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Datasheet for the decision of 14 September 2021

Case Number: T 0093/18 - 3.4.03

Application Number: 10757478.2

Publication Number: 2465098

IPC: G07D7/20, G07D7/00, G06F17/14

Language of the proceedings: EN

Title of invention:
AUTHENTICATION OF SECURITY DOCUMENTS, IN PARTICULAR OF BANKNOTES

Patent Proprietor:
KBA-NotaSys SA

Opponent:
Bundesdruckerei GmbH

Headword:

Relevant legal provisions:
EPC Art. 56, 100(a), 101(2)

Keyword:
Inventive step - (no)
Patent revoked

Decisions cited:

Catchword:

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Case Number: T 0093/18 - 3.4.03

D E C I S I O N
of Technical Board of Appeal 3.4.03
of 14 September 2021

Appellant: (Opponent)	Bundesdruckerei GmbH Kommandantenstrasse 18 10969 Berlin (DE)
Representative:	Richardt Patentanwälte PartG mbB Wilhelmstraße 7 65185 Wiesbaden (DE)
Respondent: (Patent Proprietor)	KBA-NotaSys SA PO Box 347 55, Avenue du Grey 1000 Lausanne 22 (CH)
Representative:	Koenig & Bauer AG - Lizenzen - Patente - Friedrich-Koenig-Straße 4 97080 Würzburg (DE)
Decision under appeal:	**Decision of the Opposition Division of the European Patent Office posted on 16 November 2017 rejecting the opposition filed against European patent No. 2465098 pursuant to Article 101(2) EPC.**

Composition of the Board:

Chairman	T. Häusser
Members:	M. Papastefanou
	G. Decker

Summary of Facts and Submissions

I. The appeal of the opponent is against the decision of the opposition division rejecting its opposition against the European patent 2 465 098 B1.

II. Reference is made to the following documents, cited in the impugned decision:

A1: WO 2008/146262 A2

A3: Glock, Stefan et al., *"Feature Extraction Algorithm for Banknote Textures Based on Incomplete Shift Invariant Wavelet Packet Transform"*, Pattern Recognition, p. 422-431, The 31st annual pattern recognition symposium of the German Association for Pattern Recognition, September 9-11, 2009

III. The opposition was based on the ground of lack of inventive step (Article 100(a) EPC in combination with Articles 52(1) and 56 EPC).

In the decision under appeal, the opposition division held that the subject matter of claim 1 of the patent as granted involved an inventive step with respect to the combination of A3 with the common general knowledge of the skilled person or with A1 (see points 5 and 6 of the reasons of the impugned decision), as well as with respect to the combination of A1 with A3, i.e. with A1 as a starting point (*ibid.*, point 7).

In arriving at this conclusion, the opposition division also held that the priority claim of the patent was not valid and the effective date of the relevant claim was the filing date of the application, 11 August 2010 (*ibid.*, point 3), as well as that A3 belonged to the

state of the art according to Article 54(2) EPC (*ibid.*, point 4).

IV. The appellant opponent ("opponent") requested that the decision under appeal be set aside and the patent be revoked in its entirety.

The respondent patent proprietor ("proprietor") requested that the appeal be dismissed.

V. Claim 1 of the patent as granted is worded as follows (emphasis in the original):

A method for checking the authenticity of security documents, in particular banknotes, wherein authentic security documents comprise security features (41-49; 30; 10; 51, 52) printed, applied or otherwise provided on the security documents, which security features comprise characteristic visual features intrinsic to the processes used for producing the security documents, said method comprising the steps of:

- *digitally processing a sample image of at least one region of interest (R.o.I.) of the surface of a candidate document to be authenticated, which region of interest encompasses at least part of said security features, said digital processing including performing a decomposition of the sample image by means of wavelet transform (WT) of the sample image and extracting classifying features (σ^2 , C, ...) from the decomposition of the sample image, and*
- *deriving an authenticity rating of the candidate document based on the extracted classifying features (σ^2, C, ...),*

characterized in that *said decomposition of the sample image is based on an incomplete wavelet packet*

transform (WPT) of the sample image and includes decomposition of the sample image into a wavelet packet tree comprising at least one approximation node ($A_{i,j}$) and detail nodes ($cV_{i,j}$, $cH_{i,j}$, $cD_{i,j}$), and looking for the detail node within the wavelet packet tree that has the highest information content.

VI. The parties' arguments can be summarised as follows:

According to the **opponent**, the skilled person starting from A1 and looking to improve the authentication of the security documents would consider A3. The combination of the teachings of A1 and A3 would lead to the claimed invention in an obvious manner. Claim 1 of the patent, therefore, did not involve an inventive step.

