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Table with 5 columns: APPLICATION NO., FILING DATE, FIRST NAMED INVENTOR, ATTORNEY DOCKET NO., CONFIRMATION NO. Includes application details for 13/625,368 filed 09/24/2012 by Nabil Lawandy, attorney BARLOW, JOSEPHS & HOLMES, LTD., examiner BUCCI, THOMAS, art unit 1711, and notification date 03/03/2020.

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte NABIL LAWANDY

Appeal 2019-002943
Application 13/625,368
Technology Center 1700

Before JEFFREY B. ROBERTSON, JAMES C. HOUSEL, and
N. WHITNEY WILSON, *Administrative Patent Judges*.

HOUSEL, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Pursuant to 35 U.S.C. § 134(a), Appellant¹ appeals from the Examiner's decision to reject claims 1, 3–7, 9 and 10. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.²

¹ We use the word Appellant to refer to “applicant” as defined in 37 C.F.R. § 1.42(a). Appellant identifies the real party in interest as Spectra Systems Corporation. Appeal Brief (“Appeal Br.”) filed June 1, 2018, p. 1.

² Our Decision additionally refers to the Specification (“Spec.”) filed September 24, 2012, the Examiner's Final Office Action (“Final Act.”)

CLAIMED SUBJECT MATTER

The invention is directed to a banknote including a self-cleaning and directed cleaning capability. Spec. ¶ 11. The banknote substrate includes a photo-catalytic material that, upon exposure to a source of illumination, reacts in a manner that sheds accumulated contaminants and dirt. *Id.* More particularly, the invention employs coatings, inks, and additives which are photo-active and catalytic to reactions which are effective in breaking up organic contaminants and dirt. *Id.* ¶ 12. Desirably, this effect occurs through exposure to ambient light, but may also be aided by additional equipment for optical/UV excitation, flowing air, water flow, and mechanical brushing. *Id.*

Claim 1, reproduced below from the Claims Appendix to the Appeal Brief, is illustrative of the claimed subject matter. The limitation at issue is italicized.

1. *A directed cleaning banknote material comprising:*
 - a polymeric banknote substrate having a surface and a contaminant encrusted on said surface; and
 - a photo-catalytic material on said surface of said substrate, said photo-catalytic material upon exposure to energy having a wavelength in the 200nm–400nm region causes said photocatalytic material to release electrons that converts atmospheric water to hydroxyl radicals resulting in chemical oxidation on said surface said chemical oxidation releasing said contaminant from said surface.

REFERENCES

The prior art relied upon by the Examiner is:

dated December 18, 2017, and the Examiner’s Answer (“Ans.”) dated November 2, 2018.

Name	Reference	Date
Marzolin et al. ("Marzolin")	US 2008/0053308 A1	Mar. 06, 2008
Weber et al. ("Weber")	US 2009/0138077 A1	May 28, 2009
Olsson	US 2011/0200656 A1	Aug. 18, 2011

REJECTIONS

The Examiner maintains, and Appellant requests our review of, the following grounds of rejection:

1. Claims 1, 3–7, 9, and 10 are rejected under 35 U.S.C. § 102(b) as anticipated by Weber;
2. Claims 1, 3–7, 9, and 10 are rejected under 35 U.S.C. § 103(a) as unpatentable over Marzolin in view of Olsson.

OPINION

After review of the Examiner's and Appellant's opposing positions and the appeal record before us, we determine that Appellant's arguments are insufficient to identify reversible error in the Examiner's anticipation and obviousness rejections. *In re Jung*, 637 F.3d 1356, 1365 (Fed. Cir. 2011). Accordingly, we affirm the stated rejections for substantially the fact findings and the reasons set forth in the Examiner's Answer and the Final Office Action. We offer the following for emphasis only.

Rejection 1: Anticipation

The Examiner rejects claims 1, 3–7, 9, and 10 under 35 U.S.C. § 102(b) as anticipated by Weber. Appellant does not argue the claims under this rejection separately. In accordance with 37 C.F.R. § 41.37(c)(1)(iv),

dependent claims 3–7, 9, and 10 stand or fall with claim 1, which we select as representative in our opinion below.

The Examiner finds that Weber discloses a directed cleaning banknote material as recited in claim 1, comprising a polymeric substrate coated with anatase TiO₂. Ans. 3–5. A complete statement of this rejection is set forth in the Examiner’s Answer, pp. 3–6. Appellant initially asserts that Weber’s Figures 2A and 2B do not depict polymeric banknotes. Appeal Br. 5. Although Appellant is correct (*see* Weber ¶ 7), this particular error is insufficient to demonstrate reversible error on the part of the Examiner, because Weber in paragraph 24, also relied on by the Examiner (Final Office Action 5; Ans. 3), teaches that the polymeric substrate may be a banknote. Weber ¶ 24.

