Internal distribution code:

(A) [-] Publication in OJ
(B) [-] To Chairmen and Members
(C) [-] To Chairmen
(D) [X] No distribution

Datasheet for the decision of 15 October 2025

Case Number: T 1260/23 - 3.3.06

Application Number: 12154483.7

Publication Number: 2466005

IPC: D21H21/16

Language of the proceedings: EN

Title of invention:
A soil and/or moisture resistant secure document

Patent Proprietor:
Crane & Co., Inc.

Opponents:
Landqart AG
Giesecke+Devrient Currency Technology GmbH
Oberthur Fiduciaire SAS

Headword:
Crane/secure document

Relevant legal provisions:
EPC Art. 84, 83, 123(2), 56, 76(1)
RPBA 2020 Art. 13(2), 12(4)

Keyword:
Claims - lack of clarity no ground for opposition
Sufficiency of disclosure - (yes)
Amendments - added subject-matter (no) - extension beyond the content of the application as filed (no)
Divisional application - added subject-matter (no)
Inventive step - (yes)
Amendment to case - amendment admitted (yes) - amendment within meaning of Art. 12(4) RPBA 2020
Amendment after summons - exceptional circumstances (no) - taken into account (no)

Decisions cited:
G 0001/03, G 0003/14, T 1041/17, T 1465/23

Catchword:

Europäisches Patentamt
European Patent Office
Office européen des brevets

Beschwerdekammern

Boards of Appeal

Chambres de recours

Boards of Appeal of the
European Patent Office
Richard-Reitzner-Allee 8
85540 Haar
GERMANY
Tel. +49 (0)89 2399-0

Case Number: T 1260/23 - 3.3.06

D E C I S I O N
of Technical Board of Appeal 3.3.06
of 15 October 2025

Appellant: (Patent Proprietor)	Crane & Co., Inc. 30 South Street Dalton, MA 01226 (US)
Representative:	Grünecker Patent- und Rechtsanwälte PartG mbB Leopoldstraße 4 80802 München (DE)
Appellant: (Opponent 3)	Oberthur Fiduciaire SAS 7 avenue de Messine 75008 Paris (FR)
Representative:	Ipsilon Le Centralis 63, avenue du Général Leclerc 92340 Bourg-la-Reine (FR)
Respondent: (Opponent 1)	Landqart AG Kantonsstrasse 16 7302 Landquart (CH)
Representative:	Bremi, Tobias Hans Isler & Pedrazzini AG Giesshübelstrasse 45 Postfach 1772 8027 Zürich (CH)
Respondent: (Opponent 2)	Giesecke+Devrient Currency Technology GmbH Prinzregentenstraße 159 81677 München (DE)

Representative: LKGLOBAL
Lorenz & Kopf Patentanwalt
Attorney at Law PartG mbB
Brienner Straße 11
80333 München (DE)

Decision under appeal: **Interlocutory decision of the Opposition Division of the European Patent Office posted on 15 May 2023 concerning maintenance of the European Patent No. 2466005 in amended form.**

Composition of the Board:

Chairman J.-M. Schwaller
Members: S. Arrojo
C. Heath

Summary of Facts and Submissions

I. Appeals were filed by the proprietor and opponent 3 against the decision of the opposition division to maintain European patent No. 2 466 005 in amended form on the basis of the claims according to auxiliary request 8 filed during oral proceedings on 30 March 2023.

II. In its statement of grounds of appeal, the proprietor/ appellant requested that the decision under appeal be set aside and the patent be maintained on the basis of auxiliary request 6 of the decision under appeal (filed as auxiliary request III on 20 April 2022) or, as an auxiliary measure, on the basis of auxiliary request 1 enclosed therewith. Auxiliary requests 1 to 5 and 8 of the decision under appeal were no longer maintained.

III. Claim 1 according to **auxiliary request 1** reads as follows:

"1. A method for imparting soil and/or moisture resistance to a porous substrate used in the production of secure documents and having a thickness without obscuring optically variable effects generated by non-porous security devices, the method comprising:
applying a soil and/or moisture resistant formulation to opposing surfaces of the porous substrate;
forcing the soil and/or moisture resistant formulation into the pores of the substrate, the formulation thereby penetrating and extending throughout at least a portion of the thickness of the substrate; and
removing excess formulation from opposing surfaces of the substrate, wherein the porous substrate has one or more non-porous, optically variable, security devices

contained on, or exposed through one or more windows in, at least one surface of the substrate, wherein exposed surfaces of the one or more non-porous, optically variable, security devices are left substantially free of the soil and/or moisture resistant formulation, wherein a size press is used to force the soil and/or moisture resistant formulation into the pores of the substrate and to remove excess formulation from opposing surfaces thereof,

wherein from about 5 to about 20 % by dry weight, based on the total dry weight of the treated substrate, of the soil and/or moisture resistant formulation is forced into the pores of the substrate from both sides thereof,

wherein the soil and/or moisture resistant formulation is an aqueous formulation containing one or more thermoplastic resins selected from the group of resins having an ester bond, polyurethane resins, functionalized polyurethane resins, and copolymers and mixtures thereof, wherein the soil and/or moisture resistant formulation is an aqueous polymer dispersion comprising dispersed particles having average particle sizes ranging from about 50 to about 150 nanometers,

wherein the aqueous polymer dispersion comprises from about 10 to about 40% by dry weight of resin particles or solids selected from the group of polyurethane resins, polyether-urethane resins, urethane-acrylic resins, and mixtures thereof."

