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D E C I S I O N
of 16 May 2006

Case Number: T 0740/04 - 3.2.05

Application Number: 95941189.3

Publication Number: 0799137

IPC: B41M 5/40

Language of the proceedings: EN

Title of invention:
Receiver sheet for thermal dye transfer printing

Patentee:
Dupont Teijin Films U.S. Limited Partnership

Opponent:
Toray Industries, Inc.

Headword:
-

Relevant legal provisions:
EPC Art. 54, 56, 123(2)

Keyword:
"Inventive step (main request and first auxiliary request, no)"
"Extension beyond the content of the application as filed (second to seventh auxiliary request, yes)"

Decisions cited:
T 0002/81

Catchword:
-

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Case Number: T 0740/04 - 3.2.05

D E C I S I O N
of the Technical Board of Appeal 3.2.05
of 16 May 2006

Appellant: (Opponent)
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Decision under appeal:
Decision of the Opposition Division of the European Patent Office posted 15 April 2004 rejecting the opposition filed against European patent No. 0799137 pursuant to Article 102(2) EPC.

Composition of the Board:

Chairman: W. Moser
Members: W. Widmeier
H. Schram

Summary of Facts and Submissions

I. The appellant (opponent) lodged an appeal against the decision of the Opposition Division rejecting the opposition against European patent No. 0 799 137.

Opposition was filed against the patent as a whole based on Article 100(a) EPC (lack of novelty, Article 54 EPC, and lack of inventive step, Article 56 EPC).

The Opposition Division held that these grounds of opposition did not prejudice the maintenance of the patent as granted.

II. Oral proceedings were held before the Board of Appeal on 16 May 2006.

III. The appellant requested that the decision under appeal be set aside and that the European patent No. 0 799 137 be revoked.

IV. The respondent (patent proprietor) requested as main request that the appeal be dismissed. As an auxiliary measure, the respondent requested that the decision under appeal be set aside and that the patent be maintained on the basis of the following documents:

(a) claims 1 to 10, respectively filed as first and second auxiliary requests on 6 January 2005; or
(b) claims 1 to 10, respectively filed as third, fourth, fifth, sixth and seventh auxiliary requests on 12 April 2006.

V. The following documents were in particular referred to in the appeal proceedings:

D7 US-A-5,330,961

D8 Experimental Report of Toshihiko Hiraoka, dated 18 November 2003

D9 Affidavit of Takashi Sumiya, dated 15 December 2003, related to document D8

D10 Experimental Report of Toshihiko Hiraoka, dated 16 December 2003

D11 Affidavit of Takashi Sumiya, dated 16 December 2003, related to document D10

D14 JP-A-6-92038 (English translation)

D15 Analysis Report of Toshihiko Hiraoka, dated 29 July 2004

D16 Catalogue "'TORAY' Lumirror, Revised Sept. '93"

D17 Affidavit of Hideki Yamagishi, dated 13 April 2006, related to document D16

D18 Analysis Report of Toshihiko Hiraoka, dated 13 April 2006

D19 Notarial Deed No. 118, 2006 by Koyama Nobuhiro, Japanese Original, including photos 1 to 56

D20 English translation of document D19

D21 JP-A-4-176687 (English translation)

D23 Analysis Report of Toshihiko Hiraoka, dated 13 April 2006

D24 Affidavit of Koichi Kubota, dated 13 April 2006, related to document D23

D25 Affidavit of Koichi Kubota, dated 13 April 2006, related to document D15.

VI. Claim 1 of the main request reads as follows:

"1. A thermal transfer printing receiver sheet (1) for use in association with a compatible donor sheet (5), the receiver sheet (1) comprising a dye-receptive receiving layer (3) to receive a dye thermally transferred from the donor sheet, and an opaque biaxially oriented supporting polyester substrate (2) characterised in that said substrate (2) comprises (i) small voids (16), formed around inorganic filler particles (14), having a mean void size in the range from 0.3 to 3.5 µm, and (ii) large voids (15), formed around organic filler particles (13), having a mean void size in the range from 5 to 21 µm and less than 15% by number of the voids (15, 16) have a void size greater than 27 µm."

