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D E C I S I O N
of 9 March 1998

Case Number: T 0872/96 - 3.4.2

Application Number: 89309881.4

Publication Number: 0361918

IPC: G03B 21/62

Language of the proceedings: EN

Title of invention:
Rear-projection screen

Patentee:
Dai Nippon Printing Co., Ltd.

Opponent:
Philips Electronics N.V.

Headword:
-

Relevant legal provisions:
EPC Art. 56

Keyword:
"Inventive step (confirmed)"

Decisions cited:
-

Catchword:
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Case Number: T 0872/96 - 3.4.2

D E C I S I O N
of the Technical Board of Appeal 3.4.2
of 9 March 1998

Appellant: (Opponent)
Philips Electronics N.V.
Groenewoudseweg 1
5621 BA Eindhoven (NL)

Representative:
Cobben, Louis Marie Hubert
Internationaal Octrooibureau B.V.
Prof. Holstlaan 6
5656 AA Eindhoven (NL)

Respondent: (Proprietor of the patent)
Dai Nippon Printing Co., Ltd.
1-1-1, Ichigayakaga-cho
Shinjuku-ku
Tokyo (JP)

Representative:
Blake, John Henry Francis
Brookes & Martin
High Holborn House
52/54 High Holborn
London WC1V 6SE (GB)

Decision under appeal: **Decision of the Opposition Division of the European Patent Office posted 15 July 1996 rejecting the opposition filed against European patent No. 0 361 918 pursuant to Article 102(2) EPC.**

Composition of the Board:

Chairman: E. Turrini
Members: A. G. Klein
M. Lewenton

Summary of Facts and Submissions

I. The opposition filed against European patent No. EP-A-0 361 918 (application No. 89 309 881.4) and founded mainly on an objection of lack of inventive step of the subject-matter of claim 1 as granted in view of the contents of document US-A-4 509 822 (hereinafter document D1) was rejected by the Opposition Division.

II. The appellant (opponent) filed an appeal against the decision of the Opposition Division.

In his statement of the grounds of appeal dated 22 November 1996 the appellant first remarked that the name of the representative of the patentee as entered on the minutes of the oral proceedings held before the Opposition Division, namely "Mr Francis", did not apparently coincide with the name of the representative who actually attended the proceedings for the patentee, as was evidenced by the copy, joined to the statement of grounds, of a letter sent by the patentee's representative to the appellant's representative a few days after said oral proceedings. Accordingly, clarification about a possible mistake in the identification of the patentee's representative was expressly requested by the appellant.

With respect to the issue of the patentability of the subject-matter of claim 1 as granted, the appellant stressed that the representative of the patentee was unable in the opposition procedure to explain what the effect of the alleged invention was. As long as it was not clear what the effect of the difference between the claimed structure and the prior art structure of document D1 was, it was not possible to judge its inventiveness. A minor, technically irrelevant change could not justify the granting of a patent.

The opposed patent indeed addressed the same technical problem as document D1, namely the colour shading of the image formed by the superimposition of a red, a green and a blue pictures projected onto the rear side of the screen by three corresponding colour picture tubes, placed next to each other with their optical axes angularly offset with respect to each other.

Document D1 already taught to provide cylindrical lenses between parallel ridge lenses. In the embodiment of Figure 6, the colour shading was compensated for by one cylindrical lens only, whereas Figures 8 to 10 showed that two or more such cylindrical lenses could be inserted between two ridge lenses, and Figure 7 illustrated the provision of prisms instead of the cylindrical lenses. This palette of possibilities suggested that a number of other possibilities would have the same effect.

The advantage put forward by the representative of the patentee in the opposition procedure, that the claimed inclination of the cylindrical lenses caused the light rays to converge in regions nearer the screen than the apexes of the ridge lenses and then to diverge forwardly, was not consistent with Figure 6 of the opposed patent and its explanation.

Anyway, the skilled person knew that inclining a cylindrical lense was equivalent to increasing the curvature of a non-inclined lens. In the embodiment of Figure 8 of D1, the single cylindrical lens of Figure 6 was substituted by two cylindrical lenses with a smaller radius and thus a stronger curvature, having exactly the effect and advantage of the claimed inclined lenses.

Therefore, claim 1 as granted not only defined an obvious rearrangement of the structure shown in Figure 6 of document D1, but also an obvious equivalent of the measure illustrated in Figure 8 of the same document.

From the above submissions it is implicit that the appellant in effect requested that the appealed decision be set aside and that the patent be revoked.