IV. In its statement of grounds of appeal, opponent 3 and also appellant requested that the patent be revoked, arguing that the main request in the appeal proceedings did not meet the requirements of Articles 83, 84 and 123(2) EPC and was obvious starting from **D16 (EP 1 319 104 B1)** as the closest prior art.

V. In its reply, the proprietor further requested as an auxiliary measure that the patent be maintained on the basis of auxiliary requests 2 to 11, with auxiliary requests 2 and 7 to 11 respectively corresponding to auxiliary requests 8 and 9 to 13 in the first instance proceedings. In case the board intended not to admit the auxiliary requests filed in response to an allegedly mistaken interpretation of **G 3/14**, the case should be remitted to the first instance in order to correct this error.

VI. Opponent 1 requested that the appeal filed by the proprietor be dismissed and submitted additional documents D99 and D100.

VII. Opponent 3 also submitted these two documents.

VIII. Subsequently, the parties made the following submissions:

On 26 April 2024, the proprietor requested that D99 and D100 not be admitted into the proceedings.

On 25 October 2024, opponent 3 submitted additional arguments against the admittance and allowability of the proprietor's requests.

On 19 December 2024, the proprietor filed additional arguments.

IX. On 16 April 2025, the board issued the preliminary opinion that the main request was not allowable under Article 84 EPC and that auxiliary request 1 appeared to meet the requirements of the EPC.

X. In further submissions dated 5 June and 16 July 2025, opponent 1 requested that Mr. Kocher be allowed to make oral contributions as a technical expert at the forthcoming hearing. It also cited the decision of the opposition division in the parallel case EP 3 231 938, including a witness hearing that clarified certain aspects of the prior use "DOKONG 10", also cited in the present case. It requested that this new evidence should be admitted into the proceedings, because once it was taken into account, the claimed invention was obvious starting from this prior use.

XI. On 30 July 2025, the proprietor requested neither to admit these new submissions nor to permit oral submissions by Mr. Kocher under Art. 13(1) and (2) RPBA

XII. In a submission dated 4 September 2025, opponent 3 filed D101 (Declaration by Mr. Rosset), D102 (analysis of samples concerning the cited prior uses), D103a (decision of the opposition division in the parallel case), D103b (minutes of the oral proceedings) and D104 (transcription of the hearing of Mr. Rosset as witness in the parallel case). These documents were then relied upon to submit inventive step objections against claim 1 starting from the prior use "DOKONG 10".

XIII. In a submission dated 2 October 2025, the proprietor requested that the new facts and evidence filed by opponent 3 not be admitted into the proceedings under Art. 13(1) and (2) RPBA.

XIV. With submission of 6 October 2025, opponent 3 argued in favour of the admittance of the new facts and evidence.

XV. At the oral proceedings, which took place on 15 October 2025, the proprietor withdrew the main

request. At the end of the debate, the proprietor and appellant requested that the contested decision be set aside and the patent be maintained on the basis of auxiliary request 1 annexed to the grounds of appeal or, as an auxiliary measure, on the version upheld by the opposition division, or on the basis of auxiliary requests 3 to 6 filed with the reply of the proprietor, or of auxiliary requests 3' to 6' or 3'' to 6'' filed with the submission dated 19 December 2024, or of auxiliary requests 7 to 11 filed with its reply to the grounds of opponent 3.

Opponent 3 and appellant requested that the patent be revoked.

Opponent 1 and party as of right as well as respondent to the proprietor's appeal, requested that the appeal filed by the proprietor be dismissed.

Opponent 2 and party as of right as well as respondent to the proprietor's appeal did not file any written submissions and did not attend the oral proceedings.

Reasons for the Decision

1. Auxiliary request 1 - Admittance

1.1 This request was filed for the first time at the appeal stage, so its admittance is governed by Article 12(4) RPBA, according to which the board’s discretion shall be exercised in view of, *inter alia*, the complexity of the amendment, the suitability of the amendment to address the issues which led to the decision under appeal, and the need for procedural economy.

1.2 Claim 1 at issue corresponds to that in the version upheld by the opposition division (now auxiliary request 2), with the sole difference being that the list of polymers has not been restricted to polyurethane. For the board, the restriction of the list of polymers in the request upheld by the opposition division was arguably an attempt to overcome a clarity objection raised for the first time at the oral proceedings. The objection was based on an alleged ambiguity arising from the definition of two lists of polymers in claim 1, with the first including a broad reference to "*resins having an ester bond*", and the second focusing on more specific chemical groups. According to the decision, it was unclear whether the second list was intended to limit the scope of all the groups in the first list, or simply to propose specific forms for some of them; thus, the claim could be challenged for lack of clarity under the principles set out in **G 3/14**, as the ambiguity stemmed from the deletion of the term "preferably" before the second list when granted claim 5 was incorporated into the contested claim 1.

1.3 The proprietor argued that the request should be admitted, as it was filed in response to clarity objections raised for the first time during the oral proceedings before the opposition division. Moreover, in view of the principles established in **G 3/14**, these objections should not have been raised at all, as they concerned subject-matter already defined in the claims as granted.