Claim 1 of the first auxiliary request is supplemented with respect to claim 1 of the main request after "organic filler particles (13)" by "having a mean particle size in the range from 2 to 8 µm".

Claim 1 of the second auxiliary request is supplemented with respect to claim 1 of the main request after "characterised in that said substrate (2)" by "is a mono-layer substrate and".

Claim 1 of the third auxiliary request is supplemented with respect to claim 1 of the main request after "characterised in that said substrate (2)" by "has an optical density of at least 1.1 and".

Claim 1 of the fourth to seventh auxiliary requests comprises at least one of the above-mentioned added features "is a mono-layer substrate" and "has an optical density of at least 1.1".

VII. The appellant argued essentially as follows:

Documents D16 to D25 submitted on 18 April 2006 are of high relevance and do not introduce new subject-matter. The further analysis of E60 films became necessary in view of the communication of the Board issued together with the summons for oral proceedings. Thus, these documents should be admitted.

Documents D7, D14 and D21 refer to the use of E60 films in the production of substrates for thermal transfer printing receiver sheets. The E60 film was produced from 1989 until 1991 with a density of 0.8 g/cm^3 and from 1991 on with a density of 1.0 g/cm^3. Document D16 is a catalogue which was freely distributed and which comprises an original E60 film. The properties of E60 films with a density of 0.8 g/cm^3 are shown in documents D8 and D23, the properties of E60 films with a density of 1.0 g/cm^3 are shown in documents D10, D15, D16 and

D18. The analysis according to document D18 was made of an E60 film of document D16. It is thus proven that E60 films are state of art, and the properties of these films have been demonstrated.

Claim 1 of the main request is not restricted to a printing receiver sheet having a mono-layer substrate. The claim leaves it open whether this substrate consists of a single layer or of a plurality of layers. Paragraph [0006] of the patent in suit relates to the printing receiver sheet rather than to the substrate of this sheet. This is consistent with paragraph [0051] of the patent in suit, which describes an additional layer between the substrate and the receiving layer. With the exception of specific examples, nothing is said about the number of layers of the substrate. The description of the patent in suit may therefore not be construed to limit claim 1 to a mono-layer substrate. The thermal transfer printing receiver sheet disclosed in document D21 whose substrate is a multi-layer substrate is therefore comparable with the subject-matter of claim 1 of the main request. In Example 3 of document D21, an E60 film is used for the substrate. At the publication date of document D21, the E60 film with a density of 0.8 g/cm^3 was no longer produced. Thus, the public was instructed by this document to use the E60 film with a density of 1.0 g/cm^3. Consequently, as can be seen from claim 1 and Examples 1 and 3 of document D21, the thermal printing receiver sheet has all features of claim 1 of the main request so that the subject-matter of this claim lacks novelty.

The same applies to the subject-matter of claim 1 of the first auxiliary request because document D18 shows

that the particle size of the organic filler particles is in the range from 1 to 9 µm. Because of the Gaussian distribution of the particle sizes, it follows that the mean particle size of these particles is within the range of from 2 to 8 µm specified in claim 1 of the first auxiliary request. Thus, also the subject-matter of this claim lacks novelty.

The patent in suit and document D21 are based on the same problem, i.e. to enhance printing quality. When the E60 film with the higher density of 1.0 g/cm^3 was released, it was obvious for a person skilled in the art to use this film instead of the 0.8 g/cm^3 film, which has a lower mechanical stability, in order to further enhance the printing quality. Document D21 leads therefore in an obvious manner to the subject-matter of claim 1 of the main request which thus does not involve an inventive step.

The same applies to the subject-matter of claim 1 of the first auxiliary request because the mean particle size specified in this claim is also a feature of the E60 film of document D16.

The term "mono-layer" is not disclosed in the application as filed. No part of the general description can be interpreted to disclose a mono-layer substrate. In the description of the specific examples, a mono-layer substrate is disclosed in combination with further features which cannot be omitted. For example, when using a mono-layer substrate, barium sulphate in an amount of 16 wt % to 17 wt % is necessary, whereas a multi-layer substrate, such as used in document D21, has about 3 wt % of this material. A mono-layer

substrate without the further features specified in the examples is therefore not disclosed in the application as filed so that the subject-matter of claim 1 of the second auxiliary request infringes Article 123(2) EPC.

