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D E C I S I O N
of 13 May 1997

Case Number: T 0723/95 - 3.4.1

Application Number: 90915195.3

Publication Number: 0448727

IPC: H01J 17/49

Language of the proceedings: EN

Title of invention:
Plasma display panel and method of manufacturing the same

Applicant:
NORITAKE CO., LIMITED

Opponent:
-

Headword:
Plasma display panel/NORITAKE CO.

Relevant legal provisions:
EPC Art. 123(2)

Keyword:
"Subject-matter extending beyond the content of the application as filed - no (after further amendments)"

Decisions cited:
-

Catchword:
-

Case Number: T 0723/95 - 3.4.1

D E C I S I O N
of the Technical Board of Appeal 3.4.1
of 13 May 1997

Appellant: NORITAKE CO., LIMITED
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Decision under appeal: **Decision of the Examining Division of the European Patent Office dated 26 April 1995 refusing European patent application No. 90 915 195.3 pursuant to Article 97(1) EPC.**

Composition of the Board:

Chairman: G. D. Paterson
Members: R. K. Shukla
U. G. O. Himmler

Summary of Facts and Submissions

1. European patent application No. 90 915 195.3 relating to a plasma display panel was refused by a decision of the Examining Division on the ground that the application was amended in such a way that it contained subject-matter which extended beyond the content of the application as filed, and thereby contravened the requirement of Article 123(2) EPC.

During the proceedings before the Examining Division claims 1 to 9 filed with the letter dated 23 February 1995 and forming the basis of the above decision were extensively revised in relation to claims 1 to 12 as filed. The above decision to refuse the application is however based only on the finding that the amendments to claim 1 specifying the composition of the dielectric layer as consisting of "*at least one member selected from the group consisting of a glass and an inorganic dielectric material containing a glass* " contravened the requirement of Article 123(2) EPC, since the composition of the dielectric layer as set out in the amended claim was not derivable from the description of the methods on pages 13 to 15 and the subject-matter of claims 11 and 12, as originally filed.

II. The Applicant lodged an appeal against the above decision and requested that a patent be granted on the basis of claims filed with the statement of the grounds of appeal, dated 26 July 1995. In relation to the claims forming the basis of the contested decision, only the composition of dielectric layer in the newly

filed independent claims 1, 2, 8 and 9 was amended to read as follows:

"a dielectric layer consisting of glass and a dielectric powder including the glass".

It was submitted by the Applicant that the above composition of the dielectric layer was based on the description on page 13, lines 12 to 13 of the application as filed, and the amended claim therefore complied with the requirement of Article 123(2) EPC.

III. In a communication dated 12 December 1995, the Board informed the Applicant that the proposed amendments to claims 1 in respect of the composition of the dielectric layer did not remove the objection under Article 123(2) EPC, since the amended wording of the claim implied that the dielectric material of the layer containing the glass is *in powder form,* whereas according to the description on page 13, lines 12 to 13 and page 14, line 25 to page 15, line 12, a mixture of glass and a dielectric powder including the glass, after its deposition on a diaphragm, is heated to *melt* the glass, so that the dielectric coating according to the disclosure in the original application consists of a dielectric material in a glass. This objection was also raised in respect of claims 2, 8 and 9.

IV. Following further communications from the Board informing the Applicant that the amended claims 1, 2, 8 and 9 submitted by him did not comply with the requirements of Article 123(2) EPC and Article 84 EPC, the Applicant requested in a letter dated 26 September

1996 the grant of a patent on the following text of the application:

Description: pages 1, 1a to 32 according to the annex to the communication from the Board, dated 28 August 1996;

Claims: 1 to 9 according to the annex to the communication from the Board, dated 28 August 1996;

Drawings: Sheets 1/9 to 9/9 as originally filed.

V. Independent claim 1 of the above request has the following wording, the features of the claim being subdivided into paragraphs (a) to (f) by the Board to facilitate their discussion.

" A plasma display panel having

(a) a first group of parallel electrodes (6,14) and a second group of parallel electrodes (7,13) and comprising a front glass plate (1), a back plate (5) and a diaphragm (3,4) there between, said front glass plate (1) and said back plate (5) being sealed together,

(b) said diaphragm (3,4) having an upper surface and a lower surface and consisting of a metallic sheet having a plurality of apertures for permitting discharge, said apertures being filled with an ionizable gas,

(c) characterized in that the electrodes (6,14) of the first group and the electrodes (7,13) of the second group are situated in parallel planes, which have a predetermined distance, and in a vertical view of the plasma display the electrodes of the first group and the second group intersect,

(d) said diaphragm (3,4) has a thickness of 0.01 to 1.0 mm,

(e) at least one of said upper and lower surfaces of said diaphragm is provided with a dielectric coating (2) consisting of a dielectric material in a glass,

(f) the minimum pitch in the arrangement of said apertures is less than 0.6 mm."

Independent claim 2 relating to a plasma display panel differs from the above claim only in that the thickness of the diaphragm and the minimum pitch of the apertures (see features (d) and (f) of claim 1) are not specified in the claim.

