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**Datasheet for the decision
of 18 March 2008**

Case Number: T 0524/05 - 3.4.01

Application Number: 97113395.4

Publication Number: 0807904

IPC: G06K 9/00

Language of the proceedings: EN

Title of invention:

Method and apparatus for authenticating US paper currency

Patentee:

CUMMINS-ALLISON CORPORATION

Opponents:

GIESECKE & DEVRIENT GmbH
DE LA RUE INTERNATIONALE LIMITED

Headword:

-

Relevant legal provisions:

EPC Art. 123(2)
RPBA Art. 13

Relevant legal provisions (EPC 1973):

EPC Art. 84, 76(1), 111(1)

Keyword:

"Admissibility of late-filed requests (yes)"
"Added subject-matter (yes: main request and 1st to 3rd and
5th auxiliary requests; no: 4th auxiliary request)"
"Clarity (yes: 4th auxiliary request)"
"remittal (yes: 4th auxiliary request)"

Decisions cited:

Catchword:

-



Case Number: T 0524/05 - 3.4.01

D E C I S I O N
of the Technical Board of Appeal 3.4.01
of 18 March 2008

Appellant:

(Patent Proprietor)

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(Opponent II)

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Decision under appeal: Decision of the Opposition Division of the European Patent Office posted 11 February 2005 revoking European patent No. 0807904 pursuant to Article 102(1) EPC.

Composition of the Board:

Chairman: B. Schachenmann
Members: H. Wolfrum
G. Assi

Summary of Facts and Submissions

- I. The appellant (patent proprietor) lodged an appeal against the decision of the opposition division, dispatched on 11 February 2005, revoking European patent No. 0 807 904 arising as a divisional application from parent application EP 95 913 629.2, which was published as EP-A-0 749 611.

The notice of appeal was received on 21 April 2005 and the prescribed fee was paid on the same day. On 21 June 2005 a statement of grounds of appeal was filed.

- II. The oppositions of opponent I and of opponent II had invoked the grounds of Articles 100(a) (lack of novelty and inventive step) and 100(b) EPC.

Having to decide on requests for maintenance of the patent in amended form, the opposition division had based its decision on the provisions of Articles 84, 123(2) and 100(b) EPC 1973.

- III. Oral proceedings were arranged in accordance with respective requests of the parties.

In response to a communication of the Board sent to the parties on 29 October 2007, the appellant filed by letter of 31 January 2008 a main request and a first auxiliary request, replacing the former requests on file.

By letter of 18 February 2008, respondent/opponent I objected to added subject-matter which was allegedly introduced by the amendments made to the claim 1 of each of the appellant's new requests.

In reaction to the observations made by respondent/opponent I, the appellant filed by letter of 6 March 2008 four further revised sets of claims as second to fifth auxiliary requests.

Oral proceedings were held on 18 March 2008.

Upon objections raised by the opponents and comments made by members of the Board during these proceedings the appellant proposed an amended first and second version of the fourth auxiliary request of 6 March 2008. The second version was finally submitted as a new fourth auxiliary request on which the Board was requested to decide after all parties had been given the opportunity to comment.

- IV. As a result of the debate, the appellant requested maintenance of the patent in amended form on the basis of
- claim sets I and II filed on 31 January 2008 as main request and first auxiliary request, respectively, or on the basis of claim sets III, IV and VI filed on 6 March 2008 as second, third and fifth auxiliary request, respectively, or on the basis of a single claim filed in the oral proceedings of 18 March 2008 as fourth auxiliary request,
 - description pages 2 to 9 filed on 31 January 2008 and
 - the drawings of the patent as granted.

Furthermore, the appellant requested remittal of the case to the opposition division for further discussion of novelty and inventive step.

- V. The respondents requested that the appeal be dismissed.

In this context, the respondents raised objections as to the admission into the proceedings of the second to fifth auxiliary requests.

