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D E C I S I O N
of 6 March 1995

Case Number: T 0178/92 - 3.2.5
Application Number: 86201435.4
Publication Number: 0256170
IPC: B41M 7/02, C09D 11/12, C09D 11/02
Language of the proceedings: EN

Title of invention:

Paper object printed with ink and coated with a protective layer, and process for producing it

Patentee:

Joh. Enschedé en Zonen Grafische Inrichting B.V.

Opponent:

BASF Aktiengesellschaft, Ludwigshafen

Headword:

-

Relevant legal provisions:

EPC Art. 56

Keyword:

"Inventive step (yes, after amendments)"

Decisions cited:

-

Catchword:

-



Case Number: T 0178/92 - 3.2.5

D E C I S I O N
of the Technical Board of Appeal 3.2.5
of 6 March 1995

Appellant:
(Proprietor of the patent) Joh. Enschedé en Zonen
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Representative: De Hoop, Eric
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Respondent:
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Representative: -

Decision under appeal: Decision of the Opposition Division of the
European Patent Office delivered on 7 November
1991 and posted on 19 December 1991 revoking
European patent No. 0 256 170 pursuant to
Article 102(1) EPC.

Composition of the Board:

Chairman: C. V. Payraudeau
Members: A. Burkhart
W. D. Weiss

Summary of Facts and Submissions

- I. The Appellant (Proprietor of the patent) lodged an appeal against the decision of the Opposition Division by which the patent No. 0 256 170 had been revoked.

This decision was based on the ground that the subject-matter of the patent in suit did not involve an inventive step, having regard to the following documents:

- D1: GB-A-1 381 672,
- D2: GB-A-1 381 141,
- D3: "Eastman Cellulose Acetate Propionate", Eastman Chemicals, USA, 1982,
- D4: "Eastman Cellulose Acetate Butyrate", Eastman Chemicals, USA, 1982,
- D5: "Hoechst Wachse" Datenblatt, Hoechst AG, DE, 1985, and
- D6: "Tropag Mikronisierte Wachse für Druckfarben und Lacke", Micro Powders Inc., DE, 1979 and 1982.

- II. The subject-matter of Claim 1 of the patent in suit as granted is a

"Paper object printed with ink and coated with a protective layer, characterized in that the printing ink contains 1-10% by weight of wax consisting essentially of particles smaller than 30 μm and in that the protective coating consists for a major part of cellulose ester or ether".

The other independent Claim 7 relates to a process for producing the said printed paper object.

The Opposition Division essentially held that it was known by the documents D1 to D4 that cellulose ether or ester coating on printed paper objects exhibit desirable properties such as flexibility, abrasion resistance and oil and grease resistance, and by the documents D5 and D6 that waxes consisting of particles smaller than 30 μm are used as high quality additives to printing inks and improve rub resistance and matt appearance, in concentrations corresponding to the range of 1 to 10%, and that, therefore, it was to be expected from the skilled practitioner that he would consider incorporating waxes consisting essentially of particles smaller than 30 μm into printing inks which are to be coated with a cellulose ester or ether coating as a routine variation and within the scope of the art and without exercising inventive skill.

III. In his statement setting out the grounds of appeal, the Appellant argued essentially that the state of the art did not render obvious the invention according to the contested patent, the gist of which was that paper currency printed with wax-containing ink may be coated with a well adhering layer of varnish which will repel dirt and add to the useful life of the thus treated paper, if the wax is a specific micronised wax consisting of particles smaller than 30 μm , but only to a smaller extent particles of less than 10 μm , and if the varnish is a cellulose ester or ether. When no such wax was used in the ink, the varnish was apparently repelled by the ink and consequently was not present at all on the raised intaglio lines of the banknotes.

The Appellant presented a new Claim 1 and a new auxiliary Claim 1 which were restricted to "paper currency", on the basis of which he requested the maintenance of the patent in amended form.

IV. The Respondent (Opponent) requested that the appeal be dismissed and submitted that he fully agreed with the reasoning of the Opposition Division in their decision concluding that the subject-matter of the contested patent did not involve an inventive step, and that this reasoning would also apply, if the subject-matter of the patent was restricted to "paper currency produced by intaglio printing".

The Respondent referred for the first time to a further prior art document, namely to document

D8: "The printing ink manual", 3rd edition, page 202, Van Nostrand, Reinhold (U.K.), 1984.

V. In a communication pursuant to Article 110(2) EPC the Board of Appeal expressed its view that an amended Claim 1, which was restricted to the specific particle size of the micronised wax according to page 2, lines 47 to 50 of the patent specification would seem to involve an inventive step.

VI. In response to this communication, the Appellant filed new Claims 1 and 7 taking into account the view of the Board of Appeal.

The Appellant requested then, as sole request, that the patent be maintained in amended form on the basis of the following documents:

Description: pages 1 to 9, filed on 25 January 1994, and
Claims: Nos. 1 to 7, filed on 25 January 1994.

VII. The Respondent did not react on the communication issued by the Board of Appeal and did not comment on the new, valid request of the Appellant.

VIII. Claim 1 reads as follows:

"1. Paper currency printed with ink and coated with a protective layer, **characterized in that** the printing ink contains 1-10% by weight of micronized wax consisting for the greater part of particles of 30 μm and smaller and for a minor part of particles smaller than 10 μm and in that the protective coating consists for a major part of cellulose ester or ether."

Dependent Claims 2 to 6 concern specific embodiments of the subject-matter of Claim 1.

