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Datasheet for the decision of 20 July 2021

Case Number: T 2361/17 - 3.2.05

Application Number: 09714069.3

Publication Number: 2244888

IPC: B42D25/29, B41M3/14, B42D25/00, B42D25/415

Language of the proceedings: EN

Title of invention:
Security document comprising a security feature having a layer with particles

Patent Proprietor:
De La Rue International Limited

Opponents:
Giesecke+Devrient Currency Technology GmbH
CCL Secure Pty Ltd

Relevant legal provisions:
EPC Art. 84
RPBA Art. 13(1), 13(3)

Keyword:
Admittance (main request: no; auxiliary request 2: yes)
Reformatio in peius (no)
Clarity (no)

Decisions cited:
G 0003/14

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Case Number: T 2361/17 - 3.2.05

D E C I S I O N
of Technical Board of Appeal 3.2.05
of 20 July 2021

Appellant I: (Opponent 1)	Giesecke+Devrient Currency Technology GmbH Prinzregentenstraße 159 81677 München (DE)
Representative:	Patentanwälte Geyer, Fehners & Partner mbB Perhamerstrasse 31 80687 München (DE)
Appellant II: (Opponent 2)	CCL Secure Pty Ltd 1-17 Potter Street Craigieburn VIC 3064 (AU)
Representative:	Lincoln IP 4 Rubislaw Place Aberdeen AB10 1XN (GB)
Respondent: (Patent Proprietor)	De La Rue International Limited De La Rue House Jays Close Basingstoke, Hampshire RG22 4BS (GB)
Representative:	Boult Wade Tennant LLP Salisbury Square House 8 Salisbury Square London EC4Y 8AP (GB)
Decision under appeal:	**Interlocutory decision of the Opposition Division of the European Patent Office posted on 27 June 2017 concerning maintenance of the European Patent No. 2244888 in amended form.**

Composition of the Board:

Chairman	P. Lanz
Members:	O. Randl
	A. Bacchin

Summary of Facts and Submissions

I. Both opponents filed an appeal against the decision of the opposition division that the amended version of European patent No. 2 244 888 ("the patent") satisfied the requirements of the EPC.

The opposition division was of the opinion that the main request on file lacked inventive step but that the first auxiliary request was allowable.

II. On 19 November 2019 the parties were summoned to oral proceedings to be held on 20 July 2020.

III. At the request of appellant II (opponent 2) and the respondent (patent proprietor), the oral proceedings were rescheduled for 20 July 2021.

IV. Oral proceedings before the board took place on 20 July 2021.

V. The appellants (opponent 1 and 2) requested that the decision under appeal be set aside and the patent be revoked.

The respondent (patent proprietor) requested that the decision under appeal be set aside and the patent be maintained on the basis of the main request or on the basis of the second auxiliary request, both filed during the oral proceedings.

VI. The first auxiliary request, which was filed with the reply to the statement of grounds of appeal, was withdrawn during the oral proceedings before the board.

VII. Claim 1 of the <u>main request</u> reads (the feature references used by the board being given in square brackets):

"[**1**] A security document comprising [**2**] a printed security feature [**3**] having a tactile feel, [**4**] said security feature comprising a printed layer with particles protruding at least 20 µm therefrom [**5**] in an amount of at least 10 particles per mm^2 of said layer, wherein [**6**] the particles are sized such that no diameter is greater than 150% of the smallest diameter, and further wherein [**7**] the standard deviation of the particle size is 40-100 µm."

Claim 1 of the <u>second auxiliary request</u> reads:

"A security document comprising:-
at least one printed region printed with a printed security feature having a tactile feel;
and at least one unprinted region which is not printed with said security feature;
said security feature comprising a printed resin layer with spherical particles protruding at least 20 µm therefrom in an amount of at least 10 particles per mm^2 of said layer,
wherein a change of height between the at least one printed resin layer and the unprinted region forms one tactile characteristic and a rough abrasive texture of variable height created by the protruding particles on the printed resin layer forming another tactile characteristic."

