BESCHWERDEKAMMERN DES EUROPÄISCHEN PATENTAMTS

BOARDS OF APPEAL OF THE EUROPEAN PATENT OFFICE

CHAMBRES DE RECOURS DE L'OFFICE EUROPEEN DES BREVETS

A		B		C	X

File No.: T 0855/91 - 3.2.5

Application No.: 87 901 664.0

Publication No.: 0 257 103

Classification: B41F 17/14

Title of invention: Device for forming thin film

D E C I S I O N
of 6 July 1993

Applicant: Nissha Printing Co., Ltd.

Proprietor of the patent: -

Opponent: -

Headword: -

EPC: Art. 56

Keyword: "Inventive step (no)"

Headnote
Catchwords

Case Number: T 0855/91 - 3.2.5

D E C I S I O N
of the Technical Board of Appeal 3.2.5
of 6 July 1993

Appellant: Nissha Printing Co., Ltd.
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Decision under appeal: **Decision of the Examining Division of the European Patent Office dated 10 June 1991 refusing European patent application No. 87 901 664.0 pursuant to Article 97(1) EPC.**

Composition of the Board:

Chairman: C.V. Payraudeau
Members: A. Burkhart
H.J. Seidenschwarz

Summary of Facts and Submissions

I. European patent application No. 87 901 664.0 filed as international application No. PCT/JP87/00134 on 3 March 1987 and published on 2 March 1988 with the publication No. 0 257 103 was refused by a decision of the Examining Division dated 10 June 1991.

II. The reason given for the refusal was that the claimed subject-matter lacked an inventive step having regard to the prior art disclosed in documents

D1: JP-A-29-155047 and
D2: JP-Y-53-43204.

III. The Appellant filed an appeal against this decision and requested that a patent be granted on the basis of the Claims 1 to 5, filed with his Statement of Grounds of Appeal, submitted on 18 October 1991.

IV. Claim 1 reads as follows:

"1. A thin-film forming apparatus comprising:
A base body (1) having a supporting means (2);
a first roller (3) rotatably supported by said supporting means (2);
an ink-supplying device (5) for supplying ink on a surface of said first roller (3);
a doctor (6) fitted to a given position around said first roller (3) so as to spread the ink supplied onto said first roller (3) on its surface;
a second roller (4) rotatably supported by said supporting means (2) at a lower portion of said first roller (3);
first driving means (7,8,9) for driving and rotating said first roller (3) in synchronization with said

second roller (4), said first driving means (7,8,9) being supported by said supporting means (2);
a surface plate (11) movably mounted on said base body (1) and having a top surface for placing material (10) to be printed;
second driving means (12,13) for driving said surface plate (11) to move said surface plate (11) on said base body (1) between an insertion position (B), a printing position (A), and an output position (C); and
controlling means which controls rotation of said second roller (4) and movement of said surface plate (11) so that the ink transferred onto said second roller (4) is printed on the material (10) to be printed;
characterized in that said first roller (3) is an intaglio roller having a multiplicity of ink cells (3b) arranged in its outer surface to retain a specified amount of the ink supplied from said ink-supplying device (5) and supply the specified amount of the ink to the surface of said second roller (4) in a predetermined pattern, that said doctor (6) spreads the ink supplied onto the surface of said first roller (3) to retain the specified amount of the ink into the ink cells (3b) of said first roller (3), and that said second roller (4) is a printing roller having a convex portion (4a) for contacting to the surface of said first roller (3) and the material (10) so that the specified amount of the ink retained in the ink cells (3b) of said first roller (3) is transferred onto the surface of said second roller (4), and the ink transferred in said printing pattern to the surface of the second roller (4) is printed on the material (19)."

