DECISION
of 26 November 1999

Case Number: T 0387/98 - 3.5.1

Application Number: 89102182.6

Publication Number: 0328086

IPC: G06K 19/06

Language of the proceedings: EN

Title of invention:
Articles incorporating non-continuous holographs and methods of making them

Patentee:
AMERICAN BANK NOTE HOLOGRAPHICS, INC.

Opponent:
Leonhard Kurz GmbH & Co.
GIESECKE & DEVRIENT GmbH
Landis & Gyr Technology Innovation AG

Headword: -

Relevant legal provisions:
EPC Art. 56, 112(1), 123(2)

Keyword:
"Inventive step - (yes) after amendment"
"Amendments - added subject-matter (yes) main request"
"Enlarged Board - referral (no)"

Decisions cited:
T 0167/93, T 0010/97
Catchword:
-
Case Number: T 0387/98 - 3.5.1

DECISION
of the Technical Board of Appeal 3.5.1
of 26 November 1999

Appellant: Leonhard Kurz GmbH & Co.
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Respondent: AMERICAN BANK NOTE HOLOGRAPHICS, INC.
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Decision under appeal: Decision of the Opposition Division of the European Patent Office posted 30 March 1998 rejecting the opposition filed against European patent No. 0 328 086 pursuant to Article 102(2) EPC.

Composition of the Board:

Chairman: P. K. J. van den Berg
Members: R. S. Wibergh
          S. C. Perryman
Summary of Facts and Submissions

I. This is an appeal against the decision of the Opposition Division to reject the oppositions against European Patent No. 0 328 086.

II. Three parties had opposed the patent. The grounds of opposition were those of Article 100(a),(b),(c) EPC. Among the documents cited were:

D0: EP-A-0 201 323

D1: GB-A-2 136 352

D2: DE-A-33 33 220

D4: DE-C-34 22 908

D5: DE-A-32 06 062

III. According to the decision, no subject-matter had been added to claim 1 in a way contradicting Article 123(2) EPC, the invention was new with respect to both D1 and D2, and an inventive step was involved in respect of each cited piece of prior art and combinations thereof. No decision was taken with regard to the ground of opposition under Article 100(b) EPC since the initial argumentation on this point had not been pursued.

IV. Opponent 1 and opponent 2 each lodged an appeal against this decision.

V. Oral proceedings before the Board were held on 26 November 1999. In the course of the proceedings the
respondent filed new claims 1 and 23.

Claim 1 read as follows (omitting the reference signs):

An article comprising
a first substantially transparent unperforated sheet, film or layer, a surface of which carries a relief formation thereon which contains the information of a first image or recognizable pattern in the form of a hologram or diffraction grating, said relief formation carrying a plurality of areas of reflective material thereon, each single area being small in relation to the total surface, covered by and conform to said relief formation, said plurality of areas of reflective material forming a first regular discontinuous pattern on said sheet, film or layer to make said first image or recognizable pattern viewable by reflecting light incident on said substantially transparent sheet, film or layer, the discontinuous pattern of reflective areas having no correspondence with said image or recognizable pattern and leaving uncovered regions of said transparent sheet, film or layer, characterized in that

a substrate containing visual information in written and printed form, or as a photograph, is connected to said first sheet, film or layer on the side opposite to the viewing side thereof, and in that said uncovered regions are substantially transparent and are present in a width and a proportion to said areas of reflective material so that the visual information in written and printed form, or as a photograph, contained on said substrate is viewable behind the first image or recognizable pattern.
(The italics mark the features which distinguish the claim from the granted version.)

Claim 23 was a corresponding method claim.

VI. Claim 6 of the patent remained unamended. It reads:

The article of any of claims 1 through 5 wherein said substrate is a second sheet, film or layer which carries a relief formation on one of its surfaces which is made at least partially reflective so that a second image is viewable in regions between the reflective areas of the first sheet, film or layer.