1.4 The opponents argued that the request should have been filed prior to the oral proceedings before the opposition division at the latest, because the amendments (i.e. the deletion of the product claims)

also constituted an attempt to overcome objections filed earlier in the proceedings.

1.5 The board observes that, according to the minutes (points 2.38 to 2.41) and the decision under appeal (point 9.1.2), the clarity objections against method claims 1 and 4 and product claims 5 and 6 were raised and discussed for the first time during the oral proceedings before the opposition division. The opposition division correctly decided to exercise its discretion to admit auxiliary request 8 into the proceedings, as the subject-matter of this request was adapted to overcome the clarity objections raised against both types of claims. However, as explained in the following section, the board has concluded that the clarity objections against the method claims should not have been raised, in accordance with the principles established in **G 3/14**. It is also apparent from the decision under appeal, point 8.1.2, that the opposition division was not minded to admit auxiliary requests which were not clearly allowable.

Since auxiliary request 1 represents an attempt to overcome the clarity objections raised against the product claims, the proprietor had no reason to file this request before those objections were raised for the first time during the oral proceedings. Furthermore, by that stage, the opposition division had already indicated that the definition of the polymer lists derived from granted claims 4 and 5 was not allowable under Article 84 EPC. Therefore, the proprietor had no reason to file auxiliary request 1 in its present form during the oral proceedings, as it would in any event not have been admitted.

1.6 The board also notes that the assessment of patentability for the request at issue is essentially identical to that for auxiliary request 2 (upheld by the opposition division). Admitting auxiliary request 1 does therefore not adversely affect procedural economy. Moreover, as is apparent from the preliminary opinion and from the conclusions set out in the present decision, the board considers that this request appropriately addresses the issues which led to the decision under appeal. The board thus exercised its discretion under Article 12(4) RPBA to admit auxiliary request 1 into the appeal proceedings.

2. Auxiliary request 1 - Article 84 EPC

2.1 Both the opposition division and the opponents argued that the incorporation of claims 4 and 5 as granted into claim 1 as granted and the deletion of the term "preferably" led to a problem under Article 84 EPC, because it was unclear whether the second list of polymers (i.e. "*group of polyurethane resins, polyether-urethane resins ...*") was intended to restrict the previously defined group of polymers (i.e. "*group of resins having an ester bond, polyurethane resins ...*"), or simply to complement it by proposing additional polymers.

2.2 For the opposition division, the claim could be challenged for lack of clarity under the principles set out in **G 3/14**, as the ambiguity stemmed from the deletion of the term "preferably" before the second list when claims 1, 4 and 5 as granted were combined.

2.3 The opponents also argued that the clarity objections complied with the conditions set out in **G 3/14**, because claim 1 at issue was not based solely on a combination

of dependent claims but also incorporated features taken from different parts of the description. Furthermore, as became apparent from the discussion on inventive step, the features recited in the claim were regarded as being closely interrelated, so it could not be argued that the meaning of the features in the granted claims 4 and 5 had not been affected by their combination with the other features in claim 1 at issue.

2.4 The board has however concluded that, in accordance with the principles established in decision **G 3/14**, the issue of clarity is not to be examined in respect of the contested features for the following reasons:

2.4.1 The position of the opposition division is based on the assumption that the term "preferably" somehow clarified that the features in question represented a further limitation of the aqueous formulation defined in claim 4 as granted. The board cannot agree with this argument, as the introduction of certain features by means of the term "preferably" merely indicates that they are optional, thereby rendering the defined subject-matter equivalent to that of an additional dependent claim. As argued by the proprietor, this corresponds to the case described in Reasons 3(a) of **G 3/14** (the so-called "Type A(i)" cases), and is therefore not open to clarity objections during opposition or opposition-appeal proceedings.

2.4.2 It is equally irrelevant to the underlying question whether part of the amendments to claim 1 are based on information taken from the description, or whether the features in the claim are functionally interrelated. The only decisive question for assessing compliance with the requirements of **G 3/14** is whether the alleged

lack of clarity arises, at least in part, from subject-matter which was not present in the claims as granted, that is, whether it is the amendment (extending beyond the combination of features as granted) that introduces the clarity issue.

2.4.3 In the present case, the clarity objections are based on the argument that the first and second lists were not drafted in a clearly convergent manner (i.e. the sub-groups of the second list do not necessarily fall within the broader group of "resins having an ester bond"), and that there was no explicit indication that the second group of polymers is necessarily a further restriction of the first group.

Irrespective of the board's opinion on the merits of these clarity objections, it is evident that they relate exclusively to the wording of claims 4 and 5 as granted, and not to any functional interaction or subject-matter resulting from combining these features with the other features of claim 1.

2.5 The board therefore concludes that, in accordance with the principles established in decision **G 3/14**, the contested features are not open to examination under Article 84 EPC.

3. Auxiliary request 1 - Article 83 EPC

3.1 The opponents argued that the lack of a specific definition for the term "average particle size" would give rise to an insufficient disclosure of the invention.

3.2 The board cannot agree with this argument, as any alleged ambiguity regarding how a parameter is measured

or interpreted affects only the scope of the claims, and therefore constitutes a potential clarity issue under Article 84 EPC, rather than an insufficiency of disclosure problem under Article 83 EPC.

