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Datasheet for the decision of 11 September 2020

Case Number: T 0570/16 - 3.5.04

Application Number: 11164284.9

Publication Number: 2391138

IPC: H04N13/00, G06F1/16, H04N13/02, H04N13/04

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Title of invention:
Hand-held electronic device

Applicant:
Nintendo Co., Ltd.

Headword:

Relevant legal provisions:
EPC Art. 56, 84, 123(2)

Keyword:
Inventive step - (yes) - after amendment

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Catchword:

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Case Number: T 0570/16 - 3.5.04

D E C I S I O N
of Technical Board of Appeal 3.5.04
of 11 September 2020

Appellant: (Applicant)	Nintendo Co., Ltd. 11-1 Kamitoba Hokotate-cho Minami-ku Kyoto 601-8501 (JP)
Representative:	Lang, Johannes Bardehle Pagenberg Partnerschaft mbB Patentanwälte, Rechtsanwälte Prinzregentenplatz 7 81675 München (DE)
Decision under appeal:	**Decision of the Examining Division of the European Patent Office posted on 8 October 2015 refusing European patent application No. 11164284.9 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairwoman	B. Willems
Members:	A. Seeger
	T. Karamanli

Summary of Facts and Submissions

I. The appeal is against the decision of the examining division to refuse European patent application No. 11 164 284.9, published as EP 2 391 138 A2.

II. The documents cited in the decision under appeal included the following:
D1: EP 1 357 726 A1
D2: US 2002/0126202 A1

III. The application was refused on the ground that the subject-matter of claim 1 of the then main request and the then first auxiliary request lacked inventive step over the combined disclosures of documents D1 and D2 (Article 56 EPC). The then second auxiliary request was not admitted into the proceedings in accordance with Rule 137(3) EPC.

IV. The applicant ("appellant") filed notice of appeal. With the statement of grounds of appeal, the appellant filed claims according to a main request and auxiliary requests I to VI. The appellant submitted that the claims of the present main request corresponded to the claims of the main request on which the decision under appeal was based. Alternatively, the appellant requested that oral proceedings be held before the board.

V. The board issued a summons to oral proceedings. In a communication under Article 15(1) of the revised Rules of Procedure of the Boards of Appeal (RPBA 2020, OJ EPO 2020, Supplementary publication 2) annexed to the summons, the board expressed the provisional opinion that the subject-matter of claim 1 according to the

main request did not involve an inventive step within the meaning of Article 56 EPC.

The board also stated that it was inclined to not admit the auxiliary requests into the appeal proceedings under Article 12(4) of the Rules of Procedure of the Boards of Appeal in the version of 2007 (RPBA 2007, OJ EPO 2007, 536 and EPC 16th edition, June 2016, pages 601 to 629).

Moreover, the board indicated that, *prima facie:*

(a) claim 1 of auxiliary request I gave rise to objections under Articles 84 and 123(2) EPC

(b) claim 1 of auxiliary request II gave rise to an objection under Article 84 EPC, and its subject-matter appeared to be obvious (Article 56 EPC)

VI. By letter dated 11 August 2020, the appellant filed amended claims according to auxiliary requests II, V and VI, replacing the previous auxiliary requests II, V and VI. The appellant maintained its request for oral proceedings if the main request was not considered allowable by the board.

VII. On 11 September 2020, the board held oral proceedings. During the oral proceedings, the appellant filed amended claims 1 to 10 of a new main request, which was largely based on auxiliary request II filed by letter dated 11 August 2020, and withdrew all other requests. The appellant's final request was thus that the decision under appeal be set aside and that a patent be granted on the basis of claims 1 to 10 of the main request filed during the oral proceedings of 11 September 2020.

