

Internal distribution code:

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

**Datasheet for the decision
of 13 October 2025**

Case Number: T 1523/23 - 3.4.02

Application Number: 17792774.6

Publication Number: 3454099

IPC: G02B5/18, B42D25/328, G09F3/02,
G09F19/12

Language of the proceedings: EN

Title of invention:
Display Body

Patent Proprietor:
Toppan Printing Co., Ltd.

Opponent:
Giesecke+Devrient Currency Technology GmbH

Headword:
Display with reduced colour shift/TOPPAN PRINTING

Relevant legal provisions:
EPC Art. 100(a), 56, 111(1)
RPBA 2020 Art. 11
Decision of the President of the European Patent Office dated
22 November 2022 (OJ EPO 2022, A 103) Art. 1

Keyword:

Grounds for opposition - lack of patentability (yes)
Inventive step - (no) - obvious alternative
Remittal - (yes)

Decisions cited:

G 0001/21, T 0648/88, T 1089/15

Catchword:

1. Holding oral proceedings before an opposition division by videoconference against the will of a party does not, as such, infringe that party's right to be heard, even in the absence of travel restrictions. Any alleged infringement must be substantiated by the specific circumstances of the individual case (see Reasons 2.1 to 2.7).

2. In the assessment of inventive step of a device, i.e. a physical artefact, advantages of the manufacturing process do not carry over to the claimed device itself. The relevant case law is that concerning product-by-process claims, not that in the field of chemistry relating to intermediate chemical compounds arising in a non-obvious chemical process (see Reasons 3.12 to 3.15).



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 1523/23 - 3.4.02

D E C I S I O N
of Technical Board of Appeal 3.4.02
of 13 October 2025

Appellant: Giesecke+Devrient Currency Technology GmbH
(Opponent) Prinzregentenstraße 161
81677 München (DE)

Representative: Patentanwälte Geyer, Fehners & Partner mbB
Perhamerstraße 31
80687 München (DE)

Respondent: Toppan Printing Co., Ltd.
(Patent Proprietor) 5-1, Taito 1-chome
Taito-ku
Tokyo 110-0016 (JP)

Representative: Hoffmann Eitle
Patent- und Rechtsanwälte PartmbB
Arabellastraße 30
81925 München (DE)

Decision under appeal: **Decision of the Opposition Division of the
European Patent Office posted on 27 June 2023
rejecting the opposition filed against European
patent No. 3454099 pursuant to Article 101(2)
EPC.**

Composition of the Board:

Chairman R. Bekkering
Members: F. Giesen
G. Decker

Summary of Facts and Submissions

I. The appeal by the opponent (appellant) is directed against the decision of the opposition division dated 27 June 2023 rejecting the opposition against European patent EP 3 454 099.

II. The following documents were referred to and will also be relevant for the present decision:

D3 JP 2012-203266 A

D3a machine translation of D3 by Patent Translate

III. Oral proceedings before the board took place on 13 October 2025. The parties' final requests were the following:

The opponent requested

as a main request that the decision under appeal be set aside and that the case be remitted to the opposition division with the order to hold the oral proceedings in person,

alternatively, that the decision under appeal be set aside and that the patent be revoked.

The proprietor (respondent) requested

as a main request that the appeal be dismissed, i.e. that the patent be maintained as granted,

alternatively, that the decision under appeal be set aside and that the patent be maintained in amended form on the basis of the claims according to one of auxiliary requests 1 to 4 filed by letter of 30 November 2021.

IV. Claim 1 of the main request (i.e. as granted) reads as follows:

- M1.1 *"A display (10) comprising:*
- M1.2 *an uneven-structure-forming layer (2) having an uneven surface provided with a plurality of concavities or a plurality of convexities respectively provided with flat bottoms (2b, 2B) and flat tops (2a, 2A) substantially parallel to the flat bottoms (2b, 2B);*
- M1.3 *and light reflecting layer (4) covering all or a part of an uneven surface of the uneven-structure-forming layer (2),*
- M1.4 *wherein the uneven-structure-forming layer (2) is provided with two kinds of uneven-structure-forming regions (R1, R2), wherein each of the two kinds of uneven-structure-forming regions (R1, R2) has a constant distance (d, D) between the flat bottoms (2b, 2B) and the flat tops (2a, 2A), the distance (d, D) being different between the two kinds of regions (R1, R2), characterized in that:*
- M1.5 *the two kinds of uneven-structure-forming regions (R1, R2) are alternately and repetitively arrayed;*

- M1.6 *the distance (d) in one of the two kinds of uneven-structure-forming regions (R1) is selected from a range where a sum of chromatic values (u', v') of the display (10) increases with an increase in distance (d); and the distance (D) in the other one of the two kinds of uneven-structure-forming regions (R2) is selected from a range where the sum of chromaticity values (u', v') of the display (10) decreases with an increase in distance,*
- M1.7 *such that a combination contributing to reduction of a color shift of the display is established."*