3.3 In the present case, the board has concluded that a skilled person would encounter no serious difficulty in reproducing the invention, as this merely requires measuring the "average particle size" using any of the methods known in the art.

3.4 The board therefore concludes that the requirements of Article 83 EPC are satisfied.

4. Auxiliary request 1 - Article 123(2) EPC

4.1 Claim 1 at issue is allegedly based on a combination of the subject-matters of claims 1, 3, 4, 5 and 7 as filed, with the additional indication that the method does not obscure optically variable effects generated by non-porous security devices.

4.2 The opponents argued that the amendments were based on multiple selections from different parts of the application as filed. The only reference in the specification to the effect of not obscuring the optical elements was found in paragraph [0014], in connection with a method broader than that defined in claim 1 as filed. Furthermore, claims 1, 3, 4 and 7 as filed were all dependent on claim 1, so any combination would necessarily involve multiple selections.

4.3 The board disagrees with these arguments for the following reasons:

It is first noted that the purpose of preventing negative effects on the visibility of the security elements is not only described in the embodiment of paragraph [0014] as filed, but is also presented in paragraphs [0009] to [0012] and [0020] of the description as filed as one of the key technical contributions of the alleged invention. No selection is therefore required to incorporate this feature into claim 1 at issue.

The board furthermore agrees with the opposition division that no selection is required to combine claims 1, 3, 4, 5, and 7 as filed, because although claims 3, 4, and 7 refer only to claim 1 as filed, it is apparent from paragraphs [0012] to [0020] and [0026] to [0035] that the contested combination merely involves combining the key technical contributions of the alleged invention with the most preferred polymer dispersions in the preferred amounts and concentrations.

In particular, starting from the combination of claims 1, 4, and 5 (explicitly supported by the claim dependence), the only question is whether there is a basis for further combining this embodiment with the features of claims 3 and 7 as filed.

Firstly, it follows directly from paragraphs [0012], [0013], [0014], [0015], [0020], and [0032] that the use of a size-press to force the formulation into the pores and remove excess formulation from opposing surfaces (as defined in claim 3 as filed) is a key feature for all embodiments of the alleged invention. Incorporating this feature into claim 1 does therefore not require any selection, nor does it introduce any new undisclosed information.

Furthermore, it follows from paragraph [0035] as filed that forcing 5 to 20% of the formulation, based on the total dry weight of the treated substrate, constitutes what the original application regarded as an "effective amount" for the other key purpose of the invention, namely (see par. [0006]) achieving a security paper that is durable, and thus protected against soiling and/or moisture. Consequently, incorporating this feature into claim 1 does not require any selection, nor does it add any new undisclosed information.

4.4 The board therefore concludes that the claimed subject-matter is directly and unambiguously derivable from the application documents as filed, and so this request meets the requirements of Article 123(2) EPC.

5. Auxiliary request 1 - Article 76(1) EPC

5.1 The opponents raised objections under Article 76(1) EPC, arguing that the amendments were based on multiple selections from different parts of the parent application WO 2008/054581 A1. Firstly, while paragraph [0013] of said application provided a basis for defining that the method was used in the production of secure documents, this feature was only described as part of a broader method. Introducing this feature into claim 1 at issue thus involved a first selection.

The purpose of not obscuring the optical elements was disclosed in paragraph [0014], which again presented this feature as part of a broader method and thus represented a second selection.

The amendments were furthermore based on incorporating the features of claims 4, 5, 6, 7, 9 and 10 as filed,

for which there was no basis in the parent application, in particular because claims 10, 4 and 9 did not refer to each other but only to claim 1.

5.2 For the board, the subject-matter of claim 1 at issue does not extend beyond the content of the earlier application as filed because the combination of claims 1, 5, 6 and 7 of the parent application - directly supported by the claim dependency - provides a basis for a method according to claim 1 including all aspects related to the soil and/or moisture formulation; thus, it remains to be seen whether the additional aspects introduced into claim 1 require multiple selections and/or introduce new information with respect to the content of the parent application, which however consistently and repeatedly refers to the manufacturing of secure documents as the key object of the invention. This is not only expressed in paragraph [0013], but also in the description of the technical field (par. [0002]), throughout the "summary of the invention" (see pars. [0003] to [0012]) and in the description of the best mode for carrying out the invention (see par. [0020] ff.). It is therefore apparent that this feature applies to all embodiments of the invention, so its incorporation into claim 1 at issue does not involve any selection.

Furthermore, the definition of the OVDs as being contained within or exposed through one or more windows, and the purpose of leaving these windows substantially free of formulation, are not only derivable from claim 10 as filed, but also represent an integration of the only two embodiments for the method described in paragraphs [0014] and [0015] of the parent application. A skilled person reading the latter as a whole would therefore understand that these embodiments

can be combined, as is indeed done in claim 10, without any selection being involved. Rather, such a combination simply constitutes a further development - in fact, the only one presented in the general part of the description - of the broader method described in the preceding paragraphs and in claim 1 of the parent application.