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

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

"A hand-held electronic device (10) including a first housing (21) and a second housing (11) provided beneath the first housing, wherein

the first housing is provided with a stereoscopic display section (22) capable of displaying an image which is stereoscopically visible with naked eyes, and is provided with a pair of imaging sections (23a, 23b) capable of stereoscopic shooting; and

a parallax adjusting operation section (25) for adjusting a parallax of the stereoscopic display section, the parallax adjusting operation section being a slider physically moveable in a predetermined direction, and

wherein a stereoscopic effect of a stereoscopic image displayed on the stereoscopic display section is adjusted by shifting a position of a right-eye image and a position of a left-eye image taken by the pair of imaging sections (23a, 23b) in horizontal direction in accordance with the position of the slider when the slider is located between a first position and a second position, and

a single planar image different from the stereoscopic image is displayed on the stereoscopic display section, after parallax barrier is set to OFF, when the slider is located at a third position which is different from the first position and the second position, wherein the

planar image is either one of the two images taken by the pair of imaging sections (23a, 23b)."

Claims 2 to 10 of the main request are dependent claims.

IX. The examining division's arguments relevant to the present decision may be summarised as follows.

(a) Document D1 represented the prior art closest to the subject-matter of claim 1 according to the then main request (see decision under appeal, point 12).

(b) The problem to be solved might be regarded as how to provide the stereoscopic display section with views comfortable for different users (see decision under appeal, point 13.2).

(c) Document D2, paragraphs [0018] to [0019], disclosed a display with a parallax adjusting operation section (see decision under appeal, point 13.2). Document D2, paragraphs [0005] and [0020], taught using a slider physically moveable in a predetermined direction to allow a user to adjust a stereoscopic effect to provide a comfortable view. Document D2, paragraph [0019], further disclosed that control knob 108 could be set to a minimum perceived depth. The examining division equated this minimum perceived depth with zero depth. This effectively corresponded to a plane image, which was the third position of claim 1. The examining division concluded that the skilled person would have regarded it as standard to include these features of document D2 in the hand-held electronic device described in document D1 to solve the problem posed.

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

(a) A basis for the amendments to claim 1 was found in:
- original claim 3
- paragraphs [0066] to [0069] and Figures 6A to 6C of the application as published
- paragraph [0069] in combination with paragraph [0059] or paragraph [0129] of the application as published
- paragraph [0069] in combination with paragraphs [0118] to [0119] and Figure 14: S24, S25 of the application as published

A basis for the amendments to dependent claim 4 was found in paragraph [0049], lines 34 to 36, of the application as published.

(b) The objection of lack of clarity raised by the board under point 4.5.2 of its communication pursuant to Article 15(1) RPBA 2020 was overcome by adding the feature "*after parallax barrier is set to OFF*" to claim 1.

(c) Starting from document D1, the person skilled in the art would not have turned to document D2 (see statement of grounds of appeal, point III 4(a)). The teaching of document D2 related to a television unit using a lenticular array display. Therefore, the skilled person faced with the problem of improving a mobile telephone using a parallax barrier display technology, as in document D1, would not have considered this document.

(d) The person skilled in the art would not have used the slider known from document D2 to adapt the depth of a displayed 3D image as set out in document D2. Instead, they would have used other adjusting means already available in a mobile phone according to document D1, such as the buttons shown on the housing 20 in Figure 2B.

(e) In a mobile phone according to document D1, the switching between displaying a 2D and a 3D image was only triggered by a rotation of the display into a particular orientation (see points B.I.2 to B.I.6 of the letter dated 11 August 2020 further elaborated on during the oral proceedings). In document D1, each specific camera mode (e.g. a mode using one camera or a mode using two cameras) was pre-assigned to a particular display orientation via an initial configuration step carried out by the user. Hence, document D1 already disclosed specific means to switch between displaying a 2D and a 3D image (the display rotation). Thus, there was no need to use a slider for this purpose.

