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**Datasheet for the decision
of 18 January 2012**

Case Number: T 1140/09 - 3.4.03
Application Number: 03028753.6
Publication Number: 1489562
IPC: G07D 11/00, G07F 19/00
Language of the proceedings: EN

Title of invention:
System and method for tracing bank notes

Patent Proprietor:
Hitachi-Omron Terminal Solutions, Corp.

Opponents:
Giesecke & Devrient GmbH
Wincor Nixdorf International GmbH

Headword:

-

Relevant legal provisions:
RPBA Art. 12(4), 13(3)

Relevant legal provisions (EPC 1973):
EPC Art. 54(2), 56, 111(1)

Keyword:

"Document available to the public (yes)"
"Inventive step (no)- main request, second and third auxiliary requests"
"Remittal (no)"

Decisions cited:
T 0084/83, T 0743/89, T 0422/93, T 0804/05

Catchword:

-



Case Number: T 1140/09 - 3.4.03

DECISION
of the Technical Board of Appeal 3.4.03
of 18 January 2012

Appellant I:
(Opponent 01)

Giesecke & Devrient GmbH
Prinzregentenstrasse 159
D-81677 München (DE)

Appellant II:
(Opponent 02)

Wincor Nixdorf International GmbH
Heinz-Nixdorf-Ring 1
D-33106 Paderborn (DE)

Representative:

Schaumburg, Thoenes, Thurn, Landskron, Eckert
Patentanwälte
Postfach 86 07 48
D-81634 München (DE)

Respondent:
(Patent Proprietor)

Hitachi-Omron Terminal Solutions, Corp.
6-3, Ohsaki 1-chome
Shinagawa-ku
Tokyo (JP)

Representative:

MERH-IP
Matias Erny Reichl Hoffmann
Paul-Heyse-Strasse 29
D-80336 München (DE)

Decision under appeal:

Interlocutory decision of the Opposition
Division of the European Patent Office posted
20 March 2009 concerning maintenance of
European patent No. 1489562 in amended form.

Composition of the Board:

Chairman: G. Eliasson
Members: T. Häusser
P. Mühlens
R. Q. Bekkering
T. Karamanli

Summary of Facts and Submissions

- I. The appeals by the opponents O1 and O2 concern the interlocutory decision of the opposition division to maintain the European patent No. EP 1 489 562 as amended during the opposition proceedings (Article 101(3)(a) EPC).

The patent had been opposed in its entirety. Grounds of opposition were lack of novelty and inventive step (Articles 100(a), 54(1) and (2), 56 EPC 1973) and unallowable extension of the subject-matter of the patent (Article 100(c) EPC 1973).

- II. At the oral proceedings before the board, appellants I and II (opponents O1 and O2) requested that the decision under appeal be set aside and that the patent be revoked. The respondent (patent proprietor) requested that the appeals be dismissed (main request), or that the patent be maintained in amended form on the basis of one of auxiliary requests 2 or 3 filed at the oral proceedings.

At the oral proceedings the board decided not to admit auxiliary request 1 filed at the oral proceedings into the proceedings. The respondent then requested remittal to the department of first instance for having the opportunity to re-file auxiliary request 1, which was not admitted by the board.

III. Reference is made to the following documents:

- E3: Brochure relating to PIDSY Post Identification system, Giesecke & Devrient (original brochure was handed over at the oral proceedings before the board)
- E5: PIDSY - e-mail of Mr Strasser dated 11.04.2003
- E6: PIDSY - press release of 20.03.2003
- E7: PIDSY - letter confirming press release E6
- E8: PIDSY - information disclosure statement
- E9: PIDSY - transmittal letter concerning E8
- E10: PIDSY - invoice dated 17.12.02 of the design company
- E11: PIDSY - invoice dated 19.03.2003 of the printing company
- E12: PIDSY - affidavit of Mr Strasser
- E13: PIDSY - affidavit of Mr Sterzinger
- E14: EP 1 113 393 A2

IV. The wording of claim 1 as maintained by the opposition division (main request) reads as follows (board labelling):

- A) "An automatic teller machine (ATM) electronically connected to one or more devices, the one or more devices comprising:
 - a) a deposit device (206) configured to receive an initial bank note (204) and a counterfeit bank note which is physically the same bank note as the initial bank note after having been identified as counterfeit bank note at an external station;
 - b) an image extraction device (208) configured to extract one or more initial images (216)

from the initial bank note (204) and the counterfeit bank note;