A similar situation applies to the features allegedly derived from claims 4 and 9 of the parent application, as well as to the defined purpose of avoiding the obscuring of the security elements. From a reading of the earlier application (see paragraphs [0009] to [0015], [0020] and [0032]), it is apparent that the main objective of the invention is to provide moisture- and/or soil-resistant secure documents while ensuring that the OVDs are not obscured. The key measure for achieving this is the use of a size press to force the formulation into the pores of the substrate and to remove any excess formulation from its surfaces. Furthermore, since the forcing of 5 to 20% of the formulation into the substrate is explicitly disclosed (see paragraph [0035]) as representing an "effective amount" for providing a moisture- and/or soil-resistant substrate, the skilled person would understand the addition of this feature as a way of restricting the invention to methods effectively achieving the required impregnation. The incorporation of the features of claims 4 and 9, and of the purpose of avoiding obscuring the security elements, into claim 1 does therefore not involve any selection, nor does it introduce any new technical information.

5.3 In view of these considerations, the board concludes that the subject-matter of claim 1 is directly and unambiguously derivable from the parent application as

filed, so that the requirements of Article 76(1) EPC are met.

6. Admittance of the new inventive step objections

6.1 The board notes that the inventive step objections starting from the alleged public prior use were raised for the first time after the preliminary opinion of the board had been issued and shortly before the oral proceedings. These objections are based on late filed facts and evidence, whose admittance is governed by Article 13(2) RPBA, according to which any amendment to a party's case made after notification of a communication under Article 15(1) RPBA shall, in principle, not be taken into account unless there are exceptional circumstances, which have been justified with cogent reasons by the party concerned.

6.2 In the present case, the alleged public prior use and the corresponding evidence were known to the opponents from the outset of the opposition proceedings, and so they had ample opportunity to raise objections based on this prior use, including inventive step attacks, during both the opposition and the appeal proceedings.

6.3 However, in the appeal proceedings, the prior uses "DOKONG 10" and "ANDUS 200-500" were only cited (see pages 4 to 7 of the statement of grounds of appeal of opponent 3) as anticipating the subject-matter of the product and method claims as granted. The prior uses were not cited - either in the appeal or in the opposition proceedings - in support of any objection of lack of inventive step against the method claims, for which only document D16 was relied upon as the closest prior art.

6.4 The opponents have argued that the late filing of this objection was justified by the emergence of new facts and evidence — a *novum* — which allegedly only became available in July 2025 in the context of parallel proceedings. Furthermore, they submitted that, since the proprietor was also a party to those parallel proceedings, these facts and evidence could not have come as a surprise to them.

6.5 The board is however not persuaded by these arguments, because the fact that certain documents or witness statements relating to the prior use became available only in parallel proceedings does not, in itself, constitute an exceptional circumstance within the meaning of Article 13(2) RPBA 2020.

Moreover, the prior use in question was submitted by opponent 3 with their notice of opposition. At that point in time, opponent 3 also comprised the company "ArjoWiggins Security". Since the relevant facts and evidence lay within the sphere of influence of that company, opponent 3 could and should have submitted all the relevant information at that stage. More specifically, since the product of the prior use "DOKONG 10" was produced by "ArjoWiggins Security" and the witness revealing the new information was a former employee of this company, it would have been their responsibility to provide all the information during first instance proceedings.

For the sake of completeness, the board also notes that, if — as argued by the opponents — more time would have been required to carry out the analyses and retrieve the relevant information, it would have been incumbent upon the opponents to request an extension of

time and/or a postponement of the oral proceedings in order to prepare the evidence.

6.6 For these reasons, the board exercised its discretion under Article 13(2) RPBA 2020 not to admit into the proceedings the new inventive step objections based on the prior use.

7. Auxiliary request 1 - Article 56 EPC

7.1 Interpretation of claim 1

7.1.1 The interpretation of some of the claimed features has been a matter of discussion and is considered of particular relevance for the underlying discussion.

7.1.2 While not explicitly contested, it should first be clarified that the board understands that the sizing process according to claim 1 is performed on a raw or untreated paper substrate, or at least on one which has not previously undergone any sizing or coating process. This follows from the claim language itself, which defines a method "*for imparting soil and/or moisture resistance to a porous substrate*", thereby implying that such resistance has not yet been provided. Furthermore, the step of forcing the formulation into the pores of the substrate likewise presupposes that the paper remains sufficiently porous to permit such penetration. Moreover, from a technical standpoint, it would be illogical or practically meaningless to size a substrate that has already been sized or coated, since such a substrate would no longer exhibit the degree of porosity necessary for the claimed process. The skilled person would therefore immediately understand that the claimed method is intended to be carried out on an unsized, uncoated paper as part of the papermaking or

substrate-preparation stage, prior to any subsequent finishing treatments or coatings.

7.1.3 Since, as concluded above, the features derived from claims 4 and 5 as granted - respectively corresponding to the last two paragraphs in claim 1 at issue - are not open to examination under clarity, it is necessary to indicate how they have been interpreted by the board in the assessment of patentability.

Claim 1 at issue explicitly indicates that the soil and/or moisture resistant formulation (emphasis added by the board) "*is an aqueous formulation containing ...*" (see first to last paragraph of claim 1 at issue) and (also) "*is an aqueous polymer dispersion comprising ...*" (see last paragraph of claim 1 at issue). It follows from this wording that both paragraphs define one and the same thing - namely the soil and/or moisture resistant formulation - which logically implies that the "aqueous polymer dispersion" can only be interpreted as a narrower definition of the "aqueous formulation". Consequently, the sizing formulations according to claim 1 must contain at least one substance satisfying the requirements in both paragraphs - i.e. falling within at least one of the groups of both lists of resins. For example, since polyurethane is defined in both lists, any formulation containing polyurethane would be encompassed; resins including ester bonds are only covered if they also fall within one of the groups of the second list; however, if the formulation only contains a resin having an ester bond with no urethane, this would fall outside the scope of the claim as it would not satisfy the requirements of the second list. It should however be noted that since both lists use open-ended expressions ("containing" and "comprising"), the

formulations may also contain any other substances or polymers, provided the defined resins are present in the defined amounts and having the required particle sizes.

