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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE
THE PATENT TRIAL AND APPEAL BOARD

Ex parte STEVEN MARC GASWORTH[1]

Appeal 2019-001512
Application 14/801,956
Technology Center 1700

BEFORE MARK NAGUMO, GEORGE C. BEST, and SHELDON M. MCGEE, *Administrative Patent Judges*.

NAGUMO, *Administrative Patent Judge*.

DECISION ON APPEAL

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[1] The applicant under 37 C.F.R. § 1.46 (Application Data Sheet, filed 17 July 2015), and hence the appellant under 35 U.S.C. § 134, is the real party in interest, identified as SABIC Global Technologies B.V. ("SABIC") (Appeal Brief, filed 18 June 2018 ("Br."), 2.)

STATEMENT OF THE CASE

SABIC ("Gasworth") timely appeals under 35 U.S.C. § 134(a) from the Final Rejection[2] of claims 1–16.[3] We have jurisdiction. 35 U.S.C. § 6. We affirm.

OPINION

A. Introduction[4]

The subject matter on appeal relates to articles of manufacture made from polymer compositions that are said to have improved weatherability under cyclic temperature conditions. (Spec 1 [0002].) More particularly, the ′956 Specification indicates that when two connected regions of a part are formed from different polymers, they may have different coefficients of thermal expansion, resulting in differential expansion that leads to wear or fatigue of such bonded or coated systems (*id.* at 5 [0021]), in addition to accelerated weathering of the parts due to higher temperatures (*id.* at 1–2 [0004]). These effects are said to be especially large when one component

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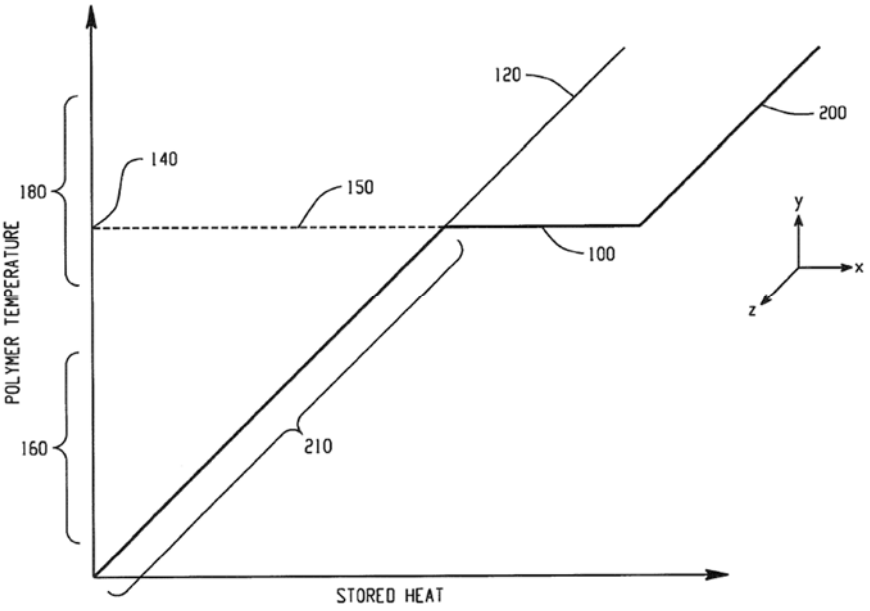
[2] Office Action mailed 26 January 2018 ("Final Rejection"; cited as "FR").

[3] Remaining copending claims 17–20 have been withdrawn from consideration, by the Examiner (FR 1, § 5a), and are not before us.

[4] Application 14/801,956, *Polymers, articles comprising polymers, and methods of making and using the same*, filed 17 July 2015 as a continuation of 14/758,366, filed 29 June 2015, which is the national stage under 35 U.S.C. § 371 of PCT/US2014/010047, filed 02 January 2014, which claims the benefit of 61/748,186, filed 02 January 2013. We refer to the "′956 Specification," which we cite as "Spec."

is opaque[5] and the other component is transparent[6], and the part is exposed to solar radiation on a daily basis, such as in the rooflite of an automobile, where the rooflite has a dark border or blackout portion. (*Id.*)

The Specification teaches that these effects may be moderated by providing a phase change material ("PCM," here, a material that melts at a temperature of interest), which may be encapsulated in a microsphere with glass or polymer as the encapsulant (*id.* at 19–20 [0059]), in either or both the transparent or opaque portion of the part (*id.* at 3 [0011]). The effect of the PCM on the temperature of the polymer is illustrated in Figure 1, which is reproduced below.