VI. Claim 1 of the appellant's **main request** reads as follows :

"1. A method of authenticating documents relative to being genuine United States paper currency comprising the steps of :

illuminating a document (2104) with ultraviolet light;

detecting ultraviolet light reflected by said document;

detecting visible light emitted from said document;

characterized by

determining the authenticity of said document based upon

comparison of the amount of ultraviolet light reflected

from said document with the amount of ultraviolet light

reflected from genuine United States paper currency

illuminated with ultraviolet light and additionally based

upon a comparison of the visible light emitted from said

document with the visible light emitted from a United

States paper currency illuminated with ultraviolet light;

wherein

said step of detecting ultraviolet light reflected by

said document comprises taking a number of samples of

amounts of ultraviolet light reflected by said document

and averaging said samples to obtain a reflected

ultraviolet average;

wherein said step of detecting visible light emitted from

said document comprises taking a number of samples of

amounts of visible light emitted from said document; and

wherein a

negative determination of authenticity is made regarding

said document if either said reflected ultraviolet

average does not exceed a first predetermined threshold

or any of said samples of the amount of visible light

exceeds a second predetermined threshold; and indicating to the operator the reasons why a document has been rejected."

Claims 2 to 6 are dependent claims.

Claim 1 of the **first auxiliary request** introduces, before the step of "indicating", the following additional features :

"wherein a detector (2202) is used for said step of detecting ultraviolet light reflected by said document; wherein said detector generates an output voltage based on the amount of ultraviolet light detected; and wherein said first predetermined threshold is set such that a negative determination of authenticity is made if the voltage generated by said step of detecting ultraviolet light reflected by said document is less than or equal to one-half a voltage expected for a genuine United States bill;".

Claims 2 to 4 are dependent claims.

The **second** and **third auxiliary requests** are based, respectively, on the main request and the first auxiliary request. In claim 1 of each of these requests the expression "in intervals" is added after the word "taking" in the two occurrences of the phrase "taking a number of samples".

The sole claim of the **fourth auxiliary request** reads as follows :

"A method of authenticating documents relative to being genuine United States paper currency comprising the steps of :

*illuminating a document (2104) with ultraviolet light;
detecting ultraviolet light reflected by said document
with a UV sensor;
determining the authenticity of said document based upon
comparison of the amount of ultraviolet light reflected
from said document with the amount of ultraviolet light
reflected from genuine United States paper currency
illuminated with ultraviolet light, and detecting the
presence of fluorescence of said document illuminated
with ultraviolet light by detecting visible light emitted
from said document with a fluorescence sensor;
wherein the output of the UV sensor is sampled at a
number of intervals, the readings are averaged, and an
average level is compared with a predetermined threshold;
wherein the presence of fluorescence is detected by
sampling the output of the fluorescence sensor at a
number of intervals;
and wherein a negative determination of authenticity is
made regarding said document if either said average level
does not exceed said predetermined threshold or if any of
the sampled outputs of the fluorescence sensor rises
above a noise floor; and
indicating to an operator the reasons why a document has
been rejected."*

The **fifth auxiliary request** differs from the third auxiliary request in that in claims 1 and 2 the term "first predetermined threshold" is replaced by the term "predetermined threshold", in claim 1 the term "second predetermined threshold" is replaced by the term "noise floor", and dependent claim 4 is deleted.

Claims 2 and 3 are dependent claims.

VII. The respondents objected to the admissibility of the second to fifth auxiliary requests filed on 6 March 2008 and in the oral proceedings, respectively, ie to the admission of those requests which had been filed less than one month before the oral proceedings.

Moreover, they raised a number of objections under Articles 84 EPC 1973, 123(2) EPC and 76(1) EPC 1973 against the appellant's requests.

In the respondents' opinion, the expression "relative to being genuine United States paper currency" in claim 1 of all requests referred to an unspecified standard for authentication, in view of the fact that the optical and mechanical properties as well as the design of safety features of genuine specimens showed wide variations, given the large differences in age and wear or soiling of the paper currency in circulation. Enclosure X1 presented by the appellant in their letter of 31 January 2008 even provided evidence for the fact that, starting from 2003 onwards, US paper currency included security threads which showed detectable visible fluorescence under UV illumination. Against this background, it was virtually impossible for a skilled person to select useful threshold values for the detection of UV and visible light. Moreover, it was impossible to tell which activities would fall under the scope of protection.

Apart from that, as far as the detection of visible light or fluorescence was concerned, there was no basis of disclosure in the application documents as filed for a comparison with respect to a "second threshold". The disclosed term "noise floor", on the other hand, did not have a well recognized meaning.

Contrary to the content of the application documents as filed, some of the requests on file did not specify that what was detected was whether or not a document under test showed visible light fluorescence. In this respect, the subject-matter of none of the claims on file preserved the originally-disclosed context that fluorescence detection was performed by using the same UV illumination as was used for the detection of reflected UV light.