Independent claim 8 relating to a method has the following wording, the features of the claim being subdivided into paragraphs (a') to (f') by the Board to facilitate their discussion:

"A method of producing a plasma display panel comprising

(a') a back plate (1) provided with a first group of

parallel electrodes (6,14), a diaphragm (3,4) having a thickness of 0.01 to 1.0 mm and a front glass plate (1) provided with a second group of parallel electrodes (7,13) hermetically sealed together,

(b') wherein the electrodes (6,14) of the first group and the electrodes (7,13) of the second group are situated in parallel planes, which have a predetermined distance, and in a vertical view of the plasma display the electrodes of the first group and the second group intersect,

(c') said diaphragm (3,4) consisting of at least one metal sheet having a plurality of apertures of discharge cells which are located where said electrodes, in a vertical view, intersect,

(d') at least one of said upper and lower surfaces of said diaphragm being provided with a dielectric coating (2) consisting of a dielectric material in a glass,

(e') the minimum pitch of the arrangement of said apertures being less than 0.6 mm,

(f') characterized in that a glass and a dielectric powder including the glass is electrodeposited on the surface of the metal sheet, using the sheet as an electrode in a solution containing an electrolyte in which said glass and said dielectric powder including the glass is suspended, and followed by heating to melt the

glass, so that the dielectric layer electrically insulates the metal sheet and the two groups of parallel electrodes are firmly adhered onto the metal sheet.

Independent claim 9 relating to a method differs from claim 8 only in that instead of features as in (f'), it contains the following features :

(f") characterized in that the method comprises the steps of coating a mixture of a glass and a dielectric powder including the glass, an organic polymer and a solvent on a strippable substrate to form the dielectric layer (2), applying the dielectric layer (2) on said substrate to one or both surfaces of said metal sheet by pressure and/or heating together, stripping said substrate to transfer the dielectric layer (2) to the surface of said metal sheet, and heating to melt said glass and to remove the organic polymer and the solvent, so that the dielectric layer (2) electrically insulates the metal sheet and the two groups of parallel electrodes are firmly adhered onto the metal sheet.

Reasons for the Decision

1. In the present appeal the only issue to be decided is whether the subject-matters of independent claims 1, 2, 8 and 9 as amended, and the amended description extend beyond the content of the application as filed.

1.1 Amended claims 1 and 2 relate to a plasma display panel in its assembled form and specify that the dielectric coating provided respectively on the upper and lower surfaces of a diaphragm consists of a dielectric material in a glass (see paragraph (e) above).

In the application as filed various methods for coating a metal diaphragm with a dielectric material are mentioned. According to a first method by electrodeposition described on page 13, line 7 to page 14, line 15, a glass and a dielectric powder including the glass are dispersed in a solution containing an electrolyte. The powder that is electrodeposited on the metal diaphragm is then heated to melt the glass, whereby an insulating layer intimately adhering to the surface of the metal plate (i.e. the diaphragm) is formed.

According to a second method of forming the insulating layer (see page 14, line 25 to page 15, line 12), after an ink consisting of a glass, a dielectric powder containing the glass and a resin is transferred onto a metal plate, the composite structure is heated to melt the glass whereby the insulating layer firmly adheres to the metal plate (i.e. the diaphragm).

It therefore follows from the application as filed that the dielectric layer after its formation consists of a dielectric material in a glass, as amended in paragraph (e) of claims 1 and 2 and as set out in paragraph (d') of claims 8 and 9.

1.2 The amendments to claims 1 and 2 in paragraphs (a) to (d) and (f) and to claims 8 and 9 in paragraphs (a') to (c'), and (e') and (f') or (f") are all derivable from the description and drawings of the application as originally filed (see in particular, column 4, line 24 to 53; column 5, lines 2 to 7; column 6, lines 8 to 9; column 7, lines 28 to 46; column 8, lines 11 to 40; and Figures 7 to 10).

1.3 It therefore follows that claims 1, 2, 8 and 9 have been amended in such a way that their amended subject-matters do not extend beyond the content of the application as filed. The amended claims therefore comply with the requirements of Article 123(2) EPC.

1.4 The description has been amended so as to be consistent with the new claims and also contains minor editorial amendments. These amendments do not go beyond the content of the application as filed.

2. In the Board's judgment therefore the application as amended complies with the requirement of Article 123(2) EPC.

3. During the proceedings before the Examining Division, a combination of claims 1 and 3 as filed was considered to meet the requirement of inventive step (see, paragraph 6 of the official communication, dated 1 July 1994). The present independent claims 1 and 2 each includes inter alia the features of claims 1 and 3 as filed, and each is considerably restricted in its scope in relation to the above combination, so that the case is not to be remitted for examination of inventive step

in the claimed subject-matter.

Order

For these reasons it is decided that:

1. The decision of the Examining Division is set aside.

2. The case is remitted to the Examining Division with an order to grant the patent on the text as specified in paragraph IV above.

The Registrar: The Chairman:

M. Beer G. D. Paterson