V. Claim 6 of the main request (i.e. as granted) reads as follows:

- M6.1 *"A display (10) comprising:*
- M6.2 *an uneven-structure-forming layer (2) having an uneven surface provided with a plurality of concavities or a plurality of convexities respectively provided with flat bottoms (2b, 2B) and flat tops (2a, 2A) substantially parallel to the flat bottoms (2b, 2B); and*
- M6.3 *a light reflecting layer (4) covering all or a part of an uneven surface of the uneven-structure-forming layer (2),*
- M6.4 *wherein the uneven-structure-forming layer (2) is provided with two kinds of uneven-structure-forming regions (R1, R2), wherein each of the two kinds of uneven-structure-forming regions (R1, R2) has a constant optical distance, the optical distance being different between the two kinds of regions (R1, R2); characterized in that:*

- M6.5 *the two kinds of uneven-structure-forming regions (R1, R2) are alternately and repetitively arrayed; and*
- M6.6 *of the two kinds of uneven-structure-forming regions (R1, R2), the optical distance in one kind of uneven-structure-forming region (R1) is selected from a range of 90-308 nm, and the optical distance in the other kind of uneven-structure-forming region (R2) is selected from a range of 252-385 nm, or*
- M6.7 *the optical distance in one kind of uneven structure-forming region (R1) is selected from a range of 252-385 nm, and the optical distance in the other kind of uneven structure-forming region (R2) is selected from a range of 315-561 nm, or*
- M6.8 *the optical distance in one kind of uneven structure-forming region (R1) is selected from a range of 315-561 nm, and the optical distance in the other kind of uneven structure-region (R2) is selected from a range of 459-660 nm, wherein*
- M6.9 *the optical distance is a value obtained by multiplying a distance (d, D) between the flat bottoms (2b, 2B) and the flat tops (2a, 2A) by a refractive index (n) of a medium; and*
- M6.10 *the medium is either the uneven-structure-forming layer (2) or, when the display (10) further comprises a transparent layer (6) protecting the light reflecting layer (4), the transparent layer (6)."*

The feature labelling of claim 1 corresponds to that in the decision under appeal (point 1.8.1 of the Facts and Submissions). However, the labelling of claim 6 is modified by subdividing feature M6.8 into features

M6.6. to M6.8 corresponding to the three options of optical distances.

Reasons for the Decision

1. Admissibility

The appeal meets the requirements of Articles 106 to 108 EPC as well as Rule 99 EPC. It is therefore admissible.

2. *Remittal with the order to hold in-person oral proceedings*

2.1 The opponent requested, as its main request, that the board set aside the decision under appeal and remit the case with the order that the opposition division hold the oral proceedings again, this time in person.

2.2 Under Article 111(1), second sentence, EPC, the board, when deciding on the appeal, has discretion whether it reviews the case itself or whether it remits the case to the department whose decision was appealed for further prosecution. Under Article 11 RPBA, however, the board should not remit the case unless special reasons present themselves for doing so. As a rule, fundamental deficiencies which are apparent in the proceedings before the department whose decision was appealed constitute such special reasons.

2.3 The opponent alleged an infringement of its right to be heard, which may constitute a fundamental deficiency within the meaning of Article 111(1) EPC.

The opponent's argument in support of its main request rests on the premise that, according to decision G 1/21, in order to safeguard the right to be heard, oral proceedings were in principle to be held in person. This right could only be safeguarded if a party was denied its wish for in-person oral proceedings for good reasons. Such good reasons, as for example travel restrictions (both parties' representatives were based in Munich), were absent in the present case.

The Decision of the President of the European Patent Office dated 22 November 2022 concerning the format of oral proceedings before examining and opposition divisions, the Legal Division and the Receiving Section (OJ EPO 2022, A 103; "The Decision of the President"), which made videoconferences the rule for oral proceedings before the opposition divisions and required parties to argue for exceptions, was not in line with the principles established in decision G 1/21. By relying on the Decision of the President rather than on G 1/21, the opposition division infringed the opponent's right to be heard (statement of grounds of appeal, point 2.1).

- 2.4 The board does not consider that there was an infringement of the opponent's right to be heard.
- 2.5 Oral proceedings in the form of a videoconference are oral proceedings within the meaning of Article 116 EPC (G 1/21, OJ EPO 2022, 49, Reasons 30). This conclusion was reached irrespective of any additional conditions (Reasons 31). In particular, neither a general emergency, nor travel restrictions, nor the consent of the parties were regarded as prerequisites. The Enlarged Board of Appeal considered that, while suboptimal, oral proceedings by videoconference as such

do not impair the right to be heard and the right to fair proceedings (Reasons 40 and 43). A videoconference is a suitable format for oral proceedings (Reasons 48). A violation of the right to be heard may nevertheless occur in individual cases (Reasons 43). However, it is clear that the Enlarged Board of Appeal did not regard the format of a videoconference as such to constitute a violation of the right to be heard.