V. In a communication pursuant to Article 11(2) of the Rules of Procedure of the Boards of Appeal, the Board expressed a provisional opinion stating that the claimed subject-matter did not involve an inventive step having regard to the documents D1 and D2 and the document

D3: Text book "Bruckmann's Handbuch der Drucktechnik", E.D. Stiebner, Verlag F. Bruckmann KG, München, 1976, page 163.

VI. In the reply of 9 June 1993 to the communication of the Board, the applicant requested that a patent be granted on the basis of the Claims 1 to 5 submitted on 18 October 1991 (main request), or on the basis of a first auxiliary request, wherein at the end of Claim 1 of the main request the following feature is added: "said ink cells (3b) of the intaglio roller having identical depths and sizes", or on the basis of a second auxiliary request, wherein at the end of Claim 1 of the main request the following feature is added: "said intaglio roller (3) is of ceramics or coated with ceramics", and wherein Claims 2 and 3 of the main request are cancelled.

VII. By a telephone call of 29 June 1993 the Board informed the Representative of the Appellant that the Board, with respect to the second auxiliary request, introduces a further document, namely document

D4: GB-A-2 049 102.

This document was transmitted by telecopy on 29 June 1993 to the Representative of the Appellant.

VIII. On 6 July 1993 oral proceedings were held.

During the oral proceedings the Appellant repeated his requests submitted with his letter filed on 9 June 1993.

In support of his requests, he substantially argued as follows:

The devices known from documents D1, D2 and D3 were not suitable for producing a thin-film image having a uniform thickness, since these documents were concerned with producing images having a gradation of ink film thickness. In contrast thereto, the present invention produced a thin-film image with uniform thickness, due to the fact that the depths and sizes of the cells of the intaglio roller were kept constant. Therefore, the teaching of documents D1 to D3 could not suggest a thin-film forming apparatus as claimed in Claim 1 according to the main request or the first auxiliary request.

Although document D4 disclosed an ink transfer roll having a ceramic surface coating, the teaching of this document could not suggest to use such a ceramic coating on the surface of the intaglio roller of the specific thin-film forming apparatus according to the invention.

Reasons for the Decision

1. *Original disclosure*

1.1 Main request

The features of Claim 1 of the main request are disclosed on the following locations of the originally filed application documents: Claim 1 and Figure 1.

The features of Claims 2 to 5 are disclosed in the originally filed Claims 2 to 5.

1.2 First auxiliary request

The feature "said ink cells of the intaglio roller having identical depths and sizes", which has been added

to the features of Claim 1 of the main request, is not *expressis verbis* mentioned in the originally filed application documents. However, it is clearly indicated in the originally filed description that the object underlying the invention consists in printing a film pattern having uniform thickness over its entire area (see page 4, lines 11 to 14 and page 7, lines 3 to 5 of the originally filed description). Since it belongs to the general knowledge of the person skilled in the art of intaglio printing that this object can only be achieved if the ink cells of the intaglio roller have identical depths and sizes, the latter feature is implicitly disclosed in the originally filed application documents. Moreover, the originally filed figure 15, which is a sectional view of the intaglio roller, shows that the ink cells have identical depths.

1.3 Second auxiliary request

The feature "said intaglio roller is of ceramics or coated with ceramics", which has been added to the features of Claim 1 of the main request is disclosed in the originally filed Claims 2 and 3.

1.4 Therefore, the claims according to the main request and the first and second auxiliary requests comply with Article 123(2) EPC.

2. *Main request*

2.1 Novelty

Document D2 (see Figures 1 and 2) discloses a printing apparatus comprising a first rotatably driven roller (3), an ink supplying device (6) for supplying ink on the surface of the first roller, a doctor blade (5) fitted to a given position around the first roller so as

to spread the ink supplied onto the first roller on its surface, a second rotatably driven roller (1) positioned at a lower portion of the first roller, wherein the first roller is an intaglio roller having a multiplicity of ink cells arranged in its outer surface to retain a specified amount of the ink supplied from the ink supplying device and supply the specified amount of ink to the surface of the second roller in a predetermined pattern, the doctor blade spreads the ink supplied onto the surface of the first roller to retain the specified amount of the ink into the ink cells of the first roller, and the second roller is a printing roller having a convex portion for contacting the surface of the first roller and the material to be printed so that the specified amount of ink retained in the ink cells of the first roller is transferred onto the surface of the second roller and the ink transferred in the printing pattern to the surface of the second roller is printed on the material to be printed.

