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D E C I S I O N
of 23 December 1998

Case Number: T 0717/94 - 3.4.1

Application Number: 89202252.6

Publication Number: 0361575

IPC: H01J 9/20

Language of the proceedings: EN

Title of invention:
Method of vapour depositing an interference filter layer on the inside of a display window, a display window, a projection cathode ray tube and a projection television apparatus

Applicant:
Koninklijke Philips Electronics N.V.

Opponent:
-

Headword:
-

Relevant legal provisions:
EPC Art. 52(1), 54, 56

Keyword:
"Novelty (yes)"
"Inventive step (no)"
"Disclosure of a feature in a drawing of a document"

Decisions cited:
T 0729/89, T 0204/83, T 0377/89, T 0621/92, T 0132/83, T 0169/83

Catchword:

Europäisches Patentamt | European Patent Office | Office européen des brevets

Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number: T 0717/94 - 3.4.1

D E C I S I O N
of the Technical Board of Appeal 3.4.1
of 23 December 1998

Appellant: Koninklijke Philips Electronics N.V.
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Decision under appeal: **Decision of the Examining Division of the European Patent Office posted 20 June 1994 refusing European patent application No. 89 202 252.6 pursuant to Article 97(1) EPC.**

Composition of the Board:

Chairman: G. Davies
Members: G. Assi
H. K. Wolfrum

Summary of facts and submissions

I. The appellant (applicant) lodged an appeal, received on 8 August 1994, against the decision of the Examining Division, dispatched on 20 June 1994, refusing the application No. 89 202 252.6 (publication No. 0 361 575). The fee for the appeal was paid on 8 August 1994. The statement setting out the grounds of appeal was received on the same day.

In the decision under appeal, the Examining Division held that the application did not meet the requirements of Articles 52(1), 54 and 56 EPC, having regard *inter alia* to the following document:

(D1) EP-A-0 206 381.

II. With the grounds of appeal the appellant requested that the decision under appeal be set aside and that a patent be granted on the basis of the following application documents:

Claims:
No. 1-12 as filed with the letter dated 25 March 1993,
Description:
Pages 3-5,7-10 as originally filed,
Pages 1,2,6 as filed with the letter dated 25 March 1993,
Drawings:
Sheets 1/4-4/4 as originally filed.

On 30 November 1998, the appellant was summoned to oral proceedings to take place on 27 January 1999. With the communication accompanying the summons, the Board introduced the following documents which are cited from the Board's own knowledge:

(D6) Patent Abstracts of Japan, vol. 7, no. 129 (E-179), JP-A-58-44656,

(D7) US-A-4 543 510 and

(D8) Patent Abstracts of Japan, vol. 5, no. 7 (E-041), JP-A-55-136433.

By letter received by the EPO on 24 November 1998, the appellant informed the Board that "he will not attend the oral proceedings, and leaves the decision in this case to the Technical Board of Appeal. Not attending the oral proceedings does not mean that the appellant will abandon the application".

By a communication dated 22 December 1998, the oral proceedings were cancelled.

III. The wordings of Claims 1, 8, 9, 10 and 12 read as follows:

"1. A method of manufacturing a projection cathode ray tube (19), the method comprising as a process step the vapour deposition of a multilayer interference filter (4) on a surface (3) of a display window (1) after which the display window (1) and further components are combined to form a projection cathode ray tube (19) in such a manner that the surface extends on the inside of the projection cathode ray tube, characterized in that during the vapour deposition process the said surface is surrounded by an edge (2) having a height (a) which is not more than 1/5 of the minimum distance between the centre of the display window and the edge (b)."

"8. A projection cathode ray tube (19), having a vapour-deposited multilayer interference filter (4) on an inside surface (3) of a display window (1), the

display window having an upright edge (2), characterized in that the upright edge (2) has a height (a) which is not more than 1/5 of the minimum distance between the centre of the display window and the upright edge (b)."