7.1.4 In the feature "*an aqueous polymer dispersion comprising dispersed particles having average particle sizes ranging from about 50 to about 150 nanometers*", it was contested whether the range restricted the size of the resin particles or could also be considered to relate to other particles present in the dispersion (such as pigments).

For the board, when the feature "*an aqueous polymer dispersion comprising dispersed particles*" is read in the context of claim 1 and/or the description (par. [0027] of the patent), the dispersed particles would be understood by the skilled person to correspond to the "resin particles" defined immediately thereafter. Although the claim employs the open term "comprising", this is considered merely to allow for the presence of other components of the formulation distinct from the dispersed polymeric particles — such as water, solvents or other liquid constituents — or, at most, for the inclusion of minor non-polymeric solid additives. It therefore follows that the particle size range of 50 to 150 nm restricts the dimensions of the resin particles of the aqueous polymer dispersion.

7.1.5 The interpretation of the feature "*the aqueous polymer dispersion comprises from about 10 to about 40% by dry weight of resin particles or solids ...*" has also been a matter of contention.

The proprietor argued that this expression was conventionally used in the field to define the amount

of solids contained in liquid dispersions, and the expression "by dry weight" simply meant that the weight of the solids had to be measured in a dry state (i.e. after removing the absorbed liquid), in order to avoid any ambiguities and/or inconsistent measurements resulting from the absorption of liquids by the solid particles.

The opponents, on the other hand, contended that the feature defined the percentage of certain solid products with respect to the total solid content of the formulation, after evaporation of the liquid solvents. In this respect, reference was made to paragraph [0029] of the patent.

For the board follows the interpretation proposed by the proprietor, as this is the only technically reasonable way of understanding paragraph [0029] of the patent, which states (emphasis added by the board): "*The soil and/or moisture resistant formulation is made by mixing the component(s) with water so as to obtain an aqueous formulation having a total solids content ranging from about 10 to about 40% by dry weight*". Even though, as emphasised by the opponents, this is immediately followed by the indication that this measurement is "*based on the total dry weight of the formulation*", this expression is not intended to indicate — as the opponents argued — that the weight percentage should be calculated with respect to the total weight of the solids (rather than the aqueous formulation). In fact, if the opponents' interpretation were followed, paragraph [0029] would be both contradictory and technically absurd, because the "% by dry weight" in this passage explicitly concerns the "total solid content" (rather than a specific component), which, if measured with respect to the

total solid content, could only ever be 100% by definition, which would be both technically absurd and contradictory with the described range of "10 to 40% by dry weight".

In summary, the board interprets this feature as defining the weight percentage of the substances in question measured in dry form with respect to the total weight of the aqueous soil and/or moisture resistant formulation.

7.2 Closest prior art

7.2.1 Having established that the inventive step objections starting from the prior use "DOKONG 10" are not admitted into the proceedings, there is agreement that document D16 represents the closest prior art, as it pursues a similar technical purpose and includes an example (Comparative Example 1) in which a sizing formulation ("agent de collage") is applied to a fibrous substrate containing a security element by means of a size press. However, D16 does not specify the nature of this sizing formulation.

7.2.2 The opponents also proposed Example 2 of D16 as an alternative starting point. This Example discloses the application of a formulation including polyurethane as coating using an air blade coater to the substrate obtained from Comparative Example 1 (already sized with the "agent de collage"). The opponents noted that while Example 2 described the application with an air blade coater, par. [0028] of D16 taught that other known devices such as an impregnating unit ("imprégnatrice") could be used.

7.2.3 It is however not apparent to the board how the skilled person would arrive at the claimed invention starting from Example 2. As indicated in point 7.1.2 above, method claim 1 is considered to be limited to a sizing process carried out on a paper substrate which has not previously been sized or coated. Thus, even if it were considered obvious to apply the composition of Example 2 using an impregnating unit, and such impregnating unit were regarded as equivalent to a sizing press, the coating would still be conducted on a previously sized substrate (the one obtained in comparative example 1), so it would not render claim 1 obvious. The board has therefore concluded that Example 2 cannot lead to the subject-matter of claim 1 in an obvious way. Consequently, the ensuing inventive step argumentation will be based on Comparative Example 1 as the starting point.

7.2.4 The subject-matter of claim 1 differs from Comparative Example 1 of D16 in that:
(i) about 5 to 20% by dry weight of the sizing formulation is forced into the pores of the substrate,
(ii) the formulation comprises about 10 to 40% by dry weight of resin particles,
(iii) the resin particles have a particle size ranging from 50 nm to 150 nm,
(iv) the resin particles are selected from the group of polyurethane resins, polyether-urethane resins, urethane-acrylic resins, and mixtures thereof.

7.3 Problem solved by the claimed invention

7.3.1 The object (see par. [0011] of the patent) of the claimed method is to effectively protect a paper with security elements from soil and/or moisture without disrupting the visibility of the security elements.

