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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte ROBERT A. PYLES, JESSICA BOYER,
ISAAC PLATTE, and DAVID ROCCO

Appeal 2019-002798
Application 15/337,126
Technology Center 1700

Before BEVERLY A. FRANKLIN, MICHAEL G. McMANUS, and
JANE E. INGLESE, *Administrative Patent Judges*.

McMANUS, *Administrative Patent Judge*.

DECISION ON APPEAL

Pursuant to 35 U.S.C. § 134(a), Appellant¹ seeks review of the Examiner's decision to reject claims 1–20. We have jurisdiction under 35 U.S.C. § 6(b).

We REVERSE.

¹ We use the word “Appellant” to refer to “applicant” as defined in 37 C.F.R. § 1.42. Appellant identifies the real party in interest as Covestro LLC. Appeal Br. 1.

CLAIMED SUBJECT MATTER

The present application generally relates to “high security polycarbonate laminates integrated with insulated glazing units (IGU) to produce high security windows.” Specification dated Oct. 28, 2016 (“Spec.”) 1. The laminates are taught to comprise at least nine layers arranged in a specific sequence. *Id.*

Claim 1 is illustrative of the subject matter on appeal and is reproduced below:

1. A laminate comprising nine layers, in the following order:
 - (i) an insulated glazing unit;
 - (ii) a thermoplastic polyurethane;
 - (iii) a polycarbonate;
 - (iv) a thermoplastic polyurethane;
 - (v) a polycarbonate;
 - (vi) a thermoplastic polyurethane;
 - (vii) a glass;
 - (viii) a thermoplastic polyurethane; and
 - (ix) a polycarbonate.

Appeal Br. 10 (Claims App.).

The Specification describes an embodiment that corresponds to claim 1. Spec. 18 (Example 8). The Specification teaches that the described embodiment “was found to retain its shape following the autoclave, as well as through cold and warm temperature cycles. Furthermore, the laminate passed the blast test.” *Id.* This contrasts with various comparative examples which are taught to bow (“forming a potato-chip like distortion”) during manufacture or not to meet “blast requirements.” *Id.* at 15–18. Example 1, for instance, differs from the claimed embodiment only in that its seventh

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(vii) layer is taught to be polycarbonate rather than glass. The Specification teaches that the embodiment of Example 1 does not meet blast requirements. *Id.* at 17.

REFERENCES

The Examiner relies upon the following prior art:

Name	Reference	Date
Duncan et al. (“Duncan”)	US 2003/0061783 A1	April 3, 2003
Mock et al. (“Mock”)	US 2009/0241422 A1	Oct. 1, 2009
Higuchi et al. (“Higuchi”)	US 2011/0223414 A1	Sept. 15, 2011
Leighton et al. (“Leighton”)	US 2012/0219749 A1	Aug. 30, 2012
Michiels et al. (“Michiels”)	US 2013/0330570 A1	Dec. 12, 2013
Dear	US 2014/0186556 A1	July 3, 2014
PPG Industries, Inc. (Nov. 2001), Gas Space Convection Effects on U-values in Insulating Glass Units (“PPG”)		

REJECTIONS

The Examiner maintains the following rejections:

1. Claims 1–3, 8–10, 14, and 15 are rejected under 35 U.S.C. § 103 as being unpatentable over Leighton in view of PPG. Final Act. 2–4.
2. Claim 4 is rejected under 35 U.S.C. § 103 as being unpatentable over Leighton in view of PPG and further in view of Dear. *Id.* at 5.
3. Claims 5 and 6 are rejected under 35 U.S.C. § 103 as being unpatentable over Leighton in view of PPG and further in view of Michiels. *Id.* at 5–6.

4. Claim 7 is rejected under 35 U.S.C. § 103 as being unpatentable over Leighton in view of PPG and further in view of Michiels and Dear. *Id.* at 6–7.
5. Claims 11–13 are rejected under 35 U.S.C. § 103 as being unpatentable over Leighton in view of PPG and further in view of Higuchi. *Id.* at 7–8.
6. Claims 16–19 are rejected under 35 U.S.C. § 103 as being unpatentable over Leighton in view of PPG and further in view of Duncan. *Id.* at 8–9.
7. Claims 16 and 20 are rejected under 35 U.S.C. § 103 as being unpatentable over Leighton in view of PPG and further in view of Mock. *Id.* at 9–10.

DISCUSSION

Rejection 1. The Examiner rejects claims 1–3, 8–10, 14, and 15 as obvious over Leighton in view of PPG. *Id.* at 2–4. In support of the rejection, the Examiner finds that Leighton teaches a transparent laminate structure that can be used as armor. *Id.* at 2. The Examiner finds that Leighton teaches that the laminate is made of “two or more” transparent layers made of glass or transparent plastic such as polycarbonate. *Id.* (citing Leighton ¶ 38). The Examiner further finds that Leighton teaches interlayers of aliphatic polyether polyurethanes between the transparent layers. *Id.* The Examiner determines that the interlayers may be of thermoplastic urethane. *Id.* at 2–3.