"9. A projection cathode ray tube (19), having a vapour deposited multilayer interference filter (4) on an inside surface (3) of a display window (1), characterized in that the inner face of the display window has no surface discontinuity."

"10. A projection cathode ray tube (19), having a vapour deposited multilayer interference filter (4) on an inside surface (3) of a display window (1), characterized in that the display window comprises a recess around the inner face of the display window."

"12. A projection colour television apparatus comprising a projection cathode ray tube as claimed in claim 8, 9, 10 or 11."

Claims 2-7 and 11 are dependent claims.

IV. The appellant argued essentially as follows:

The Examining Division's objections against Claims 1, 8 and 9 were solely based on a line drawn in the schematic Figure 2 of D1. According to the Examining Division, the technical feature concerning the absence of an edge around the display window was unambiguously shown in said figure.

No such conclusion could, however, be drawn. Indeed, it was not at all uncommon that in schematic drawings those parts of the drawings which did not relate to the actual subject of a patent application and which were

not described in the specification were drawn much less accurately than those parts which related to the subject-matter of the application. In particular, following the reasoning as set out in point 4.3 of the decision T 0729/89, which was relevant to the present case, it could not be assumed that the schematic Figure 2 of D1 unambiguously showed a feature such as the presence or absence of an edge around the display window. Therefore, the claimed subject-matter was novel.

Reasons for the decision

1. The appeal is admissible.

2. The Board is satisfied that the requirements of Articles 123(2) and 84 EPC are met.

3. *Document D1*

3.1 In the decision under appeal (see point II.A.3, second sentence), the Examining Division came to the conclusion that the inner face of the display window of the projection cathode ray tube according to Figure 2 of D1 had no surface discontinuity. The appellant disputes this conclusion. The question to be asked is whether or not such a feature, which is allegedly shown solely in the drawing, could be considered as forming part of the disclosure of the document. The relevant case law of the boards of appeal can be summarised as follows:

- For the purposes of Article 54(2) EPC, the disclosure of the prior art may also take the form of a drawing. When a feature is shown solely in a drawing without a detailed and clarifying

description, a careful check should be made to establish whether the mere diagrammatic representation enables the skilled person to derive a **practical technical teaching** therefrom (see T 204/83, OJ EPO 1985, 310; T 729/89; T 377/89; T 621/92).

- In T 132/83, for the purposes of Article 123(2) EPC, the Board held that for disclosure it is not necessary that a feature be explicitly described in the original specification as having a particular relevance. It suffices that it can be **clearly and unambiguously** derived, albeit only from the drawing, as being a feature of an embodiment of the invention.

- In T 169/83, OJ EPO 1985, 193, the Board emphasised that specific features should be clearly, unmistakably and fully derivable from the drawings in terms of **structure and function** by a skilled person and so relatable by him to the content of the description as a whole as to be manifestly part of the invention.

In the present case, document D1 relates to a projection television display tube with a multilayer interference filter, the tube having a high luminosity (see page 2, lines 20-24). In particular, the disclosure concerns the definition of the filter. With regard to the drawings, Figure 1 shows the tube, Figure 2 a sectional view of the display window, and Figure 3 the structure of the filter. D1 is not at all concerned with the problem underlying the present application, i.e. the negative influence of the edge portion of the display window on the thickness of the interference filter produced by vapour deposition. The applicant of D1 is aware of the fact that a small

thickness variation may occur, in particular in the case of strongly curved display windows, but does not consider such a variation as being necessarily problematic. On the contrary, he holds that it may even have a favourable effect on the light fading towards the corners and the edge of the display window (see page 14, lines 27-34). Thus, he is not concerned with the effects the shape of the display window, in particular its border portion, may cause during the vapour deposition of the interference filter, so the description relating to Figure 2 does not refer to any detail concerning the display window 2 as such (except that it is inwardly curved) and the interconnection of the window 2 with the tube funnel 3. Although Figure 2 is precise enough to represent the window and the funnel with different hatchings, as it is usual in technical drawings for different parts assembled together, as well as the borderline between window and funnel, the drawing alone does not give any clear technical teaching concerning a particular structure of the window to be understood as having any technical effect or even as forming part of the invention. Under these circumstances, the Board holds that a skilled reader of document D1 does not find any hint at precise structural details of the border portion of the display window. For these reasons, the Board disagrees with the conclusion to which the Examining Division comes in the appealed decision in the sense that D1 does not include unambiguous technical information as to a particular structure of the interconnection between the display window and the funnel.