According to D16 (par. [0053]), the exemplary embodiments allow a good visibility of the security elements.

7.3.2 As indicated in the preliminary opinion, there are no comparative tests to demonstrate that the proposed solution would provide better results than the process described in D16. Consequently, the problem cannot rely on any alleged improvement, be it in the protection of the paper or in maintaining the visibility of the security elements.

7.3.3 The opponents argued that, in view of this conclusion, the only problem solved would be the provision of an alternative method, which according to decision **T 1465/23** should automatically lead to the conclusion that the invention was not obvious. In particular, this decision (see Catchword) indicated that: "*If there is no technical effect that is credibly derivable from the wording of a claim on the basis of its distinguishing features, it is usually unnecessary to - artificially - formulate an (unsolved) objective technical problem, such as finding an "alternative way to achieve a (non-existent) technical effect*". In such a case, the distinguishing features simply constitute arbitrary or non-functional modifications of the available prior art which cannot involve an inventive step within the meaning of Article 56 EPC (see points 2.7 and 3.3.3 of the Reasons).

7.3.4 The board first notes that, as also indicated at the oral proceedings, the subject-matter of claim 1 explicitly defines a method which imparts "*soil and/or moisture resistance to a porous substrate without obscuring optically variable effects generated by non-*

porous security devices", and although there is no evidence that these functions are improved with respect to the closest prior art, the claimed method must nevertheless result in a product exhibiting suitable soil and/or moisture resistance properties while maintaining the visibility of the security elements.

7.3.5 In practice, this means that the problem solved by the alleged invention is not merely to provide an arbitrary alternative method, but rather to provide one that ensures the dual purpose of imparting the required soil and/or moisture resistance while preserving the optical properties of security elements.

7.3.6 The conclusions reached in decision **T 1465/23** thus do not apply to the present case, since the purpose of imparting soil and/or moisture resistance without obscuring the security elements is explicitly defined in claim 1, so its subject-matter is limited to methods that achieve this. Consequently, it cannot be argued — at least not in the context of the assessment of inventive step, but only if such an issue were to arise under the ground of sufficiency of disclosure (see **G 1/03**, Reasons 2.5.2, third paragraph) — that the invention would fail to achieve the stated purpose over its entire scope.

7.3.7 The problem solved by the invention is thus to provide an alternative method for treating a security paper that ensures appropriate resistant and durability properties while preserving a good visibility of the optical effects of the security elements (note that this formulation is analogous to that proposed for the parent application in case **T 1041/17**, point 5.3.1).

7.4 Obviousness of the proposed solution

7.4.1 The opponents argued that D16 disclosed the coating of a paper with a polyurethane dispersion (see pars. [0013] and [0033]), and the application of polyurethane dispersions to paper was known from D37 (see page 2/6), D18 (see page 11), D95 (see pages 10 and 14) or D97, with D37 disclosing (page 2/6) a wet pick-up of 30-50%. The restriction of the particle size of the resins to 50–150 nm was moreover obvious, as it was well-known to use sub-micron sizes in analogous polymer dispersions (see D19, col. 3, line 34; D7, page 2, line 20; D17, Table 1; D10, page 4, last line and D97, page 7, line 30).

7.4.2 The board observes that the polyurethane dispersions discussed in D16, D18 (see page 3, lines 11-18) and D95 are not supposed to be used as a sizing agent, but as a coating to be applied after the paper has been treated with a sizing agent. As indicated above, this is against the purpose of the method according to claim 1 at issue, which explicitly defines that the sizing agent including the polymer dispersion is forced into the pores of the substrate by means of a sizing press.

Documents D37 and D97, which disclose sizing formulations containing polyurethane, provide very limited additional information. The general reference in D37 to the typical wet-pick up values of sizing formulations going from 30 to 50% does not provide any useful hint, as being not directly linked to the polyurethanes, and in any case provides no real indication of the amount of solids incorporated into the pores of the substrate, let alone of the amount of polymer in the sizing formulation.

The cited documents are also of little help for the question of particle sizes. In terms of the diameters as such, D19 only indicates (see col. 3, line 34) that the majority of particles have a size of less than 1 micron, which is significantly broader than the defined range of 50 to 150 nm. Similarly, D7 broadly refers (see page 2, line 20) to the use of "submicron" particles. Documents D17 and D97 respectively disclose a range of 400 to 2500 Angstroms, i.e. 40 to 250 nm (D17, Table 1), and 15 to 200 nm (D97, page 7, line 30), which are both appreciably broader than the claimed range of 50 to 150 nm. Finally, while document D10 discloses a most preferred range of 80 to 150 nm (see page 4, line 28), the polymers used therein do not include polyurethanes, so this document cannot prove that the proposed size range would be obvious for a dispersion containing polyurethanes.

In view of the above, the board concludes that the above cited documents do not render the solution proposed in claim 1 obvious.

7.4.3 The opponents also relied on documents D99 and D100 to support their argument that the polymer dispersion defined in claim 1 would have been obvious. These documents were filed for the first time during the appeal proceedings, as annexes to the reply of opponent 3, and their admittance was contested by the proprietor under Article 12(4) RPBA. However, since they are not decisive for the outcome of the case, no formal decision on their admittance is necessary. For the sake of completeness, the board has nevertheless taken them into account in its assessment below.