- c) a transaction log device (210) configured to attach a transaction log (214) to the one or more initial images (216) of the initial bank note (204);
- d) a comparison device (222) configured to compare the one or more initial images (216) of the initial bank note to the one or more images (220) of the counterfeit bank note in order to obtain a comparison result (224),
- d1) the comparison device (222) being configured to calculate values indicating the degree of similarity between the initial bank note and the counterfeit banknote as said comparison result; and
- e) a retrieval device for tracing the counterfeit bank note, which is configured to retrieve the transaction log attached to the initial bank note, if the comparison device (222) determines that the one or more initial images (216) of the initial bank note and the counterfeit bank note are within the range of similarity."

V. Claim 1 of auxiliary request 1 differs from claim 1 of the main request in comprising additionally the following feature:

- d2)₁ "wherein the comparison device is configured to normalize the image of the initial bank note with the image of the counterfeit bank note and to perform position correction to ensure that the position of the image of the

counterfeit banknote is substantially the same as the position of the image of the initial bank note prior to the calculation of the values indicating the degree of similarity between the initial bank note and the counterfeit banknote, and"

VI. Claim 1 of auxiliary request 2 differs from claim 1 of the main request in that features a), b), c), d), d1), and e) are replaced by the following features a)₂, b)₂, c)₂, d)₂, d1)₂, and e)₂, respectively:

- a)₂ "a deposit device (206) configured to receive a plurality of initial bank notes (204) and a counterfeit bank note which is physically the same bank note as one of the initial bank notes after having been identified as counterfeit bank note at an external station;"
- b)₂ "an image extraction device (208) configured to extract one or more initial images (216) from the initial bank notes (204) and the counterfeit bank note;"
- c)₂ "a transaction log device (210) configured to attach a transaction log (214) to the one or more initial images (216) of the initial bank notes (204);"
- d)₂ "a comparison device (222) configured to compare the one or more initial images (216) of the initial bank notes to the one or more images (220) of the counterfeit bank note in order to obtain a comparison result (224),"
- d1)₂ "wherein values of predetermined observation points of the images, which describe image

characteristics, are determined for the one or more initial images (216) of the plurality of initial bank notes and the counterfeit bank note, and the observation point values of the initial bank notes are compared with corresponding observation point values of the counterfeit bank note to calculate a value (702) indicating a degree of similarity between the counterfeit banknote and the initial bank notes for each of the plurality of initial bank notes, wherein the comparison device is configured to obtain and provide as a comparison result said values indicating a degree of similarity for a plurality of initial bank notes for determining a likelihood of a match with the counterfeit bank note; and"

e)₂ "a retrieval device for tracing the counterfeit bank note, which is configured to retrieve the transaction log attached to the initial bank notes for which the comparison device (222) determines that one of said values relating to the comparison of the one or more initial images (216) of the initial bank notes and the image (220) of the counterfeit bank note are within a range of similarity."

VII. Claim 1 of auxiliary request 3 differs from claim 1 of auxiliary request 2 in that features d1)₂ and e)₂ are replaced by the following features d1)₃ and e)₃, respectively:

- d1)₃ "wherein values of predetermined observation points of the images, which describe image characteristics, are determined for the one or more initial images (216) of the plurality of initial bank notes and the counterfeit bank note, and the observation point values of the initial bank notes are compared with corresponding observation point values of the counterfeit bank note to calculate a value (702) indicating a degree of similarity between the counterfeit banknote and the initial bank notes for each of the plurality of initial bank notes, wherein the comparison device is configured to obtain and provide as a comparison result a sorting of said values in order of likelihood of a match with the counterfeit bank note; and"
- e)₃ "a retrieval device for tracing the counterfeit bank note, which is configured to retrieve the transaction log attached to the initial bank notes for which the comparison device (222) determines that one of said values of said sorting relating to the comparison of the one or more initial images (216) of the initial bank notes and the image (220) of the counterfeit bank note are within a range of similarity."

VIII. The parties argued essentially as follows:

- (a) Admissibility of documents E8-E14

Appellant I submitted that documents E8-E13 were filed as further evidence that document E3 had been made available to the public before the priority date of the opposed patent after the opposition division had come to a negative finding in this respect. Furthermore, document E14 was filed as a reaction to the addition of a new feature to claim 1 during the opposition proceedings. Therefore, these documents should be admitted to the proceedings.