The passage on page 8, lines 11 to 14, of the application as filed discloses as widest range of the optical density of the substrate 1.1 to 1.45. The removal of the upper limit of this range, so that any optical density greater than 1.1 is included in the subject-matter of claim 1 of the third auxiliary request, has no basis in the application as filed so that also this request involves an infringement of Article 123(2) EPC.

VIII. The respondent argued essentially as follows:

The documents submitted by the appellant on 18 April 2006 are late filed. The appellant did not give a good reason for this late filing. Furthermore, document D21 does not add anything beyond the content of documents D7 and D14. Consequently, these late filed documents should not be admitted.

It is not disputed that E60 films were used before the priority date of the patent in suit. However, the void properties of the E60 films mentioned in documents D7, D14 and D21, each having a priority or filing date in 1991 or 1992, are unknown. The films analyzed according to documents D8 and D10 were reproduced in 2003. Materials and their properties may have changed over the years so that these documents cannot be used to demonstrate the properties of an earlier E60 film. There is no evidence that the film which was analyzed

according to document D23 is the same film which was used in documents D7, D14 and D21. There is no evidence that the film analyzed according to document D15 ever left the producer's plant. Documents D9 and D24 are worthless because it is unknown which position within their company the authors of these documents had at the priority date of the patent in suit. In order to show the correspondence of the E60 film of document D16 with the film analyzed according to document D18 the film properties listed in document D16 should also have been analyzed. Thus, the appellant did not demonstrate which properties the E60 films of documents D7, D14 and D21 had.

The patent in suit is implicitly restricted to a mono-layer substrate. This follows from paragraph [0006] of the patent in suit. The additional layers mentioned in paragraphs [0051], [0064] and [0065] of the patent in suit are not additional layers of the substrate. Thus, document D21, which discloses a thermal transfer printing receiver sheet with a multi-layer substrate, cannot be novelty destroying for the subject-matter of claim 1 of the main request. Moreover, the E60 film mentioned in Example 3 of this document cannot be the E60 film of document D16 because, at the application date of document D21, this film, which has a density of 1.0 g/cm^3, was not yet available, so that the E60 film of document D21 must be a film of 0.8 g/cm^3 density. The properties of this earlier film, however, are not proven by the appellant. The subject-matter of claim 1 of the main request is therefore novel with respect to document D21.

There is no unambiguous disclosure that the mean particle size of the organic filler particles of the E60 film is between 2 and 8 µm, as specified in claim 1 of the first auxiliary request. It may be that all respective particles of the E60 film are around 1 µm or 9 µm, and thus outside this range. Consequently, the subject-matter of claim 1 of the first auxiliary request is novel.

The patent in suit is based on the problem to avoid a multi-layer substrate. Document D21, which is based on a different problem, does not hint to the mono-layer substrate of the subject-matter of claim 1 of the main request. Mono-layer and multi-layer substrates are principally different and mutually exclusive. The subject-matter of claim 1 of the main request involves therefore an inventive step.

This conclusion applies for the same reason also to the subject-matter of claim 1 of the first auxiliary request.

The last sentence on page 1, the text of page 3 to page 4, line 7, and the examples of the application as filed (published version) clearly show that the substrate is a mono-layer substrate so that even without mentioning a mono-layer in claim 1, the subject-matter of this claim will be seen by a person skilled in the art as being restricted to a mono-layer substrate. It is thus possible to introduce the expression "mono-layer" into the claim without the need to introduce also the further features of the examples of the application as filed. Claim 1 of the second

auxiliary request is therefore in accordance with Article 123(2) EPC.