VIII. The relevant submissions of the parties can be summarised as follows:

(a) Admittance of the main request

(i) Respondent (patent proprietor)

The modifications that have been made are that the minimum protrusion and the minimum amount of particles have been changed to 20 µm and 10 per mm², respectively. These features come from granted claims 2 and 3, respectively. This ties in with Example 6, which shows that these features provide a rough or semi-rough tactile feel. The examples are at the lower end of what is now claimed. Moreover, a feature relating to the standard deviation of the particles of between 40 and 100 µm has been introduced. This feature has been taken from granted claim 7. This standard deviation supports and emphasises the variable roughness, i.e. the tactile effect (see paragraph [0012] of the patent and paragraph [0028]: "*... Preferably the ink or resin will comprise a wide distribution of particle sizes thereby providing a variable roughness across the security feature. ...*"). The wide distribution is what defines the variable-roughness tactile feel. So the tactile feel is now measurable. The protrusion and density also contribute to the tactile feel.

The amendments have been presented during the oral proceedings because up to this point both the opposition division's decision and the board's provisional opinion were in the respondent's favour, finding that the subject-matter of claim 1 as maintained by the opposition division was sufficiently disclosed. The amendment constitutes a reaction to the board's changed opinion. The finding that the tactile feature was not supported was not in the provisional opinion, which also justifies the filing of the amendment at this point. Point 8.1 of the provisional opinion ("*... The question might arise whether feature 3 ... clearly defines the claimed subject-matter. However, this question is beyond the scrutiny of the board ... In any case, the lack of clarity appears not to be such that it hinders the skilled person from carrying out the invention.*") led the respondent to believe that the line of argument relating to the tactile feel was a matter of clarity and not of sufficiency of disclosure. Therefore, to address this point, which only came up during the oral proceedings, the respondent needed to file amended claims.

As the new features have been taken from dependent claims, the requirements of Article 13(3) RPBA 2007 appear to be met. The opposition was filed in 2014. The appellants have had 7 years to consider all the issues relating to the dependent claims.

When asked by the board what was implied by features 6 and 7, the respondent explained that feature 6 related to each individual particle and defined its shape, whereas feature 7 was the standard deviation for all the particles within the ink. This is also disclosed in paragraph [0030] of the description. In response to the board's observation that paragraph [0030] referred to dimensions, whereas feature 6 referred to diameters, the respondent explained that paragraph [0030] expressed what feature 7 was meant to convey. This can also be seen from the fact that granted claim 12, which depends from granted claim 11 alone, limits its subject-matter to spherical particles, and that the same limitation is expressed in paragraph [0030].

The answer to the question of whether the skilled person can carry out the invention as defined in claim 1 is clearly "yes". The skilled person would have known how to adapt the examples given in the patent.

When asked by the board whether it shared the appellants' interpretation of the standard deviation values of feature 7, the respondent responded that there was no doubt that claim 1 was consistent with Example 7. The D_{50} value of 90 µm falls within the claimed range, even if the appellants' interpretation is adopted.

(ii) Appellants (opponents)

The new main request should not be admitted because it is not *prima facie* allowable and because it is not clear why it has not been filed before, since the objection of insufficiency of disclosure had been discussed since the opposition proceedings. The new request is the amendment of an auxiliary request filed five weeks before the oral proceedings before the board. At all stages of the seven years of the opposition proceedings, the respondent has contented itself with filing counter-arguments instead of filing amended sets of claims. The respondent should not be allowed to change its strategy at this late point in the proceedings.

There are many reasons why the new main request cannot overcome the objections based on Article 83 EPC.
A first aspect consists of the interaction of features 6 and 7. Feature 6 refers to all particles and not to each individual particle. If something different is meant, the feature would refer to "each particle"

rather than to "the particles". Thus there is an unsurmountable contradiction between features 6 and 7.

