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Datasheet for the decision of 18 June 2019

Case Number: T 1968/15 - 3.3.02

Application Number: 09167868.0

Publication Number: 2161314

IPC: C09D11/00, C09D11/10, G06K1/00, G06K19/00

Language of the proceedings: EN

Title of invention:
Ultra-violet curable gellant inks for tactile and regular print applications as security features for signature and document authentication

Patent Proprietor:
Xerox Corporation

Opponent:
Bundesdruckerei GmbH

Headword:

Relevant legal provisions:
EPC Art. 56

Keyword:
Inventive step

Decisions cited:

Catchword:

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Case Number: T 1968/15 - 3.3.02

D E C I S I O N
of Technical Board of Appeal 3.3.02
of 18 June 2019

Appellant: (Opponent)	Bundesdruckerei GmbH Oranienstr. 91 10969 Berlin (DE)
Representative:	Patentanwälte Bressel und Partner mbB Potsdamer Platz 10 10785 Berlin (DE)
Respondent: (Patent Proprietor)	Xerox Corporation Xerox Square - 20A 100 Clinton Avenue South Rochester, NY 14644 (US)
Representative:	Grünecker Patent- und Rechtsanwälte PartG mbB Leopoldstraße 4 80802 München (DE)
Decision under appeal:	**Decision of the Opposition Division of the European Patent Office posted on 10 August 2015 rejecting the opposition filed against European patent No. 2161314 pursuant to Article 101(2) EPC**

Composition of the Board:

Chairman	M. Maremonti
Members:	S. Bertrand
	M. Blasi

Summary of Facts and Submissions

I. The appeal by the opponent (hereinafter "appellant") lies from the decision of the opposition division to reject the opposition against European patent no. 2 161 314.

II. The contested patent contained a set of 13 claims, independent claims 1 and 11 of which read as follows:

"1. A method for creating an authentication mark on a recording medium comprising:
(a) depositing marking material directly onto a recording medium or depositing marking material onto an intermediate transfer member, in an image area to create a marking material image and in an authentication image area to create a marking material authentication image, wherein the marking material is an ultraviolet curable phase change ink composition comprising an optional colorant and a phase change ink vehicle comprising a radiation curable monomer or prepolymer; a photoinitiator; a reactive wax; and a gellant;
(b) depositing a predetermined amount of additional marking material upon the authentication image area to increase an amount of marking material associated with the marking material authentication image in the authentication image area;
(c) when an intermediate transfer member is used, transferring the deposited marking material from the intermediate transfer member to the recording medium; and
(d) curing the marking material upon the recording medium such that the fixed marking material associated with the authentication image area is a tactilely perceptible authentication mark, the fixed marking

material associated with the tactilely perceptible authentication mark having a first height, the first height being tactilely perceptible, wherein the first height is at least 31 micrometers."

"*11. An authentication mark disposed on a recording medium comprising:*
an authentication image area and a marking material image area
wherein the fixed marking material associated with the authentication image area is a tactilely perceptible authentication mark having a height, with respect to a surface of the medium, that is tactilely perceptible;
wherein the fixed marking material associated with the marking material image area is tactilely non-perceptible; and
wherein the authentication mark is created with an ultraviolet curable phase change ink composition comprising an optional colorant and a phase change ink vehicle comprising a radiation curable monomer or prepolymer; a photoinitiator; a reactive wax; and a gellant, and wherein the authentication image area has a height of at least 31 micrometers."

III. The following documents are referred to in the present decision:

E1: US 2008/151310 A1

E2: US 2008/000384 A1

IV. In its decision the opposition division came to the conclusion that the invention as defined in the granted claims involved an inventive step with E1 considered to be the closest prior art.

V. In its statement setting out the grounds of appeal, the appellant contested the reasoning of the opposition division and submitted *inter alia* that the subject-matter of granted claims 1 and 11 did not involve an inventive step considering E1 as the closest prior art, taken in combination with E2.

VI. The patent proprietor (hereinafter "respondent") filed a response to the statement of grounds of appeal. It rebutted the appellant's arguments and corroborated its argumentation by filing the results of additional experiments.

VII. In a letter of 31 August 2016, the appellant submitted further arguments.

VIII. On 25 March 2019, the board issued a communication in preparation for the oral proceedings to be set as requested by the parties.

IX. Oral proceedings before the board were held on 18 June 2019.

X. The appellant's arguments, where relevant to the present decision, may be summarised as follows:

- E1 represented the closest prior art. It disclosed a method for creating an authentication mark on a recording medium comprising all of the features of granted claim 1 except the ultraviolet curable phase change ink composition comprising an optional colorant and a phase change ink vehicle comprising a radiation curable monomer or prepolymer, a photoinitiator, a reactive wax and a gellant.
- The technical problem was to select a phase change ink composition which allowed no migration of the

printed droplet and which was robust, see paragraph [0046] of the contested patent.