III. Immediately upon receipt of appellant's statement of the grounds of appeal, the representative of the respondent (patentee) addressed a letter dated 4 December 1996 to the Registry of the Boards of Appeal, strongly objecting to the inclusion of a personal letter from him to the appellant's representative as an exhibit to appellant's statement of the grounds of appeal. In his view, introducing into the appeal procedure an irrelevant query over the representation at the oral proceedings held by the Opposition Division, using a copy of his letter, was an attempt to prejudice the presentation of the patentee's case by introducing his privately expressed and personal opinions which had no bearing on the way the patentee's case was or would be presented or on the way the Opposition Division decided the case. Accordingly, the respondent asked that the appellant be instructed to file a revised statement of grounds restricted to matters relevant to the appeal proceedings.

In a later submission dated 4 June 1997, the respondent then replied to the substantive issues raised in the appellant's statement of the grounds of appeal and, as a main request, requested that the appeal be rejected.

Auxiliarily, he requested that the patent be maintained with an amended claim 1 corresponding to the claim of the auxiliary request presented in the opposition procedure and, provisionally, that oral proceedings be held.

In support of his requests, the respondent with reference to Figures 1 to 4 as attached to his submission of 4 June 1997 pointed at the different technical effect achieved by the inclined cylindrical lenses as defined in the patent, as compared to the cylindrical lenses of document D1, which were not so inclined. Where the cylindrical lenses were inclined, it was possible to design the cylindrical lenses so as to provide an increased angle of view within which projected light was diverged. Thereby the diverged projected light could be mixed with light emitted outwardly from the flanks of the ridge lenses, the brightness be increased over an increased angle of view, and the colour shading problem be alleviated. More specifically, the inclination of the cylindrical lenses with their small radius of curvature caused some projected rays to be totally reflected on the inner surface of each cylindrical lens. These totally reflected rays were then directed to, and they passed through, the flanks of the adjacent ridge lenses, so as to be emitted towards the viewer along an oblique direction. For this reason, the brightness was increased over a wide angle of view. In addition, the total reflections caused inversion of the order of arrangement of the red, green and blue light rays, whilst rays passing through the flanks of the ridge lenses without internal total reflection were not subjected to such inversion. Consequently, the colour shading problem was further alleviated by the mixing of these rays.

In contrast, the non-inclined cylindrical lenses used in document D1 caused internally reflected rays to return to the projector side of the screen, resulting in loss of light.

The respondent also questioned the appellant's submission that inclination of the cylindrical lenses was equivalent to increasing their curvature. Merely increasing the curvature of the non-inclined cylindrical lenses of document D1 did not make it possible to direct rays which were totally internally reflected by the cylindrical lenses to the flanks of the adjacent ridge lenses. Document D1 did not mention either that the adjacent cylindrical lenses of Figure 8 had an increased curvature as compared to the single lenses of Figure 6.

Finally, the respondent admitted that the statement made in the opposition procedure, that light rays advancing out of the front side of the convex lenses were caused to converge "in regions nearer the screen that the apexes of the triangular lenses" and then to diverge, was incorrect, and that the quoted portion should have been replaced by "in regions forward of the apexes of the triangular lenses". This issue however was irrelevant to the appeal, since the statement had not been relied upon by the Opposition Division in reaching their decision.

Claim 1, the only independent claim of the set of claims of the patent as granted, on which respondent's main request is based, reads as follows:

"1. A transparent rear projection screen (4) which is provided on its rear side with a set of lenses (15) for paralleling light projected thereon and which is provided on its front side with an array of parallel elongate upright ridges (14) of triangular cross

section and having light diffusing means (22, 22A) on their flanks (18, 19), said ridges being separated by pairs of cylindrical convex lenses (12, 13) in such a way that each ridge (14) lies between two convex lenses (12, 13) placed symmetrically on its both sides,

said screen being characterised in that the optical planes of said cylindrical lenses (12, 13) are inclined with respect to the major plane of the screen so that the junction lines between the flanks (18, 19) of said ridges (14) and the thereto adjacent cylindrical lenses (12, 13) are at a larger distance from the rear side of the screen than the junction lines between two adjacent cylindrical lenses (12, 13)."

Reasons for the Decision

1. The appeal is admissible.

1.1 The Board in this respect agrees to the respondent's submission that the issue of the incorrect identification of the respondent's representative in the minutes of the oral proceedings held before the Opposition Division was irrelevant to the present appeal. The appellant did not demonstrate that the mistake had any effect on the decision under appeal, nor that he had been adversely affected in any manner by the mistake, nor has he even sought to do so.

Nor is there any doubt that the respondent's representative actually attended the oral proceedings in question, and that the incorrect identification in the minutes is the mere result of the unfortunate mistaking of his third surname, namely Francis, for his first name. Further clarification of this matter as was requested by the appellant is not required, accordingly.

Since appellant's statement of the grounds of appeal also duly comprises arguments directed to the substantial issues on which the appealed decision was founded, his appeal is considered admissible.

