

Candidate's examination paper (Examination paper C/1991)

Notes to the examiner

- i) English language Annex 1 used
- ii) Note to client: Annex 3 should be referred to in opposition it will not be viewed as a criticism. The grounds must indicate the facts and evidence relied upon. Annex 3 is to be relied upon and so must be identified.

Opposition must be filed within 9 months from publication of the decision to grant Art. 99(1) EPC. The later published correction is irrelevant to this time limit.

The text of the granted patent is that of the text notified to the applicant under R. 51(4) EPC. Errors in the publication of the B specification may be corrected without any infringement of Art. 123 EPC because the B specification is not the granted text. See legal advice 17. Hence, the addition of Claim 9 which was already present in the text of the application and priority document, does not constitute added subject matter.

Entitlement to a patent is not a ground under Art. 100 EPC on which opposition may be lodged. Hence Annex 4 as an internal memo and hence not available to the public, presumably, cannot be used in the opposition other than as evidence of what might be generally known at the time, e.g. the metal oxides.

Art. 104(1) EPC provides that each party should pay its own costs. However, R. 63 EPC does allow the EPO to give an award of costs. Such an award is only done where through the actions of one party, the other party has been severely inconvenienced, e.g. filing new citable documents late or postponing an oral hearing at the last moment. The grounds identified by the client are not in my opinion suitable for an award of costs. However, to avoid further costs I could advise against taking any further action, if on the evidence I supply it is clear to the EPO that the patent is not patentable then they could continue the opposition under their own motion Art. 114 EPC.

Entitlement proceedings would have to take place through the national courts now that the patent is granted.

Even though the brochure (Annex 6) was not actually examined by anyone - it was as was the display available to the public and hence forms part of the state of the art from that date. This was confirmed in a recent decision by the Board of Appeal in which a document was available in a library but not catalogued. In the same decision it was confirmed a document which is posted is only available to the public the day it is received not the day it is posted. Hence, Annex 5 must be deemed available some time prior to the start of the fair but not the day the summary was actually posted out.

Annex 7 cannot be used to attack the features of the patent in suit having entitlement to the 1st priority since it is a national intervening publication and hence only national rights exist.

I'm not too impressed with the argument that one could replace the heating elements of Annex 8 with a valve-shaped conductor but it has been included for completeness. It is a very weak argument because it is clear from Annex 8 that the display has been made and functions in a manner which does not make such a substitution obvious.

Notice of Opposition

We, kfz-zubehör Bremen AG of Rudolf Dieselstrasse 2-4, 2800 Bremen, Germany, our principal place of business being Germany,

OPPOSE the grant of:

European Patent No. 0192444
Application No. 85300111.4
entitled: Liquid Crystal cell display with heating device

Granted in the name of: Racing-car Corp. of 34 Old Church Street, Liverpool, L1 3AB, England

The above mentioned patent is opposed in its entirety and attached is a statement of the grounds on which this opposition is based under Article 100(a) EPC.

A fee voucher is enclosed in payment of the opposition fee.

Karlpeter Gründlich
KARLPETER GRÜNDLICH - General Authorisation No. 99999.

Representative Address: Europaplatz 104, 8000 München 80, Germany

Grounds for Opposition

European Patent No. 0192444 is opposed on the basis that the invention as claimed lacks inventive merit under Art. 100(a) EPC.

The following documents are relied upon in this opposition:

Annex 2 -
Annex 3 -
Annex 4 -
Annex 5 -
Annex 6 -
Annex 7 -
and Annex 8 -

The patent in suit is directed to a liquid crystal (LC) display which is provided with a heating device. The LC display is of the

transmission type and is for use for indicating symbols etc. in an automobile. The LC display has at least one glass plate either side of a liquid crystal.

The invention of the patent in suit is characterised in that one of the glass plates is a composite structure in which a resistance heating means is arranged between two glass layers. These features appear in the first priority claimed by the patent in suit and hence have a priority right of 19th January 1984.

Annex 8, which was published 13th April 1982 and so forms part of the state of the art, describes an LC display (page 1, l 2) which is provided with a heating device (Pg 2, l 23). No specific disclosure is made of its use for indicating symbols but it is made clear in both the description and drawings that a matrix of LC cells are provided which could be used for indicating symbols. The use of a matrix of LC cells in this manner was one of common general knowledge prior to the priority dates of the patent in suit and evidence from technical journals to support this will be filed in the near future. In any event reference to the use of the LC display for indicating symbols and its use in automobiles is non-limiting in the patent-in-suit.

As may be clearly seen in Figure 2 and as is described at page 2, l. 34 and page 3, l. 1, separate LC cells have at least one glass plate either side. In addition, the lower glass plate is a composite of a glass substrate with heating elements on top of the substrate and with a further layer of glass over and about the heating elements (page 2, l. 22-28). Again, although not specifically recited, the heating elements are electrically controlled and hence must be in the form of resistance heating means. Thus, all the features of Claim 1 other than the fact the LC display is of the transmission type are clearly shown or may be understood to be present in Annex 8.

