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D E C I S I O N
of 11 July 2002

Case Number: T 0537/00 - 3.4.2

Application Number: 92912581.3

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H01L 41/08, G01P 3/48, G02B 27/14

Language of the proceedings: EN

Title of invention:
Instrument display panel for passenger vehicle

Patentee:
NU-TECH AND ENGINEERING, INC.

Opponent:
Mannesmann VDO AG

Headword:
-

Relevant legal provisions:
EPC Art. 54, 56

Keyword:
"Novelty and inventive step (confirmed)"

Decisions cited:
-

Catchword:
-



Case Number: T 0537/00 - 3.4.2

D E C I S I O N
of the Technical Board of Appeal 3.4.2
of 11 July 2002

Appellant: Mannesmann VDO AG
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Representative: Zmyj, Erwin, Dipl.-Ing., Dipl.-Wirtsch.-Ing.
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Representative: W.P. Thompson & Co.
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Decision under appeal: Decision of the Opposition Division of the
European Patent Office posted 24 March 2000
rejecting the opposition filed against European
patent No. 0 583 392 pursuant to Article 102(2)
EPC.

Composition of the Board:

Chairman: E. Turrini
Members: A. G. Klein
V. Di Cerbo

Summary of Facts and Submissions

I. The opposition filed against European patent No. 0 583 392 (application number 92 912 581.3) and founded on the ground under Article 100(a) that the claimed subject-matter was not patentable in view in particular of the contents of the documents

D5: US-A-5 003 433

D6: VDO Technische Information Instrumententechnik, September 1989, pages 6 to 10

D7: WO 88/03663

D8: JP-A-55 1527 and abstract

was rejected by the opposition division.

II. The appellant (opponent) lodged an appeal against the opposition division's decision.

III. Oral proceedings were held on 11 July 2002, at which the appellant requested that the decision under appeal be set aside and that the European patent be revoked.

The respondent (proprietor of the patent) as its main request requested that the appeal be dismissed and that the patent be maintained as granted.

Claim 1, the only independent claim of the set of claims as granted reads as follows:

"1. An instrument panel (10) for use in a passenger vehicle to provide a visual representation of data from a plurality of instruments (12,14,16,18) to a passenger, the instrument panel (10) comprising the features of:

a thin generally planar light distribution layer (26) having a front surface, a back surface, an outer peripheral edge, and a plurality of apertures extending through said light distribution layer (26) between said front and back surfaces, with each of said apertures being defined by an inner peripheral edge;

a light source (20) positioned to directly back-light at least one of said instruments (14) and also cooperating with at least a portion of one of said peripheral edges of the light distribution layer (26) for directing light into the plane thereof;

said light source generating light that is reflected within said light distribution layer;

a graphic layer (30) having indicia thereon forming a stationary graphic portion (46,50,52) of a plurality of analog gauges (12,16,18), said graphic layer (30) overlaying the front surface of the light distribution layer (26);

a circuit board (24) fixed relative to said light distribution layer (26) and extending parallel and adjacent to the back surface (24) thereof, said circuit board (24) having mounted thereon a series of electrical components and a plurality of electric gauge motors (22) forming a portion of said plurality of analog gauges (12,16,18), each of said gauge motors (22) having a stator mounted in fixed relation to the circuit board (24) and a

rotor and shaft (138) assembly rotatable relative thereto about an axis generally perpendicular to the plane of the light distribution layer (26), each of said plurality of gauge motor shafts (138) being aligned with one of said plurality of apertures in said light distribution layer (26); and
a plurality of rotatable masks (70) each mounted adjacent to said graphic layer (30) and affixed to the rotor and shaft (138) assembly through one of said apertures in the light distribution layer (26), said masks (70) each rotatably shiftable relative to the indicia on the graphic layer (30) to form an analog gauge (12,16,18) for transmitting instrument data to a vehicle passenger."