Claim 7 reads as follows:

"7. A process for producing paper currency printed with ink and coated by a protective layer, wherein paper is printed with an ink which comprises binder, pigment and optionally solvent, drying agent and other auxiliaries, and subsequently is covered with a layer of varnish, **characterized in that** the ink contains 1-10% by weight of micronized wax consisting for the greater part of particles of 30 μm and smaller and for a minor part of particles smaller than 10 μm and in that the protective coating consists for a major part of cellulose ester or ether."

Reasons for the Decision

1. *Amendments*

With respect to the patent as granted, the new Claims 1 and 7 have been restricted in the sense that the expression "paper object" has been replaced by the expression "paper currency" and that the wording "wax

consisting essentially of particles smaller than 30 μm " has been replaced by the wording "micronised wax consisting for the greater part of particles of 30 μm and smaller and for a minor part of particles smaller than 10 μm ".

The basis for these amendments can be found on page 2, line 5 and line 48 to 50 of the patent as granted and on page 1, line 4, and page 3, lines 9 to 18 of the originally filed description.

The description has been adapted to the amended claims and some clerical errors therein have been corrected.

Therefore, the patent in its amended form is not subject to objections based on Article 123(2) and (3) EPC.

2. *Novelty*

Documents D1 to D4 disclose paper objects printed with ink and coated with a protective layer which consists of cellulose ester or ether.

The subject-matter of Claim 1 differs from these paper objects in that the paper object is a paper currency and that the printing ink contains 1 to 10% by weight of micronised wax consisting for the greater part of particles of 30 μm and smaller and for a minor part of particles smaller than 10 μm .

Documents D5 and D6 disclose micronised wax powders which are used as additives to printing inks in an amount of 1 to 10%, the waxes having a particle size in the range of smaller than 30 μm . Documents D5 and D6 do not disclose a particle size distribution of the wax additive in the sense that it consists for the greater part of particles of 30 μm and smaller and for a minor

part of particles smaller than 10 μm . Moreover, these documents are silent about paper currency and the use of a protective coating for the printed ink.

From document D8 it is known that specific security inks are useful in printing banknotes. However, document D8 does not disclose banknotes comprising any of the features according to the characterising portion of Claim 1.

Therefore, the subject-matter of Claim 1 is novel in view of the prior art under consideration.

3. *Inventive step*

3.1 Paper currency is subject to intensive circulation and therefore it is desired to coat it with a protective layer to counteract soiling so that it may have a longer useful life. Nowadays, wax is often incorporated in printing ink to improve the rheological properties thereof and also because then the ink will not come off onto the next sheet in a pile of freshly printed paper. However, if the printing ink contains wax, the problem arises that the protective coating does not adhere well to the printed parts.

3.2 This problem is solved by the paper currency according to Claim 1, which is characterised by

- (a) a specific wax additive incorporated into the printing ink, the wax being a micronised wax and consisting for the greater part of particles of 30 μm and smaller and for a minor part of particles smaller than 10 μm , and by
- (b) a protective coating consisting for a major part of cellulose ester or ether.

Due to the combination of the aforementioned features (a) and (b), the adhesion of the protective coating to the printed parts is good, such that the paper currency keeps the property of good dirt repellency for a long lifetime, even when folded and handed over frequently (see examples of the contested patent).

- 3.3 The teachings of the documents under consideration do not render obvious the subject-matter of Claim 1 for the following reasons.

Documents D1 to D4 teach that cellulose ester or ether can be used as protective coatings for printed paper objects in order to render these objects resistant against scuffing, rubbing, water, oil and grease.

However, documents D1 to D4 do not refer to paper currency and do not suggest that the said protective coating layer should be used in combination with a specific wax-containing ink, in order to enhance the adhesion of the protective coating to the printed parts of a printed object.

Documents D5 and D6 teach that printing inks containing a micronised wax additive in an amount of up to 10% and having a particle size smaller than 30 μm show improved rub resistance.

However, these documents do not teach that the micronised wax additive should have a specific particle size distribution in the sense that it consists for the greater part of particles of 30 μm and smaller and for a minor part of particles smaller than 10 μm . Moreover, documents D5 and D6 do not refer to paper currency and do also not suggest that the use of an ink comprising a specific wax additive in combination with a specific

protective coating enhances the adhesion of the protective coating to the printed parts of a printed object.

Document D8 was only cited by the Respondent in order to demonstrate that paper currency is not exclusively printed by the intaglio-process. However, this document does not disclose or suggest any of the features of the characterising portion of Claim 1.

- 3.4 Therefore, the subject-matter of Claim 1 also involves an inventive step in the meaning of Article 56 EPC.
4. The same applies to the specific embodiments of the subject-matter of Claim 1 according to the dependent Claims 2 to 6.
5. Claim 7 refers to a process for producing paper currency, which process is characterised essentially by the same features as the paper currency according to Claim 1.

Therefore, also the subject-matter of this claim is new and involves an inventive step for the same reasons as expressed above with respect to the subject-matter of Claim 1.

6. The patent can thus be maintained in amended form as requested.

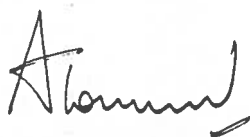
Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the first instance with the order to maintain the patent in amended form on the basis of the following documents:

Description: pages 1 to 9, filed on 25 January 1994, and
Claims: 1 to 7, filed on 25 January 1994.

The Registrar:



A. Townend

The Chairman:



C. Payraudeau