Moreover, the original disclosure required an indication of the fact that the samples were taken "in intervals". On the other hand, the expression "in intervals" had no clear and unambiguous meaning in that it was not apparent whether it would refer to time intervals or different locations. From the originally-filed description it appeared that the intervals could only mean intervals in time, which in turn however would mean that the sampling would have to be done on a stationary document.

The reference to a negative determination on the basis of an output voltage of a UV detector as claimed either in the independent or the dependent claims of the various requests on file was inconsistent with the claimed averaging of samples and, moreover, implied a third test to be made, for which the original application documents did not provide a basis of disclosure. Finally, the references to an amount of UV light in some of the dependent claims was inconsistent with the determination of a sampled average.

VIII. According to the appellant, the amendments proposed by the main request and the first auxiliary request were based in essence on dependent claims of the patent as

granted. Thus any objections under Article 123(2) EPC or 76(1) EPC 1973 could and should have been raised by the respondents/opponents in an earlier stage of the opposition and appeal proceedings. The further amendments proposed by the second to fifth auxiliary requests should be admitted into the appeal proceedings because they were filed in response to freshly raised objections as to lack of clarity and added subject-matter.

The objections as to added subject-matter were unfounded for the simple reason that the claimed subject-matter was more specific than claim 1 of the application as originally filed, which was identical to claim 41 of the parent application. Moreover, the claimed limitations were either explicitly or implicitly disclosed in the originally-filed description. At any rate, the definitions of the fourth auxiliary request were based on the literal description of a particular embodiment.

As regards the question of clarity, the patent specification did not leave any reasonable doubt as to what was meant by genuine United States paper currency and which criteria had to be met for a document under test in order to be found to be non-genuine. In addition, the mere fact that some of the claim definitions had a broad meaning did not render them unclear.

Reasons for the Decision

1. In the following reference is made to the provisions of the EPC 2000, which entered into force as of 13 December 2007, unless the former provisions of the EPC 1973 still apply to pending applications.

2. The appeal complies with the requirements of Articles 106 to 108 and Rules 1(1) and 64 EPC 1973 and is, therefore, admissible.

3. Admissibility of the late-filed requests (Article 13 RPBA)

3.1 Article 13(1) RPBA stipulates that *"Any amendment to a party's case after it has filed its grounds of appeal or reply may be admitted and considered at the Board's discretion. The discretion shall be exercised in view of inter alia the complexity of the new subject-matter submitted, the current state of the proceedings and the need for procedural economy."*

Article 13(3) RPBA complements this by stating that *"Amendments sought to be made after oral proceedings have been arranged shall not be admitted if they raise issues which the Board or the other party or parties cannot reasonably be expected to deal with without adjournment of the oral proceedings."*

3.2 In the present case, all requests proposed by the appellant for discussion at the oral proceedings were in fact filed after the oral proceedings had been arranged.

3.3 The respondents did not object to the admission into the proceedings of those requests which were filed more than one month before the date of the oral proceedings, ie the main request and the first auxiliary request, and the Board saw no reason to deny the admissibility of these requests.

- 3.4 However, the respondents did object to the admissibility of the second to fifth auxiliary requests which were filed less than two weeks before the oral proceedings and to repeated proposals concerning an amended fourth auxiliary request which were made in the course of the oral proceedings.

The Board notes that the amendments introduced by claim 1 of the main request and claim 1 of the first auxiliary request are mainly based on definitions included in claims of the patent as granted (cf claims 6, 9 and 12 of the patent as granted). No objections as to added subject-matter concerning the granted claims had been raised by the respondents earlier in the opposition and appeal proceedings. In fact, the first time that objections were raised was with the letter of 18 February 2008 by respondent/opponent I, and further objections were added in the course of the discussion in the oral proceedings.

In the Board's view, reasons of equity demand that the appellant be given at least one opportunity to respond to freshly raised objections of added subject-matter. Since this was the case for the requests filed in writing on 6 March 2008 as well as for the amended fourth request filed in the oral proceedings, the Board decided to exercise its discretion in favour of the appellant and to also admit these requests into the appeal proceedings.