The respondent argued that documents E8-E13 were filed late; they should have been filed at the same time as E3 to substantiate the alleged distribution of the brochure E3. In addition, document E14 was filed late and not prima facie highly relevant as it was not concerned with the tracing of bank notes but with the identification of objects. These documents should therefore not be admitted to the appeal proceedings.

(b) Public availability of document E3

Appellant I argued that the invoice E10 of the design company in relation to the drawing up of the brochure E3 was dated "17.12.02" and contained a remark that the data would be sent directly to the printing company. This confirmed that the order for drawing up the brochure and for sending it to the printing company had been given before 17.12.2002. The invoice E11 of the printing company concerning the printing of the brochure E3 contained an indication that 100 copies of the brochure E3 had been sent by the printing company directly to the industrial fair 'CeBIT 2003'. Document E3 had therefore been made available to the public before the priority date of the patent.

The respondent argued that the indication "PIDSY" on the invoices E10 and E11 did not allow the conclusion that they related to the brochure E3 or at least the same version thereof. Furthermore, one could not derive from these invoices that E3 was actually distributed at CeBIT 2003. The mere fact that the brochure was printed did not imply that it was made available to the public. The affidavit E13 was also not specific enough regarding the questions when, with respect to what, where, to whom, and how the disclosure took place, i.e. the disclosure was not shown "up to the hilt". Mentioning document E3 in the 'information disclosure statement' (documents E8 and E9) did not constitute any admission by the patent proprietor that document E3 was part of the state of the art. Document E3 had therefore not been made available to the public.

(c) Main request - inventive step

Appellant I argued that document E3 disclosed that images were captured using the *CashRay* 90 or *CashRay* 180 sensor. This was also confirmed in the affidavit E12 of Mr Strasser. Furthermore, in the lower window on page 4 it was disclosed that a "best match" was obtained for a certain orientation of the counterfeit bank note implying that a similarity based approach was used in the system of E3. That document did not disclose that the values indicating the degree of similarity were *calculated* (feature d1)). The objective technical problem consisted in determining the value. In view of his general technical knowledge or in view of document E14, paragraph [0037], the skilled person would solve this problem by calculating the values.

Appellant II added that uniqueness of bank notes as described in E3 was not useful for their verification but rather for tracing. The subject-matter of claim 1 of the main request therefore lacked an inventive step.

The respondent argued that document E3 did not give any information on *how* the tracing was performed and was silent on the use of images for tracing bank notes. Furthermore, it could not be deduced from E3 that the *same* cash machine was used for tracing the bank notes as for the initial deposit. The remark in document E3 regarding the uniqueness of bank notes related to determining whether it was genuine or not. Document E14 was not relevant for assessing inventive step as it did not relate to the comparison of images of the same object, but to the comparison of an image with nominal values. Furthermore, the problem of the invention was to improve the tracing of counterfeit bank notes and as document E14 was not concerned with that problem it would not have been considered by the skilled person when attempting to solve the problem. The subject-matter of claim 1 of the main request therefore involved an inventive step.

(d) Admissibility of auxiliary request 1 / request for remittal

Appellants I and II requested auxiliary request 1 not to be admitted to the proceedings as it was filed late and raised many new issues which would need discussion. In particular, the subject-matter of the request was complex and would have to be examined regarding intermediate generalizations. Furthermore, a new search might have to be performed to retrieve new relevant

documents of the state of the art. The auxiliary request 1 should therefore not be admitted to the proceedings. Moreover, the request for remittal to the department of first instance should be refused.

The respondent argued that the subject-matter of the request was not complex and related to the comparison between the images. That subject-matter could therefore not have been unexpected and was in fact covered by the original search. Furthermore, a new situation arose since a blow-up of the figures on page 4 of E3 were only submitted by appellant I during oral proceedings. The principle of equal treatment of the parties required the request to be admitted. If it was not admitted this principle required that the request for remittal to the department of first instance for having the opportunity to re-file auxiliary request 1 be granted.

(e) Auxiliary request 2 - inventive step

Appellant I argued that it was disclosed in document E14 (paragraphs [0029] and [0037]) that characteristic features at image points ("Ist-Bildpunkte") were determined by the camera and subsequently stored and compared to values at corresponding points in reference images ("Soll-Bildpunkte"). The skilled person would therefore, starting from document E3 and faced with the same problem as for the main request arrive at the subject-matter of claim 1 of the second auxiliary request. Hence that subject-matter did not involve an inventive step.

