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D E C I S I O N
of 8 December 2000

Case Number: T 0649/97 - 3.2.5

Application Number: 91920283.8

Publication Number: 0554370

IPC: B41M 5/00

Language of the proceedings: EN

Title of invention:

Coating of hydrophilic interpenetrating networks

Patentee:

MINNESOTA MINING AND MANUFACTURING COMPANY

Opponent:

Canon Inc. Corporate Intellectual Property and Legal
Headquarters

Headword:

-

Relevant legal provisions:

EPC Art. 54, 56, 84

Keyword:

"Novelty (yes)"
"Inventive step (yes)"
"Clarity (yes)"

Decisions cited:

-

Catchword:

-



Case Number: T 0649/97 - 3.2.5

D E C I S I O N
of the Technical Board of Appeal 3.2.5
of 8 December 2000

Appellant: Canon Inc. Corporate Intellectual Property
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Respondent: MINNESOTA MINING AND MANUFACTURING COMPANY
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Decision under appeal: Interlocutory decision of the Opposition Division
of the European Patent Office posted 17 April
1997 concerning maintenance of European patent
No. 0 554 370 in amended form.

Composition of the Board:

Chairman: W. Moser
Members: P. E. Michel
W. R. Zellhuber

Summary of Facts and Submissions

I. The appellant (opponent) lodged an appeal against the interlocutory decision of the Opposition Division maintaining the patent No. 0 554 370 in amended form.

In the decision under appeal, it was held that the grounds of opposition submitted by the appellant under Article 100(a) (lack of novelty and inventive step) did not prejudice the maintenance of the patent as amended.

The following documents were referred to in the appeal proceedings:

D1: US-A-4783376

D2: JP-A-58-89391

D2a: English translation of D2

D2c: JP-A-56-80489

D2d: English translation of D2c

II. Oral Proceedings were held before the Board of Appeal on 8 December 2000.

(i) The appellant requested that the decision under appeal be set aside and the patent be revoked.

(ii) The respondent (patentee) requested that the appeal be dismissed.

III. Claim 1 of the patent as maintained by the Opposition Division reads as follows:

"1.A transparent article comprising a transparent substrate bearing on at least one major surface thereof a hydrophilic liquid-absorbent, semi-interpenetrating network comprising:

- a) at least one crosslinked polymer forming a continuous matrix and
- b) at least one liquid-absorbent polymer comprising a water-absorbent polymer intertwined in said matrix,

said crosslinked polymer deriving from a crosslinkable polymer that is crosslinked after it has been applied to the substrate."

IV. The appellant argued essentially as follows:

The term "transparent" is merely a relative, subjective term. There is an overlap between the meanings of the expressions "transparent" and "translucent" which gives rise to ambiguity. In particular, claim 1 is not restricted to transparent imageable materials and extends to transparent articles having a number of possible uses.

Claim 1 lacks novelty in view of the disclosure of document D2. The translation of this document, document D2a, refers at page 6, lines 21 to 24, to a non-water-proofed water-soluble polymer being embedded in a matrix of a water-proofed water-soluble polymer. At least the methods 1 to 4 as set out at pages 9 and 10 of document D2a result in cross-linking of the water-proofed water-soluble polymer, so that references to a water-proofing agent also refer to a cross-linking

agent. The polyamide-polyamine-epichloride resin, referred to in Example 1 at page 14 is a cross-linking agent.

The reference at page 4 of document D2a to document D2c supports the contention that D2 is not restricted to opaque materials. The references at page 12 to plastics materials and glass plates make immediate reference to transparent films. If the support is transparent, it is clear that the coating must also be transparent. Page 8, line 15 refers to 0 parts of pigment. Page 8, line 8 of document D2a refers to the pigment providing for ink adsorption. The passage at page 13, line 23 to page 14, line 5 makes it clear that the ink is absorbed by the water-soluble polymer and not by the pigment.

If the subject-matter of claim 1 is regarded as being novel, the subject-matter of claim 1 does not involve an inventive step starting from either document D1 or document D2 as the closest prior art.

Starting from document D2 as the closest prior art, the only distinguishing feature is the transparency of the article. If the person skilled in the art wishes to make the coating transparent, the presence of a pigment is not only unnecessary, but also unsuitable.

Starting from document D1 as the closest prior art, the object of the invention is to improve the ink absorption and durability of the coating. A highly cross-linked structure is durable, but has low ink absorption. On the other hand, a low degree of cross-linking increases ink absorption, but decreases durability. The coating of document D2 solves this problem by using a combination of a water-proofed

water-soluble polymer and a non-water-proofed water-soluble polymer.

V. The respondent argued essentially as follows:

The term "transparent" is a clear term which has a well defined meaning in the art of optical articles.

Document D2 does not disclose a transparent article. The passage at page 8, lines 6 to 14 of document D2a refers to the pigment providing for ink adsorption, so that the presence of a pigment must be regarded as being an essential feature of the composition. It does not necessarily follow from the references at page 12 to plastics and glass that the material is transparent. It is not appropriate to refer to document D2c or its translation D2d as a source for a disclosure of suitable support materials. Document D2 itself discloses support materials at page 12, lines 3 to 18 of document D2a. Document D2 focuses on paper supports (see, for example, page 3, line 3 to page 4, line 1 of document D2a). All the examples of document D2 require a high loading of opaque pigment.