4. **Main request -**

Basis of disclosure (Articles 123(2) EPC and 76(1) EPC 1973)

- 4.1 Claim 1, which is directed to a method of authenticating

documents relative to being genuine United States paper currency, *inter alia* comprises the following features:

- (i) in addition to a step of detecting UV light reflected from the document under test, determining the authenticity of a document "based upon a comparison of visible light emitted from said document with the visible light emitted from a United States paper currency illuminated with ultraviolet light";
- (ii) detecting ultraviolet light reflected by said document by "taking a number of samples of amounts of ultraviolet light reflected by said document and averaging said samples to obtain a reflected ultraviolet average";
- (iii) detecting visible light emitted from said document by "taking a number of samples of amounts of visible light emitted from said document"; and
- (iv) making a negative determination of authenticity if "any of said samples of the amount of visible light exceeds a second predetermined threshold".

4.2 Features (i) to (iv) are indeed comprised in dependent claims 9 and 12 of the patent as granted. However, in particular features (ii) to (iv) do not have a counterpart in any of the claims of the divisional application as originally filed. Moreover, none of features (i) to (iv) is disclosed by the claims of the parent application. Hence, only the description and drawings of the divisional application as originally filed and the corresponding parts of the parent application remain as a possible source of disclosure.

Considering this source of disclosure in detail, a test for authentication is disclosed which, in addition to a

step of detecting UV light reflected from the document under test, is based on a step of detecting the presence of visible light which is due to a UV induced fluorescence (cf column 8, line 46 to column 9, line 6, and column 9, lines 24 to 31, of the published divisional application; page 32, lines 21 to 18, and page 33, lines 15 to 20, of the parent application). The invention as originally filed exploits the optical properties of genuine US paper currency as they existed at the time of the priority date claimed (*ie* in October 1994). At that time, a US banknote strongly reflected UV light but did not show any fluorescence in the visible range of the spectrum when illuminated with UV light (cf for instance column 7, lines 34 to 36; column 8, line 59 to column 9, line 3; column 9, lines 7 to 9, of the published divisional application; page 11, lines 19 to 23; page 32, lines 30 to 32; page 33, lines 3 and 4, of the parent application).

Furthermore, according to said source of disclosure, the detection of ultraviolet light reflected by the document under test and the detection of the presence of UV induced visible light fluorescence take place by respectively sampling in intervals the output of a UV sensor and the output of a visible light fluorescence sensor. The readings of the UV sensor are averaged and the average thus obtained is compared to a predetermined threshold (cf column 12, lines 54 to 58; column 13, lines 49 to 54; column 14, lines 12 to 14, of the published divisional application; page 148, lines 3 to 6; page 149, lines 7 to 11 and 22 to 23, of the parent application).

A negative determination of authentication is made if either said average level does not exceed said predetermined threshold or if any of said sampled outputs of the fluorescence sensor rises above a noise floor (cf column 12, lines 13 to 20, and 44 to 53; column 14, lines 14 to 17, of the published divisional application; page 147, lines 11 to 13; page 147, line 27 to page 148, line 2; page 149, lines 23 to 25, of the parent application).

- 4.3 A comparison of this disclosure with the claimed features reveals that feature (i) constitutes a generalisation of the disclosed method of authenticating in that - by omitting any limitation as to fluorescence - it includes the possibility of detecting visible light which is not due to UV fluorescence but, for instance, emitted under ambient illumination. In combination with feature (iv) the claimed method thus encompasses an authentication test which could be based for instance on the brightness of a certain colour of the document. Such a method of authenticating is however not the subject of the divisional application as filed, nor is it disclosed in the parent application in the context of an authentication under UV illumination.

As regards features (ii) and (iii), there is no disclosure of the claimed sampling of "amounts" of UV or visible light, which could be interpreted as implying some transformation of measured sensor outputs into another physical parameter such as light intensities.

Moreover, given the fact that genuine US paper currency is expected not to fluoresce at all, there is simply no visible light that would be emitted from a United States

paper currency illuminated with ultraviolet light, so that the claimed comparison of visible light from a document under test with some visible light which would be emitted from genuine US paper currency up to a certain second predetermined threshold, as is suggested by feature (iv), has no clear and unambiguous basis in said source of disclosure.