1.2 Concerning the respondent's objection to the inclusion into the file of the copy of his personal letter, written to the appellant's representative and submitted by the latter with his statement of the grounds of appeal, it is noticed that the Convention does not confer the Registry, nor the Board itself, any power to exclude from the file of a European patent application or patent any submission made by a party to a procedure relating to said patent application or patent, however irrelevant the submissions may be. The personal letter in question does not either fall into any of the categories of parts of the file which shall be excluded from inspection pursuant to Article 128(4) EPC, as listed in Rule 93(a) to (c) EPC, nor into the list of documents excluded from inspection by the President of the European Patent Office by virtue of Rule 93(d) EPC, as set out in the decision of the President of the European Patent Office dated 16 September 1985 (see OJ EPO 1985, 316).

Incidentally, Technical Boards of Appeal are not competent in relation to grievances taken up against professional representatives in the exercise of their duties, which can only be settled in accordance with the Code of Conduct of the Institute of Professional Representatives before the EPO and the Regulation on Discipline for Professional Representatives.

2. *Patentability of the subject-matter of claim 1 in accordance with respondent's main request*

2.1 The compliance of claim 1 of respondent's main request, which corresponds to claim 1 as granted, with the requirements of Article 123(2) relating to the admissibility of amendments, and the novelty of its subject-matter in the sense of Article 54 EPC have not been challenged by the appellant.

The Board also shares both parties' view that the nearest prior art is constituted by the transparent rear projection screens illustrated in Figures 2 to 6 or 8 of document D1 and defined in the preamble of present claim 1, as acknowledged in the introduction of the present patent description.

2.2 In the known transparent rear projection screens the optical planes of the cylindrical lenses 22 are parallel to the major plane of the screen 4 in the sense that the junction lines between the flanks of the ridges 21 and the adjacent cylindrical lenses 22 are at the same distance from the rear side of the screen (embodiments of Figures 2 to 6), or are at the same distance than the junction lines between two adjacent cylindrical lenses (embodiment of Figure 8).

Thus, the screen defined in present claim 1 is distinguished from this nearest prior art in that the optical planes of the cylindrical lenses are inclined with respect to the major plane of the screen, as set out in the characterising portion of the claim.

2.3 Both the screen disclosed in document D1 and the screen which is the subject-matter of present claim 1 aim at mitigating the well known "colour shadow" or "colour-shading" effect caused by the projection of differently

coloured images upon the rear side of the screen, from angularly offset directions, as is described in column 1, lines 20 to 44 of the present description.

In response to the appellant's objection that the claimed inclination of the optical planes of the cylindrical lenses only resulted from a minor, arbitrary design change of no technical relevance - thereby apparently implying that the claimed subject-matter was not an "invention" in the sense of Article 52(1) EPC - the respondent in his letter dated 4 June 1997 explained that the inclination in particular caused some projected rays, which were totally reflected onto the inner surface of each cylindrical lens, to be directed to, and to pass through, the flanks of the adjacent ridge lenses, instead of being reflected back towards the rear side of the screen, with a corresponding loss of light.

The Board has no reason to question these explanations, which have not been contested either by the appellant. They also appear to be fully consistent with the statement in document D1 that the radius of curvature of the cylindrical lenses disclosed there, which determines the degree of spreading of the emitted light in the lateral direction, cannot however be too small, otherwise the parallel light which impinges the inner surfaces of the side parts of these lenses would be totally reflected (see column 5, lines 41 to 51).

2.4 In the Board's opinion, neither document D1, in which all the embodiments proposed comprise lenses arranged between the longitudinal ridges with their optical planes parallel to the major plane of the screen, nor any of the other documents brought to light in the examining or opposition proceedings but no longer relied upon by the appellant in his appeal, hint at inclining the optical plane of the cylindrical lens

arranged between the longitudinal ridges of the nearest prior art screens disclosed in document D1, with the resulting advantage of a greater luminosity of the transmitted images over an extended angular range.

Nor could the Board find in the file any support for appellant's submission that a person skilled in the art of optics would know that inclination of the cylindrical lenses was equivalent to increasing the curvature of the lens surface of a non-inclined lens. The technical effect and advantages achieved by the inclined configuration precisely demonstrate that the configurations are not optically equivalent.

For these reasons, the subject-matter of claim 1 is considered to involve an inventive step in the sense of Article 56 EPC.

3. Thus the subject-matter of claim 1 is patentable and so is the subject-matter of dependent claims 2 to 11 by virtue of their appendency to claim 1.

The grounds for opposition therefore do not prejudice the maintenance of the patent unamended (Article 102(2) EPC).

Respondent's auxiliary requests need not be considered, accordingly.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

P. Martorana E. Turrini