VII. The appellants have argued that amended claim 1 contained subject-matter going beyond the original disclosure. Moreover, at least after the amendment to claim 1, also dependent claim 6 defined subject-matter which had not been disclosed. Furthermore, the invention was either not new or not inventive with respect to D2 in combination with D5 and also not inventive over D1 considered alone or together with D4.

As to the interpretation of D1, a recent decision by another Technical Board of Appeal was presented, T 10/97, in which the teaching of this document was explained. The decision also contained statements concerning the obviousness of certain ways of producing partially transparent layers. Appellant 1 suggested that the question whether a board is bound by the interpretation of a document or by obviousness considerations made previously by another board should be referred to the Enlarged Board of Appeal. The proposed wording of such a question was the following

0373.D
(here quoted in the original German):

"1. Sind die Mitglieder einer Beschwerdekammer bei der Beurteilung des Offenbarungsgehalts einer Druckschrift an die Entscheidung bzw. Beurteilung einer anderen Beschwerdekammer gebunden, die die gleiche Druckschrift in einem ähnlichen Zusammenhang bereits beurteilt hat, und

2. Sind die Mitglieder einer Beschwerdekammer auch an die Überlegungen der mit der gleichen Druckschrift bereits früher befaßten Kammer gebunden, die sich mit der Übertragung der bekannten Lehre auf andere Anwendungen bzw. mit der Modifikation der bekannten Lehre durch den Fachmann befassen?"

VIII. The respondent argued that the amendment to claim 1 made during the oral proceedings before the Board merely represented a fair generalisation of a specific embodiment described in the patent. Furthermore, none of the cited documents rendered the invention obvious. D1 disclosed holograms which were either opaque or which comprised transparent de-metallised areas. In the latter case there was no regular pattern of small reflecting areas covering the hologram. D2 did not disclose that the described security device might be transparent. Therefore not even the problem underlying the invention, which was to permit information on the substrate beneath the security device to be viewed, could be deduced from this document. It was furthermore doubtful whether anything at all would in fact be visible through the known security device. As to D4, this document was far away from the invention as it did not disclose a discontinuous reflecting layer.
IX. Appellant 1 (Opponent 1) and Appellant 2 (Opponent 2) requested that the decision under appeal be set aside and that the patent be revoked.

X. The Respondent (patent proprietor) requested that the decision under appeal be set aside and that the patent be maintained as main request on the basis of claims 1 and 23 submitted at the oral proceedings before the Board on 26 November 1999 and otherwise the claims as granted, and as auxiliary request on the basis of claims 1 and 23 submitted at the oral proceedings before the Board on 26 November 1999 with the other claims as granted but without claims 6 to 10, 14 and any reference to these claims in the other dependent claims, all claims to be renumbered appropriately.

XI. Opponent 3 did not attend the oral proceedings and has not made any comments during the appeal proceedings.

Reasons for the Decision

The Respondent’s main request

1. The invention

The invention is an article comprising a substrate with visual information beneath a layer carrying a relief formation corresponding to a hologram (or diffraction grating). The hologram is such that the visual information behind it remains viewable. This information is either in written and printed form or as a photograph. To increase the visibility of the
hologram, reflective material (eg aluminium) is applied to the relief formation. However, if a continuous layer were applied - as is well known in the prior art - the visual information would be concealed. Therefore the reflective material is in the form of a plurality of areas, each area being small in relation to the total surface. It is preferred (cf claim 2) that the area spacing is 2.5 to 7.8 dots per mm and that the metal in total covers 15% to 60% of the relief formation. Being discontinuous, this reflecting layer permits underlying information to be viewed through it.

2. Interpretation of claim 1

2.1 Claim 1 contains the functional feature that the uncovered regions are such that "visual information in written and printed form, or as a photograph, contained on said substrate is viewable" behind the hologram image.

2.2 The Opposition Division took the view that the expression "visual information" implies a structure and therefore excludes the mere fact that something exists (eg a colour). "Viewable" means not just that something can be perceived but also that it can be recognised.