As indicated on page 8, lines 11 to 14 of the application as filed (published version), the range of 1.1 to 1.45 of the optical density of the substrate is a preferred range. A person skilled in the art will further conclude from this passage that the substrate is opaque and that there is a broad range regarding the values for the optical density with a lower limit of 1.1 and a practical upper limit determined by the possible maximum amount of filler particles. This factual situation is similar to the one underlying decision T 2/81 where the combination of the lower limit of a preferred sub-range and the higher limit of a full range into a new range was considered allowable under Article 123(2) EPC. Thus, also claim 1 of the third auxiliary request is allowable under this formal aspect.

Reasons for the Decision

1. *Documents D16 to D25*

Documents D16 to D25 were filed by the appellant within the time limit set by the Board in its communication issued together with the summons for oral proceedings. The filing of these documents is to be considered to represent a reaction to the doubts expressed by the Board in that communication as to the evidence concerning the E60 films. Moreover, these documents are relevant so that they are introduced into the procedure (Article 114(1) EPC).

2. *State of the art*

Document D16 is a catalogue of September 1993 comprising, among other samples, a sample of an E60 film. Document D17 concerns the authenticity and public availability of document D16. The Board has no reason to doubt that document D16 was available to the public at the priority date of the patent in suit and that the analysis of the E60 film of this document was correctly performed and recorded. The E60 film of document D16 is therefore considered prior art within the meaning of Article 54(2) EPC, and document D18 is considered to show the properties of this film.

3. *Main request*

3.1 The Board cannot share the respondent's opinion that claim 1 is to be interpreted such that the supporting polyester substrate is a mono-layer substrate. The claim itself does not comprise an explicit restriction in this respect. Paragraph [0006] of the patent in suit, which is considered by the appellant to limit the patent in suit to a receiver sheet with a mono-layer substrate, cannot be interpreted in that sense. It rather relates to the object of the patent in suit to eliminate printing flaws without the need of an additional layer. The texts preceding and following that paragraph refer to the receiver sheet rather than to the substrate of this receiver sheet, so that this additional layer is to be interpreted as an additional layer of the receiver sheet. The same applies to paragraphs [0051], [0064] and [0065] of the patent in suit. Although, in addition to the substrate, these

passages of the description mention further layers of the receiver sheet, they are silent about the design of the substrate itself. Figures 1 to 5, which show the substrate 2 as a single layer, are schematic drawings. The corresponding description (cf. paragraphs [0067] and [0068] of the patent in suit) is also very general and in particular silent about the design of the substrate so that it may not be regarded as a basis for a restriction of claim 1 to a mono-layer substrate. Examples 1 to 3 (cf. paragraphs [0072] to [0084] of the patent in suit) relate to specific embodiments of the receiver sheet which cannot be used as basis for a general limitation of claim 1.

3.2 Document D21 discloses a thermal transfer printing receiver sheet for use in association with a compatible donor sheet (cf. the paragraph bridging pages 1 and 2), the receiver sheet comprising a dye-receptive receiving layer to receive a dye thermally transferred from the donor sheet (cf. page 4, last paragraph to page 5, second paragraph) and a supporting polyester substrate (cf. page 5, third paragraph, page 11, lines 7 and 8, and page 14, lines 1 to 5). Example 1 describes how the substrate which supports the dye receiving layer is built, and Example 3 discloses that the basic layer of this substrate is made of E60 film. From the filing date of document D21 (i.e. 10 November 1990) it follows that Example 3 is based on the use of an E60 film with a density of 0.8 g/cm^3 because, as stated by the appellant, production of E60 film with a density of 1.0 g/cm^3 was started in 1991. Thus, a person skilled in the art reading document D21 at, or after, its publication date (24 June 1992) would still understand this document such that it discloses the use of an E60

film with a density of 0.8 g/cm^3. The person skilled in the art would not necessarily attribute the properties of the E60 film having a density of 1.0 g/cm^3 produced at that time, when studying or reworking Example 3 of document D21, because there is no disclosure in this document that this has to be done if materials change or are no longer available.