- 4.4 The appellant's argument that no subject-matter was added by the amendments to claim 1 since the claimed subject-matter constituted only a limitation of a more generally claimed method of authenticating cannot be accepted. According to the appellant, the alleged basis of disclosure for the purposes of Articles 123(2) EPC and 76(1) EPC 1973 was provided, respectively, by claim 1 of the divisional application as filed and claim 41 of the parent application. However, both claims refer to a method of authentication which relies on a single step of comparing reflected UV light with UV light from a genuine document, wherein claim 41 of the parent application is even not specific as to the genuine document being US paper currency. It is illogical to consider such an unspecific piece of information to constitute a valid basis of disclosure for particular technical instructions, such as the presently claimed details of detecting reflected UV light, let alone for an extra test of authenticating, such as the presently claimed detection of the presence of visible light fluorescence.

According to the appellant, the claim definition, in particular when read in the context of the description, made it clear that the step of detecting visible light meant fluorescent light emitted in reaction to the claimed UV illumination. Moreover, support for a

comparison of the detected amount of visible light with a predetermined second threshold was given in column 14, lines 32 to 40, of the published divisional application, corresponding to page 150, lines 3 to 9, of the parent application.

The cited passages indeed refer to *"means for adjusting the sensitivities of the UV reflection and/or fluorescence test, for example, by adjusting the respective thresholds means"* and a *"high/low threshold to be adjusted, for example, either in absolute voltage terms or in genuine/suspect ratio terms"*. But no mention is made in the application documents as filed or in the parent application of a "second predetermined threshold" to be used for a comparison with "detected amounts" of visible light, which threshold could be deliberately chosen for the authentication of US paper currency. On the contrary, from the repeated reference to the fact that for genuine US paper currency no visible light fluorescence can be detected it is apparent that the sole reference for the fluorescence test can only be what is called the "noise floor" of the fluorescence sensor (column 12, lines 44 to 46, and column 14, lines 14 to 17, of the published divisional application; corresponding to page 147, lines 27 to 28, and page 149, lines 23 to 25, of the parent application).

- 4.5 It follows from the above considerations that aforementioned features (i) to (iv) do not have a basis of disclosure in the divisional application nor in the parent application as filed.

Consequently, claim 1 of the main request does not comply with the requirements of Articles 123(2) EPC and 76(1)

EPC 1973.

The main request is therefore not allowable.

5. **First auxiliary request**

Basis of disclosure (Articles 123(2) EPC and 76(1) EPC 1973)

Claim 1 of the first auxiliary request also comprises aforementioned features (i) to (iv) and, in addition, the feature of

(v) making a negative determination of authenticity with respect to the level of the output voltage of a detector for UV light if said voltage "is less than or equal to one-half a voltage expected for a genuine United States bill".

Although feature (v) is disclosed analogously in column 13, lines 35 to 44, of the published divisional application and on page 148, line 30 to page 149, line 4, of the parent application, it is not disclosed as a test for authenticity which would be performed in addition to the comparison of a measured average of reflected UV light with a predetermined threshold, as it is claimed in claim 1 of the first auxiliary request.

Therefore, and for the reasons given above with respect to claim 1 of the main request, claim 1 of the first auxiliary request comprises added subject-matter, contrary to the requirements of Articles 123(2) EPC and 76(1) EPC 1973.

The first auxiliary request is therefore not allowable.

6. **Second, third and fifth auxiliary requests -**

Basis of disclosure (Articles 123(2) EPC and 76(1) EPC 1973)

Claim 1 of each of the second, third and fifth auxiliary comprises aforementioned feature (i) and thus includes added subject-matter already for this reason.

Moreover, claim 1 of the second auxiliary request comprises feature (iv) and claim 1 of each of the third and fifth auxiliary requests comprises feature (v).

For the sake of completeness it is noted that notwithstanding the amendments to features (ii) and (iii) by adding the expression "in intervals" in the respective definitions of claim 1 of each of the second, third and fifth auxiliary requests, each of these claims is still directed to taking a "number of samples of amounts" of UV or visible light, respectively, and thus define subject-matter which does not possess a basis of disclosure.

Thus, for the reasons set out in paragraphs 4. and 5. above, claim 1 of each of the second, third and fifth auxiliary requests also infringes the provisions of Articles 123(2) EPC and 76(1) EPC 1973.

The second, third and fifth auxiliary requests are therefore not allowable.

7. **Fourth auxiliary request**

7.1 Basis of disclosure

7.1.1 The sole claim takes up the context of disclosure given

in the description, as it is set out in paragraph 4.2 above (cf column 8, lines 46 to 56; column 9, lines 24 to 31; column 12, lines 13 to 20 and 44 to 58; column 13, lines 49 to 54; column 14, lines 12 to 17, of the published divisional application; page 32, lines 21 to 18; page 33, lines 15 to 20; page 147, lines 11 to 13; page 147, line 27 to page 148, line 6; page 149, lines 7 to 11 and 22 to 25, of the parent application).