(f) Even if it were assumed that in a mobile phone according to document D1 switching between displaying a 2D and a 3D image occurred within a single display orientation, the person skilled in the art would not have used a slider to trigger this switching. Firstly, the mobile telephone known from document D1 comprised other means to switch between displaying a 3D and a 2D image within a single display orientation, such as the buttons shown on the housing 20 in document D1, Figure 2B. It was not evident why the person skilled in the art would have deviated from this switching means which was already available in the mobile telephone

known from document D1. Secondly, using the slider to switch between displaying a 3D and a 2D image had disadvantages. Namely, to switch between displaying a 3D and a 2D image, the slider first needed to be moved from its position corresponding to a comfortable depth to the minimum depth position. When switching back from displaying a 2D to a 3D image, the position corresponding to a comfortable depth needed to be found again.

Reasons for the Decision

1. The appeal is admissible.

2. *Main request, amendments (Article 123(2) EPC)*

2.1 Compared with claim 1 as originally filed, claim 1 of the main request contains the following amendments indicated by underlined text:

(a) the first housing is provided with a stereoscopic display section (22) capable of displaying an image which is stereoscopically visible with naked eyes, and is provided with a pair of imaging sections (23a, 23b) capable of stereoscopic shooting;

(b) a parallax adjusting operation section (25) for adjusting a parallax of the stereoscopic display section, the parallax adjusting operation section being a slider physically moveable in a predetermined direction, and

(c) wherein a stereoscopic effect of a stereoscopic image displayed on the stereoscopic display section

is adjusted by shifting a position of a right-eye image and a position of a left-eye image taken by the pair of imaging sections (23a, 23b) in horizontal direction in accordance with the position of the slider when the slider is located between a first position and a second position, and

(d) a single planar image different from the stereoscopic image is displayed on the stereoscopic display section, after parallax barrier is set to OFF, when the slider is located at a third position which is different from the first position and the second position, wherein the planar image is either one of the two images taken by the pair of imaging sections (23a, 23b).

2.2 The board is convinced that the basis for the amendments to the claims indicated by the appellant (see point X(a) above) is correct. The board maps this basis to the amendments in parts (a) to (d) as follows, converting at the same time the references to the application as published into references to the application as originally filed.

2.3 A basis for the amendments in part (a) can be found in original claim 3.

A basis for the amendments in part (b) can be found on page 14, first full paragraph, to page 15, first paragraph, (paragraphs [0066] to [0069] of the application as published) and in Figures 6A to 6C of the application as filed.

The amendments in part (c) are based on the paragraph bridging pages 14 and 15 (paragraph [0069] of the application as published) in combination with the

paragraph bridging pages 11 and 12 (paragraph [0059] of the application as published) or the paragraph bridging pages 33 and 34 (paragraph [0129] of the application as published) of the application as filed.

The amendments in part (d) are based on the paragraph bridging pages 14 and 15 (paragraph [0069] of the application as published) in combination with page 30, second and third paragraph (paragraphs [0118] and [0119] of the application as published), and Figure 14: S24, S25 of the application as filed.

2.4 Dependent claims 2 and 3 correspond to original claims 2 and 4, respectively.

Dependent claim 4 corresponds to original claim 5 with the further amendment that there are multiple shutter buttons for the stereoscopic shooting, based on page 9, lines 1 and 2 (paragraph [0049] lines 34 to 36 of the application as published), of the application as filed.

Dependent claims 5 to 8 correspond to original claims 7 to 10, respectively.

Dependent claims 9 and 10 correspond to original claims 14 and 15, respectively.

2.5 In view of the above, the claims of the main request do not contain subject-matter which extends beyond the content of the application as filed. Thus, they meet the requirements of Article 123(2) EPC.

3. *Main request, clarity (Article 84 EPC)*

3.1 According to Article 84 EPC, the claims "*shall be clear and concise*".

3.2 According to established case law, Article 84 EPC has to be interpreted as meaning not only that a claim must be comprehensible from a technical point of view, but also that it must define the object of the invention clearly, that is to say indicate all the essential features of the invention (see Case Law of the Boards of Appeal of the European Patent Office ("Case Law"), 9th edition 2019, II.A.3.2).