Therefore, the subject-matter of Claim 9 is regarded as novel, having regard to D1.

The same conclusion applies *mutatis mutandis* to Claims 1, 8, 10 and 12.

3.2 Considering D1 as the most relevant state of the art, the technical problem to be solved is improving the interference filter as regards the negative influence of the edge portion of the display window on the thickness of the vapour-deposited filter from the centre of the display window towards the edge (see the original application, page 1, lines 23-25). The solution according to Claims 1 and 8 consists in the provision of an upper limit for the height of the edge of the display window ($a < b/5$).

The fact that the vapour-deposited interference filter may have a non-uniform thickness is already known from document D1 (see page 14, lines 27-30), which mentions, as a possible cause, the strong curvature of the display window. Thus, the problem underlying the present application does not contribute to inventive step.

Contrary to the statement in the present application (see page 5, lines 29-31) that an "unexpected" thickness decrease occurs, the Board holds that it is not surprising for the skilled person that the presence of an edge portion may well have a negative influence on the deposition of the filter because of a shadowing effect. Indeed, the experimental results will differ from the theoretical ones to the extent the calculations do not take account of physical phenomena occurring, like the said shadowing effect. In view of this, it is obvious that a reduction of the edge height will reduce the shadowing effect. Thus, once the shadowing effect has been identified as being the cause for the observed variations of the filter thickness, the determination of the appropriate edge height then results from a mere optimisation process and could be made by anyone of ordinary skill in the art.

Therefore, the subject-matter of Claims 1 and 8 does not involve an inventive step, having regard to D1.

4. *Documents D6, D7 and D8*

The state of the art pursuant to Article 54(2) EPC also comprises documents D6, D7 and D8.

4.1 Document D6 shows a projection cathode ray tube comprising a funnel 4 and a display window 1 with an edge portion 2 (see Figure 1). Light transmittance of the edge portion 2 or of the funnel 4 is reduced by providing a region of low-transmittance in the edge portion (see the region 2a in Figure 2) or in the funnel (see the region 7 in Figure 3), in case such an edge portion is not provided. According to the embodiment of Figure 3, the display window has no surface discontinuity. Considering that it is well known in the prior art (see D1) to provide projection cathode ray tubes with vapour-deposited multilayer interference filters on the inside surface of the display window, the subject-matter of Claim 9 does not involve an inventive step, having regard to the combination of D6 and D1.

4.2 As regards Claim 9, the same conclusion is drawn with regard to document D7 (see column 1, lines 7-43 and 54-59; Figures 1-3) to be combined with D1.

4.3 The feature that the inner face of the display window has no surface discontinuity, means that the height of the edge portion is substantially zero (see the original Claim 3). If one considers this feature as a particular case of the range mentioned in Claims 1 and 8, then the subject-matter of these claims also lacks inventive step, having regard to the combination of D6 with D1, or D7 with D1.

4.4 Document D8 shows a projection cathode ray tube comprising a funnel 3 and a display window 10 with a recess around its inner face (see Figures 2 and 3). Thus, the subject-matter of Claim 10 does not involve an inventive step, having regard to the combination of D8 and D1 (disclosing a projection cathode ray tube with a vapour-deposited multilayer interference filter).

4.5 In view of the foregoing, the apparatus of Claim 12 also lacks inventive step.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

M. Beer G. Davies