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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte ADRA SMITH BACA, DAVID EUGENE BAKER,
PRANTIK MAZUMDER, MARK ALEJANDRO QUESADA, and
WAGEESHA SENARATNE

Appeal 2019-004413
Application 13/905,367
Technology Center 1700

Before CATHERINE Q. TIMM, LINDAM. GAUDETTE, and
MICHELLE N. ANKENBRAND, *Administrative Patent Judges*.

GAUDETTE, *Administrative Patent Judge*.

DECISION ON APPEAL¹

The Appellant² appeals under 35 U.S.C. § 134(a) from the Examiner’s
decision finally rejecting claims 1–13 and 21–26.³

¹ This Decision includes citations to the following documents: Specification filed May 30, 2013 (“Spec.”); Final Office Action dated July 18, 2018 (“Final”); Appeal Brief filed November 27, 2018 (“Appeal Br.”); Examiner’s Answer dated March 19, 2019 (“Ans.”); and Reply Brief filed May 16, 2019 (“Reply Br.”).

² We use the word “Appellant” to refer to “applicant” as defined in 37 C.F.R. § 1.42. The Appellant identifies the real party in interest as Corning Incorporated. Appeal Br. 3.

³ We have jurisdiction under 35 U.S.C. § 6(b).

We affirm in part and enter a new ground of rejection pursuant to 37 C.F.R. § 41.50(b).

CLAIMED SUBJECT MATTER

The invention “relates generally to fingerprint-resistant or anti-fingerprint glass articles . . . as well as to methods of making and using the glass articles.” Spec. ¶ 2. Claim 1, reproduced below, is illustrative of the claimed subject matter:

1. An oleophobic article, comprising:
 - a glass substrate comprising a flat surface; and
 - a patterned oleophobic coating, disposed on the flat surface of the glass substrate, comprising a plurality of non-interacting adjacent gas-trapping features separated by a distance b , wherein each gas-trapping feature comprises an opening in an outer surface of the patterned oleophobic coating that extends to a depth below the outer surface, each opening having a cross-sectional dimension a , wherein an average a is about 10 nanometers to about 100 micrometers so that when a liquid drop contacts the flat surface, the liquid drop forms a liquid meniscus having a concave shape that traps the gas within the gas-trapping features and compressing the gas that is trapped within the gas-trapping features and wherein the patterned oleophobic coating imparts oleophobicity to the glass substrate.

Appeal Br. 29 (Claims Appendix).

REFERENCES

The Examiner relies on the following prior art as evidence of unpatentability:

Name	Reference	Date
Deng	US 2007/0231542 A1	Oct. 4, 2007
Petcavich	US 2010/0033818 A1	Feb. 11, 2010
Cook	US 2010/0279068 A1	Nov. 4, 2010

REJECTIONS

1. Claims 1 and 11 are rejected under 35 U.S.C. § 112(b) or 35 U.S.C. § 112 (pre-AIA), second paragraph, as indefinite. Final 2.
2. Claims 1–6, 10, 21, 23, and 24⁴ are rejected under 35 U.S.C. § 103(a) as unpatentable over Petcavich. Final 3–6.
3. Claim 7 is rejected under 35 U.S.C. § 103(a) as unpatentable over Petcavich and Cook. Final 6.
4. Claims 8 and 9 are rejected under 35 U.S.C. § 103(a) as unpatentable over Petcavich and Deng. Final 6–7.
5. Claims 11–13, 22, 25, and 26 are rejected under 35 U.S.C. § 103(a) as unpatentable over Petcavich, Cook, and Deng. Final 7–10.

⁴ We determine that the Examiner's inclusion of claim 22 and omission of claim 23 in the rejection statement is harmless error. *See* Final 3. The Examiner discusses claim 23, not claim 22, in the body of this rejection. *Id.* at 5–6; *see also* Appeal Br. 16–17 (addressing the claim 23 rejection over Petcavich).

OPINION

Indefiniteness Rejection

The Examiner determined that the claim 1 and claim 11 recitation of “the liquid drop forms a liquid meniscus having a concave shape that traps the gas within the gas-trapping features and compressing the gas that is trapped within the gas-trapping features” renders claims 1 and 11 indefinite because “it is not clear which element is ‘compressing the gas that is trapped.’” Final 2. The Examiner advises that “the rejection would be withdrawn should the Appellant amend the claim[s]” to change “compressing” to “compresses.” Ans. 12.⁵

A claim is indefinite under 35 U.S.C. § 112 when it contains words or phrases whose meaning is unclear. *In re Packard*, 751 F.3d 1307, 1309 (Fed. Cir. 2014). General claim construction principles apply when determining indefiniteness. *Enzo Biochem, Inc. v. Applera Corp.*, 599 F.3d 1325, 1332–33 (Fed. Cir. 2010). Although “claim language should be read in light of the specification as it would be interpreted by one of ordinary skill in the art,” *In re Suitco Surface, Inc.*, 603 F.3d 1255, 1260 (Fed. Cir. 2010), “[a]bsent claim language carrying a narrow meaning, the PTO should only limit the claim based on the specification or prosecution history when those sources expressly disclaim the broader definition,” *In re Bigio*, 381 F.3d 1320, 1325–26 (Fed. Cir. 2004).