The LC display in Annex 8 is of the reflective type where both the illuminating source and the observer are on the same side of the display whereas the transmission type provides for the illumination to be on the opposite side of the display to the observer. These two types are commonly recognised alternatives and are discussed in the introduction to the patent in suit. A similar discussion may be found in Annex 3. It will be appreciated that necessary alterations of the LC display of Annex 8 to render the display a transmission type as opposed to a reflective type were well known to those skilled in the art prior to the priority dates of the patent in suit and would involve simple technical alterations of the workshop type and ones which would not interfere with the glass/heating element layers.

Thus, I submit that the features of Claim 1 lack invention in the light of Annex 8 and common general knowledge.

In the alternative, Annex 3, which was published on 19th January 1984 and so forms part of the state of the art, and which is cited as prior art in the patent in suit describes a liquid crystal display (page 1, l. 1-2) of the transmission type (page 2, l. 13-19 and Fig 2). As discussed previously with respect to Annex 8 although there is no specific disclosure of the use to

which the LC display may be placed it will be appreciated that its use in automobiles for the display of symbols etc. is one of common general knowledge. The LC display of Annex 3 also has a heating element (page 1, l. 19-20). However, in the transmission LC display of Fig. 2 the heating layer is shown adjacent the liquid crystal. However, as is made clear on page 2, lines 8 to 11, certain features are omitted from the drawings for the sake of clarity.

Annex 3 also describes a reflection type LC display (Figure 3) and in this embodiment the heating element or layer is sandwiched between two glass layers (Pg 2, l. 34-35) so forming one composite layer.

There is no disclosure in Annex 3 to suggest any reason why features may be taken from the first embodiment of Figure 2 and combined with features taken from the second embodiment of Figure 3. Thus, there is no technical prejudice to the insertion of a glass layer between the heating layer and the liquid crystal in Figure 2. More specifically, there is no technical prejudice disclosed which would prevent someone skilled in the art from taking the composite structure of Figure 3 and inserting it in replacement of the heating layer in Figure 2.

As mentioned in relation to Annex 8, there is also no disclosure of the heating element being a resistive heating means but since the heating element is electrically powered then it is clear that the heating layer must be resistive.

Thus, Claim 1 also lacks invention in the light of Annex 3.

Furthermore, there is no disclosure as to any technical prejudice to deter someone skilled in the art from using the composite heating/glass structure shown in Annex 8 with the transmission type LC display of Figure 2 in Annex 3. Claim 1 also lacks invention in the light of the combined disclosure of Annexes 3 and 8, therefore.

Claim 2 of the patent in suit is directed to the feature of the glass layer closer to the liquid crystal being thinner than the more remote glass layer. Although this claim is rather unclear, it is to be presumed that this relates to the composite structure. In Figure 2 of Annex 8, it may be clearly seen that the thickness of the layer 19 above the heating elements is less than the thickness of the substrate 18 below the heating elements.

Hence in accordance with the comments set out above in relation to Claim 1, Claim 2 also lacks invention in the light of Annex 8 and common general knowledge, or the combined disclosures of Annexes 3 and 8.

Turning now to Claim 3 of the patent in suit, this is directed to the feature of the composite structure being heated adjacent the liquid crystal. However, in both Figures 1 and 2 other members are interposed between the composite structure and the liquid crystal. For example in Figure 1 an electrode 5 lies between the composite structure and the liquid crystal.

In Figure 2 of Annex 8 a similar situation is disclosed. The composite structure has the field electrode layer and its oxide

above it before the liquid crystal cells. Hence, the arrangement is very similar to that shown in Figure 1 of the patent in suit. If however, the term "adjacent" is to be understood in its literal sense of "next to" or "abutting against" this feature is shown in Fig. 3 where the composite structure is shown adjacent the liquid crystal.

For these reasons I submit that the features of Claim 3 lack invention in the light of Annex 3 on its own, when Claim 3 is combined only with Claim 1. If Claim 3 is combined with Claim 2 then the features still lack invention in the light of Annex 8 or the combined disclosures of Annexes 3 and 8.

Claim 4 requires that on one side of the liquid crystal there are two superposed glass plates, the outer plate being the composite structure. In other words, Claim 4 requires that a composite structure be mounted on the exterior surface of a known LC display i.e. on the outer surface of one of the glass layers sandwiching a liquid crystal.

Annex 3 shows a composite structure in Figure 3 and for the same reasons that it would be obvious to combine the composite structure with the display of Figure 2, the same applies to combining the composite structure with the display of Figure 1 which is a known LC display. Annex 3 describes the need for heating means to be mounted on an LC display and then proposes specific embodiments but since all that is required is a heating structure the combination of the embodiments of Figures 3 and 1 is an obvious combination to make.

In addition, the particular arrangement to which Claim 4 is directed provides no particular technical advantages nor overcomes any particular technical prejudice and as such is an obvious design feature.