2.3 The Board's opinion is that the expression "information" as such should not be interpreted too narrowly. It is for example difficult to see why a colour or a pattern which might be typical for a particular kind of document should be regarded as conveying no information at all. However, since claim 1 as amended specifies expressly that the information be in "written and printed form, or as a photograph", 
background colours and abstract patterns can be disregarded. In order to compare the invention with the available prior art it suffices to note that the present definition covers any kind of text as well as photos (or parts of photos) containing any kind of picture information.

The word "viewable" is taken to mean visible to a human being. The feature defines a property of the claimed device. For reasons which will become clear it is not necessary for the Board to decide to what degree the information should be "viewable".

3. Additional subject-matter (Article 100(c) and Article 123(2) EPC)

3.1 The appellants contend that claim 1 has been modified both during the examination and at the opposition appeal stage such that the patent in its present form contains subject-matter which was not disclosed in the application as filed.

3.2 According to the appellants, the feature "each single area being small in relation to the total surface" in claim 1 as granted goes beyond what has been originally disclosed because of the vagueness of the expression "small". The application as filed mentions dots present at a density of about 25 to 400 dots per inch (1 to 16 dots per mm), but a dot which is merely "small" might be substantially larger than that.

The Opposition Division argued that it does not matter how small the dots are as long as the visual information behind the hologram is still viewable. The
Board agrees with this view. The overall teaching of the original application is indeed that the hologram and the underlying information must be viewable simultaneously, and this would not be possible unless the dots (which are opaque) are sufficiently "small". The vagueness of the word is inevitable since it is not the absolute dimension of the dots which is relevant but the size relative to the substrate and the information thereon.

3.3 The second feature of claim 1 as granted to which the appellants have objected is that the uncovered regions are "present in a width and proportion to said areas of reflective material" such that the visual information is recognisable.
Again, the Board agrees with the Opposition Division that this feature has been sufficiently disclosed. From the passage at column 9, lines 15 to 21 of the published patent application it is clear that the pattern may be varied, the important consideration being to have enough of the hologram made reflective so that a holographically reconstructed image may be clearly seen, but yet not too much so that the visual information beneath the hologram on the article being protected remains clearly viewable and readable. The words "width" and "proportion" now in the claim do not appear in the original text, but exact correspondence is not a requirement of the EPC. The original application contains several examples of proper dot spacings and percentages of reflecting parts to unreflecting parts. The skilled person was clearly taught to control the dimensions and spacing of the covered regions such that the desired effect is achieved. The Board is satisfied that the criticised feature does not mean anything else than this.

3.4 During the appeal proceedings claim 1 was modified by the introduction of the expression "/visual information/ in written and printed form, or as a photograph". The Respondent has pointed to column 4, lines 35 to 38 of the published application for support: "A substrate 11 contains written information 13 printed on a portion of the surface and a photograph 15 attached to that same surface". According to the appellants, however, the word "or" in the amendment led to an extension of the subject-matter since the cited passage in the application only discloses the combination of written printed information and a photo.
The Board might perhaps have shared the appellants' opinion if the original disclosure had been limited to the cited passage. This quotation however refers only to the preferred embodiment. It is stated in the introductory part of the application that authentication is generally needed for articles such as "credit cards, identification cards, driver's licenses, transit passes, passports, stock certificates, and the like" (column 1, lines 13 to 15). Not all these articles can be expected to carry both text and a photo. In fact, the skilled man is not taught by the original application that the nature of the information to be protected is at all relevant for the invention. Important is only that there is some information, such as text or a photo, which should be viewable beneath the hologram. It would therefore be unfair to require that the invention be limited to the preferred embodiment.

3.5 However, the Board agrees with the appellants in that the amendment to claim 1 discussed in the preceding paragraph leads to an extension of the originally subject-matter when claim 6 is considered. This claim, which is dependent in particular on claim 1, has not been amended itself. However, it redefines the substrate set out in claim 1 in a decisive way: the substrate is said to be "a second sheet... which carries a relief formation". In other words, the substrate is identified with a hologram layer. According to the amended claim 1 the substrate contains visual information in written and printed form or a photo. Therefore claim 6 defines a hologram layer containing this information. But such a feature is not disclosed anywhere in the application as filed (which
is not surprising, considering that the "substrate" as described is the article to be protected).