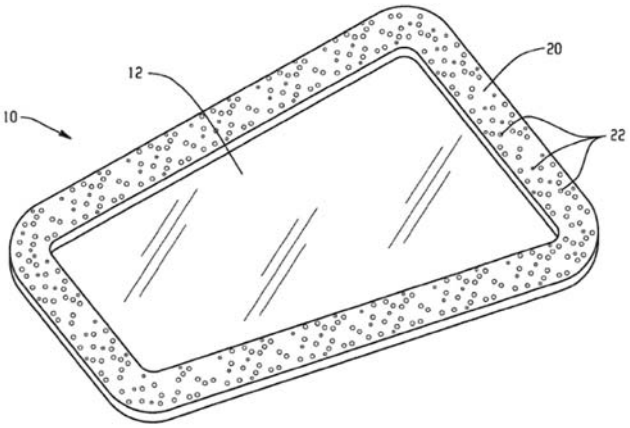
{Figure 1 shows a graph of polymer temperature versus stored heat}

[5] The Specification states that the term "opaque generally refers to less than or equal to 1% of visible light being able to transfer through an object." (Spec. 12 [0037], last sentence.)

[6] The Specification states that the term "transparent" can be used to describe a layer that "e.g., can allow greater than or equal to 5% of visible light to transfer through it." (Spec. 21 [0062], 2d sentence.)

A polymer composition that does not contain a PCM follows line segments **210**[7] and **120**, i.e., the temperature rises steadily as the material is heated, e.g., by exposure to the sun. If the composition comprises a PCM having a melting point **140**, the temperature will rise along segment **210** until the melting temperature is reached. While the PCM melts, i.e., as long as solid PCM is present, the temperature of the composition containing the PCM will not rise, as shown by segment **100**. When all of the PCM has melted, the composition's temperature will start to rise, as shown by segment **200**.[8] (Spec. 7–8 [0026]–[0027].) In the words of the Specification, "a polymer comprising a PCM can sustain a smaller temperature rise for a given heat input." (*Id.* at 7 [0025], last sentence.)

An embodiment of the invention is shown in Figure 4, below.



{Figure 4 shows a glazing **10** with transparent substrate **12** and dark border **20** incorporating PCM **22**}

[7] Throughout this Opinion, for clarity, labels to elements are presented in bold font, regardless of their presentation in the original document.

[8] This is, of course, an idealized description that assumes the polymer composition is in thermal equilibrium with the PCM. To the extent the polymer matrix is not in thermal equilibrium with the PCM, the temperature of the polymer matrix will continue to rise as the PCM melts; but the presence of the PCM will moderate that temperature rise.

Claim 1 is representative and reads:

A polymer part, comprising:

a first layer comprising
a first polymer, wherein
the first layer allows greater than or equal to 5% of visible light to transfer through it;

a second layer
in thermal contact with the first layer and comprising
a second polymer, *wherein the second layer is opaque*;

wherein one or both of the first layer and the second layer comprises a phase change material; and

wherein when exposed to cyclic temperature and solar radiation conditions for a period of time,
the polymer part has a lower effective temperature as compared to a polymer part without a phase change material when exposed to the same cyclic temperature and solar radiation conditions for the same period of time.

(Claims App., Br. 10; some formatting and emphasis added.)

It should be noted that, as indicated by the embodiment of the invention illustrated in Figure 4, the first and second layers may be adjacent to one another, and one need not overlie the other.

The Examiner maintains the following ground of rejection[9, 10, 11]:

> Claims 1–16 stand rejected under 35 U.S.C. § 103(a) in view of the combined teachings of Weiss[12] and Lawall.[13]

B. Discussion

The Board's findings of fact throughout this Opinion are supported by a preponderance of the evidence of record.

Gasworth raises arguments for the patentability of claims 1 and 14, which depends, ultimately, from claim 1. All claims, other than claim 14, stand or fall with claim 1. 37 C.F.R. § 41.37(c)(1)(iv) (2017).

Claim 1

Briefly, the Examiner finds that Weiss describes polycarbonate automotive window systems in which the perimeter of a window (glazing) is "marked with an opaque fade-out border," and finds that these regions correspond to the recited first and second layers recited in claim 1. (FR 4, § 4 (citing Weiss 1 [0002]).) The Examiner finds further that the opaque

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[9] Examiner's Answer mailed 12 October 2018 ("Ans.").

[10] Because this application claims the benefit of an application filed before 16 March 2013, the effective date of the America Invents Act, we refer to the pre-AIA version of the statute.

[11] The Examiner has withdrawn rejections of claims 1–15 under 35 U.S.C. § 112, first paragraph, for lack of written description, and under 35 U.S.C. § 112, second paragraph, for indefiniteness. (Ans. 3.)

[12] Keith D. Weiss et al., *Ink for a polycarbonate substrate*, U.S. Patent Application Publication 2004/0191521 A1 (2004).