Moreover, the standard deviation according to feature 7 is presented as being "between 40 and 100 µm". However, claim 1 requires that the standard deviation be "40-100 µm". The skilled person would have immediately understood that the mean value has to be at 70 µm. This is also the understanding of paragraph [0024] ("*The standard deviation of the particle size is, for example, at least 40 µm and preferably less than 100 µm. In another embodiment the particles may all generally be the same size, having a standard deviation of less than 5 µm.*") And even if a different interpretation is adopted, the particle size has to be somewhere between 40 and 100 µm. Assuming a Gauss curve, the value of the D_{50} average particle size is 70 µm. However, there are no exemplary embodiments for this standard deviation. Example 6 has a D_{50} value of 18 µm. This value cannot possibly be reconciled with a standard deviation of 40-100 µm. Example 7 is a case in which all the particles protrude above the ink layer by a height X of greater than 40 µm, which can be seen from the fact that the number of particles/mm² is the same for X = 10, 20, 30 and 40 µm.

Tactile Feel	D_{50} (µm)	Resin Thickness (µm)	Number of Particles/mm² protruding above the resin/ink layer by a height of greater than xµm			
			X = 10	X = 20	X = 30	X = 40
Rough - featureeasily identifiable	90	40	10	10	10	10

This is not surprising, because D_{50} is 90 µm for a resin thickness of 40 µm. Consequently, Example 7 does not correspond to what is now claimed either. There is a gap between 20 and 40 µm for which the patent does not provide any example. Examples 6 and 7 both refer to screen ink for screen printing. However, claim 1 also encompasses e.g. intaglio printing, as is clear from dependent claim 10. This is not a trivial matter, in particular because the particle shapes, protrusions and distributions should not be modified by the printing process. Significant pressures are exerted during intaglio printing. Finally, examples 6 and 7 both refer to very specific inks based on resin with a resin:particle weight proportion of 70:30. There is no disclosure for other inks or proportions.

Since the new request does not overcome the objection that has led to the board's finding that the former main request is insufficiently disclosed, it should not be admitted.

Moreover, feature 7 is almost irrelevant because the tactility results from the protruding particles. It is not clear whether and how the fact that particles of different sizes are used would increase the roughness. Furthermore, there is still no objective test to know whether or not a security feature is tactile.

(b) Admittance of auxiliary request 2

(i) Appellants (opponents)

This auxiliary request should not be admitted. The request is problematic because of the feature "spherical particles" and the fact that feature 6 has been deleted. The feature "spherical particles" is not a limitation of the former feature 6. The former feature 6 referred to all particles (and not each particle, as argued by the respondent) and defined a condition for the relative particle sizes. This has nothing to do with the shape of the particles and in particular with them being spherical. The deletion of the former feature 6 violates the prohibition of *reformatio in peius*.

This can be seen from the following example. Ink with spherical particles sized such that the greatest diameter corresponds to 200% of the smallest diameter would not be encompassed by claim 1 as maintained by the opposition division but would fall within the range of claim 1 of auxiliary request 2.

There are further deficiencies, such as a lack of support in the description, but the violation of the prohibition of *reformatio in peius* should be sufficient to refuse admittance of auxiliary request 2.

As already pointed out in the context of the former auxiliary request 2, the amendment is derived from the specification and introduces a lack of clarity. The simultaneous requirement of spherical particles and "rough abrasive texture" seems to be contradictory: spherical particles would not produce such a texture. Whether the variations in alignment and protrusion would lead to a rough feel depends on a great number of unspecified parameters.

(ii) Respondent (patent proprietor)

The appellants deliberately misunderstand feature 6 of claim 1. As already explained, this feature relates to the shape of each particle and does not define a particle size distribution.