According to the **proprietor**, there was no motivation from the skilled person starting from A1 to take A3 into consideration, since the authentication process of A1 was complete. Combining A1 with A3 was not obvious and claim 1 of the patent involved an inventive step.

The arguments of the parties are dealt with in detail in the reasons.

Reasons for the Decision

1. The appeal is admissible.

2. The claimed invention

The claimed invention relates to the authentication of security documents, in particular banknotes.

2.1 Banknotes comprise usually several security features, which are printed/applied onto the banknote paper with various techniques, such as line offset, letterpress printing, foil printing or intaglio printing. Intaglio printing is carried out using a printing press which prints a pattern onto the paper exercising high pressure. In this way the obtained printed pattern on the paper has a relief. This allows for the printing of patterns with high resolution and sharpness (see paragraphs [0022] to [0024] of the patent).

Since intaglio printing is largely used for the printing of banknotes, intaglio presses are not generally available. A potential counterfeiter who wishes to produce a perfect copy of a bank note (or other security document) must reproduce the intaglio printed patterns using other printing or copying techniques. However, even with printing techniques of high quality (such as offset printing), it is not possible to obtain the sharpness and contrast of the intaglio printed patterns (*ibid.*, paragraphs [0027] and [0028]).

2.2 Authenticity checks of banknotes based on the security features obtained by intaglio printing are known in the art (see, for example, document A1). The authenticity check is based on scanning a banknote and analysing the scanned image using image/signal processing algorithms. A known algorithm used in this context is the wavelet transform (or transformation), which decomposes the digital image on the basis of wavelets (brief oscillations) (see also paragraphs [0029] and [0030] of the patent).

2.3 The claimed method proposes the use of a specific version of the wavelet transformation, the wavelet

packet transform (WPT), which provides better results in the middle and higher frequency scales when decomposing a digital image. This provides an improved authenticity check, since the intaglio printed features are decomposed mainly in those frequency scales (*ibid.*, paragraphs [0031] to [0035]).

3. Inventive step (Articles 100(a), 52(1) and 56 EPC)

3.1 It is common ground that the priority claim of the patent is invalid and that document A3 belongs to the prior art according to Article 54(2) EPC (see point III above).

3.2 A1 as closest prior art

3.2.1 A1 describes a method for checking the authenticity of security documents, and in particular banknotes. The method in A1 is similar to the one defined in the claims of the opposed patent (e.g. compare claim 1 of the patent with claim 1 of A1). According to the description of the patent, the claimed invention aims at improving the method(s) of A1 (see for example paragraph [0008] of the patent).

It is also uncontested by the parties that A1 discloses all the features of the preamble of claim 1 as granted (see for example page 7, line 1 to page 8, line 8 and claims 1 and 5 of A1).

3.3 Difference and technical problem

3.3.1 Claim 1 differs from A1 by its characterising features, which indicate that the claimed method uses an incomplete wavelet packet transform (WPT) of the sample image. In A1 the method is based on another version of

the known Wavelet Transform (WT), the Discrete Wavelet Transform (DWT) (see for example claim 6 of A1).

Hence, the two methods differ in which type of wavelet transform they use and in that the detail node within the wavelet packet tree is sought that has the highest information content.

3.3.2 According to the patent, the authenticity check is based mainly on the features of the security document related to (produced by) intaglio printing (see e.g. paragraph [0033]). In the context of the WT in general, the features (structures) printed with intaglio printing techniques can be considered textures with certain ranges of spatial frequencies.

The WPT algorithm is a generalisation of the WT, which decomposes better the middle frequency scales of the sampled image when compared to the WT (see paragraphs [0034] and [0035] of the patent).

This provides for a better discrimination between intaglio-printed textures and medium- or high-quality commercial offset printed textures, which is also one of the stated aims of the claimed invention (see paragraph [0010] of the patent).

3.3.3 Starting from A1 the skilled person is thus faced with the problem of how to improve the discrimination between intaglio-printed security textures of the security document and commercial offset printed textures of a (possibly counterfeit) copy, and thus improving the authenticity check of the banknotes (security documents).

3.4 Solution and obviousness

3.4.1 Document A3 describes the use of the WPT as a feature extraction algorithm of banknote textures. It is noted that A3 was written by the inventors of the invention in the opposed patent and a substantial part of its content is repeated in the description of the patent.

As explained in A3, the result of the image decomposition using the WPT results in a tree-structured WPT with a richer resolution of the middle and high-frequency scales (see Figure 1 and the second full paragraph on page 423). The specific use of the WPT in relation to the discrimination of intaglio-printed textures is discussed in section 3.1 in connection with Figure 3 as well as in Section 4 in connection with Figure 7 of document A3. At the end of page 430 (last page before the acknowledgement and references), it is stated that textures can be separated with a classification rate of up to 100%.