7.1.2 Respondent/opponent II argued that the claim definition did not preserve the disclosed context in that it covered a method in which the UV illumination for detecting UV reflection and for detecting visible fluorescence light could be performed with different UV light sources, whereas according to the description of the specific embodiment on which the other claim features were based a single UV light source was used.

Moreover, both respondents saw added subject-matter in the fact that the expression "in intervals" could be understood as referring to measurements to be performed either in different time intervals or to measurements at different positions, whereas it was apparent from the original description that the expression meant time intervals.

7.1.3 The Board does not share these concerns.

Apart from the fact that the provision of one or more UV light sources does not define a step of a method of authenticating documents but rather constitutes a feature of a device for performing the authentication tests, it is noted that the documents of the divisional application and of the parent application as filed do not pay any

attention to the details of the UV light source to be used. The UV light source is shown schematically as item "2102" in Figure 1a of the divisional application (which corresponds to Figure 60a of the parent application) and its described purpose is for illuminating a document (column 10, lines 29 to 30, of the divisional application as published, corresponding to identical specifications in the parent application). As regards the reference to a UV light source, the description further includes a discussion of measures to be taken in order to compensate for a possible degradation of UV lamp intensity (column 12, line 57 to column 13, line 34, of the divisional application as published, corresponding to identical specifications in the parent application). However, there is nothing in the application documents as filed which would allow the conclusion to be drawn that it is of any significance for detecting reflected UV light and/or the presence of UV induced visible fluorescence that a single UV lamp is used.

As regards the second objection, the corresponding piece of disclosure in column 13, lines 49 to 58, of the divisional application as published reads as follows :

"According to a preferred embodiment of the present invention, the determination of whether the level of UV reflected off a document is high or low is made by sampling the output of the UV sensor at a number of intervals, averaging the readings, and comparing the average level with the predetermined high/low threshold. Alternatively, a comparison may be made by measuring the amount of UV light reflected at a number of locations on the bill and comparing these measurements with those obtained from genuine bills."

The Board notes that the cited passage does not provide any information as to the nature of the "intervals". The respondents' objection arises from a particular interpretation according to which measurements at a number of locations were presented as an alternative to measurements made at a number of intervals so that "in intervals" could only be understood as referring to intervals in time. Although the respondents' interpretation is certainly plausible, the Board shares the appellant's view that an interpretation according to which the term "alternatively" rather draws a distinction to a comparison based on averaged sensor readings is equally valid. Therefore, the cited passage does not constitute an unequivocal disclosure of the intervals mentioned being exclusively intervals in time.

7.1.4 For the above reasons, the Board considers the claim definitions as complying with the requirements of Articles 123(2) EPC and 76(1) EPC 1973.

7.2 Clarity (Article 84 EPC 1973)

7.2.1 The respondents further questioned the clarity of the claim definitions, which allegedly resulted *inter alia* in uncertainties as to the precise scope of protection.

In detail, the respondents objected to the expression "relative to being genuine United States paper currency" as an unclear definition of the standard with which the detected levels of reflected UV light and visible fluorescence light should be compared. Moreover, the meaning of the term "in intervals" was unclear because it could refer to intervals in time or position. A further ambiguity existed as regards the meaning of the

definition of "an average level" following the claimed instruction "the readings are averaged". It was also not clear to the skilled person according to which criteria the claimed predetermined threshold for the comparison of the detected UV light would have to be chosen. Finally, it was not apparent how the fluorescence test was to be performed since, apart from the fact that it was unclear what exactly was meant by the term "noise floor", the claim did not contain any instructions as to whether the detection of visible fluorescence should look for light having a certain intensity or for light emitted at specific wavelengths.

7.2.2 In the Board's view, the claim definitions provide instructions which are sufficiently clear for a skilled person in the technical field at issue.