When asked about the apparent inconsistency between granted claim 11 and paragraph [0030] of the description of the patent, the respondent explained that a particle can have more than one diameter. Therefore the different wording ("diameter" instead of "dimension") does not make any difference. The person skilled in the art would have had no trouble interpreting the feature (see also the reference in paragraph [0028] to "particles of low aspect ratio"). Thus the feature "spherical particles" is clearly a limitation of the aspect ratio. At no point during the first-instance proceedings or in the written proceedings before the board has it ever been suggested that feature 6 applies to the spectrum of all the particles. The objection is based on a change of the appellants' line of attack.

In respect of the alleged contradiction between the use of spherical particles and the generation of a "rough abrasive texture", the respondent explained that when the particles are put into the ink there is no way to align them precisely. There is a variation in protrusion and positioning, inherently leading to an rough feel.

(c) Auxiliary request 2: clarity

(i) Appellants (opponents)

The feature relating to the rough abrasive texture is problematic on several counts. As already mentioned, the fact that the particles are spherical appears to be incompatible with the existence of a region of rough abrasive (i.e. sandpaper-like) texture. The feature that the particles are spherical has been added to the embodiment without any apparent justification for the combination. None of the examples discloses a rough abrasive texture. The argument that features 4 and 5 provide a "rough abrasive texture" has no basis in the patent.

Several features have been taken from the description. The alleged basis for the amendment discloses two transitions: a first transition from the unprinted region to the printed resin layer and a subsequent transition to the rough surface. It is not clear how this is to be achieved if the particles are simply introduced into the material, and the required dimensions are not disclosed. By contrast, claim 1 can be read onto a printed strip that as such is rough, without the above-mentioned second transition. Thus an essential feature is missing. It is not clear how the tactile features of the resin layer and the tactility related to the protrusions of the particles can both be obtained. As this lack of clarity is generated by features taken from the description, it is within the scrutiny of the board. Example 6, which is the only example with spherical particles, does not provide any help because it teaches that the resin layer should be thin. What is to be done to obtain a "rough abrasive texture"? The expression as such is unclear. There is no disclosed way of measuring an abrasive texture, let alone of knowing when an abrasive texture is "rough". This feature would be highly problematic in infringement proceedings because there is no way of ascertaining its presence. In paragraph [0059], roughness is associated only with a resin thickness of 20 µm, whereas paragraph [0007] teaches that 30 µm is needed to make a step detectable. It may be true that paragraph [0007] only relates to intaglio printing, but claim 1 comprises no limitation in respect of the printing process used and also encompasses intaglio printing.

The scientific paper cited by the respondent is a very specific document relating to a very narrow subject, namely strain-induced surface wrinkles, that has nothing to do with printed articles. The document referred to as O2D4 by the opposition division (B.H. Kaye, "Science and the detective", VCH, Weinheim, 1995, pages 19 and 20) is a much more realistic representation of the common general knowledge. It states that "*[n]ormally, the human eye cannot see an object smaller than 30 micrometers without the use of an optical instrument such as a microscope. The skin is sensitive to grit larger than 30 micrometers.*" Moreover, this is consistent with what the introductory section of the patent discloses.

(ii) Respondent (patent proprietor)

Based on paragraph [0015], the skilled person would have been capable of working out the layer thickness required to make the step detectable. The paragraph clearly states that the tactile characteristics of the ink can be made similar to the tactile characteristics of a rough surface or sandpaper, thereby providing support for the claim features. There is no requirement for a 30 µm layer in the claim or anywhere in the description. Paragraph [0007] relates to prior-art intaglio design and has nothing to do with a printed resin layer.

A "rough abrasive texture" is what is provided by spherical particles protruding at least 20 µm from the printed layer in an amount of at least 10 particles per mm^2. As established in a paper by L. Skedung et al. "Feeling Small: Exploring the Tactile Perception Limits", Sci. Rep. 3, 2617; DOI:10.1038/srep02617 (2013), "*... For static touch it is established that* *the minimum feature size that can be detected in the absence of movement or applied vibrations is around 0.2 mm. The currently accepted threshold for feature detection in dynamic touch is in the micron range*", and the paper goes on to say that it is about 1 µm. Therefore the skilled person did not have to know how much ink to put down. Contrary to the appellants' assertion, this document explores what can be felt by active touch, as can be seen from the opening sentence: "*The human finger is exquisitely sensitive in perceiving different materials, but the question remains as to what length scales are capable of being distinguished in active touch.*" It deals with this general question and is in no way limited to strain-induced surface wrinkling.