⁵ The Examiner stated that “the claims were considered for examination purposes as reciting ‘the liquid drop forms a liquid meniscus having a concave shape that traps the gas within the gas-trapping features and compresses the gas that is trapped within the gas-trapping features.’” Final 2.

“The USPTO is justified in using a lower threshold showing of ambiguity to support a [determination] of indefiniteness under 35 U.S.C. § 112, . . . because the applicant has an opportunity and a duty to amend the claims during prosecution to more clearly and precisely define the metes and bounds of the claimed invention and to more clearly and precisely put the public on notice of the scope of the patent.” *Ex parte Miyazaki*, 89 USPQ2d 1207, 1211–12 (BPAI 2008) (precedential). Consequently, during prosecution, “if a claim is amenable to two or more plausible claim constructions, the USPTO is justified in requiring the applicant to more precisely define the metes and bounds of the claimed invention by holding the claim unpatentable under 35 U.S.C. § 112 . . . as indefinite.” *Id.* at 1211; *see also Bigio*, 381 F.3d at 1324 (“The ‘broadest reasonable interpretation’ rule recognizes that ‘before a patent is granted the claims are readily amended as part of the examination process.’ *Burlington Indus. v. Quigg*, 822 F.2d 1581, 1583 (Fed. Cir. 1987). Thus, a patent applicant has the opportunity and responsibility to remove any ambiguity in claim term meaning by amending the application. *In re Prater*, . . . 415 F.2d 1393, 1404–05 ([CCPA] 1969).”).

The Appellant argues that “[t]he discussion at [Specification] paragraph [44] with respect to FIGS. 4a and 4b clearly shows the liquid meniscus 135 compresses the gas 140 trapped in the gas-trapping feature 120.” Appeal Br. 8. Specification paragraph 44 discloses, in relevant part, that “[a]s the [liquid droplet] meniscus 135 starts to invade the gas-trapping feature 120 to a depth h, the gas 140 remains physically trapped in the absence of any pathway to the atmosphere above the glass substrate 100, and is gradually compressed.” Spec. ¶ 44.

The Appellant’s argument is not persuasive. Even if Specification paragraph 44 supports an interpretation of the claim phrase “compressing the gas” as meaning that the liquid meniscus compresses the gas, we agree with the Examiner that the Specification, as a whole, does not support limiting claims 1 and 11 to this explicitly-described embodiment. In other words, we agree with the Examiner that “[t]he way the claim is written it is not clear which element is ‘compressing the gas that is trapped.’” Ans. 12. Accordingly, we sustain the rejection of claims 1 and 11 as indefinite.

Obviousness Rejections

The Examiner rejected claims 1–6, 10, 21, 23, and 24 as unpatentable over Petcavich, and claims 7–9, 11–13, 22, 25, and 26 as unpatentable over Petcavich in view of various secondary references. *See* Final 3–10. The Appellant argues that the Examiner’s obviousness determination as to claims 1–13 and 21–26 is based on an unsupported finding that Petcavich discloses or suggests “a patterned oleophobic coating [that] imparts oleophobicity to the glass substrate” as recited in independent claims 1 and 11. *See* Appeal Br. 10–12, 20–21. The Appellant’s argument is persuasive for the reasons discussed below.

The Examiner found that the claim term “a patterned oleophobic coating” reads on Petcavich’s protective layer 203. Final 3 (citing Petcavich ¶¶ 41, 51, Fig. 2). Petcavich discloses that protective layer 203 comprises microstructures 202 formed into or onto a first substrate surface using any known processing technique. Petcavich ¶ 41. Petcavich discloses that “embodiments of the protective layer may be fabricated with essentially any polymer that may be processed to form a plurality of microstructures (e.g.,

curved elongated microstructures) in a surface of the protective layer.” *Id.*

¶ 85. As illustrated in Petcavich Figure 2, protective layer 203 is applied to another substrate 201 by positioning protective layer 203’s second, relatively smooth surface on substrate 201’s surface. *Id.* ¶ 41.

According to Petcavich, the protective layer’s surface topography “breaks up [a] foreign mark and promotes or allows for the redistribution of the foreign mark substance via capillary action.” *Id.* ¶ 51. For example, when oil from a fingerprint is deposited onto the microstructures’ flat upper surfaces, the oil migrates to recessed areas between the microstructures thereby decreasing the amount of fingerprint oil that remains on the microstructures’ flat upper surfaces. *Id.* According to Petcavich,

by allowing fingerprint oil to spread throughout the recessed area of a protective layer (film) covering an image display, the concentration or mass of oil originally deposited which can cause optical distortion quickly disperses to the recessed area, and the light from an underlying image is able to traverse through the flat upper surfaces of the transparent/translucent microstructures and recessed area with minimal image distortion.

Id. ¶ 55. The Examiner finds that Petcavich’s coating imparts oleophobicity to the substrate because the microstructures are formed in the coating and break up and redistribute the oil within the coating, “thus, they do not direct the foreign substance [(e.g., fingerprint oil)] to the substrate.” Ans. 15–16 (internal citations omitted).

