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Datasheet for the decision of 19 January 2010

Case Number: T 1368/07 - 3.2.05

Application Number: 98902867.5

Publication Number: 0961690

IPC: B41M 5/24

Language of the proceedings: EN

Title of invention:
Laser marking of articles

Patentee:
Securency International Pty Ltd

Opponent:
GIESECKE & DEVRIENT GmbH

Headword:
-

Relevant legal provisions:
EPC Art. 56

Relevant legal provisions (EPC 1973):
-

Keyword:
"Inventive step - yes"

Decisions cited:
-

Catchword:
-

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Case Number: T 1368/07 **-** 3.2.05

D E C I S I O N
of the Technical Board of Appeal 3.2.05
of 19 January 2010

Appellant: (Opponent)
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Representative:
-

Respondent: (Patent Proprietor)
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Decision under appeal:
Interlocutory decision of the Opposition Division of the European Patent Office posted 12 June 2007 concerning maintenance of the European patent No. 0961690 in amended form.

Composition of the Board:

Chairman: W. Zellhuber
Members: H. Schram
E. Lachacinski

Summary of Facts and Submissions

I. The appellant (opponent) lodged an appeal against the decision of the Opposition Division posted on 12 June 2007 maintaining the European patent Nr. 0 961 690 in amended form on the basis of the main request of the respondent (patent proprietor) filed on 23 April 2007.

The Opposition Division held that the grounds of opposition under Article 100(a) EPC (lack of inventive step, Article 56 EPC) did not prejudice the maintenance of the patent in amended form.

II. Oral proceedings were held before the Board of Appeal on 19 January 2010.

III. The appellant requested that the decision under appeal be set aside and that the patent in suit be revoked.

The respondent requested, as main request, that the appeal be dismissed, and, as first, second and third auxiliary requests, that the decision under appeal be set aside and that the patent in suit be maintained on the basis of the sets of claims filed as auxiliary requests No. 1, 2 and 3, respectively, on 18 December 2009.

IV. Claims 1, 2 and 20 as maintained by the Opposition Division read as follows:

"1. A method of marking an article, the article comprising a substrate with opacifying layers on opposite surfaces of the substrate, said method comprising:

irradiating an area of the opacifying layer on one surface of the substrate with a beam of laser radiation from a single source such that said area of the opacifying layer on said one surface is ablated by some of the energy of the laser radiation to produce a marking by removing said area of the opacifying layer on said one surface, wherein the beam of laser radiation travels through the substrate with its remaining energy which is sufficient to ablate an area of the opacifying layer on the opposite surface of the substrate to produce a marking by removing the area of the opacifying layer from the opposite surface of the substrate."

"2. A method of creating a transparent window in an article comprising a clear substrate with opacifying layers on opposite surfaces of the substrate, said method comprising:

irradiating an area of the opacifying layer on one surface of the substrate with a beam of laser radiation from a single source such that said area is ablated by some of the energy of the laser radiation to remove said area of the opacifying layer from said one surface, wherein the beam of laser radiation travels through the substrate with its remaining energy which is sufficient to ablate an area of the opacifying layer on the opposite surface of the substrate to create a transparent window in the substrate."

"20. A security document comprising a clear substrate formed of a transparent plastics film having opacifying layers of printed matter on opposite surfaces of the film, the substrate being formed from a material which is substantially transparent to laser radiation of a selected wavelength wherein both of said surfaces have a marking or

a transparent window, said markings or windows being formed in the printed matter by removing a first area of the printed matter on one surface of the substrate by ablating said first area with a beam of laser radiation of the selected wavelength from a single source of laser radiation, and allowing the beam of laser radiation to pass through the substrate with its remaining energy being sufficient to remove a second area of the printed matter on the other surface, said second area being in register with said first area removed from the printed matter on said one surface."

V. The following documents were *inter alia* referred to in the appeal proceedings:

D1 EP-A 0 564 877

D7 DE-A 36 34 857

D8 DE-C 31 51 407

D9 EP-B 372 274

D10 DE 195 41 453

VI. The arguments of the appellant, in writing and during the oral proceedings, can be summarized as follows:

The present invention related to a method of marking the opposite sides of an article, or creating a transparent window in that article, such as a security document which typically comprised layers of plastics material, by a laser, and to a security document produced by such a method. The alleged invention was based on two well-

known properties of laser radiation impinging on a layered structure, namely that (i) it was possible with a single laser to make markings simultaneously in more than one layer (see eg document D7, column 5, lines 46 to 53) and that (ii) different effects in the material of the layers, eg blackening or ablation, were obtained selectively according to the dosage of the laser energy and/or the absorptive behaviour of the material with respect to the laser beam (see eg document D8, column 6, lines 23 to 56, which was cited in column 6, line 33, of document D7).