- E2 (paragraphs [0007], [0017], [0019], [0020], [0022], [0099], [0102], [0125], [0133], Table 1), disclosed ultraviolet curable phase change ink compositions comprising the ingredients required by granted claim 1. The properties of the suggested ink compositions needed by E1 to achieve a long-lasting defined and stable 3D-volume (adjustable viscosity, preservation of drop integrity, no show-through, curing properties, resistance to scratch, curability, no ink bleeding, no ink migration, dot quality) were all disclosed in E2 and the ink compositions disclosed therein would be considered by the skilled person to provide a reasonable expectation of success when searching for a solution to the posed technical problem.
- The skilled person would have therefore combined E1 with E2 and arrived at the subject-matter of claims 1 and 11.
- Thus, the claimed subject-matter did not involve an inventive step.

XI. The respondent's arguments, where relevant to the present decision, may be summarised as follows:

- The additional experiments submitted during the opposition proceedings and re-filed with the reply to the statement of grounds of appeal showed that the marking material in accordance with the patent allowed the creation of a three dimensional (hereinafter 3D) structure having a height of at least 31 micrometers. The experiments further showed that the ink used in the method according to the patent had to comprise all of the components of claim 1 (a radiation curable monomer or prepolymer,

a photoinitiator, a reactive wax and a gellant) to solve the underlying problem addressed by the patent and that not all phase change (solid) inks led to the desired results.

- The problem to be solved in view of E1 taken as the closest prior art was that of providing a marking material which allowed the reliable production of 3D structures on substrates with precision and robustness.
- E1 referred to solid inks or toners as marking material and did not disclose any specific marking materials as preferred embodiments for the disclosed method. E1 was silent regarding the use of the UV curable phase change ink composition as defined in granted claim 1 and the advantages achieved therewith.
- E2 was concerned with typical problems in two dimensional (2D) printing, in particular how to improve dot quality and gloss. The latter property was not a property required in the patent. E2 did not suggest that the inks are suitable for 3D printing, let alone for use in a method for creating an authentication mark on a recording medium. There was no expectation in E2 of successfully achieving 3D printing by using the 2D ink composition. Thus, the skilled person had no incentive to combine E1 with E2.
- Therefore, the claimed subject-matter involved an inventive step.

XII. The parties' final requests were the following:

- The appellant requested that the decision under appeal be set aside and that the patent be revoked.

- The respondent requested that the appeal be dismissed.

Reasons for the Decision

The ground for opposition under Article 100(a) EPC - inventive step under Article 56 EPC

1. The invention

The gist of the invention lies in the provision of methods suitable for enabling the authentication of an original document without the use of outside intervention (optical reader or a light source) by means of marking materials that are robust and compatible with a printing device that can produce regular text and tactile security features (paragraph [0019]).

2. The closest prior art

Both parties regarded E1 as the closest prior art.

2.1 E1 discloses (claims 9 and 11) a method of creating an authentication mark on a recording medium, comprising:

(a) depositing marking material on a recording medium in an image area to create a marking material image and in an authentication image area to create a marking material authentication image;
(b) depositing a predetermined amount of additional marking material upon the recording medium in the authentication image area to increase an amount of marking material associated with the marking

material authentication image in the authentication image area;
and
(c) fixing the marking material upon the recording medium such that the fixed marking material associated with the authentication image area is a tactilely perceptible authentication mark, the fixed marking material associated with the tactilely perceptible authentication mark having a first height, the first height being tactilely perceptible (claim 9 of E1) and is at least 31 micrometers (claim 11).

2.2 In the same way as the patent, E1 aims to enable the authentication of an original document without the use of outside intervention, e.g. from either a machine (optical reader) or a light source (paragraph [0007]).

2.3 E1 (paragraph [0017]) discloses the use of a solid ink as an example of a marking material that can be used to generate tactilely perceptible images. It is undisputed that a solid ink is synonymous with a phase change ink as referred to in granted claim 1.

2.4 E1 further discloses in that paragraph [0017] that "[*r*]*epeated layering of solid ink in this manner may be used to generate an ink pile height that is tactilely perceptible*". Paragraph [0018] details figure 3 of E1 and compares a tactilely perceptible printed image (having a height of at least 31 micrometers) with a tactilely non-perceptible printed image (having a height of about 10 micrometers). The tactilely perceptible printed image is obtained by applying additional marking material (i.e. solid ink) as compared to the amount of marking material deposited for the tactilely non-perceptible printed image.

E1 thus teaches that a tactilely perceptible authentication mark can be produced by the repeated layering of solid ink.

For these reasons, the board agrees with the parties that E1 represents the most promising starting point for the assessment of inventive step.

3. The technical problem

3.1 E1 (2.1, *supra*) discloses a method of creating an authentication mark on a recording medium.

3.2 It is common ground that the subject-matter of granted claim 1 only differs from the disclosure of the closest prior art in the ultraviolet curable phase change ink composition. According to claim 1, said composition comprises an optional colorant and a phase change ink vehicle comprising a radiation curable monomer or prepolymer, a photoinitiator, a reactive wax, and a gellant. In E1, the ink composition is not specified.