4. For these reasons the Respondent's main request is refused under Article 123(2) EPC.

The Respondent's auxiliary request

5. According to the Respondent's auxiliary request the claims directed to multiple hologram structures (claims 6 to 10 and 14) are deleted.

6. Amendments

It follows from points 3.2 to 3.4 above that the patent documents according to the auxiliary request contain no subject-matter which extends beyond the content of the application as filed.

7. The prior art

7.1 D1

D1 concerns metallised hologram devices. As mentioned at page 1, lines 45 to 49, the metallised coating preferably overlaps the area of the hologram. Two examples of particular applications are of interest:

(1) At page 5, lines 40 to 70 a partially transparent hologram device is described which allows indicia on the document to which the device is attached to show through. In particular, the major part of a passport photo may be visible whilst a portion such as a corner of the photo is "covered by the
metallised embossed hologram security device which bonds it to the surface of the passport edge".

(2) In connection with Figures 7 to 9 a device is shown which comprises an embossed hologram (Figure 7e). According to page 2, lines 61 to 68, this hologram is (optionally) covered with a metallic coating (Figure 7g) and subsequently demetallised in part (Figure 7i). The resulting metal pattern as it is depicted in the figures corresponds roughly to the hologram structure. The demetallised areas will be partially transparent. In Figure 9 an application for this kind of hologram is given as forming a (relatively small) bridging seal across two adjacent surfaces. It appears that the surfaces could be the edges of a video cassette, mentioned at page 1, line 19, in which case there would probably be no indicia behind the hologram.

7.2 D2 and D5

D2 discloses a hologram structure in which the grating is metallised in areas, typically 100-300 µm wide, separated by non-metallised regions, typically 10-30 µm wide. The ratio between the two width values should be approximately a factor of 10. The non-metallised regions are provided to improve the bonding between the layers above and below the grating (which may be of the same material). Nothing is said about the hologram being transparent or translucent. The only application for the hologram explicitly mentioned is the attachment to "documents". At page 5, line 6 there is a reference to D5, where it is said that holograms can be
incorporated in bank notes, credit cards, passports, ID cards, and gramophone records or jackets.

7.3 D4

D4 (Figure 2) describes a device comprising a continuous reflecting layer beneath an embossed hologram formation. On top of this hologram structure a layer is provided consisting of a material which permits writing (e.g. a signature). To ensure that the hologram remains visible under the signature, the layer is arranged as a discontinuous pattern of dots. The dots are opaque and thus partially conceal the hologram structure. It is explained that the hologram image is recognisable because, generally, complete image information is available also from a part of a hologram structure.

7.4 D0

D0 concerns a hologram device which is made partially transparent by applying a continuous, very thin (typically less than 200 Å) metallic layer onto the hologram.

8. Novelty

8.1 Novelty in relation to D1

The Board finds that the example in D1 which comes closest to the invention is the security device application described at page 5, lines 7 to 70. This device is "semi-transparent", which means that "indicia on the document /are allowed/ to show through the
embossed security hologram, as, for example, in the case of a passport photograph where it is important that the major part of the photograph is not obscured from view... the photograph... remaining viewable through the hologram". That far the teaching corresponds to the invention. However, there is no indication that the part of the hologram covering the photo is at all metallised. According to D1 "a portion such as one corner of the photograph is covered by the metallised embossed hologram security device which bonds it to the surface of the passport edge". In spite of the word "security device" - which could be understood as implying that the photo is not covered by the hologram after all - the Board finds that the interpretation which appears to make most sense is that the hologram covers more or less the entire photo but only a small part of it is metallised. This part is opaque.

Therefore, although information is viewable beneath the hologram, this is not due to a regular pattern of small reflecting areas but to a complete absence of reflective material.

It follows that this example does not destroy the novelty of the invention.

As to the example described in connection with Figures 7 to 9 of D1, several differences with respect to the invention exist. Most important, it is not said that this security device is put over visual information. Furthermore, although the device indeed comprises a plurality of areas of reflective material forming a regular discontinuous pattern, this pattern
is not without correspondence with the hologram image.