2.6 The board cannot discern, and the opponent has not demonstrated, how the opponent's right to be heard was infringed merely because a format of oral proceedings, which as such complies with Articles 113 and 116 EPC as well as with the right to fair proceedings, was imposed against its will. No such conclusion can be derived from decision G 1/21.

2.7 Accordingly, the board finds no infringement of the opponent's right to be heard and consequently no special reasons within the meaning of Article 11 RPBA to remit the case to the opposition division without reviewing the decision under appeal.

3. *Inventive step - Document D3*

3.1 The displays according to claims 1 and 6 of the main request do not involve an inventive step in view of D3 alone.

Starting Point

3.2 Document D3 is an appropriate starting point for the assessment of inventive step, which was not contentious between the parties.

Distinguishing Features

- 3.3 Document D3 discloses features M1.1 to M1.5. As regards features M1.1 to M1.3, this is common ground between the parties.
- 3.4 The decision under appeal (point 2.5.1.12) stated that: *"even if the feature M1.5 were to be considered as disclosed in D3, there is no teaching in document D3 that the distances between the flat bottoms and the flat tops are embodied in the manner as specified by any of the features M1.4 or M1.6, and therefore able to generate the effect specified by feature M1.7"*.
- 3.5 The proprietor further argued that D3 did not disclose that the two regions of the chequered pattern had different optical distances, as feature M1.4 requires.
- 3.6 This does not persuade the board. Paragraph [0054] of the translation D3a states (emphasis added by the board):

"When the display body 10 is observed under normal lighting conditions, the letter "T" has two types of uneven structure regions having different depths arranged in a checkered (sic) pattern. Therefore, it is expressed by a mixed color of yellow and magenta, which are the colors expressed by both uneven structures."

- 3.7 Feature M1.4 is also disclosed in figure 2, paragraph [0024], and paragraph [0040], which again clearly state that the depth D1 is 0.2 μm and the depth D2 is 0.3 μm . This clearly applies to regions 17 and 18 in figure 3.
- 3.8 The opposition division assumed that feature M1.5 was disclosed in D3 (see point 3.4 above). The board agrees, see in particular the chequered pattern in figure 3 of D3.
- 3.9 Concerning feature M1.6, the board acknowledges that figure 3 and paragraph [0054] disclose a chequered pattern of two kinds of regions forming the letter "T" of figure 1. These two kinds of uneven-structure-forming regions produce magenta and yellow colours which mix (see paragraph [0054] of the translation D3a). Paragraph [0050] of D3a further discloses that a depth of 300 nm produces yellow and a depth of 200 nm produces magenta. It is, however, not directly and unambiguously derivable whether this depth represents the optical or the geometrical distance.

Because of this ambiguity, feature M1.6 is regarded as a distinguishing feature.

- 3.10 Regarding feature M1.7, the board agrees with the opponent's argument (page 7 of the statement of grounds of appeal, section "Merkmal M1.7") that, for a given display, it is not apparent what the target colour was. Consequently, it is also not apparent whether a colour shift occurred and whether it was reduced by the choice of the heights of the two regions. This feature attempts to define a technical effect of the manufacturing process in a claim directed to an

individual display, which cannot limit the claimed product.

- 3.11 It follows that the sole distinguishing feature of claim 1 over D3 is feature M1.6, since D3 does not directly and unambiguously disclose whether the values 200 nm and 300 nm refer to geometrical or optical distances.

Technical Effect

- 3.12 Under the problem-solution approach, a technical effect can only be taken into account if it is achieved by the claimed subject-matter. In the present case, a technical effect achieved by the manufacturing process cannot be relied upon when assessing inventive step of the display of claim 1. Even if the process produces an ensemble of displays whose standard deviation from the mean (target) colour is reduced, for an individual display neither the target colour nor the deviation or reduction thereof is recognisable. As each display has fixed distances in the two kinds of regions, the fact that these distances are chosen such that the sum of chromaticity values lies on slopes of opposite sign has no effect for that individual display.

The opponent therefore correctly argued that the technical effect achieved by the choice of distances in feature M1.6 is merely to set a desired mixed colour.

- 3.13 The patent proprietor contended that a technical effect need not be directly derivable from the claimed subject-matter, referring to decisions T 648/88 and T 1089/15. Those cases showed that a technical effect achieved by an inventive chemical process may be relied upon when assessing inventive step of a new

intermediate product occurring in that process. It was therefore argued that, for a new product with distinguishing features, one could rely on effects of the improved manufacturing process, without requiring the effect to be directly produced by the claimed product.