The respondent argued that in document E3 there was no disclosure of a comparison between images, but rather differences of characteristics of bank notes with nominal values were compared to each other.

Furthermore, it was not suggested in document E14 to compare a plurality of images with one image. Hence the combination of documents E3 and E14 would not lead the skilled person to the subject-matter of claim 1 of the second auxiliary request, which therefore involved an inventive step.

(f) Auxiliary request 3 - inventive step

According to appellants I and II the feature of sorting the values indicating the degree of similarity did not make the claimed subject-matter inventive as sorting was well-known in the art and it would thus be obvious for the skilled person to incorporate that feature when combining documents E3 and E14.

The respondent argued that by sorting the values indicating a degree of similarity it could be ensured that a relevant transaction log was not missed in case of scores being very close to each other thereby leading to a more accurate counterfeit tracing. This feature was not disclosed anywhere in the prior art so that the subject-matter of claim 1 of the third auxiliary request was inventive.

Reasons for the Decision

1. Admissibility

The appeals are admissible.

2. Admissibility of documents E8-E14

2.1 During the opposition proceedings appellant I had provided arguments why the brochure E3 should be regarded as state of the art within the meaning of Article 54(2) EPC 1973 and had submitted documents E5-E7 as supporting evidence.

In the decision under appeal the opposition division did not regard E3 as state of the art under Article 54(2) EPC 1973. In particular it was held that it was proven neither that "mar03" in the string "BR_PIDSY_mar03_D ZDC" appearing on the last page of E3 meant 'March 2003' nor that the attachment to the e-mail of E5 had the same content as E3.

Appellant I then filed documents E8-E13, among others, with the statement of grounds of appeal. These documents were intended to further demonstrate that E3 belonged to the state of the art within the meaning of Article 54(2) EPC 1973. The filing of these documents is therefore an appropriate and immediate reaction to the negative finding concerning the public availability of E3 expressed in the decision under appeal. Consequently, the board regards the filing of these documents at this late stage to be justified.

2.2 Concerning document E14, the board regards this document to be highly relevant for the assessment of inventive step as detailed below.

2.3 For these reasons the board sees no reason to hold inadmissible documents E8-E14 pursuant to Article 12(4) of the Rules of Procedure of the Boards of Appeal (RPBA, OJ EPO 2007, 536).

3. Public availability of document E3

3.1 Document E3 is a brochure relating to a "Post Identification System", in short named "PIDSY", for identifying the person who deposited a bank note at a cash machine after the bank note has been determined as a counterfeit bank note at the central bank. The brochure relates to the own commercial product of appellant I with the purpose of informing potential customers of this latest development. The board was able to ascertain that the original brochure E3, which was submitted during oral proceedings before the board, corresponded to the copy submitted with the notice of opposition. The text of document E3 is uncontested.

3.2 However, the respondent argued that it had not been shown by appellant I "beyond reasonable doubt" that document E3 had been made available to the public.

It is established jurisprudence of the boards of appeal that information is available to the public if only a single member of the public is in a position to gain access to it and understand it, and if this member of the public is under no obligation to maintain secrecy (see Case Law of the Boards of Appeal of the EPO, 6th Edition 2010, section I.C.1.8.8). Whether or not a member of the public has actually accessed the information is irrelevant (see T 84/83, point 2.4.2 of the Reasons).

As regards the standard of proof, according to established jurisprudence of the boards of appeal, it is generally the "balance of probabilities" (see Case Law of the Boards of Appeal of the EPO, 6th Edition 2010, section VI.H.4.3). Although earlier decisions have applied the standard "beyond reasonable doubt" or "up to the hilt" for alleged public prior use, the standard of proof for the public availability of commercial brochures applied by the boards, even in their recent decisions, is the less strict standard of "balance of probabilities" (see T 743/89 and T 804/05).

In view of the above the board considers the "balance of probabilities" to be the proper standard of proof to be applied for the question of the public availability of document E3. However, the board finds for the reasons given below that the evidence presented by appellant I is such that it would also meet the stricter standard of proof as proposed by the respondent, i.e. that the evidence would also prove the public availability of document E3 beyond reasonable doubt.

- 3.3 In the board's view it is clear that the designation "PIDSY" refers to one and the same system. There is no indication in document E3 that the system described in that document was an improvement of an earlier similar system. Rather, the system is apparently a new development which is intended to achieve compliance with the Council Regulation (EC) No 1338/2001 as well as the ECB framework agreement concerning cash recycling machines.