With respect to D1 the appellants have referred to the decision T 10/97 by Technical Board 3.4.1, dated 7 October 1999, in which D1 is analysed. The appellants are of the opinion that there are differences between the present Board's interpretation and that of Board 3.4.1. However, the Board does not agree that such differences exist. The following conclusion about D1 drawn in T 10/97 (at point 3.2.1) may serve to demonstrate this point:

"Thus, a skilled person learns from document /D1/ to remove portions of an opaque reflection-enhancing layer in order to allow visibility of an underlying information pattern through the hologram. In the absence of any reflection-enhancing layer, the holographic effect will normally be expected to still exist on the de-metallised portions of the hologram, but to be relatively weak".

Important are here the words "in the absence of any reflection-enhancing layer". Thus, in the view of both boards, there is in D1 no disclosure of hologram portions which are partially transparent and comprise a "plurality of areas of reflective material... forming a first regular discontinuous pattern".

It follows that the invention is new with respect to D1.

8.2 Novelty in relation to D2

D2 discloses all the features of claim 1 except one,
viz. that the substrate should contain visual information in written and printed form or as a photograph, which is viewable behind the hologram. D2 only briefly mentions that the substrate may be a document.

Appellant 2 argues that the explicit reference in D2 to the document D5 has the consequence of incorporating the uses mentioned in this document into D2. But even so, D5 does not disclose that the described hologram device is put on top of written and printed information or a photo.

Therefore the invention is new with respect to D2 as well.

9. **Inventive step**

9.1 **Starting from D1**

Appellant 2 argues that the problem which the invention solves with respect to D1 might be stated as obtaining a more homogeneous reproduction of the demetallised hologram. To solve this problem the skilled person would turn to D4. D4 informs him that a hologram image can be reconstructed even if parts of the hologram grating are obscured - something he would anyway know from the general theory of holographics. This fact suggests partial coverage of the hologram, which may be achieved simply using half-tone techniques. Half-tone techniques are so well known that the skilled man could not fail to arrive at the invention.

The Respondent points out that the reflective layer
covering the hologram in D4 is not discontinuous. Therefore this document is too far away from the invention to suggest anything at all to the skilled person.

The Board's view is that the missing link from D1 to the invention is neither provided by D4 nor by general knowledge. The technical problem as formulated by Appellant 2 is not dealt with in D4 since the reflection layer is continuous and needs no improvement. The solution consisting in breaking up the continuous reflection layer and creating a regular pattern of reflective areas is not mentioned either. It may be agreed that the skilled man would know that complete hologram images can be reconstructed from discontinuous hologram patterns. This effect may even play a role in D1 although this is not actually said. But from D1 no reason can be seen for providing a reflection layer in the form of a pattern of reflective areas. It therefore remains obscure why the skilled man would think of half-tone techniques in connection with D1, no matter how well known such techniques may be as such.

The appellants have cited T 10/97 with a view to showing that the present invention is obvious from D1. This decision deals with a technical problem which is similar to the one proposed by Appellant 2. As to the solution to this problem the decision says in particular that

"if partially transparent reflecting films are required, basically two conventional options exist: either to use absorbing very thin semi-transparent
metal films or to use non-absorbing thin transparent dielectric films".

From this it appears that it can at most be concluded that providing a discontinuous pattern of reflecting areas according to the present invention was not a "conventional option", an observation which hardly strengthens the appellants' position. Be this as it may, the Board is of the opinion that a decision by another Technical Board of Appeal concerning a different invention is fundamentally irrelevant for the assessment of the inventive activity. Not only is no such binding effect foreseen in the EPC, but the facts of two different cases cannot be expected ever to be completely identical. Mere similarity is not enough since the inventive step may hinge on details.