Reasons for the Decision

1. Applicable version of the Rules of Procedure of the Boards of Appeal (RPBA)

The main request and the second auxiliary request were both submitted during the oral proceedings before the board on 20 July 2021.

Since the summons to oral proceedings had been notified on 19 November 2019 and thus before 1 January 2020, Article 13(2) RPBA 2020 does not apply. Instead, Article 13 RPBA 2007 continues to apply, in accordance with the transitional provisions set out in Article 25(3) RPBA 2020.

2. Main request: admittance

The main request was filed during the oral proceedings after the board had found the invention of claim 1 as maintained by the opposition division to be insufficiently disclosed. The reason for this finding was that claim 1 of the former main request covered a region of small protrusions and particle amounts which was not exemplified in the patent. Therefore the skilled person was not enabled to carry out the invention over the entire scope of claim 1.

Claim 1 of the new main request is not suitable for overcoming this objection for the following reasons:

By increasing the minimum particle protrusion to 20 µm (instead of 10 µm) and the minimum particle density to 10 particles per mm^2 (instead of 3 particles per mm^2), the respondent has reduced that part of the scope of the claim for which the patent does not provide the skilled person with information on how to carry out the invention and in particular how to obtain the tactile feel claimed through feature 3. However, even though the gap is reduced, there is still no information in the patent as to how the invention can be carried out over the entire scope of the claim.

The board does not share the appellants' interpretation that feature 7 requires that the mean value of the particle distribution be at 70 µm. The skilled person would not have understood the feature that the standard deviation of the particle size "is 40-100 µm" to mean that the distribution is centred at a mean value of 70 µm and that σ = 30 µm. The only reasonable interpretation is that the standard deviation σ adopts a value between 40 and 100 µm, and this is also clearly expressed in paragraph [0024] of the patent.

In view of this interpretation, only Example 7 can possibly provide a disclosure for the subject-matter of claim 1 because its D_{50} average particle size (90 µm) is compatible with a standard deviation of between 40 and 100 µm, whereas the D_{50} average particle size of Example 6 (18 µm) is not.

However, as correctly pointed out by the appellants, Example 7 does not provide an enabling disclosure for the lower boundary values of claim 1 because all its particles protrude from the printed layer by a distance of at least 40 µm.

Therefore the patent does not provide the skilled person with an enabling disclosure of how to obtain a security document with a printed security feature with a tactile feel comprising a printed layer with particles protruding by between 20 and 40 µm.

As the new main request cannot overcome the objections that have led the board to dismiss the former main request, the board has decided to exercise its discretion under Article 13(1) and (3) RPBA 2007 by not admitting the new main request into the appeal proceedings.

3. Auxiliary request 2

3.1 Admittance

The appellants' core argument against the admittance of auxiliary request 2 was that it violated the prohibition of *reformatio in peius* because feature 6, requiring that the particles be sized such that no diameter is greater than 150% of the smallest diameter, had been replaced by the requirement that the particles be spherical.

The validity of the appellants' argument crucially depends on the interpretation of feature 6.

The respondent argued that this feature was related to the shape of each particle and defined the required form factor, thus providing a limitation to feature 6. The respondent relied on paragraph [0030] of the patent, which reads:

> "*Preferably, the particles are such that no dimension is greater than 150% of the smallest dimension (which is taken to be 100%), and more preferably no dimension is greater than 125% of the smallest dimension. Most preferably the particles are spherical.*"

The board agrees that the disclosure of this paragraph relates to the shape of each particle. However, the board notes that the wording of feature 6 is different from the wording of paragraph [0030] because the latter refers to the "smallest dimension", and not to the "smallest diameter" as feature 6 does.