Appellant next argues that Weber fails to disclose that exposure to UV energy in the 200–400 nm wavelength range causes the coating to release electrons to cause conversion of atmospheric water to hydroxyl radicals to create an oxidation reaction. Appeal Br. 5–6. Appellant contends that Weber provides a ceramic layer that forms a spine over which polymer materials are adhered for better retention of materials on the surface of the substrate. *Id.* at 6. In contrast, Appellant contends that the present invention is a directed cleaning banknote comprising a polymer substrate sheet including “a very light coating” of TiO₂ “that is activated only by concentrated ultraviolet energy when desired to have a cleaning effect.” *Id.* at 6–7. Appellant urges that banknotes accumulate, but cannot slough off, organic contaminants every time they are handled. *Id.*

Appellant’s arguments are not persuasive of reversible error. Claim 1 does not recite any specific amount of photo-catalytic material on the surface

of the substrate, let alone recite that it forms a “very light coating.” In addition, although claim 1 does recite “directed cleaning,” Appellant does not direct our attention to these terms as requiring that the coated banknote is activated *only* by *concentrated* UV energy. Indeed, Appellant discloses that the inventive banknote includes both a self-cleaning and directed cleaning capability (Spec. ¶ 11), wherein the banknote’s polymeric substrate includes a photo-catalytic coating, ink, or additive that is desirably activated by ambient light, and can be supplemented with “equipment with optical/UV excitation and flowing air, water flow, and mechanical brushes” (*id.* ¶ 12). *See also id.* ¶ 14, 18, 21, 23. Appellant fails to direct our attention to any disclosure limiting “directed cleaning” to a photo-catalytic reaction that is activated only by concentrated UV energy, nor is the claim so limited.

Moreover, as the Examiner finds (Ans. 12–14), the ability of the recited banknote to cause conversion of atmospheric water to hydroxyl radicals to create an oxidation reaction for releasing contaminants from the surface of the banknote upon exposure to UV energy in the 200–400 nm wavelength range is a functional property of the photo-catalytic material on the surface of the banknote. As the Examiner correctly explains, a prior art product that is otherwise structurally identical to a claimed product generally is inherently capable of performing the function associated with that product. It has long been held that “apparatus claims cover what a device *is*, not what a device *does*.” *Hewlett-Packard Co. v. Bausch & Lomb Inc.*, 909 F.2d 1464, 1468 (Fed. Cir. 1990). Therefore, the patentability of an apparatus claim depends on the claimed structure, not on the use or purpose of that structure, *Catalina Mktg. Int’l, Inc. v. Coolsavings.com, Inc.*, 289 F.3d 801, 809 (Fed. Cir. 2002), or the function or result of that structure. *In re Danly*, 263 F.2d

844, 848 (CCPA 1959); *In re Gardiner*, 171 F.2d 313, 315-16 (CCPA 1949).

Although “[a] patent applicant is free to recite features of an apparatus either structurally or functionally[,] . . . choosing to define an element functionally, *i.e.*, by what it does, carries with it a risk.” *In re Schreiber*, 128 F.3d 1473, 1478 (Fed. Cir. 1997). Where the Examiner establishes a reasonable belief that a property or characteristic recited in the claims would have been inherent to the apparatus, the burden of proof shifts to Appellant to show that this characteristic or property is not possessed by the prior art. *Id.* Appellant has not provided any evidence or persuasive technical reasoning to refute the Examiner’s reasonable determination that Weber’s polymeric banknote with a ceramic coating of anatase TiO₂ (anatase TiO₂ is Appellant’s preferred photo-catalytic material (Spec. ¶¶ 19–21)) would have been inherently capable of converting atmospheric water to hydroxyl radicals to create an oxidation reaction for releasing contaminants from the surface of the banknote upon exposure to UV energy in the 200–400 nm wavelength range. Indeed, Appellant teaches that “the anatase form of TiO₂ can be excited by ultraviolet energy having a wavelength in the 200nm–400nm region.” *Id.* ¶ 20.

In addition, Appellant fails to direct our attention to support for the contention that Weber provides a ceramic layer that forms a spine over which polymer materials are adhered for better retention of materials on the surface of the substrate. To the contrary, Weber teaches that the ceramic coating can be provided on a variety of substrates including polymeric banknotes for a variety of reasons including anti-viral, anti-bacterial, and photoactive properties. Weber ¶ 24. And, as the Examiner finds (Ans. 11),

Weber teaches that the coating can be provided with or without the shell structures. *Id.*

Accordingly, we sustain the Examiner's anticipation rejection of claims 1, 3–7, 9, and 10 by Weber.

Rejection 2: Obviousness

The Examiner rejects claims 1, 3–7, 9, and 10 under 35 U.S.C. § 103(a) as unpatentable over Marzolin in view of Olsson. Appellant does not argue the claims under this rejection separately. In accordance with 37 C.F.R. § 41.37(c)(1)(iv), dependent claims 3–7, 9, and 10 stand or fall with claim 1, which we select as representative in our opinion below.