Furthermore, a version number of the system is indicated neither in document E3 nor in any one of the other documents E5-E13 relating to that document. In each of these documents merely the acronym "PIDSY" is used, sometimes supplemented by an indication that it is a registered trade mark.

Moreover, the indication in documents E10 and E11 that they concern a 4-page document is consistent with the number of pages of E3.

The board is therefore satisfied that the invoices E10 and E11 concern the drawing up and printing, respectively, of the brochure E3.

- 3.4 Appellant I alleged that E3 had been distributed to visitors of its booth at CeBIT 2003 and thereby been made available to the public before the priority date of the opposed patent.

CeBIT is well-known to be one of the largest industrial fairs in the area of information technology. It goes without saying that it was in the own interest of appellant I to inform as many potential customers as possible of the new product "PIDSY", especially at an important industrial fair such as CeBIT 2003 at which many business deals are closed. Appellant I therefore had a strong interest that the brochure E3 would be available at the fair for distribution to visitors of its booth. Hence it would be implausible under these circumstances to assume any obligation of secrecy.

The invoice E11 contains details like colours, format, and paper related to the printing of the brochure E3.

Furthermore, it is indicated in E11 that 1650 copies were delivered ("geliefert"), of which 100 to the industrial fair CeBIT ("Messe CeBIT"), and that the costs of transport to that fair would be invoiced separately.

In 2003 CeBIT took place from 12.03.2003 until 19.03.2003. The date 19.03.2003 of the invoice E11 is therefore consistent with the stated delivery to the fair.

In view of the above the board is satisfied that the brochure E3 was made available to the public at CeBIT 2003.

- 3.5 Furthermore, in the present case there is a period of about 3 months between the delivery of the brochure E3 to appellant I and the priority date 17.06.2003 of the opposed patent.

It was clearly in the interest of appellant I to disseminate the brochure E3 as widely as possible.

The time following CeBIT 2003 falls into the period mentioned above. The board is convinced that during this period visitors of CeBIT 2003 who were not given a copy of E3 at the booth of appellant I because of the limited number of copies available, received such a copy, e.g. by sending one of the 1550 copies received from the printing company (see invoice E11) by mail or by electronic transmission. Such electronic transmission is consistent with document E5 which shows the printout of an e-mail transmitting during the above period, namely on 11.04.2003, a PDF document comprising

the string "BR_PIDSY_mar03_D" also appearing on the last page of the brochure E3 itself.

In view of the above the board is satisfied that the brochure E3 was also sent to potential customers before the priority date of the opposed patent.

3.6 Since the brochure E3 has been made available to the public before the priority date of the patent in suit, it is regarded as state of the art within the meaning of Article 54(2) EPC 1973.

4. Main request - inventive step

4.1 Closest state of the art

Document E3 is regarded as the closest state of the art as it is conceived for the same purpose of tracing counterfeit money and has the most relevant technical features in common with the subject-matter of claim 1.

4.2 Difference between claim 1 and the closest state of the art

4.2.1 Document E3 discloses (see in particular pages 3 and 4) a "post identification system" named "PIDSY" which allows identifying the person who deposited a counterfeit bank note at a cash machine. After being deposited at the cash machine ("Einzahlung im SB-Automaten"), the bank notes are sent to the central bank. In case a bank note is determined to be a counterfeit bank note at the central bank, the data of the counterfeit bank note, which are created by entering the bank note in every orientation into the

deposit device ("Einzahlungsgerät"), are compared with the data of the original deposit ("im Verzeichnis abgelegten Datensatz"). In this way the person who originally deposited the bank note can be determined. There are two options for such tracing: it is performed either centrally at a tracing station or in a decentralized manner ("dezentral am Automaten") at the cash machine of the original deposit.

Using the wording of claim 1, document E3 discloses an automatic teller machine ("SB-Automat") electronically connected to one or more devices, the one or more devices comprising:

- a deposit device ("Einzahlungsgerät") configured to receive an initial bank note and a counterfeit bank note which is physically the same bank note as the initial bank note after having been identified as counterfeit bank note at an external station (this is explicitly described as the decentralized option);
- a transaction log device configured to attach a transaction log ("Datensatz") to the initial bank note (the device creating the data ("Datensatz"));
- a comparison device configured to compare the initial bank note to the counterfeit bank note in order to obtain a comparison result (the device performing the comparison between the data);
- a retrieval device for tracing the counterfeit bank note, which is configured to retrieve the transaction log attached to the initial bank note (the device using the results of the comparison to determine the person who originally deposited the bank note).