3.3 The respondent argued (XI, *supra*) that the reliable production of 3D structures on substrates with precision and robustness is achieved by using an ultraviolet curable phase change ink composition comprising an optional colorant and a phase change ink vehicle comprising a radiation curable monomer or prepolymer, a photoinitiator, a reactive wax, and a gellant.

The technical result linked to the distinguishing features of the invention according to granted claim 1 was therefore the precise and robust production of 3D

structures on substrates. The respondent formulated the technical problem accordingly.

3.4 In the following assessment of inventive step, the board, for the sake of argument only and in the respondent's favour, accepts that the objective technical problem can be seen to be the provision of a marking material which allows the reliable production of 3D structures on substrates with precision and robustness.

4. Obviousness of the claimed solution

4.1 With regard to the state of the art and common general knowledge, it was obvious to the skilled person seeking to solve the posed technical problem to select an ultraviolet curable phase change ink composition as defined in claim 1 as granted, and this for the following reasons.

4.2 E2 is concerned with the provision of a radiation curable phase change ink comprising an ink vehicle that comprises at least one radiation curable carrier, at least one gellant, at least one curable wax and at least one photoinitiator (claim 1). The radiation curable carrier is selected from the group consisting of an acrylate, a methacrylate, an alkene, a vinyl ether, an allylic ether, an epoxide an oxetane and mixtures thereof (claim 2). Table 1 of E2 discloses examples of UV phase change ink compositions comprising SR9003® (propoxylated neopentyl glycol diacrylate as a phase change ink comprising a radiation curable monomer), IRGACURE® 379, DAROCUR ITX®, IRGACURE® 819 (photoiniators), UNILIN® 350-acrylate (curable wax) and a gellant comprising a mixture of compounds having the structures depicted in paragraph [0131].

It is undisputed that the components of the ink composition of E2 fall under the definition of the ingredients of the ink composition referred to in granted claim 1.

E2 teaches that:

- wax cures into the structure of the ink, thereby generating a robust image (abstract),
- the droplets of a phase change ink solidify immediately upon contact with the substrate so that the migration of ink along the printing medium is prevented and dot quality is improved (paragraph [0007]),
- multifunctional acrylate and methacrylate monomers and oligomers can increase the density of the cured image, thereby enhancing the toughness of the cured images (paragraph [0099]),
- UV curable gellant inks provide a robust glossy image (paragraph 0017) and the gellant is used to affect a rapid viscosity increase in the jetted ink upon the substrate. In particular, jetted ink droplets can be pinned into position on a receiving substrate (paragraph [0125]),
- the prints produced by the exemplified UV phase change ink compositions in example 1 could neither be scratched nor smudged (paragraph [0133]).

4.3 While aiming to provide an adequate solid ink (or phase change ink) which allows the production of 3D structures on substrates with precision and robustness for the method disclosed in the closest prior art, the skilled person would thus have found in the above passages of E2 a clear teaching that the radiation curable phase change ink disclosed therein possesses all the properties that allow a repeated ink layering, as required by the method of E1 (2.4, *supra*).

The skilled person would thus have selected the ink composition disclosed in E2 to solve the posed technical problem (3.4, *supra*).

4.4 Contrary to the submissions of the respondent (XI, *supra*), the board sees an indication to combine E1 with E2 for the following reasons. It is accepted that the radiation curable phase change ink compositions disclosed in E2 are foreseen for 2D printing. However, given the teaching of E1 in paragraphs [0017] to [0018] that the tactilely perceptible prints are achieved by the repeated layering of solid ink, the skilled person would have considered any solid ink for 2D printing. In other words, E1 comprises a clear indication to use solid ink for 2D printing in the method of creating an authentication mark disclosed therein.

With regard to the gloss referred to in E2 (XI, *supra*), it is noted that the invention according to the patent does not exclude that such a property is achieved by the ink composition defined in granted claim 1. Therefore, obtaining high gloss in E2 does not represent an obstacle and the skilled person would not have disregarded E2 for this reason when confronted with the technical problem posed.

The argument (XI, *supra*) that the advantages achieved by the ink compositions according to the patent were not suggested in E1 cannot be taken into consideration. Whether or not the closest prior art (i.e. the disclosure of E1) suggests the advantages achieved by the ink compositions according to the patent is not of relevance in the problem/solution approach. What matters is whether or not the available prior art (and thus E2 in the present case) suggests the solution of

the technical problem to be solved to the skilled person.

4.5 For the reasons given above, the subject-matter of claim 1 and, for the same reasons the subject-matter of claim 11 of the contested patent, do not involve an inventive step within the meaning of Article 56 EPC.

4.6 The ground for opposition under Article 100(a) EPC and Article 56 EPC prejudices the maintenance of the patent as granted.

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:

N. Maslin M. Maremonti

Decision electronically authenticated