The Examiner additionally cites to Leighton’s teaching that “[l]ayers 14 of [*sic*] can be arranged in any desired order, have any desired thickness, and have any desired combination of materials necessary to achieve a

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desired structural or ballistic property.” *Id.* at 3 (citing Leighton ¶ 39). In view of such teaching, the Examiner determines that “one of ordinary skill in the art could be reasonably expected to arrive at the particular number and arrangement of layers as recited in instant claim 1 in the course of normal experimentation and optimization of ballistic and structural properties.” *Id.*

The Examiner relies on PPG as teaching that a gas space between two glass panes has an effect on the insulating value. *Id.* The Examiner determines that “it would have been obvious . . . to configure the gas space of Leighton such that it performed as an insulated glazing unit as taught by PPG because it would result in lower heat transfer through the laminate as a whole.” *Id.*

Appellant argues that the rejection is in error on several bases. Appeal Br. 5–8. First, Appellant argues that the Examiner has not presented a prima facie case of obviousness “because there is no teaching, suggestion or motivation to modify the cited prior art to arrive at the claimed invention.” *Id.* at 5. Appellant asserts that the embodiments taught by Leighton are each made up of (i) a transparent layer, (ii) an interlayer, (iii) a transparent layer, (iv) an interlayer, and (v) a transparent layer. *Id.* Appellant argues that the Examiner fails to articulate sufficient reasoning to increase the number of layers, arrange them in the claimed order, and select the claimed materials for each layer. *Id.* at 6.

Appellant additionally contends that the Examiner’s determination that a person of skill in the art “could be reasonably expected to arrive at the particular number and arrangement of layers as recited in instant claim 1 in the course of normal experimentation and optimization of ballistic and structural properties” is unsupported. *Id.* Appellant argues that the Examiner does not state what ballistic and structural properties are to be

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optimized and, therefore, has not supplied adequate “articulated reasoning with some rational underpinning.” *Id.*

In the Answer, the Examiner reiterates that Leighton teaches a laminate structure having “two or more transparent layers 14 of materials such as, but not limited to, glass, glass-ceramics, transparent ceramics, transparent plastics, and any combinations thereof.” Answer 11 (quoting Leighton ¶ 38). The Examiner finds that this includes structures such as the laminate of claim 1 which requires three transparent polycarbonate layers and one glass layer. *Id.* The Examiner further reiterates that Leighton teaches that one or more transparent layers may be replaced by air gaps (citing Leighton ¶ 39) that the Examiner equates with insulated glazing units. *Id.* With regard to the number of transparent layers, the “Examiner asserts that no motivation is needed to modify the laminate of Leighton to add layers because more layers are already contemplated and taught by Leighton.” *Id.* at 12.

The Examiner additionally responds to Appellant’s argument regarding optimization of the teachings of Leighton to arrive at the claimed device. *Id.* In this regard, the Examiner determines that “the specific structural and ballistic properties of interest would be known to one of ordinary skill in the window and transparent armor art.” *Id.* The Examiner further refers to Leighton’s teaching that the layers can be arranged in any desired order. *Id.* (citing Leighton ¶ 39).

A claim may be determined to be unpatentable where “a skilled artisan would have been motivated to combine the teachings of the prior art references to achieve the claimed invention.” *Pfizer, Inc. v. Apotex, Inc.*, 480 F.3d 1348, 1361 (Fed. Cir. 2007). In stating a ground of rejection, an Examiner must provide more than conclusory statements to support an

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obviousness argument: “there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (quoting *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)).

Here, the Examiner does not provide articulated reasoning as to how a person of ordinary skill in the art would have arrived at the specific number, type, and arrangement of layers as claimed. The Examiner, for example, does not point us to any portion of Leighton that would lead one to a specific laminate having three layers of polycarbonate in conjunction with one layer of glass.

Further, the Examiner’s determination that one of skill in the art would have arrived “at the particular number and arrangement of layers as recited in instant claim 1 in the course of normal experimentation and optimization of ballistic and structural properties” (Final Act. 3) is insufficiently supported. It is true that “the discovery of an optimum value for a result-effective variable generally does not require an inventive step.” *In re Gardner*, 449 F. App’x 914, 917 (Fed. Cir. 2011). Further, “[a] recognition in the prior art that a property is affected by the variable is sufficient to find the variable result-effective.” *In re Applied Materials, Inc.*, 692 F.3d 1289, 1297 (Fed. Cir. 2012). Here, however, the Examiner does not articulate what variables are result-effective nor what ballistic and structural properties are to be optimized. That is, the Examiner has not articulated any result to be achieved nor cited a teaching as to how any particular variable would have affected such result. Accordingly, the Examiner has not shown that one of skill in the art would have reached the claimed laminate by optimization.

In view of the foregoing, we determine that Appellant has shown reversible error in the Examiner's rejection of claim 1. We further determine that Appellant has shown reversible error in the Examiner's rejection of claims 2–20 in view of their dependency from claim 1. Appeal Br. 9. In light of such determination, we need not consider Appellant's argument that the claimed laminate exhibits unexpected results.

CONCLUSION

The Examiner's rejections are reversed.

In summary:

Claims Rejected	35 U.S.C. §	Reference(s)/Basis	Affirmed	Reversed
1–3, 8–10, 14, 15	103	Leighton, PPG		1–3, 8–10, 14, 15
4	103	Leighton, PPG, Dear		4
5, 6	103	Leighton, PPG, Michiels		5, 6
7	103	Leighton, PPG, Michiels, Dear		7
11–13	103	Leighton, PPG, Higuchi		11–13
16–19	103	Leighton, PPG, Duncan		16–19
16, 20	103	Leighton, PPG, Mock		16, 20
Overall Outcome				1–20

REVERSED