7.4.4 D99 discloses (see page 1365, left col., last lines and table II on page 1369) a protecting sizing agent for

paper treatment comprising a 30 wt.% aqueous dispersion of polyurethane in water. However, when the dispersion is applied to the substrate, the polyurethane content of the sizing compositions ranges from 0.3 wt.% to 1 wt.% (see page 1366, right col., and Table V on page 1371).

7.4.5 The opponents argued that the relevant value was the value of 30% disclosed on page 1365. The percentage by dry weight in claim 1 at issue should namely be interpreted as percentage of polyurethanes in dry weight with respect to the total solids, i.e. after all solvents had been removed, so the dilution proposed on page 1366 would not affect this value.

7.4.6 The board refers back to the interpretation of the feature in question in point 7.1.5 above, in which it was concluded that the values of 10 to 40% by dry weight could only refer to the percentage of polyurethane in dry form with respect to the total weight of the aqueous polymer dispersion. Document D99 does therefore not disclose the application of a 30 wt.% polyurethane formulation to the base sheet, but - as indicated above - of a highly diluted (0.3-1 wt.%) polymer dispersion, which is 10 times lower than the minimum value proposed in claim 1 at issue. Document D99 can therefore not render obvious the subject-matter of claim 1 at issue.

7.4.7 D100 discloses several paper sizing agents in the form of polymer emulsions (see exemplary sizing agents I, II and IV) obtained from oligourethane having a solid content (14.5%, 19.6% or 20%) and an average particle size (54, 62 or 66 nm) falling within the ranges defined in claim 1 at issue. However, in each of the application examples I to V (see pages 9 and 10), the

sizing formulations are obtained by combining a 5% starch solution and 0.2 pars of the sizing agents (polymer emulsions) I to V, completed (and so, diluted) till 100 parts with water. The concentration of polyurethanes in these sizing formulations is therefore still lower than in D99, thus falling far below the minimum 10 wt% value defined in claim 1 at issue.

7.4.8 The opponents submitted that, although the application examples in D100 employed diluted forms of the sizing agents, the document disclosed (see page 6, lines 17-18, and page 8, lines 54-55) that the sizing agents could also be applied as such, that is, in the concentrated form.

7.4.9 The board disagrees with this interpretation of the cited passages in D100, which explicitly indicate that "*The sizing agents can be used either alone or in combination with aqueous solutions of polymers*." (see page 6, lines 17-18), respectively "*The sizing agent emulsions I to V obtained in the manner described can be used directly as such for surface sizing*." (see page 8, lines 54-55).

The board notes that the first passage does not indicate that the polymer emulsions may be used in concentrated or diluted form, but rather that they can be applied either alone or in combination with aqueous polymer solutions. More specifically, the alternative "in combination with aqueous polymer solutions" does not have any relation to whether the emulsions are diluted or not, but merely teaches that these exemplary polymer emulsions can be applied together with (other) aqueous polymer solutions. This interpretation is consistent with how the application examples I to V (see page 9, lines 10-11) are carried

out, as in all of them the sizing agents I to V (in the form of polymer emulsions) are combined (in diluted form) with an aqueous polymer solution (the starch solution).
It follows that the alternatives of using the sizing agents "alone" on page 6, or "directly as such" on page 8 (arguably referring to the same concept), are likewise unrelated to the question of whether the emulsions are used in concentrated or diluted form, and instead indicate that no other components, such as aqueous polymer solutions, are combined with the sizing agent.

Document D100 is thus considered, as it was the case in D99, to only teach using polyurethane emulsions containing significantly lower polyurethane concentrations than the 10 to 40 wt% defined in claim 1 at issue.

Moreover, even if the above passages were considered to encompass the alternative of using the sizing agents in concentrated form, it would nevertheless be clear from the application examples in D100 that the preferred option is to use the polymer emulsions in diluted form.

Since the problem addressed starting from D16 is to identify alternatives that preserve good visibility of the optical effects of the security elements, there would be no reason for the skilled person to contemplate using the less preferred concentrated polymer emulsions, which would be expected to be potentially detrimental to the visibility of the security elements.

The board therefore concludes that D100 does not clearly teach applying sizing formulations having 10 to 40 wt.% of polyurethanes.

7.4.10 In view of the above considerations, the board concludes that a skilled person, starting from comparative example 1 of D16 as the closest prior art and seeking alternative methods for treating a security paper that provides resistance and durability while maintaining good visibility of the optical effects of the security elements, would not arrive at the proposed solution in an obvious manner in light of the cited prior art.

7.4.11 The subject-matter of claim 1 at issue is thus not rendered obvious by the cited prior art, so the requirements of Article 56 EPC are met.

8. Further remarks

8.1 Since auxiliary request 1 has been admitted and found allowable, there is no need to discuss the additional auxiliary requests or the proprietor's request to remit the case to the first instance for further prosecution.

8.2 There was also no need to decide on the request to allow oral submissions by Mr. Kocher, as the opponents did not pursue this request during the oral proceedings.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the department of first instance with the order to maintain the patent in the version of auxiliary request 1 as filed with the grounds of appeal, and a description to be adapted where necessary.

The Registrar: The Chairman:

A. Wille J.-M. Schwaller

Decision electronically authenticated