Document D7 represented the closest state of the art. From this document it was known to produce an identification card having markings provided in the two laser absorbing outer layers 14, 16 (the inner layer 15 being permeable to laser radiation) in such a way that the markings registered exactly one upon the other (see Figure 6, and column 10, lines 18 to 28). The subject-matter of claims 1, 2 and 20 as maintained differed from the identification card and method for making same disclosed in document D7 in that, according to the patent in suit, the outer layers were opacifying layers rather than transparent layers as in document D7, and in that the markings (windows) were made by ablation ("transparent markings/windows in dark layers") rather than by blackening as in document D7 ("dark markings in transparent layers"). The person skilled in the art seeking to apply the teaching of document D7 to articles having opacifying layers, which are known from eg document D1, would readily choose a dosage of the laser energy sufficient to ablate rather than to blacken the opacifying layers (as known from document D8, see Figure 2). What mattered was the laser absorptivity of

the opacifying layer, not the visible optical colour of said layer, see document D9, which taught that, for a laser treatment, optical transparent and optical opaque layers were equivalent, if the layers had the same laser absorptivity. Document D10 taught that the coloured layer 2 could be selectively ablated, whether it was below the transparent layer (see Figure 3) radiated by laser from above, or on top of the transparent layer (see Figure 4), also radiated by laser from above. Combining the two embodiments of Figures 3 and 4 lead to a transparent layer having two outer opacifying layers, just as in the alleged invention. For the above reasons, documents D9 and D10 gave therefore incentive to the person skilled in the art starting from document D7 to replace the transparent layers 14, 16 by opacifying layers. It followed that the subject-matter of claims 1, 2 and 20 as maintained did not involve an inventive step.

VII. The respondent's arguments, in writing and during the oral proceedings, can be summarized as follows:

Document D1, which was cited in paragraph [0007] of the patent in suit, represented the closest prior art, since this was the only document in the proceedings that disclosed a method in which dye coatings on opposite sides of a transparent carrier were ablated by laser radiation. However, document D1 concerned the reproduction of halftone images, wherein the first and second coatings 12, 14 were radiated by laser light sources A, B, respectively, (each source focused on one layer only) and not by a single laser source such that an area of the top layer was ablated by some of the energy of the laser radiation to remove said area of the

opacifying layer, wherein the beam of laser radiation travelled through the substrate with its remaining energy which was sufficient to ablate an area of the opacifying layer on the opposite surface of the substrate.

In document D7 the two layers shown in Figure 2 had different susceptibilities to laser radiation: the first layer 8 showed blackening only at accordingly high radiant-flux densities (see column 8, lines 51 to 55), whereas the second layer 9 was already blackened at low intensities (see column 8, lines 63 to 65). It followed that two operations were required to blacken the film. The invention had the important advantage for a mass produced article like an identification card that a single laser source (a single operation) reliably made markings, or transparent windows, in register in both opacifying layers covering the substrate, without the need for using layers having different susceptibilities to laser radiation. Furthermore, the layers that were marked in document D7 were transparent layers, not opacifying layers as in the invention, and the marking consisted in blackening rather than in ablating areas of the layers. There was no suggestion or motivation in document D7 to form an alternative type of marking. The aim of document D7 was to provide an identity card having a so-called "parallax image", ie an image which gave a three-dimensional impression at different viewing angles, see column 6, lines 46 to 52, and Figure 3. Replacing the transparent layers by opacifying layers (and the blackening by ablation) in document D7 would no longer yield a parallax image. The person skilled in the art, starting from the method of marking an article known from document D7 and having regard to common general knowledge, and/or any of the documents D8, D9 or D10, would

therefore not have arrived at the subject-matter of claims 1, 2 and 20 as maintained.

Reasons for the Decision

MAIN REQUEST

1. *Objection of lack of inventive step, Article 56 EPC*

1.1 The present invention relates to a method of marking articles, or creating a transparent window in articles, by a laser and more particularly to a method of marking (or creating a transparent window in) security documents having a clear substrate covered by opacifying layers such as printed matter.

The problem the invention seeks to solve is to provide a method to provide a simple and effective method of marking opposite surfaces of an article, such as a security document, or forming a transparent window in an article, see paragraphs [0005] and [0006] of the patent in suit.

This problem is solved by the subject-matter of claims 1, 2 and 20 as maintained. In particular, an area of the opacifying layer on one surface of the substrate is irradiated with a beam of laser radiation from a single source, which beam travels through the substrate with its remaining energy to irradiate an area of the opacifying layer on the opposite surface of the substrate. In this way markings, or transparent windows, are formed in register in both opacifying layers covering the substrate.

1.2 Document D1 relates to halftone reproduction of continuous tone images, and specifically to black and white radiographic images, see page 2, lines 1 and 2, and page 3, lines 33 to 35. The idea of document D1 is to provide a transparency medium 10 for reproducing an image, which comprises two imaging layers (dye coatings 12, 14) separated by a thin layer of a transparent medium 16. The dye coatings 12, 14 may possess the same optical density (see Figure 2, providing up to three optical densities at each pixel of the image, ie a single gray level) or two different optical densities (see Figure 4, providing up to four optical densities at each pixel, ie two intermediate gray levels), cf. page 4, lines 4 to 6. The ablation patterns of the dye coatings 12, 14, ie the area of the coating which is ablated or left intact at each image pixel scanned, are deliberate made different using two laser sources with a view to create a halftone image formed by the two ablation patterns. In contrast, according to the invention the (macroscopic) markings, or transparent windows, are formed on both sides of the substrate in register by a single laser source.