In particular, the Board is convinced that a skilled person was familiar with the optical properties of genuine United States paper currency as it existed at the priority date claimed by the present patent, *ie* about its strong reflectivity for UV light and the absence of UV induced visible fluorescence. Therefore, the skilled person could not be in doubt about the standard for comparison to be expected and thus was in a position to determine a proper threshold for the detection of UV light as well as a suitable level for the noise floor in the test for the presence of UV induced visible fluorescence. The respondents' observations are certainly correct that, due to variations in age, wear and soiling of the paper currency in circulation, the optical properties of genuine specimens would show wide variations. However, this circumstance imposed on the skilled person only the task to select practically useful

tolerance levels for the authentication tests to be made, so as to ascertain, on the one hand, a high level of security and, on the other hand, to avoid impractically high rejection levels of genuine banknotes, ie to find a useful compromise between these conflicting requirements. Against this background, the expression "relative to being genuine United States paper currency" cannot be considered as unclear.

Undoubtedly, the claimed method, from which ensues a negative authentication upon detection of the presence of visible fluorescence from only a single, arbitrarily taken sample, is not successfully applicable without modification to genuine US banknotes of certain denominations which have been issued since the year 2003 and which are provided with security threads showing UV induced visible fluorescence. However, this fact does not render the claimed method of authentication unsuccessful and thus unclear as long as it is applied to US paper currency as it existed at the priority date claimed by the present patent.

As regards the alleged ambiguity of the meaning of the term "in intervals", the Board notes that the mere fact that a technical term has a broad meaning does not necessarily render it unclear. In the present case, it is immaterial for a successful execution of the claimed method whether the intervals are chosen as intervals in time or in position. What matters is the fact that in each step of detection a number of samples is taken from a document under examination, be it that the samples are taken at different intervals in time, at different locations or both.

As regards the term "noise floor", the Board has no doubt that in the field of sensor technology the term is understood as referring to an existing level of background noise in the output of a sensor and its associated electronic circuitry. In this context, it is a straightforward undertaking for the skilled person to determine the noise floor for a given fluorescence detection system and to use it accordingly so as to ascertain that any output of the fluorescence sensor which exceeds the level of pure noise leads to a negative determination of authenticity.

Moreover, the claim under consideration defines in unequivocal terms that a negative determination of authentication is based *inter alia* on the detection of the presence of visible light fluorescence upon UV illumination, which presence should be considered to be established if any of the samples of the fluorescence sensor happens to exceed the noise floor. Given the aim of the present patent, *ie* the desire to distinguish genuine US paper currency from any kind of counterfeit documents, there can be no doubt that the claimed method is intended to look for any kind of visible light fluorescence regardless of a specific wavelength or particular intensity, provided that the latter is above the existing noise level.

The Board concedes that the phrase "*and an average level is compared with ...*" which follows the phrase "*the readings are averaged,*" is not an ideal example for clarity of wording and that a phrase such as "the ensuing average level is compared with ..." would indeed be a preferable definition. Nevertheless, the present definition, which has the advantage of an essentially

literal basis of disclosure, does not leave any reasonable doubt as to the fact that the "average level" which is referred to is in fact the result of the preceding step of averaging the readings of the UV sensor outputs.

7.2.3 For these reasons, the Board has come to the conclusion that the claim definitions comply with the requirement of Article 84 EPC 1973 having regard to clarity.

7.3 However, the Board notes that the patent description still requires amendment so as to eliminate any statements which refer to objects and embodiments that are no longer consistent with the amended wording of the claim of the fourth auxiliary request and as such could render the scope of the claim unclear.

To give but a few examples, reference is made to paragraphs [0031] to [0035], [0037], [0040], [0045] and parts of paragraphs [0058] and [0059].

8. *Remittal*

8.1 The appellant has requested remittal of the case to the opposition division for discussion of the matters of novelty and inventive step.

The respondents were indifferent as to this request.

8.2 According to Article 111(1) EPC 1973, second sentence, a board of appeal may either exercise any power within the competence of the department which was responsible for the decision appealed or remit the case to that department for further prosecution.

In the present case, given the facts that substantial amendments to the claim wording were made by the appellant shortly before and during the oral proceedings and that the amended claim had not yet been the subject of examination as to their merits with respect to novelty and inventive step, the Board considers it appropriate from the viewpoint of procedural fairness to give the respondents the opportunity to properly prepare their position on these issues and thus to remit the case on the basis of the claim of the fourth auxiliary request to the opposition division for further prosecution.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the opposition division for further prosecution on the basis of the only claim filed as fourth auxiliary request at the oral proceedings.

The Registrar

The Chairman

R. Schumacher

B. Schachenmann