the size or set-up of a conventional size camera. Thus the above considerations in the context of the first auxiliary request apply to the second auxiliary request, too. Nor did the appellant submit arguments as to the clarity of claim 1 of the second auxiliary request.

4.3 Thus, the board finds that claim 1 of the second auxiliary request does not meet the clarity requirement of Article 84 EPC 1973.

5. Third auxiliary request: added subject-matter (Article 123(2) EPC)

5.1 Claim 1 of the third auxiliary request specifies that "the camera module has a flat configuration **compared with conventional size cameras that are cameras for which the height of the camera is dependent on the dimensions of the lens system used and is totally dependent on the focal length thereof**" (emphasis added by the board).

5.2 Thus claim 1 clarifies the technical meaning of the "conventional size cameras" referred to in the claim.

5.3 However, this technical meaning of "conventional size cameras" is not disclosed in the application as filed. As discussed in section 2 above, the application as filed does not define what a "conventional size camera" is (the relevant parts of the description and drawings referred to in section 2 above have not been amended).

5.3.1 The discussion of D2 in the present application (see pages 1 and 2 as filed and point 2.4 above) essentially discloses a number of features of the camera of D2. The present application is very brief when it comes to the comparison of the camera of D2 with cameras of the prior art relevant to D2. There is only a reference to "conventional size cameras" and a statement of an advantage compared to "other prior art cameras, e.g. card type cameras". There is no indication that a "conventional size camera" in the present application corresponds to a specific camera type discussed in D2.

Nor is there an indication whether "other prior cameras, e.g. card type cameras" are "conventional size cameras" or whether they belong to a different group of prior-art cameras.

5.4 As indicated by the appellant in point IV.1 of the letter dated 7 January 2016, the technical meaning of "conventional size cameras" as specified in claim 1 is instead taken from the discussion of the "background of the invention" in D2 (column 1, lines 24 to 26). This part of D2 is not identified or dealt with in the discussion of D2 in the present application.

5.5 The appellant's arguments as to allowability under Article 123(2) EPC, based on case law which had allowed features mentioned in a cross-referenced document to be incorporated into the wording of a claim, did not convince the board.

5.5.1 The appellant indicated that one criterion applied in the case law was "if the invention as filed leaves no doubt that such features contribute to achieving the technical aim of the invention and if such features are precisely defined and identifiable within the total technical information within the reference document" (see point IV.1 of the letter of reply dated 7 January 2016). However, the decisions known to the present board have certainly not held that fulfilling this criterion is sufficient to meet the requirements of Article 123(2) EPC. On the contrary, for instance decision T 689/90 (see point 2.2 of the Reasons) considered four criteria. These are also discussed in T 1415/07 (see point 17 of the Reasons). Other criteria are discussed in T 1497/06 (see points 10 and 11 of the Reasons). In T 196/92, the board came to the judgement that the information on the grinding vehicles provided

by certain documents referred to in the description as filed was part of the teaching of the description. One important aspect of the reasons was that in the description "it was specifically said that the pigments are incorporated into the claimed compositions in the form of a paste, that the pigment paste may be prepared by grinding a pigment into a grinding vehicle and that suitable pigment grinding vehicles are those described in the above mentioned published European patent applications" (see point 2.4 of the Reasons).

5.5.2 In the present case, however, the amendment to claim 1 gives a definition of the otherwise undefined expression "conventional size cameras". It is not related to the technical aim of the invention. Moreover, the term "conventional size cameras" is not present in D2. Instead the term "conventional cameras" is used, in conjunction with "electronic cameras". The discussion of the "background of the invention" in D2 also makes reference to "portable cameras". The definition inserted into claim 1 is taken from a discussion of electronic cameras in D2. Thus the technical meaning of the expression "conventional size cameras" is not precisely defined and identifiable within the total technical information of D2.

5.5.3 In view of the above, the board finds that the definition of "conventional size cameras" given in claim 1 is not disclosed in the application as filed. Nor is there a convincing argument that in the present case the feature taken from the discussion of the "background of the invention" in the cross-referenced document D2 may be considered a part of the disclosure of the present application. Thus, the introduction of this definition has amended the application in such a

way that it contains subject-matter which extends beyond the content of the application as filed.

5.5.4 Thus, the board finds that claim 1 of the third auxiliary request infringes Article 123(2) EPC.

6. Fourth and fifth auxiliary requests: added subject-matter (Article 123(2) EPC)

6.1 Claim 1 of the fourth and fifth auxiliary requests comprise the same definition of "conventional size cameras" as claim 1 of the third auxiliary request. The further amendments concern features of the combining means and do not affect the definition of "conventional size cameras". Thus, the considerations in section 5 are also valid for these claims.

6.2 As a consequence, the board finds that claim 1 of the fourth and fifth auxiliary requests infringes Article 123(2) EPC.

7. In view of the above, none of the appellant's requests is allowable. Therefore, the appeal is to be dismissed.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

K. Boelicke B. Müller

Decision electronically authenticated