3.4.2 The main point of discussion between the parties was whether the skilled person starting from A1 and wishing to improve the authentication method, especially with respect to intaglio-printed features, would take A3 into consideration or not.

3.4.3 The opposition division held that there was no direct link from A1 to A3 and so the skilled person would not consider A3 (see point 7.3 of the reasons of the impugned decision).

The board does not agree with this conclusion of the opposition division. As the opponent argued (see for example the last paragraph on page 13 of the statement of the grounds of appeal), there is no need for a

"direct link" between A1 and A3 for the skilled person to take the teaching of A3 into consideration. In the context of the problem-solution approach, the skilled person is faced with the objective technical problem and A3 suggests a solution to this problem within the same technical context. This is considered sufficient in the present case for the skilled person to take A3 into consideration.

3.4.4 The proprietor argued that the authentication process described in A1 was a complete process and there were no doubts about its success. The skilled person, therefore, had no reason to start looking for other prior art documents (i.e. other authentication processes).

Moreover, A3 related to the differentiation between banknote textures produced by offset and those produced by intaglio printing, which was a rather specialised process and did not relate to authentication of security documents in general. The skilled person had no reason to take such a specialised process into consideration.

3.4.5 The board is not convinced by these arguments of the proprietor.

As the opponent also pointed out, in the context of the problem-solution approach, a difference between claim 1 and A1 was established and the technical effects of this difference were identified. On the basis of these technical effects, an objective technical problem to be solved was formulated. It is not decisive that A1, when taken in isolation, may describe a complete process with guaranteed success. Since a technical problem to be solved has been formulated, the skilled person has

to seek a solution and would, therefore, look for such solutions in the prior art.

3.4.6 Regarding the argument that A3 relates to a specialised process regarding the differentiation of intaglio-printed textures from offset-printed textures, the board notes that this is also what A1 (and the patent) does. As described in A1, the authentication process is based on the fact that security features produced by intaglio printing on security documents are usually produced with other printing processes (e.g. offset) in a counterfeit copy. A1 aims, thus, at differentiating security features (textures) produced by intaglio printing (authentic documents) from those produced by other printing methods (counterfeit documents), see for example page 29, lines 8 to 17, page 30, lines 5 to 21 and Figure 16b of A1).

In a similar way, A3 describes how intaglio printing presses are not readily available because they are used for printing banknotes and so, intaglio printed textures are "almost impossible to reproduce" with commercial printing methods (see first paragraph on page 423). As shown in Figure 3, A3 also relates to distinguishing textures produced by intaglio printing from those produced with other (in this case offset) printing methods.

3.4.7 More generally, A1 mentions the advantages of security features printed by the intaglio process (see e.g. page 2, first full paragraph) and also states that the invention in A1 aims at exploiting these advantages in order to provide an improved authentication process (see page 7, lines 1 to 6).

With respect to that, A3 states explicitly that the

intaglio printing "plays a major role in banknote reliability" (page 422, last paragraph). It also mentions the weaknesses of the WT in decomposing the middle frequency scales of an image and that the WPT provides an improved performance in this frequency range (see point "1 Introduction" on page 422). A3 states that, by using the WPT, the discrimination is successful in 100% of the cases (see last paragraph on page 430).

3.4.8 The board, thus, concludes that the skilled person starting from A1 and seeking to improve the identified technical problem (see point 3.3.3 above), would take A3 into consideration.

3.4.9 It is common ground that A3 discloses the characterising features of claim 1 of the patent:

- *the decomposition of the sample image is based on an incomplete wavelet packet transform of the sample image* (see for example the title and the abstract of A3),
- *and includes decomposition of the sample image into a wavelet packet tree comprising at least one approximation node and detail nodes* (see Figure 1 and the first lines in Section 2 on page 423),
- *and looking for the detail node within the wavelet packet tree that has the highest information content* (see section 3.2, in particular the first paragraph on page 427).

3.5 The skilled person would therefore combine the teachings of A1 and A3 and apply the WPT algorithm in the authentication method of A1 in order to obtain better results. The implementation of the WPT itself in the described method seems to be an obvious step for

the skilled person. This is in line with the fact that neither A1 nor the patent suggest any particular considerations, constraints or difficulties to be taken into account in the implementation of the corresponding wavelet transform algorithms, which are themselves generally known in the art.

The board's conclusion is, thus, that the subject-matter of claim 1 of the patent as granted does not involve an inventive step within the meaning of Article 56 EPC.

4. Consequently, the ground for opposition related to lack of inventive step (Article 100(a) in combination with Articles 52(1) and 56 EPC) as invoked by the opponent prejudices the maintenance of the patent as granted and the patent is to be revoked (Article 101(2) EPC).

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The patent is revoked.

The Registrar: The Chairman:

S. Sánchez Chiquero T. Häusser

Decision electronically authenticated