See also point 11 below.
9.2 Starting from D2

It is accepted by all parties that although D2 discloses most features of claim 1, it does not mention that the described hologram structure is, or could be, partially transparent. About 80% of the hologram surface is covered with an opaque metal layer, leaving 20% uncovered. The uncovered parts, it must be assumed, will be transparent to visible light. In order to go from this teaching to the invention, the skilled person must first have a reason to apply the described security device to a part of a document which has printed and written information or a photo on it. Second, it must be shown that if he does so, this information will still be "viewable".

The security device in D2 is intended for a "document". Documents such as bank notes or passports will generally contain printed written information and/or a photo. Since it is not said in D2 that the security device is transparent, the skilled person would hardly have put it over essential information. On the other hand, he may well have put it over inessential information, such as the corner of a photo (as disclosed in D1). Since no distinction can or should be made between essential and inessential information, this far the invention appears obvious with respect to D2.

It remains to consider whether such information would be "viewable" through the known security device.
According to the appellants, it would. This is deduced from the fact that in D2 only 80 % of the surface is metallised, which can be compared with the indications in published application corresponding to the patent-in-suit to the effect that the invention would work with up to 90 % of the area covered by aluminium (see eg claim 9).

The Respondent, on the other hand, argues that 80 % metallisation would not allow underlying information of the relevant kind to be viewable under all circumstances.

The Opposition Division estimated that "perhaps even the background of a bank note can be conjectured" through the known device.

As to this crucial issue, the Board takes the view that the appellants have not proved that anything at all would be viewable through the known security device if it is put on top of information in written printed form or a photo. This link is simply missing and should not be replaced by guesswork. The typical value in D2 of 80 % for the ratio of opaque reflective area to total area is considerably higher than the preferred interval 15-60 % set out in claim 2. For photos the preferred range is even limited to 30 % (cf the patent-in-suit col.10, l.3). Therefore, the fact that text or photos are viewable according to the invention does not necessarily mean that they would be viewable if D2 were followed. Nor is the ratio value of 90 % mentioned in the original application regarded as proof that any structure, such as one having the particular geometry disclosed in D2, would be sufficiently transparent when
covered by metal up to this degree.

The Board therefore concludes that it has not been convincingly shown that the invention follows in an obvious manner from D2.

9.3 Starting from D0

In D0, partial transparency is obtained by the application of a very thin, continuous reflecting layer. Compared with this prior art, the technical problem solved by the invention is to provide an alternative to such a layer. The appellants have argued that D4 suggests the solution according to the invention. However, the Board cannot agree that it does for the reasons already outlined above in connection with D1 (point 9.1): D4 is not concerned with this problem and does not suggest a discontinuous reflection layer.

10. The Board concludes from the foregoing that the invention as defined in claim 1 (and in the corresponding method claim 23) is patentable. It follows that the Respondent's auxiliary request for maintenance in amended form is in principle allowable. However, since a complete set of amended claims have not yet been filed and since it has not been considered whether amendments must be made to the description, the Board decides to send back the case to the first instance for further prosecution.

11. Referral of a question to the Enlarged Board of Appeal

11.1 Appellant 2 has suggested that the Enlarged Board of
Appeal be called upon to decide whether a board of appeal is bound by interpretations of documents or conclusions relating to patentability issues expressed in a decision by another board.

11.2 The Board sees however no reason for putting the question. First, no significant difference in the interpretation of D1 is believed to exist between Board 3.4.1 and the present Board (see point 8.1 above). Second, in decision T 167/93 (OJ 1997,229) it was held that even if national principles of procedural law are taken into account by virtue of Article 125 EPC, an estoppel per rem judicatam can only exist where a number of conditions are fulfilled. These conditions are in particular that the parties to the proceedings be the same and that the issues of fact be the same (see point 2.5 of the reasons). Here, already the fact that the parties are different in the present case and in case T 10/97 (only the present Opponent 3 participated also in the previous case) means that no estoppel exists. Thus the present Board is not bound by the interpretations or conclusions expressed in that decision.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The matter is remitted to the first instance for further prosecution on the basis of the Respondent's auxiliary request taking into account that claims 1 and
23 are allowable.

The Registrar:  The Chairman:

M. Kiehl  P. K. J. van den Berg