3.3 In point 4.5.2 of its communication pursuant to Article 15(1) RPBA 2020 (see point V above), the board objected that an essential feature was missing in claim 1 of the then auxiliary requests I and II, namely how a single planar image different from a stereoscopic image is displayed on a stereoscopic display section.

3.4 The board agrees with the appellant (see point X(b) above) that this objection has been overcome in present claim 1 by specifying: "*a single planar image different from the stereoscopic image is displayed on the stereoscopic display section, after parallax barrier is set to OFF*" (emphasis added by the board).

3.5 The board also considers that there are no other clarity objections.

3.6 Hence, the claims of the main request meet the requirements of Article 84 EPC.

4. *Main request, inventive step (Article 56 EPC)*

4.1 According to Article 56 EPC, "*[a]n invention shall be considered as involving an inventive step if, having regard to the state of the art, it is not obvious to a person skilled in the art*". It is established case law that the "problem and solution approach" is an appropriate tool for assessing whether claimed subject-matter fulfils the requirements of Article 56 EPC (see Case Law, I.D.2).

4.2 Document D1 is the closest prior art for the assessment of inventive step of claim 1 (see also point IX(a) above).

4.3 The subject-matter of claim 1 differs from the disclosure of document D1 in the following features:

(a) a parallax adjusting operation section (25) for adjusting a parallax of the stereoscopic display section

(b) the parallax adjusting operation section being a slider physically moveable in a predetermined direction

(c) in which a stereoscopic effect of a stereoscopic image displayed on the stereoscopic display section is adjusted in accordance with the position of the slider when the slider is located between a first position and a second position

(d) a planar image is displayed on the stereoscopic display section when the slider is located at a third position which is different from the first position and the second position

4.4 The objective technical problem to be solved may thus be regarded as how to provide the stereoscopic display section with views comfortable for different users (see also point IX(b) above).

4.5 Starting from document D1 and faced with the problem formulated in point 4.4, the person skilled in the art would have considered document D2.

The board is not convinced by the appellant's argument (see point X(c) above) that the teaching of document D2 is restricted to a television unit. Although Figure 1 of D2 may look like a television, paragraph [0001] of document D2 specifies an apparatus for producing a stereoscopic image in general. Paragraph [0002] of document D2 then further describes an autostereoscopic display, and paragraph [0003] mentions as an example of an autostereoscopic display a display apparatus according to a paper entitled "3-D Displays for Video Telephone Applications". Hence, the board finds that the skilled person starting from a portable telephone including a 3D display as shown in document D1, Figure 2B, would have considered document D2.

Moreover, the board is not convinced by the appellant's argument that the person skilled in the art would not have considered document D2 because it teaches a lenticular lens type display while document D1 discloses a parallax barrier type display (see point X(c) above). The identified problem (see point 4.4 above) does not only occur in specific kinds of stereoscopic displays. To adjust a parallax or depth and switch between displaying 3D and 2D images are general tasks that apply to any stereoscopic display. Hence, the board is not convinced that the person

skilled in the art would only have considered documents with the same 3D display technology as in document D1.

4.6 Considering document D2, the person skilled in the art would have immediately recognised that, by using the knob or slider mentioned in document D2, paragraph [0120], the x-axis separation of the images 120 and 122 shown in document D2, Figure 2, was controlled (see D2, paragraph [0019]) for adjusting a depth of a 3D image to provide a view comfortable for different users.

Hence, the person skilled in the art, faced with the problem identified in point 4.4 above, would have incorporated these features of document D2 into a portable telephone set comprising an autostereoscopic display according to document D1, thereby arriving at features (a) to (c) set out in point 4.3 above.