The device according to Claim 1 of the main request differs from this known device in that the first and second rollers are driven by a first driving means in synchronisation with each other, that the first and second rollers and their driving means are supported by a base body and supporting means, that a surface plate is movably mounted on the base body and has a top surface for placing material to be printed, that a second driving means drives the surface plate to move it on the base body between an insertion position, a printing position and an output position, and that a controlling means controls rotation of the second roller and movement of the surface plate so that the ink transferred onto the second roller is printed on the material to be printed.

The device according to Claim 1 of the main request differs substantially from the offset printing device according to document D1 in that the first roller is an intaglio roller having a multiplicity of ink cells arranged in its outer surface and in that a doctor blade spreads the ink supplied onto the surface of the first roller to retain a specified amount of ink within the ink cells of the first roller.

In document D4 no constructional details are disclosed with respect to the means which support, drive or control the transfer or printing rollers.

The same applies to document D3 which only discloses the general knowledge of the person skilled in the art that the use of low viscosity printing inks together with a doctor blade is the characteristic feature of the intaglio printing process.

Therefore, the subject-matter of Claim 1 of the main request is new with respect to the state of the art known from documents D1 to D4.

2.2 Inventive step

The problem underlying the invention consists in providing a thin-film forming device which can precisely print and form a thin film of a given pattern with a specified thickness (see page 4, second paragraph of the originally filed description).

This problem is solved by a device comprising the features of Claim 1 according to the main request. It appears that in particular the features of the characterising portion of Claim 1, which define the principle of the so-called intaglio offset printing

technique, constitute the essential features for producing a uniform thin-film pattern.

However, the principle of the intaglio offset printing technique is well-known to the person skilled in the art (see for example document D2, Figures 1 and 2). Since it is furthermore known to the person skilled in the art that the intaglio printing technique is especially adapted for printing of low viscosity printing inks (see for example document D3), which low viscosity inks are an important prerequisite for obtaining a thin film printing pattern (see page 2, first paragraph of the description), it is obvious for the person skilled in the art to make use of the intaglio offset printing technique known from document D2, if he wants to produce a thin-film printing pattern from low viscosity ink.

The contention of the Applicant that the device of document D2 was not able to produce a thin film image having uniform thickness, must be rejected.

The device according to document D2 which is concerned with the same printing principle as the invention, namely intaglio offset printing, can be operated by appropriate adjustment of the parameters, such as the nature of the ink, the ink feed, the adaptation of doctor blades, the speed of rotation of the rollers, the surface properties of the blanket roller etc., such that any desired thickness and uniformity of the printed image can be obtained.

Therefore, the person skilled in the art, confronted with the above-mentioned problem underlying the invention, would use a printing device as shown in document D2, which comprises a first intaglio roller having a multiplicity of ink cells arranged in its outer surface to retain a specified amount of the ink supplied

from the ink supplying device and supply the specified amount of the ink to the surface of the second roller in a predetermined pattern, a doctor blade which spreads the ink supplied onto the surface of the first roller to retain the specified amount of the ink in the ink cells of the first roller, wherein the second roller is a printing roller having a convex portion for contacting the surface of the first roller and the material to be printed so that the specified amount of the ink retained in the ink cells of the first roller is transferred onto the surface of the second roller, and the ink transferred in the printing pattern to the surface of the second roller is printed on the material to be printed.

Although not shown in document D2, it is obvious that such a device must have a base body comprising supporting means for the first and second roller and that the first and second rollers are driven by a driving means such that the speeds of rotation of the first and second rollers are synchronised.