[13] Jennifer P. Lawall et al., *Phase change material usage in window treatments*, U.S. Patent Application Publication 2010/0244495 A1 (2010).

area is formed with a polycarbonate resin-based ink, and that an additional hard coating may be applied to the glazing. (*Id.* at 5 (citing Weiss [0022]); see also *id*. at [0023].) The Examiner finds that Weiss does not disclose or suggest that a PCM material be incorporated in the window. (FR 6, 3d para.)

The Examiner finds that Lawall describes incorporating encapsulated PCMs into the transparent portion of a window assembly for a vehicle (*id.* (citing Lawall [0061]–[0065])), or into an opaque sunroof or screen shade (*id.* at para. bridging 6–7 (citing Lawall [0066])), in order to absorb heat while minimizing the increase in temperature (*id.* at 7, 2d para). The Examiner concludes that it would have been obvious "to incorporate encapsulated phase change material into the polycarbonate substrate window (glazing) and opaque boarder [sic: border] of the sunroof taught by Weiss" to gain the thermal benefits taught by Lawall. (*Id.*)

Gasworth objects that, for several reasons, it would not have been obvious to incorporate the encapsulated phase change material of Lawall into the opaque regions descried by Weiss, which are prepared with inks. (Br. 4–8.)

All of these arguments are not persuasive of harmful error because claim 1 recites, "wherein *one* or both of the first layer and the second layer comprises a phase change material." (Claims App., Br. 10 (emphasis added).) Thus, Claim 1 does not require that the PCM be incorporated in the opaque second layer. It follows that claim 1 is rendered obvious by a teaching or suggestion that the PCM be incorporated in the transparent layer. In other words, even if the Examiner were demonstrably wrong regarding

the obviousness of incorporating an encapsulated PCM taught or suggested by Lawall into the opaque ink regions described by Weiss, that error would be harmless with respect to claim 1. Gasworth's arguments in this respect are more relevant to dependent claim 14.

Claim 14

Claim 14 depends from claim 1 serially through claim 9, which requires that the opaque second layer have the phase change material, and through claim 12, which depends from claim 9, and which requires that the second layer comprise a blackout portion that comprises a phase change material. Claim 14 adds the further limitation that the blackout portion be made by the second shot of a two-shot injection molding process. (Claims App., Br. 11.)

Gasworth urges that it is well-understood "that two-shot injection molding processes inherently result in layers that are significantly thicker than printed layers." (Br. 8, 1st full para.) Moreover, Gasworth maintains, the viscosity restrictions on printing inks and injection molding are "completely different," and the routineer would not consider utilizing a two-shot injection molding process as a substitute for an ink deposition process. (*Id.*) While we do not consider Gasworth's arguments implausible, they are not supported by citation to generally recognized authority of record. Moreover, they concern technical matters beyond the everyday experience of the ordinary person, and thus are not appropriate for Official Notice. *In re Ahlert*, 424 F.2d 1088, 1091 (CCPA 1970) ("[A]ssertions of technical facts in areas of esoteric technology must always be supported by citation to some reference work recognized as standard in the pertinent art . . . .

Allegations concerning specific 'knowledge' of the prior art, which might be peculiar to a particular art should also be supported . . . ."). Nor are Gasworth's arguments supported by arguments based on fundamental principles of chemistry and physics, supported by adequate authority. To rule in Gasworth's favor, we need to make findings of facts that demonstrate, by the preponderance of the evidence, that the Examiner's conclusions are harmfully erroneous. "Attorney's argument in a brief cannot take the place of evidence." *In re Pearson*, 494 F.2d 1399, 1405 (CCPA 1974).

We have not overlooked Gasworth's objection that their arguments are based on Weiss's own disclosure. (Reply[14] 2, 2d. para.) But none of Gasworth's arguments address Lawall's teachings that the encapsulated phase change material is designed to be "self-containing" (Lawall 2 [0020] and [0026]), i.e., the microcapsules remain intact and the PCM remains inside, away from the matrix of the opaque region. Similarly, Gasworth argues that ink layers described by Weiss are so thin that "[t]he presence of the encapsulation forming a discreet area percent on the respective surfaces would *necessarily* alter the surface chemistry." (Br. 6, last para.) These arguments, while not facially implausible, are not supported by evidence of record or by citation to authority of record.

Because harmful error in the appealed rejection has not been shown, we affirm.

[14] Reply Brief filed 12 December 2018 ("Reply").

CONCLUSION

The Examiner's rejection of claims 1–16 under 35 U.S.C. § 103(a) in view of the combined teachings of Weiss and Lawall are affirmed.

DECISION SUMMARY

In summary:

Claims Rejected	35 U.S.C. §	Reference(s)/Basis	Affirmed	Reversed
1–16	103	Weiss, Lawall	1–16	

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).

AFFIRMED