4.2.2 Appellant I argued that document E3 disclosed the capture of images since the use of the *CashRay* 90 or *CashRay* 180 sensor was mentioned. The fact that these sensors comprised an image sensor was also confirmed in the affidavit E12 of Mr Strasser.

However, what *kind* of sensors the *CashRay* 90 or *CashRay* 180 sensors are, is not explicitly mentioned in document E3 and cannot be directly and unambiguously derived from that document. Furthermore, in this respect the affidavit E12 cannot add anything to the disclosure of E3 that is not described in that document itself. Therefore, it cannot be regarded to have been disclosed in document E3 that the employed sensors capture images.

In the figure on page 4 of document E3 a computer window titled "PIDSY re-trace" is shown comprising the statement "Best match of the counterfeit in orientation A with the banknote No. 6 in orientation 1 from the file No. 1" followed by "Assessment (scale 0 to 100): 98.4". Appellant I argued that this disclosed that a comparison between the images yielded values indicating the degree of similarity between the bank notes and hence that the sensor output related to the counterfeit bank note was directly compared to the sensor outputs related to the originally deposited bank notes to yield a value indicating the degree of similarity.

By contrast, according to the respondent the system of document E3 checked the genuineness of the bank notes by comparing their signatures with nominal values. Such a check was also performed for the returned counterfeit bank note and the result of that check was compared to

the results of the checks performed on the original bank notes. The best match indicated which of the original bank notes the counterfeit bank note was likely to be.

The board is however of the opinion that the term 'assessment' is broad and it is not evident to which aspect of the retracing it refers. In particular, it cannot be inferred from E3 that it is a measure of the similarity of bank notes, as contended by appellant I.

As to the question which data is being compared in E3, the board notes that it is described in E3 (page 4) that the counterfeit bank note is entered several times in each orientation into the deposit device in order to determine who originally deposited the bank note. However, this would not appear to be necessary if the respondent's interpretation were correct, since the result of a check regarding the genuineness should be available after that the bank note has been entered once.

The board hence finds that the disclosure of document E3 does not directly and unambiguously disclose how the comparison is done. In particular, the sparse information disclosed in E3 does not allow the inference that the comparison is performed according to any one of the two interpretations of the parties referred to above.

- 4.2.3 In view of the above the board comes to the conclusion that the subject-matter of claim 1 differs from the closest state of the art E3 in comprising (see point IV. above) features b) and d1), the parts of features c)

and d) related to images, and the part of feature e) related to similarity.

4.3 Objective technical problem

The differing features are not concerned with tracing the origin of counterfeit bank notes per se, i.e. with identifying the person who deposited a counterfeit bank note. This is already known from the closest state of the art. Therefore, the board does not follow the formulation proposed by the respondent, namely to improve the tracing system.

It is also known from the closest state of the art to identify which of the original bank notes is the counterfeit bank note. What is *not* known from the closest state of the art is how this identification is done.

The differing features achieve an effective identification of the counterfeit bank note among the original bank notes. The objective technical problem can therefore be considered to be the implementation of such identification.

4.4 Skilled person

The starting point for defining the appropriate skilled person is the objective technical problem to be solved (T 422/93, headnote). In the present case, that person is therefore regarded to be the person skilled in the technical field of identifying objects.

4.5 Obviousness

- 4.5.1 It is stated in document E3 (see page 2, left-hand column, last paragraph) that different printing and cutting tolerances, dirt, ageing and wear make each bank note unique.

For determining the genuineness of a bank note certain features have to correspond to a given standard. The effects of dirt, wear and ageing, etc. are in fact undesired for that purpose as they could possibly thwart the determination. The board therefore agrees with appellant II in that the above statement in E3 is not relevant for verifying the genuineness of bank notes. Rather, the skilled person, faced with the task to identify effectively which of the original bank notes is the counterfeit bank note, would be led by the above statement to consider using the characteristics which make each bank note unique for accomplishing that task.

Differences in the printing and cutting as well as dirt affect the visual appearance of the bank note. Ageing and wear may lead to creasing, soiling, tearing, torn edges, and fading of colours, which also affect the visual appearance of the bank note. It would thus be natural to consider capturing the visual appearance of the bank note in order to be able to use its unique characteristics for solving the posed problem.