The board is not convinced by the appellant's argument (see point X(d) above) that the person skilled in the art would not have used the slider of document D2 to adjust the depth of a 3D image but instead would have used the buttons shown on the housing 20 in Figure 2B of document D1. The person skilled in the art would have understood that a slider provides a means to adjust depth in a continuous manner with direct haptic feedback, something that cannot be achieved using buttons. Hence, the person skilled in the art would have used a slider as taught by document D2 for the depth adjustment.

4.7 The board does not share the examining division's view that a minimum x-axis separation of the images 120 and 122 shown in document D2, Figure 2, or the resulting perceived depth needs to be zero (see point IX(c)

above). Neither does document D2 disclose that the minimum depth of a 3D image needs to be zero, and nor does the board regard this as being derivable from common general knowledge. Hence, the board takes the view that the slider incorporated from document D2 is moveable between a minimum and a maximum depth (corresponding to the first and second positions according to claim 1) but not to a third position corresponding to zero depth.

4.8 The board is not convinced by the appellant's argument (see point X(e) above) that in a mobile phone according to document D1 switching between displaying a 2D and a 3D image occurs only if the display orientation is changed.

The board notes that document D1 discloses in paragraph [0063] an assignment of a camera mode for displaying a 3D image using a pair of cameras to an oblong display orientation as illustrated in D1, Figure 2B. Within this display orientation, the subsequent paragraph [0064] discloses: "*it is necessary to display the 3-D image and a normal image (2D image) by switching them*". Paragraphs [0065] to [0068] of document D1 then disclose how to accomplish a switch between displaying a 3D and a 2D image, namely by making a parallax barrier within an LCD display transparent.

The board finds that this disclosure of document D1 illustrates a situation in which, within a given display orientation, a switching between a display of a 3D and a 2D image occurs.

4.9 However, for the following reasons, the board finds that it would not have been obvious to control both the

3D image depth adjustment and a switching between a 3D and a 2D image within a single display orientation by the same slider.

Firstly, the board is convinced by the argument provided by the appellant (see point X(f) above) that the mobile telephone known from document D1 comprises other means to switch between displaying a 3D and a 2D image, such as the buttons shown on the housing 20 in document D1, Figure 2B. It is not evident why the person skilled in the art would have deviated from this switching means which was already available in the mobile telephone known from document D1.

Secondly, the board is convinced by the appellant's argument (see point X(f) above) that the integration of all depth control (control of depth between minimum and maximum as well as switching between a 3D and a 2D image of zero depth) into a single control means, in particular a slider, has disadvantages. Namely, to switch between displaying a 3D and a 2D image, the slider first needs to be moved from its position corresponding to a comfortable depth to the minimum depth position. When switching back from displaying a 2D to a 3D image, the position corresponding to a comfortable depth needs to be found again.

4.10 For these reasons, it would not have been straightforward to use the slider as a 2D/3D switching means when incorporating the features of document D2 into a portable telephone set known from document D1.

Hence, the person skilled in the art combining the disclosures of documents D1 and D2 and using common general knowledge would not have arrived at feature (d) of claim 1 (see point 4.3 above).

4.11 Therefore, the subject-matter of claim 1 is not obvious from the combination of documents D1 and D2 and the common general knowledge.

4.12 The board does not see any other document or combination of documents on file by which the skilled person would have arrived at the subject-matter of claim 1.

4.13 Claims 2 to 10 are dependent claims and therefore their subject-matter is also not obvious.

4.14 It follows that the subject-matter of the claims of the main request involves an inventive step (Article 56 EPC).

5. *Conclusion*

The board sees no obstacle to granting a patent on the basis of the claims of the main request. However, the description needs to be adapted. Hence, the board considers it appropriate to remit the case to the examining division with the order to grant a patent with the claims of the main request and a description to be adapted.

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 patent with claims 1 to 10 of the main

request filed during the oral proceedings of 11 September 2020 and a description to be adapted.

The Registrar: The Chairwoman:

K. Boelicke B. Willems

Decision electronically authenticated