- 3.14 The argument does not persuade the board in substance. The opponent correctly pointed out that this case law from a different technical field does not apply here. The cited decisions concern inventions in the field of chemistry, where the inventive concept lies in a new and non-obvious reaction pathway whose non-obviousness can "carry over" to intermediate products.

The present invention, by contrast, concerns a display device, viz. a physical artefact, as the end product of a manufacturing process, not an intermediate compound in a chemical process. The proprietor has not shown why the relationship between manufacturing method and physical end product is comparable to that between a chemical process and an intermediate product. These relationships are fundamentally different.

The chemical case law invoked by the proprietor does not establish a general rule that a new (within the meaning of Article 54 EPC) product made by an inventive process is itself inventive. This would contradict established case law and examination practice on product-by-process claims (see Case Law of the Boards of Appeal, 11th edition 2025, II.A.7.2, second and third paragraphs, and last paragraph). It represents a narrow exception.

The present display is readily characterisable by its structural and functional features. Its inventiveness

cannot be inferred from the alleged inventiveness of the manufacturing process, which was neither claimed nor examined.

For these reasons, the technical effect of a reduction in chromaticity deviation is a feature of the manufacturing process or of an ensemble of displays. It is not produced by the distinguishing feature of claims 1 and 6 and therefore cannot be taken into account.

Objective Technical Problem

- 3.15 The objective technical problem of claim 1 is therefore to provide a display with an alternative mixed colour.

Assessment of the Solution

- 3.16 The solution is obvious in view of document D3. D3 discloses a range of depths and the corresponding colours they produce. It would have been obvious for the skilled person to select any colour in the spectrum by varying the depths of the two kinds of regions.

Accordingly, the display of claim 1 does not involve an inventive step.

- 3.17 The same conclusion applies to claim 6. As D3 does not directly and unambiguously state whether the depths for yellow and magenta are geometrical or optical distances, alternative features M6.6, M6.7 or M6.8 constitute the distinguishing features.

- 3.18 Since the reduction of colour shift is a technical effect of the manufacturing process but not of an individual display, the technical effect achieved by

the alternative features M6.6, M6.7 and M6.8 is merely to provide further mixed colours.

Moreover, as the opponent correctly argued (statement of grounds of appeal, page 19, last paragraph to page 20, last paragraph), the ranges defined in the three alternative options do not ensure that the sum of chromaticity values falls on parts of the curve having slopes of opposite sign. One example is the choice of 100 nm and 252 nm, which falls within option M6.6. Figure 5 of the patent shows that the sum of chromaticity values for these choices lies on parts of the curve with a positive slope. Even if the technical effect alleged by the proprietor were accepted as occurring in an individual display, it would not be achieved across the entire claimed range.

The proprietor replied that the opponent and the board misunderstood figure 5 of the patent. The values shown in figure 5 represented the set or desired distances. As explained in paragraph 88 of the patent, the actual physical (optical) distances varied by $\pm 10\%$. Starting from the set values of 280, 350 and 510 nm, the resulting actual distances corresponded to those defined in claim 6. The circles in figure 5 illustrated these variations. Accordingly, there was no contradiction between figure 5 and claim 6.

This argument does not persuade the board. Even if a reduction in colour shift were taken into account, it would not be achieved across the entire claimed range. This is not altered by the manufacturing tolerances mentioned. It would have been up to the proprietor to limit claim 6 to ranges ensuring that the effect is achieved throughout the claimed scope rather than

generalising the scope to ranges where the effect is not produced.

The objective technical problem solved by the display of claim 6 is therefore to provide an alternative display exhibiting further mixed colours.

As for claim 1, the provision of any mixed colour would be obvious to the skilled person in view of D3.

Therefore, the display according to claim 6 does not involve an inventive step.

3.19 Since the displays of claims 1 and 6 do not involve an inventive step in view of document D3, the ground for opposition under Articles 100(a) and 56 EPC prejudices the maintenance of the patent as granted.

4. *Auxiliary requests*

4.1 Since the opposition was rejected, the auxiliary requests were not examined by the opposition division. It is the primary object of the appeal proceedings to review the decision under appeal in a judicial manner (Article 12(2) RPBA).

4.2 Neither the proprietor nor the opponent objected to a remittal. However, the opponent suggested that the board decide on the first auxiliary request itself. Claims 1 and 6 of this request included the additional feature of a random arrangement. This amendment was introduced in response to an objection under Article 100(b) EPC, not to establish inventive step. The board was therefore in a position to decide on this request.

4.3 Nevertheless, the board considers it appropriate, for the reasons set out in paragraph 4.1, to remit the case to the opposition division for further prosecution (Article 111(1) EPC). The circumstances of the present case represent special circumstances within the meaning of Article 11 RPBA.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the opposition division for further prosecution.

The Registrar:

The Chairman:



L. Gabor

R. Bekkering

Decision electronically authenticated