- 4.5.2 Document E14 is generally concerned with examining objects. It is however explicitly mentioned (see for example paragraph [0007] and claim 1) that a particular example of such examination is the determination of the

identity of objects. Since this is the technical field of expertise of the skilled person, the board is of the opinion that the skilled person would consider document E14 when attempting to solve the posed objective technical problem.

Document E14 discloses (paragraphs [0029] and [0034]-[0037]) an electronic camera A to take images of an object. Characteristic features of the images, such as intensities, contrasts, etc. are stored to be used for determining the degree of similarity between real image points ("Ist-Bildpunkte") and corresponding nominal image points ("Soll-Bildpunkte"). The features of the nominal image points may be deduced from images of the object to be examined.

As a particular example it is described in E14 (paragraphs [0069]-[0071]) that imprints on boxes are each to be associated with one of 1000 known imprints to determine the corresponding manufacturer. Test images are taken of the known imprints from which features at nominal image points are extracted. For each real image the same feature extraction is performed and the degree of similarity is calculated to be the sum of the squared and weighted differences between the nominal and real image points. The nominal image which yields the smallest value is taken to be the best result from which the corresponding manufacturer can be deduced.

The respondent argued that in E14 real images were compared to nominal images taken from another reference object. From the above it is however apparent that it

is disclosed in E14 that the nominal images could as well be test images.

Therefore, the extraction of images, the comparison between images to determine a degree of similarity, and the use of the highest degree of similarity as a criterion for retrieval is known from document E14. Hence, the skilled person would find it obvious to solve the posed technical problem by incorporating the differing features into the device of the closest state of the art.

4.6 Conclusion

In view of the above the board finds that the subject-matter of claim 1 as maintained by the opposition division lacks an inventive step within the meaning of Article 56 EPC 1973.

5. Admissibility of auxiliary requests 1 to 3

5.1 At the oral proceedings before the board the respondent requested that auxiliary requests 1 to 3 as submitted during the oral proceedings be admitted to the appeal proceedings. These requests constitute an amendment to the respondent's case after the oral proceedings have been arranged. According to Article 13(3) RPBA such amendments to a party's case "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 adjourning the oral proceedings".

5.2 Claim 1 of auxiliary request 1 differs from claim 1 of the main request in comprising additionally the feature

d2)₁ (see point V. above). According to the respondent the basis for this additional feature was the description and drawings as originally filed, in particular figure 8 and pages 24 and 25 of the description.

- 5.2.1 Since the additional feature is taken from parts of the description and figures, complex discussions may well arise whether the feature can be directly and unambiguously derived from these parts and the figures or whether an intermediate generalization is involved.
- 5.2.2 Furthermore, the additional feature may well shift the technical focus to a completely new issue which was never before under discussion. In order for the appellants to receive fair procedural treatment it may therefore be necessary to allow the appellants to respond to this new situation by performing an additional search. This would require the oral proceedings to be postponed.
- 5.2.3 In the board's view the provision of the blow-up of the figures on page 4 of E3 during oral proceedings did not alter the respondent's situation regarding potential fallback positions but is an entirely unrelated issue. Hence, there is no valid excuse for not submitting auxiliary request 1 earlier, but at the latest with the letter sent in response to the summons to oral proceedings.
- 5.2.4 Consequently, auxiliary request 1 raises issues which the board and the appellants cannot reasonably be expected to deal with without adjourning the oral proceedings.

In view of the above the board decided not to admit auxiliary request 1 into the proceedings.

5.3 Regarding auxiliary requests 2 and 3 the above issues do not arise. Therefore, the board decided to admit these requests into the proceedings.

6. Request for remittal

6.1 At the oral proceedings before the board the respondent requested that the case be remitted to the department of first instance for having the opportunity to re-file auxiliary request 1.

6.2 Auxiliary request 1 was not admitted into the proceedings by the board pursuant to the provisions of Article 13(3) RPBA for the reasons stated under point 5 above. The purpose of these provisions is to allow the board to come to a decision at the end of the oral proceedings before the board to thereby bring the case to a conclusion. Remitting the case to the department of first instance under Article 111(1) EPC 1973 so that auxiliary request 1 could be re-filed would plainly be in contradiction to the reasons for not admitting auxiliary request 1.