In the judgment of the Board, document D1 does therefore not represent a suitable starting point for assessing inventive step.

1.3 Document D7, which represents in the judgment of the Board the closest state of the art, relates to an identification card containing a plurality of synthetic layers in which information is provided by means of a laser beam, said information being visible in the form of changes in the optical properties of the synthetic

material due to irreversible changes, in particular blackening, in the material caused by the laser beam (see column 4, lines 11 to 16, and column 8, lines 47 to 65).

In Figure 6 of document D7 a card is shown consisting of three transparent layers 14, 15 and 16, whereby intermediate layer 15 is a layer permeable to the laser beam or responsive only at a very high intensity whilst one of the outer layers shows blackening only at accordingly high radiant-flux densities whereas the other outer layer is already blackened at low intensities (see column 10, lines 18 to 28, and column 8, lines 51 to 65). This layer structure is said to be especially well suited for simultaneously writing on the outer card layers (or selectively writing in individual layers) while maintaining a transparent space, see column 10, lines 25 to 28, of document D7. In this way it is possible to produce an identification card having information provided in the two outer layers in such a way that the printed patterns register exactly one upon the other.

1.4 The thrust of document D7 is to provide an identification card wherein information in transparent areas of at least a first and a second layer is provided by a laser beam in such a way as to be visible, either overlapping or singly, depending on the viewing angle, its appearance varying in accordance with the viewing angle, see claim 1, in particular its last feature (cf. column 1, lines 29 to 33). By slightly tilting the card, the pieces of information provided on the various planes of the card are visible singly, see column 5, lines 54 to 61, and Figure 3 showing the parallax image.

It is not necessary for all card layers to be transparent (cf. column 10, lines 58 and 59). Whilst it is not absolutely necessary for the so-called parallax image to be provided in a completely transparent card area (cf. column 11, lines 51 to 55), it is evident that if the inlay is opaque across its entire surface the first and second layers to be written on must be arranged on one side of the opaque inlay. What is necessary however is that the information is provided in transparent areas of the first and second layers.

There is no hint or suggestion in document D7 to the person skilled in the art to replace the first and a second layers having overlapping transparent areas to be written on, by opacifying layers. On the contrary, if the areas to be written on were not transparent, the information in each layer would no longer be singly visible.

A combination of document D7 with any of the documents D8 to D10, alone or in combination cannot lead to a different result.

Document D8, which is cited in column 4, lines 61 to 66, and column 6, lines 32 to 35, of document D7, relates to a multi-layer identification card, whereby information is provided in a visibly transparent film by a laser beam. Although document D8 teaches that different effects of the laser beam can be obtained depending on the intensity of the beam including ablation (see column 6, lines 42 to 45, wherein it is stated that if the laser energy supply is increased even further, a channel 19 penetrating cover film 11 is formed), there is no suggestion to use non-transparent films.

Document D9 relates to a data carrier, in particular an identity card, with superimposed colour contrasting layers in which items of information are represented by the local removal of individual layer regions with the exposure of deeper-lying regions of other colours by means of a laser beam. The card includes a first colour layer permeable to a laser beam and at least one second layer adapted to be thermally broken down at least partly under the effect of a laser beam located under the first layer. The conversion of the laser beam energy in the second layer and the resulting thermal breakdown of the material of the second layer locally removes the first colour layer.

Document D10 relates to a marking sheet which is suitable for application as name or type plates which are pasted on the outer surface of automobile parts, for example to display the part number, production date, trademark, etc., cf. column 1, lines 3 to 12. The marking sheet comprises a transparent layer 1, a coloured layer 2 having marked sections caused by laser radiation, an adhesive layer 3, 30, and a peelable coating layer 4, see Figures 1, 3 and 4. The idea of document D10 is that the information in the single coloured layer may be satisfactorily displayed using the colour of the outer surface of product onto which the marking sheet is pasted, thus obviating the need for a second coloured layer, see column 1, lines 48 to 54.

Whilst documents D9 and D10 concern methods for writing data on a carrier by laser ablation of coloured layers, there is no incentive to the person skilled in the art to apply this teaching to the identification card and method

for making same known from document D7, which focuses on writing data in transparent layers with a view of producing a parallax image. The argument of the appellant that the person skilled in the art would consider such a modification, ie replacing the transparent layers of by opacyfing (coloured) layers, is, in the judgment of the Board, based on an *ex post facto analysis*, i.e. based on hindsight with knowledge of the invention.

The subject-matter of claims 1, 2 and 20 as maintained is therefore not obvious to the person skilled in the art, and hence involves an inventive step, Article 56 EPC.

2. Since the claims of the main request are allowable, there is no need to consider the first to third auxiliary requests of the respondent.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

N. Maslin W. Zellhuber