For these reasons the features of Claim 1 lack invention in the light of Annex 3 and in the alternative in the light of the combined disclosures of Annexes 3 and 6.

The resistance heating means are defined in Claim 5 as being meshed or a wave-shaped heating conductor.

At page 2, line 25 of Annex 8 the heating elements are described as being in a matrix formation. Thus, the use of meshed heating conductors is disclosed in Annex 8 or in the alternative an obvious equivalent is disclosed.

The heating means are meshed or wave-shaped simply to ensure that heat is transmitted to all parts of the LC display, and as such a wave-shaped conductor is a technical equivalent to a meshed conductor. Thus, disclosure of one renders the other lacking in invention. It would be an obvious adaptation of the matrix of heating elements in Annex 8 to introduce instead a wave shaped conductor.

In the alternative, it may be seen from Annex 7 that wave-shaped conductors were well known prior to the priority date of the patent in suit. At page 1, line 20 reference is made to a wave-shaped

variable resistance heating wire which was disclosed in 1974 in US-A-3789 191. A copy of this prior document shall be submitted in the near future. Hence, the use of wave-shaped heating elements was well known prior to the patent in suit and the introduction of such a feature lacks invention.

For the above reasons it is submitted Claim 5 also lacks invention in relation to both meshed and wave-shaped conductors in the light of Annex 8 with common general knowledge in both cases.

Claim 6 is directed to the feature of the heating means being a transparent film substantially coextensive with the adjacent glass layers. This is a feature introduced for the first time in the second priority document and so has a priority date of 24 April 1984.

I would draw the attention of the Opposition Division to Annex 3 and in particular to page 2, lines 21 to 26 where the conducting heating element is described as possibly being transparent and located on the interior surface of the glass slabs.

In the alternative, I would refer to Annex 7, which was published on 16 April 1984 and so pre-dates the priority date of this feature. In particular on page 1, lines 28-33 reference is made to the heating elements being in the form of large area coatings which are invisible. In addition, this is made even more clear in Claim 1 of this patent where a highly transparent heating coating over essentially the entire screen is described.

Annex 7 is directed to heated windscreens and not to LC displays. However, both are directed to glass technology and to the provision of heating elements which do not inhibit the transparency of the glass on which such elements are mounted. If one skilled in the art of LC displays using glass supports was seeking to provide heating means then such a person would turn to examine developments in glass technology and not rely upon the limited field of LC display technology. Such a person skilled in the art would therefore certainly identify disclosures such as Annex 7 as being relevant to the particular problem being considered. Hence, it would be obvious to one skilled in the art to combine Annex 7 with either of Annexes 3 or 8.

Therefore, Claim 6 lacks invention in the light of Annex 3 or the combined disclosure of Annexes 8 and 7 or of Annexes 3, 8 and 7.

Claim 7 is directed to the heating device being made of a resistance material whose electrical resistance increases with temperature and a constant voltage source.

However, this type of resistance material is clearly described in Annex 7. Although the disclosure in Annex 7 itself cannot be used as a basis for rendering the features of Claim 7 lacking invention. However, the disclosure of the features of the resistive material relate to an earlier disclosure in 1974 in US-A-3789191, (hereinbefore referred to) and as such the disclosure in this earlier document renders the features of Claim 7 lacking in invention. A copy of the document US-A-3789191 will be submitted in the near future.

Hence Claim 7 lacks ...

Claim 8 is directed to the resistance material consisting of metal oxides of indium, gallium and tin. There is no support for this feature in the prior art documents and so this feature takes the filing date of 18th January 1985 as its priority date.

The Auto and Sport 1984 exhibition was held between 24th April 1984 and 29th April 1984. Evidence in support of the disclosures relating to this exhibition will be submitted shortly in the form of a declaration by Mrs Deveraux. Annex 5 relates to a summary which was circulated in advance of the exhibition and Annex 6 to a brochure which was available at the fair.

As may be clearly seen reference is made in the brochure of Annex 6 to the use of metal oxides of indium, Gallium and tin and to the fact that the oxides may be used to heat car laminated windows and that the oxides were invisible. Annex 5 on the other hand clearly shows that not only did the fair cover improvements in laminated windows but also to heated LC displays. Thus, both technical features were disclosed at the same fair. It would therefore be obvious to one considering a means of heating an LC display to take note of the use of invisible metal oxides to heat windows and combine the teachings to achieve the feature of Claim 8.

Thus the features of Claim 8 lack invention in the light of the disclosure at the fair and Annexes

Finally Claim 9 is directed to the replacement of glass with other transparent materials. This feature is fully supported by the earliest priority claim and so takes a priority date of 19th January 1984.

However, Annex 3 clearly refers to other alternatives to glass at page 1, line 37, and page 2, line 1 which are transparent. Therefore Claim 9 lacks invention in the light of Annex 3, or alternatively in the light of the combination of Annexes 3 and 6.