As its first and second auxiliary requests the respondent requested that the patent be maintained on the basis of the two amended set of claims filed with its letter dated 10 June 2002, in both of which independent claim 1 was supplemented with additional limitations.

The board announced its decision at the end of the oral proceedings.

IV. The arguments presented by the appellant in support of its request can be summarized as follows.

The instrument panel of claim 1 of the patent in suit lacks novelty in view of the dashboard arrangement disclosed in document D5. The front plate 12 of the latter is of a translucent and preferably transparent material and constitutes a light distribution layer

having a peripheral edge cooperating with a light source, which the opposition division held to be the only features of the claim not anticipated by document D5. The recommendation in column 4, lines 8 to 13 of said document to make opaque the side edges of plate 12 so as to avoid any lateral diffusion of the general lighting clearly confirms the plate's capacity to conduct and distribute light within its own plane as is set out in claim 1.

In respect of inventive step, the closest prior art consists of the flat instrument panel shown in Figure 3 of document D6. The skilled person starting from this instrument panel and striving at further simplifying its construction whilst also reducing radiation of heat by the light sources would find in document D7 the teaching that a single light source may simultaneously directly back-light a region of a display instrument and illuminate another region via a thin and generally planer light distribution layer 14 receiving light from its edge (see claim 1 and Figure 1 of document D7).

A similar teaching is given in document D8, in which a light source 2 directly back-lights dial 12 and simultaneously feeds light into the plane of a light distribution layer 3 through its edge, so as to reduce the number of light sources.

Accordingly, the subject-matter of claim 1 results from an obvious combination of the teaching of document D6 with either that of document D7 or that of document D8.

V. The respondent denied that the transparent front plate 12 of document D5 constituted a light distribution layer within the meaning of claim 1. It

also submitted that the combinations of features from documents D6 and D7 or D6 and D8 as constructed by the appellant were perfect examples of hindsight reasoning, the more so since the 3-dimensional structure of the dashboards of documents D7 or D8 was hardly compatible with the flat arrangement of the instruments disclosed in document D6.

Reasons for the Decision

1. The appeal is admissible.

2. *Novelty*

2.1 The instrument panel of claim 1 in its granted version *inter alia* comprises the combination of a thin generally planar light distribution layer having an outer peripheral edge and a plurality of apertures each defining an inner peripheral edge with a light source positioned to directly back-light at least one instrument and cooperating with at least a portion of one of said peripheral edges of the light distribution layer for directing light into the plane thereof, the light being reflected in said light distribution layer.

This combination in the board's view is not anticipated by any of the prior art citations in the file.

2.2 Document D5 discloses a dashboard assembly which comprises a front plate 12 made from a translucent and preferably transparent material so as to let the light delivered by a parallelepipedic central case 1, which forms a light box located behind front plate 12 and is capable of diffusing an homogeneously distributed light,

pass in direction of the observer (see Figure 1 and column 2, line 45 to column 4, line 37). Front plate 12 is thus illuminated directly through its entire back surface by the light box and it does not comprise any peripheral edges through which a light source positioned to directly back-light at least one instrument directs light which is reflected within its plane, as is required by claim 1.

The appellant in this respect relied on the passage in column 4, lines 8 to 13 of the description of document D5 as providing evidence that front plate 12 might receive light from warning or signalling lights through the side edges of cut-outs 24 formed for the passage of such warning or signalling lights. However, the indication in this passage that "If required, the side edges of plate 12 may be made opaque (blackened) so as to avoid any lateral diffusion of the general lighting" in the board's view effectively teaches away from using such side edges as an entrance window for reflecting light within the plane of plate 12. The other apertures or recesses 13, 17 in front plate 12 are provided there for passing the shafts of indicator pointers and for the mounting of a liquid crystal display, and their edges do not cooperate either with any light source positioned for directly back-lighting at least one instrument in such a way as to direct light within the plane of the plate.