Independent claim 1 recites “a patterned oleophobic coating, disposed on the flat surface of a glass substrate, comprising a plurality of non-interacting adjacent gas-trapping features . . . wherein the patterned oleophobic coating imparts oleophobicity to the glass substrate.” Appeal Br.

29 (Claims Appendix). Independent claim 11 includes similar limitations. *See id.* at 30. The Specification defines the term “oleophobic” as “the state in which the contact angle (CA) between a droplet of oil and a solid surface is greater than or equal to 90°.” Spec. ¶ 35. The Specification discloses that a patterned coating that imparts oleophobicity to a glass substrate is formed

by placing a mask, which serves as a pattern for the general shape and contours of the gas-trapping features 120, on or over the surface 110 of the glass substrate 100. Next, a coating can be disposed on the surface 110 with the mask thereon, followed by a step of removing the mask. In this manner, the voids created by removal of the mask results in a patterned coating that defines the gas-trapping features 120.

Spec. ¶ 66. The Specification discloses that the mask can be created by coating colloidal particles on surface 110 of glass substrate 100 using a solution-based technique, and that “[t]he thickness of the coating generally will serve as the height or depth **H** of the gas-trapping features 120.” *Id.*

¶ 69. After coating surface 110, particles are selectively removed such that “the remaining coating will have openings or cavities therein that correspond to the desired gas-trapping features 120.” *Id.* ¶ 70. The Specification discloses that “although the gas-trapping features 120 may be in fluid communication with each other through porosity that is inherently present in the glass substrate 100 . . . , the gas-trapping features 120 are not in fluid communication with each other, aside from their intersecting surface 110 of the glass substrate 100.” *Id.* ¶ 43.

Independent claims 1 and 11 further require that the gas trapping features are dimensioned such that “when a liquid drop contacts the [glass substrate’s] flat surface, the liquid drop forms a liquid meniscus having a concave shape that traps the gas within the gas-trapping features and

compress[es] the gas that is trapped within the gas-trapping features.”
Appeal Br. 29–30 (Claims Appendix). The Specification discloses that because gas molecules are physically trapped, a liquid drop only partially penetrates the gas-trapping features resulting in a high contact angle between the droplet and substrate surface. Spec. ¶ 62. In other words, the glass substrate is partially exposed within the gas-trapping features, and the gas trapping features are configured such that “the glass substrate [itself] . . . behave[s] like an oleophobic . . . surface.” *Id.*

Unlike the claimed coating, Petcavich’s protective layer 203 coats the entire surface of substrate 201. Although protective layer 203 itself is patterned, there is no disclosure that the pattern extends to a depth that exposes portions of substrate 201’s surface. Thus, at most, the Examiner’s findings establish that Petcavich’s patterned coating is oleophobic, but are not sufficient to show that the “coating imparts oleophobicity to the glass substrate” (i.e., that the glass substrate itself behaves like an oleophobic surface) as recited in claims 1 and 11.

For the above reasons, we do not sustain the obviousness rejections of claims 1–13 and 21–26.

New Ground of Rejection

Claims 2–10, 12, 13, and 21–26 are rejected under 35 U.S.C. § 112(b) or 35 U.S.C. § 112 (pre-AIA), second paragraph, as indefinite. Independent claims 1 and 11 are indefinite for the reasons stated by the Examiner in the Final Office Action and the Answer. *See supra* pp. 3–6. By virtue of their dependencies from claims 1 and 11, claims 2–10, 12, 13, and 21–26 likewise are unpatentable under 35 U.S.C. § 112(b) or 35 U.S.C. § 112 (pre-AIA), second paragraph, as indefinite.

DECISION SUMMARY

Claims Rejected	35 U.S.C. §	Reference(s)/ Basis	Affirmed	Reversed	New Ground
1-13, 21-26	112	Indefiniteness	1, 11		2-10, 12, 13, 21-26
1-6, 10, 21, 23, 24	103(a)	Petcavich		1-6, 10, 21, 23, 24	
7	103(a)	Petcavich, Cook		7	
8, 9	103(a)	Petcavich, Deng		8, 9	
11-13, 22, 25, 26	103(a)	Petcavich, Cook, Deng		11-13, 22, 25, 26	
Overall Outcome:			1, 11	2-10, 12, 13, 21-26	2-10, 12, 13, 21-26

37 C.F.R. § 41.50(b) provides that an appellant, WITHIN TWO MONTHS FROM THE DATE OF THE DECISION, must exercise one of the following two options with respect to the new grounds of rejection to avoid termination of the appeal as to the rejected claims:

- (1) *Reopen prosecution.* Submit an appropriate amendment of the claims so rejected or new Evidence relating to the claims so rejected, or both, and have the matter reconsidered by the examiner, in which event the proceeding will be remanded to the examiner. . . .
- (2) *Request rehearing.* Request that the proceeding be reheard under § 41.52 by the Board upon the same Record.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv). *See* 37 C.F.R. § 41.50(f).

Appeal 2019-004413
Application 13/905,367

AFFIRMED IN PART;
37 C.F.R. § 41.50(b)