It appears from Figure 1 of document D2 that the material to be printed is stiff and is supported and transported by a supporting roller (2). However, it would be obvious to a person skilled in the art to replace the supporting roller (2) by a movable surface plate having a top surface for placing the material to be printed, if the material to be printed is a thin, supple sheet material, as is known for example from document D1 (cf. Figures 3 and 4). In doing so, the person skilled in the art would, of course, provide further driving means for driving the surface plate to move it on the base body between an insertion position, a printing position and an output position, and controlling means which control the rotation of the second roller and the movement of the surface plate such

that the ink transferred onto the second roller is printed on the material to be printed, as is also known from document D1 (cf. Figures 8a to 8g).

For the above reasons, the subject-matter of Claim 1 of the main request lacks inventive step and does not fulfil the requirements of Article 56 EPC.

2.3 Therefore, the main request is not allowable.

3. *First auxiliary request*

3.1 Novelty

Claim 1 of the first auxiliary request comprises all the features of Claim 1 of the main request and the additional feature "said ink cells of the intaglio roller having identical depths and sizes".

Therefore, since already the subject-matter of Claim 1 of the main request is new, the subject-matter according to the first auxiliary request is also new.

3.2 Inventive step

The use of the feature "the ink cells of the intaglio roller have identical depths and sizes" in an intaglio offset printing device according to document D2 has the effect that a printed image is produced which has no different gradations of ink but has only one uniform thickness of ink.

This measure and its effect belong, however, to the general knowledge of the person skilled in the art of printing, and therefore, the person skilled in the art wishing to produce a printed pattern having uniform ink

thickness would, of course, provide on the surface of the intaglio roller ink cells which have identical depth and size.

Therefore, the addition of the feature "the ink cells of the intaglio roller have identical depths and sizes" to the printing device according to Claim 1 of the main request does not provide the subject-matter of this claim with an inventive step.

3.3 Consequently, also the first auxiliary request is not allowable.

4. *Second auxiliary request*

4.1 Novelty

Claim 1 of the second auxiliary request comprises all the features of Claim 1 of the main request and the additional features "said intaglio roller is of ceramics or coated with ceramics".

Therefore, since already the subject-matter of Claim 1 of the main request is new, also the subject-matter of Claim 1 of the second auxiliary request is new.

4.2 Inventive step

The use of the feature "the intaglio roller is of ceramics or coated with ceramics" in an intaglio offset printing device according to document D2 results in a hard and abrasion-resistant surface of the intaglio roller.

This measure and its effect is, however, known in the field of intaglio printing, see for example document D4. This document discloses an ink transfer roller running

against a doctor blade and having a multiplicity of ink cells arranged in its outer surface to retain a specific amount of ink supplied from an ink supplying device and transfer a specified amount of the ink to the surface of a print roller or directly to the material being printed, wherein the surface of the ink transfer roller consists of a thick ceramic coating (see abstract; page 1, lines 4 to 7, 17-18 and 84 to 92; Figures 1 and 2 of document D4). Document D4 teaches that, due to the ceramic surface of the transfer roller a high abrasion resistance of the roller is obtained (see abstract and page 1, lines 25 to 29 and 98 to 102).

Following this teaching of document D4, the person skilled in the art would use in the printing device known from document D2 an intaglio roller which is of ceramics or is coated with ceramics, if he attaches great importance to the hardness and abrasion-resistance of the intaglio roller.

Therefore, the addition of the feature "the intaglio roller is of ceramics or coated with ceramics" to the printing device according to Claim 1 of the main request does not provide the subject-matter of this claim with an inventive step.

4.3 Consequently, also the second auxiliary request is not allowable.

Order

For these reasons, it is decided that:

1. The appeal is dismissed.

The Registrar: The Chairman:

A. Townend C. Payraudeau