- 2.3 Document D6 discloses in Figure 3 an instrument arrangement comprising a thin generally planar light distribution layer ("Lichtleiter") which receives light from a light emitting diode (LED) mounted at one of its outer peripheral edges. This light source is dedicated to illuminating the light distribution layer and it

does not simultaneously directly back-light any instrument.

2.4 The other citations in the file do not come closer to the claimed subject-matter. Documents D7 and D8 in particular disclose instrument panel arrangements in which light from a light source is directed towards the front side of a dashboard through 3-dimensional light guiding elements like block 14 as shown in Figure 2 of document D7 and photoconductive plates 7 and 8 with projections 7a and 8a as shown in Figure 2 of document D8. These arrangement do not comprise any light source cooperating with at least a position of a peripheral edge of a thin generally planar light distribution layer for directing light into its plane.

2.5 For these reasons, the subject-matter of claim 1 is novel within the meaning of Article 54 EPC.

3. *Inventive step*

3.1 The parties agreed to consider the arrangement shown in Figure 3 of document D6 to represent the closest prior art. This view is shared by the board because amongst the prior art constructions referred to by the appellant the instrument panel arrangement disclosed in this document is the sole of the generally flat and compact type to which the present patent is also dedicated.

3.2 In the arrangement of Figure 3 of document D6, the light source which generates light to be directed into the plane of light distribution layer does not back-light any other instrument as is set out in claim 1. On the contrary, a separate light source ("LED für

Warmleuchte") is provided beside the light distribution layer to emit a warning signal, if required.

Thus, the board can also agree to the appellant's definition of the technical problem underlying the claimed subject-matter, namely to further simplify the construction of the known instrument panel and to reduce heat dissipation.

- 3.3 The skilled person faced with this technical problem would not in the board's view have found in the prior art any obvious hint at the claimed solution which in particular involves the provision of a single light source which both directly back-lights at least one instrument and cooperates with the peripheral edge of a generally planar light distribution layer so as to reflect light into its plane.

Document D5 in this respect explicitly teaches away from allowing any light interference or lateral diffusion of light between transparent plate 12 and adjacent light sources (see the sentence bridging columns 2 and 3 and column 4, lines 8 to 13).

The constructions of documents D7 and D8 do not exhibit the thin configuration of the closest prior art as is also addressed by the patent in suit. Back-lighting source 2 of the construction of document D7 (see Figure 1) and back-lighting source 2 of the construction of document D8 (see Figure 3) are arranged at a substantial distance behind the corresponding light conductive front plates (13 in Figure 1 of document D7; 12 in Figure 3 of document D8), which calls for an additional light guide extending in the direction orthogonal to such front plate to transmit

light from the light source to the latter (light guide 14 in Figure 1 of document D7 and light guides 7 and 8 in Figure 3 of document D8).

Furthermore, as was correctly stressed by the respondent in its letter of 29 January 2001 (see the paragraph bridging pages 6 and 7), the instrument panels of documents D7 and D8 both comprise incandescent lamp bulbs as light sources whilst the use of light emitting diodes (LEDs) instead of the conventional incandescent light bulbs is expressly presented in document D6 as an essential feature of the closest prior art construction shown in its Figure 3, which results in a thin structure and an optimal exploitation of the lighting power (see D6, the second paragraph of page 8).

Therefore, the skilled person striving at further simplifying the construction and reducing heat dissipation of the instrument panel in accordance with Figure 3 of document D6 had no obvious reason to consider the bulky and heat radiating arrangements of documents D7 or D8, if not with the benefit of hindsight.

3.4 For these reasons, the subject-matter of claim 1 as granted involves an inventive step within the meaning of Article 56 EPC. So does the subject-matter of claims 2 to 19 by virtue of their appendence to claim 1.

4. Since the grounds for opposition invoked by the appellant do not prejudice maintenance of the patent unamended, rejection of the opposition by the opposition division was justified.

The respondent's main request that the appeal be dismissed is therefore allowable, and its first and second auxiliary request need not be considered further.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:

P. Martorana

E. Turrini