Document D2 does not disclose a coating comprising a semi-interpenetrating network (SIPN). As stated in the patent in suit at page 3, lines 4 to 10, of the description it is a characteristic of an SIPN that the uncrosslinked portion thereof cannot be leached out. In the compositions disclosed in document D2, the presence of fillers is necessary to achieve this result. Method 5 does not result in the formation of covalent bonds, so there is no cross-linking present. In addition, the experimental report of Mr. Herbert shows that the coating was removed by immersion in an alkali solution,

thus implying that an SIPN was not present. The formation of an SIPN requires a certain cross-linking density, so that the mere presence of a cross-linking agent in a composition does not necessarily mean that an SIPN is formed. The solvent system also plays a role, it being necessary to select a solvent in accordance with the parameters set out at page 12 of the description of the patent in suit.

Document D1 must be regarded as the closest prior art since it is concerned with transparent materials. It is concerned with the problem of providing a durable coating having good ink absorption, proposing either the use of a hydrophilic cross-linking agent (column 8, lines 35 to 48) or limiting the degree of cross-linking.

There is no motivation to look to document D2 to solve these problems, since this document merely discloses an opaque coating.

Reasons for the Decision

1. Clarity

The term "transparent" as used in claim 1 should be construed as meaning sufficiently transparent for the claimed article to carry out its intended function, for example as a transparent imageable material for use in an overhead projector. The person skilled in the art will not have any difficulty identifying articles through which an image is intended to be viewed or projected and hence regarded as being transparent.

2. *Novelty*

- 2.1 It was alleged on behalf of the appellant that the subject-matter of claim 1 is not new having regard to the disclosure of document D2. Document D2 does not, however, disclose a transparent article.

Document D2 is concerned with coatings for paper which include an opaque pigment such as talc and are therefore opaque. The reference at page 8, line 15 of D2a to the use of a range of 0 to 10 parts of a pigment with respect to 1 part of water-soluble polymer is not understood as constituting a teaching to provide a transparent coating not including a pigment, since it occurs in the context of a passage setting out the advantages of the presence of a pigment. The fact that document D2 refers in its discussion of the prior art to document D2c (see page 4, line 21 of document D2a), which in turn mentions (see page 3, lines 8 to 12 of document D2d) that the recording medium may be transparent cannot be seen as implying that document D2 itself relates to transparent recording media. The reference in document D2 is part of a discussion (page 4, line 22 to page 5, line 18 of document D2a) of the disadvantages of the use of water-soluble polymer coating layers in terms of their lack of durability and is not concerned with the nature of the substrate.

The reference at page 12, lines 3 to 5, of document D2a to the use of various support materials including plastics films and glass plates does not necessarily imply that the support materials are transparent. A fortiori, there is no suggestion in document D2 that a transparent coating should be used on a transparent support, thus resulting in a transparent article.

The subject-matter of claim 1 is thus novel with respect to the disclosure of document D2.

2.2 The subject-matter of claim 1 is also novel having regard to the disclosure of document D1, since this document does not contain any disclosure of an SIPN, and, in fact, the novelty of claim 1 was only disputed by the appellant on the basis of the disclosure of document D2.

3. *Inventive step*

3.1 Closest prior art

Document D1 represents the closest prior art and discloses a transparent article comprising a transparent substrate bearing a coating layer which contains a compound having cross-linking properties. There is, however, no reference to the use of an SIPN.

It was suggested on behalf of the appellant that document D2 could equally be regarded as the closest prior art. This cannot be accepted in view of the fact that this document does not refer to transparent articles, and thus does not provide a suitable starting point for a skilled person seeking to provide an improved transparent article. The object of the invention would then be to render the article transparent, requiring the replacement of the substrate by a transparent substrate and the coating by a transparent coating.

3.2 Object of the invention

The object of the invention is, as stated in the

description of the patent in suit at page 2, lines 53 and 54, to further improve ink absorption ability and durability.

3.3 Solution

According to claim 1, the above object is achieved by the use of a coating of a semi-interpenetrating network comprising at least one crosslinked polymer forming a continuous matrix and at least one liquid-absorbent polymer comprising a water-absorbent polymer intertwined in said matrix, said crosslinked polymer deriving from a crosslinkable polymer that is crosslinked after it has been applied to the substrate. The presence of the cross-linked matrix ensures durability, whilst the water-absorbent polymer nevertheless permits good ink absorption.

Whilst document D2 discloses methods of producing coatings, at least some of which appear to result in the formation of SIPNs, there is nothing in the disclosure of document D2 which would suggest to the person skilled in the art that such coatings would be of benefit in improving ink absorption ability and durability of the transparent articles of document D1. As stated above, document D2 is not concerned with transparent articles. Even if it occurred to the person skilled in the art that the opaque pigments utilised in the coating compositions of document D2 could be omitted, there is nothing to indicate that the resulting coatings would be suitable for use as transparent coatings of transparent articles. The omission of the large quantities of talc or calcium carbonate included in the compositions of the examples of document D2 would result in coating liquids having

very different characteristics, for example as to ink adsorption and stickiness (see page 8, lines 6 to 9 of document D2a), so that the person skilled in the art would be deterred from such an omission. There is, moreover, no incentive for the skilled person to experiment with such an omission.

The subject-matter of claim 1 thus involves an inventive step. Claim 3 is appendant to claim 1 and claims 2 and 4 are directed to methods of preparing the transparent article of claim 1. These claims thus similarly involve an inventive step.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:

M. Dainese

W. Moser