6.3 Consequently, the request to remit the case to the department of first instance is refused.

7. Auxiliary request 2 - inventive step

- 7.1 Compared to claim 1 of main request claim 1 of the second auxiliary request comprises the following additional features (see points IV. and VI. above):
- (i) with respect to features a), b), c), d), e) of claim 1 of the main request the corresponding features a)₂, b)₂, c)₂, d)₂, e)₂ specify that the deposit device is configured to receive a *plurality* of bank notes, and
 - (ii) with respect to feature d1) of claim 1 of the main request the corresponding feature d1)₂ further specifies that the calculation of the degree of similarity between the initial and counterfeit bank notes uses the comparison of observation point values describing image characteristics.

- 7.2 The cash machine of document E3 is intended to be used by the clients of the corresponding bank who are able to deposit their bank notes in it, just like the automatic teller machine of the patent. The feature concerning the plurality of bank notes is therefore regarded to be already disclosed in document E3 representing the closest state of the art.

In addition to the differing features of the main request listed under point 4.2.3 above the subject-matter of claim 1 of the second auxiliary request further differs from the closest state of the art in the features listed under point 7.1 (ii) above.

The additional features aid in the implementation of an effective identification of the counterfeit bank note. The objective technical problem to be considered when

assessing the inventive step of the subject-matter of claim 1 of the second auxiliary request is therefore the same as that defined above with respect to the main request (see point 4.3 above), namely how to implement such an identification.

- 7.3 Document E14 discloses (paragraphs [0029], [0034]-[0038]) that characteristic features at *real image points* ("Ist-Bildpunkte") of real images are stored in a memory C and those at corresponding *nominal image points* ("Soll-Bildpunkte") of nominal images are stored in a memory H. In the unit E a calculation is carried out to determine a degree of similarity between the features at the real image points and those at the corresponding nominal image points, for example by evaluating the sum of the absolute values of the feature differences.

The argument of the respondent that it was not suggested in document E14 to compare a plurality of images with one image is not relevant as this is already known from the closest state of the art E3.

The board is therefore of the opinion that it would be obvious for the skilled person, when starting from document E3 and faced with the problem of how to effectively identify the counterfeit bank note, to use the comparison of image characteristics at certain image points for calculating the degree of similarity between the initial and counterfeit bank notes.

The subject-matter of claim 1 of the second auxiliary request accordingly does not involve an inventive step under Article 56 EPC 1973.

8. Auxiliary request 3 - inventive step

8.1 Compared to claim 1 of the second auxiliary request claim 1 of the third auxiliary request comprises the following additional features (see point VII. above):

- a further specification of the sorting of the values indicating the degree of similarity in the order of likelihood of a match (feature d1)₃), and
- use of the results of the sorting in the retrieval of the appropriate transaction log (feature e)₃).

Claim 1 of the third auxiliary request is therefore regarded to further differ from the closest state of the art in comprising these additional features.

8.2 The board agrees with the respondent in that the additional features help to avoid that a relevant transaction log is missed, when, for example, several values indicating the degree of similarity are close to each other. In this way these features aid in the implementation of an effective identification of the counterfeit bank note. Therefore, the objective technical problem to be considered when assessing the inventive step of the subject-matter of claim 1 according to the third auxiliary request is again regarded to be the same as that defined above with respect to the main request (see point 4.3 above), namely how to implement such an identification.

8.3 When, starting from the device of E3, the skilled person implements the effective identification of counterfeit bank notes with the aid of the teaching of E14, each of the deposited initial bank notes will

yield a value indicating the degree of similarity with the counterfeit bank note. In the board's view the skilled person would recognize that a similarity-based approach might not always yield the correct answer and that it might therefore not be appropriate to blindly retrieve the transaction log corresponding to the bank note which yields the highest value for the degree of similarity. Sorting these values in the order of likelihood of a match is regarded to be a measure which lies within the normal practice of the skilled person to take imperfections of a similarity-based approach into account. In this way several of the highest values indicating the degree of similarity could be taken into account when retrieving the corresponding transaction logs, especially when these values are close to each other.

In view of the above the board is of the opinion that it would be obvious for the skilled person to consider the additional features listed under point 8.1 above in order to solve the posed problem.

Consequently, the subject-matter of claim 1 of the third auxiliary request does not involve an inventive step under Article 56 EPC 1973.

9. Conclusion

In view of the above the board is of the opinion that, taking into consideration the amendments made by the patent proprietor, the patent and the invention to which it relates do not meet the requirements of the EPC. Therefore the patent is revoked (Article 101(3)(b) EPC).

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The request for remittal to the department of first instance is refused.
3. The patent is revoked.

The Registrar:

The Chairman:

S. Sánchez Chiquero

G. Eliasson