3.3 It may be left open whether the E60 film produced before the filing date of document D21 had the properties as given in documents D8/D9 or D23/D24, which refer to an E60 film with a density of 0.8 g/cm^3, because, for the reasons given hereinafter, the subject-matter of claim 1 does not involve an inventive step. Example 3 of document D21 teaches the use of an E60 film as basic layer of the substrate of the printing receiver sheet. Since, in 1991, production of the E60 film was changed in terms of density of the latter, it was obvious in accordance with the teaching of document D21, when realising Example 3, to use the modified and improved E60 film which has a density of 1.0 g/cm^3. A sample of this E60 film is comprised in document D16 together with a table of the characteristics of the film. This table discloses that the film is opaque and biaxially oriented (different values for thermal shrinkage in machine direction (MD) and transverse direction (TD)). As can be seen from the analysis according to document D18 (cf. Table 1), the E60 film of document D16 comprises small voids formed around inorganic filler particles having a mean void size in the range from 0.3 to 3.5 µm, and large voids formed around organic filler particles having a mean void size in the range from 5 to 21 µm, and less than 15% by number of the voids have a void size greater

than 27 µm. Thus, when using the E60 film which was produced from 1991 on to realise Example 3 of document D21, one arrives at the subject-matter of claim 1. This subject-matter therefore does not involve an inventive step (Article 56 EPC).

4. *First auxiliary request*

According to Table 1 of document D18, the particle size of the organic filler particles is in a range from 1 to 9 µm. It is unrealistic to assume, as the respondent does, that there is a high concentration of particles with a size between 1 and 2 µm, so that the mean particle size would be smaller than 2 µm, or between 8 and 9 µm, so that the mean particle size would be greater than 8 µm. One must assume that, without special process measures, the distribution of the particle sizes is more or less in accordance with a Gaussian curve. Consequently, when the particle size ranges from 1 to 9 µm, the mean particle size will be inside a range from 2 to 8 µm. The E60 film of document D16 therefore also has the additional feature of claim 1 of the first auxiliary request. Thus, for the same reasons as the subject-matter of claim 1 of the main request, also the subject-matter of claim 1 of the first auxiliary request does not involve an inventive step.

5. *Second auxiliary request*

As stated under point 3.1 above, the general description of the patent in suit does not support a limitation of claim 1 to a mono-layer substrate. The same applies to the application as filed. Also there, the general description is silent about the design of

the substrate so that it cannot be seen as a basis for any limitation of the substrate, be it to a mono-layer or to a multi-layer substrate. Rather, a mono-layer substrate can exclusively be derived from the description of the specific examples 1 to 3 (cf. page 16, line 1, to page 19, line 5, of the published version of the application as filed). However, there the feature "mono-layer" is not an isolated feature, it is disclosed in combination with other features, such as specific materials for the composition of the substrate and specific production measures. A generalization to a mono-layer substrate without these specific connected features is therefore an extension beyond the content of the application as filed so that the subject-matter of claim 1 of the second auxiliary request contravenes Article 123(2) EPC.

6. *Third auxiliary request*

Claim 1 of the third auxiliary request specifies that the substrate has an optical density of at least 1.1. In the application as filed, it is stated that the substrate is opaque and preferably exhibits an optical density in a range from 1.1 to 1.45 (cf. page 8, lines 11 to 14, of the published version). In the judgement of the Board, the feature that the substrate is opaque cannot be seen as a disclosure of an indefinite upper limit as claimed in claim 1 of the third auxiliary request. The findings of decision T 2/81 (OJ EPO, 1982, 394) thus are not applicable. Contrary to the situation underlying this decision, in the present case there is no disclosure in the application as filed of a wider general and a narrower preferred range which could be combined. The only disclosure as to the optical density

of the substrate is a range from 1.1. to 1.45. Any extension of this range must be seen as an extension beyond the content of the application as filed, so that also the subject-matter of claim 1 of the third auxiliary request infringes Article 123(2) EPC.

7. *Fourth to seventh auxiliary requests*

Claims 1 of the fourth to seventh auxiliary requests comprise at least one of the two features which were considered above under points 4 and 5 not allowable under Article 123(2) EPC. Thus, the subject-matter of these claims extends also beyond the content of the application as filed and therefore infringes Article 123(2) EPC.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The patent is revoked.

The Registrar: The Chairman:

P. Cremona W. Moser