The appellants argued that feature 6 was not concerned with the shape of each particle but with the particle size distribution. According to this understanding, feature 6 requires that the particles be sized such that no particle has a diameter that exceeds the diameter of the smallest particle by more than 150%.

If only the wording of the claim is considered, the interpretation proposed by the appellants is not unreasonable. However, the board notes that, during the opposition proceedings and during the appeal proceedings, the respondent's interpretation was used and appears never to have been contested, as can be seen from both the decision under appeal (see, for instance, the reference to feature 6 as "low aspect ratio" in point 13.2 of the grounds, or the reference in point 13.3.2.1 to opponent 1's argument that, by using spherical particles, the skilled person would "inevitably arrive" at the subject-matter of claim 1 of auxiliary request 1) and the board's provisional opinion (see the reference to "form factor feature 6" in point 8.3.1 (a) of the communication pursuant to Article 15(1) RPBA 2020). Put another way, up to the oral proceedings before the board, all the parties appear to have tacitly assumed the patent proprietor's (now: respondent's) interpretation to be correct.

The amendment of claim 1 can only be said to shift the scope of the claim beyond the scope of the patent as maintained by the opposition division - thereby infringing the principle of prohibition of *reformatio in peius* - if the appellants' sudden change of interpretation of feature 6 is endorsed. However, the appellants cannot be allowed to take a procedural advantage based exclusively on their changed line of argumentation at such a late stage in the proceedings, to the detriment of the respondent.

In any case and most importantly, the board takes the view that the respondent's interpretation of feature 6, which appears to have been accepted throughout the opposition and appeal proceedings by the appellants, the opposition division and the board of appeal correctly reflects the skilled person's understanding of the contested feature. In view of this, the claim amendment does not shift the scope of claim 1 as understood by the person skilled in the art. For these reasons, the appellants' argument based on the prohibition of *reformatio in peius* cannot be accepted.

Consequently, auxiliary request 2 is admitted into the appeal proceedings pursuant to Articles 13(1) and (3) RPBA 2007.

3.2 Clarity

Claim 1 of auxiliary request 2 comprises the feature that "a rough abrasive texture" of variable height created by the protruding particles on the printed resin layer forms another tactile characteristic.

This feature has been taken from the description and has no counterpart in the granted claims. Therefore, in accordance with decision G 3/14 of the Enlarged Board of Appeal, the clarity of this feature is within the board's scrutiny.

The patent does not define the expression "rough abrasive texture". It is used three times in the patent, twice in paragraph [0015] and once in paragraph [0033]. None of these passages helps to understand precisely what is meant. At most, paragraph [0015] states that there is a "*contrast between the rough abrasive texture generated by the protruding particles and the smooth texture of both the base substrate and the resin layer*".

The board is not aware of any generally-accepted understanding of the expression "rough abrasive texture" in the field of security documents, and the respondent has not suggested that such a common understanding exists.

The respondent argued that there was no need to define "rough abrasive texture" because it was the effect provided by spherical particles protruding at least 20 µm from the printed layer in an amount of at least 10 particles per mm^2. The board cannot endorse this argument because the description of the patent never associates "rough abrasive texture" with this particular set of features.

Consequently, the skilled person considering the subject-matter of claim 1 is unable to determine what exactly is being claimed and whether a given security document falls within the scope of claim 1.

It follows that claim 1 does not comply with the requirements of Article 84 EPC.

In view of this finding, auxiliary request 2 is not allowable. It is not necessary to examine the other objections raised by the appellants against this auxiliary request.

4. Conclusion

None of the requests on file is allowable. The main request is not admitted into the proceedings (see point 2.) and auxiliary request 2 does not comply with the requirements of Article 84 EPC.

Consequently, the patent must be revoked.

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:

N. Schneider P. Lanz

Decision electronically authenticated