The Examiner finds that Marzolin discloses substrates, such as paper-type, textiles, fabrics, etc., having photo-catalytic coatings which are capable of application as a directed cleaning banknote as recited in claim 1. Final Act. 7. Though Marzolin fails to teach that the substrate is a polymeric banknote, the Examiner finds that Olsson teaches a banknote with an antimicrobial material applied to its surface. *Id.* at 10. Therefore, the Examiner concludes that it would have been obvious to provide a polymeric banknote as taught by Olsson with Marzolin's photo-catalytic material in order to predictably allow for contaminant removal therefrom. *Id.* A complete statement of this rejection is set forth in the Final Office Action, pp. 6–11.

Appellant argues that the Examiner improperly treated the limitation that the product is a banknote as preambular intended use. Appeal Br. 7. Appellant asserts that claim 1 specifically requires a polymeric banknote substrate. *Id.*

This argument is not persuasive of reversible error because it fails to address the Examiner's rejection, wherein the Examiner acknowledges that Marzolin fails to teach, but finds that Olsson suggests, that the substrate is a polymeric banknote. Thus, the Examiner properly treated both the limitation that the product is a banknote as well as the limitation that the banknote substrate is polymeric. *See* Ans. 15, 16.

Appellant next contends that Marzolin adds anatase TiO₂ to building materials so as to be passively self-cleaning when exposed to visible light over long periods of time, wherein “[t]hese building and construction materials are simply substitutions for polymeric banknotes.” Appeal Br. 7–8. Appellant further contends that Olsson similarly teaches a full time active material that, even when combined with Marzolin, is “on” all the time thereby deteriorating the coating and substrate. *Id.* at 8. In contrast, Appellant contends that the present invention is a directed cleaning banknote comprising a polymer substrate sheet including “a very light coating” of TiO₂ “that is activated only by concentrated ultraviolet energy when desired to have a cleaning effect.” *Id.* Appellant urges that banknotes accumulate, but cannot slough off, organic contaminants every time they are handled. *Id.*

Appellant's arguments are not persuasive of reversible error. As we explained above regarding similar arguments in the anticipation rejection, claim 1 does not recite any specific amount of photo-catalytic material on the surface of the substrate, let alone recite that it forms a “very light coating.” In addition, although claim 1 does recite “directed cleaning,” Appellant does not direct our attention to these terms as requiring that the coated banknote is activated *only* by *concentrated* UV energy. Indeed, Appellant discloses that the inventive banknote includes both a self-cleaning

and directed cleaning capability (Spec. ¶ 11), wherein the banknote's polymeric substrate includes a photo-catalytic coating, ink, or additive that is desirably activated by ambient light, and can be supplemented with "equipment with optical/UV excitation and flowing air, water flow, and mechanical brushes" (*id.* ¶ 12). *See also id.* ¶ 14, 18, 21, 23. Appellant fails to direct our attention to any disclosure limiting "directed cleaning" to a photo-catalytic reaction that is activated only by concentrated UV energy, nor is the claim so limited.

Moreover, as the Examiner finds (Ans. 12–14), the ability of the recited banknote to cause conversion of atmospheric water to hydroxyl radicals to create an oxidation reaction for releasing contaminants from the surface of the banknote upon exposure to UV energy in the 200–400 nm wavelength range is a functional property of the photo-catalytic material on the surface of the banknote. As the Examiner correctly explains, a prior art product that is otherwise structurally identical to a claimed product generally is inherently capable of performing the function associated with that product.

Where the Examiner establishes a reasonable belief that a property or characteristic recited in the claims would have been inherent to the apparatus, the burden of proof shifts to Appellant to show that this characteristic or property is not possessed by the prior art. *Schreiber*, 128 F.3d at 147. Appellant has not provided any evidence or persuasive technical reasoning to refute the Examiner's reasonable determination that Marzolin's substrate, configured as a polymeric banknote as Olsson suggests, with a ceramic coating of anatase TiO₂ would have been inherently capable of converting atmospheric water to hydroxyl radicals to create an oxidation reaction for releasing contaminants from the surface of the banknote upon

exposure to UV energy in the 200–400 nm wavelength range. To the contrary, Appellant discloses that the anatase form of TiO₂ has this functional property. Spec. ¶ 20.

As Appellant has not identified reversible error in the Examiner’s obviousness rejection over Marzolin and Olsson, we sustain this rejection.

CONCLUSION

Upon consideration of the record, and for the reasons given above and in the Final Office Action and the Examiner’s Answer, the decision of the Examiner rejecting claims 1, 3–7, 9, and 10 under 35 U.S.C. § 102(b) as anticipated by Weber, and under 35 U.S.C. §103(a) as unpatentable over Marzolin and Olsson, is *affirmed*.

DECISION SUMMARY

In summary:

Claims Rejected	35 U.S.C. §	Basis/Reference(s)	Affirmed	Reversed
1, 3–7, 9, 10	102(b)	Weber	1, 3–7, 9, 10	
1, 3–7, 9, 10	103(a)	Marzolin, Olsson	1, 3–7, 9, 10	
Overall Outcome			1, 3–7, 9, 10	

TIME PERIOD FOR RESPONSE

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

AFFIRMED