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The opinion in support of the decision being entered today
(1) was not written for publication in a law journal and
(2) is not binding precedent of the Board.

Paper No. 20

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte MARK M. HASEGAWA, STEVEN A. DANEMAN,
RONALDO R. DeJESUS and HENRY W. BABEL

Appeal No. 1996-3977
Application 08/232,627¹

ON BRIEF

Before JOHN D. SMITH, WARREN and OWENS, *Administrative Patent Judges*.

WARREN, *Administrative Patent Judge*.

Decision on Appeal

This is an appeal under 35 U.S.C. § 134 from the decision of the examiner finally rejecting claims 12 through 20 and refusing to allow claims 1 through 11 as amended subsequent to the final rejection, which are all of the claims in the application. Claims 1 and 16 are illustrative of the claims on appeal:

1. A coated article, comprising:
an article having a surface; and
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¹ Application for patent filed April 25, 1994.

a multicomponent coating on at least a portion of the surface of the article, the coating comprising a mixture of a low absorptance pigment, a low emittance material, a binder, and, optionally, a high absorptance pigment, each of the components of the coating being stable when exposed to a space environment.

16. A method for preparing a coated article, comprising the steps of:

providing an article having a surface;

preparing a selected composition of a multicomponent coating whose absorptance can be selectively varied over a range of from about 0.20 to about 0.90, according to the selected composition of the coating, and whose emittance can be selectively varied over a range of from about 0.25 to about 0.90, according to the selected composition of the coating; and

applying the selected composition of the multicomponent coating to the surface of the article.

The appealed claims are represented by claims 1 and 16.² Claim 1 is drawn to an article coated at least partially with a multicomponent coating comprising a mixture of at least the three required and one optional components specified in this claim, wherein each of the required and optional components is stable when exposed to a space environment. Claim 16 is drawn to a method of coating an article comprising at least applying thereto a selected composition of a multicomponent coating. The absorptance of the multicomponent coating can be selectively varied over a range of from about 0.20 to about 0.90, and the emittance thereof can be selectively varied over a range of from about 0.25 to about 0.90, according to the selected composition of the coating. According to appellants, the “coating has a controllable range of optical properties” and provides the “spacecraft designer . . . [with] a wide range of variation in thermal properties of the coating, from which particular formulations can be selected for specific applications” which are “stable when exposed to the space environment” (specification, page 3; see also page 4, lines 32-36).

The references relied on by the examiner are:

Shai

4,111,851

Sep. 5, 1978

² Appellants have not separately argued any specific claim rejected on appeal with respect to the grounds of rejection based on prior art under 35 U.S.C. §§ 102(b) and 103. See page 4 of the principal brief. Thus, we decide this appeal based on appealed claim 16 with respect to the ground of rejection under § 102(b) and on appealed claims 1 and 16 with respect to the ground of rejection under § 103. 37 CFR § 1.192(c)(7) (1995).

J.F. Cordaro and C. Stein (Cordaro), "Molecular Engineering Of Pigments For Degradation-Resistant Thermal Control Coatings," AIAA-92-2167-CP, AIAA Materials Specialist Conference - *Coating Technology for Aerospace Systems*, Dallas, Texas, 1992.

The examiner has advanced the following grounds of rejection on appeal: claims 1 through 13 are rejected under 35 U.S.C. § 112, first paragraph, enablement requirement; claims 16 and 19 are rejected under 35 U.S.C. § 102(b) as being anticipated by Shai; and claims 1 through 18 and 20 are rejected under 35 U.S.C. § 103 as being unpatentable over Shai in view of Cordaro.³ We affirm the ground of rejection under § 102(b) and the ground of rejection under § 103 with respect to claim 16, and reverse the ground of rejection under § 112, first paragraph, and the ground of rejection under § 103 with respect to claims 1 through 15, 17, 18 and 20.

Rather than reiterate the respective positions advanced by the examiner and appellants, we refer to the examiner's answer and supplemental answer, and to appellants' principal, reply and supplemental reply briefs for a complete exposition thereof.

Opinion

We have carefully considered the record before us, and based thereon, find that we cannot sustain any of the grounds of rejection under 35 U.S.C. § 112, first paragraph, enablement requirement.⁴ It is well settled that under § 112, first paragraph, the examiner has the burden of

³ In the final rejection of April 4, 1995 (Paper No. 5), the examiner rejected claims 1 through 13, 16, 17, 19 and 20 under § 112, first paragraph, and withdrew this ground of rejection with respect to claims 16, 17, 19 and 20 in the answer (page 2). The examiner further rejected claims 16, 19 and 20 under § 102(b) in said Office action, and withdrew this ground of rejection with respect to claim 20 in the answer (page 2). From the statements on page 2 of the answer and the statement of the rejection and supporting rationale on pages 9-10 of the answer, we find that the statement that "[c]laims 16-19 are rejected" on page 9 of the answer should read "[c]laim 16 *and* 19 are rejected." Thus, we cannot agree with appellants (reply brief, page 4), that the examiner has included claims 17 and 18 in this ground of rejection. Indeed, the examiner made no statement in his answer to this affect in the same manner that he clearly indicated on page 15 of the answer that claims 16 and 20 were included in the ground of rejection under § 103.

⁴ The examiner cited "M.P.E.P. [Manual of Patent Examining Procedure] §§ 706.03(n) and 706.03(z)" (answer, page 3). These sections are entitled "Correspondence of Claim and Disclosure" and "Undue Breadth," respectively, and last appeared in the Sixth Edition of the MPEP (Jan. 1995). See Rev. 1 of the Sixth Edition of the MPEP (Sept. 1995). We observe that both of these sections remained unchanged since at least Rev. 6 of the Fifth Edition of the MPEP (Oct. 1987). Neither section

providing a reasonable explanation, supported by the record as a whole, why the assertions as to the scope of objective enablement set forth in the specification are in doubt, including reasons why the description of the invention in the specification would not have enabled one of ordinary skill in this art to practice the claimed invention without undue experimentation, in order to establish a *prima facie* case under the enablement requirement of the first paragraph of § 112. *In re Wright*, 999 F.2d 1557, 1561, 27 USPQ2d 1510, 1513 (Fed. Cir. 1993); *In re Wands*, 858 F.2d 731, 737, 8 USPQ2d 1400, 1404 (Fed. Cir. 1988); *In re Strahilevitz*, 668 F.2d 1229, 1232, 212 USPQ 561, 563-64 (CCPA 1982); *In re Marzocchi*, 439 F.2d 220, 223-24, 169 USPQ 367, 369-70 (CCPA 1971). In addition to the breadth of the claims and the amount of direction or guidance in the specification, factors to be considered in determining whether the enablement requirement of § 112, first paragraph, has been complied with include the quantity of experimentation necessary, the presence or absence of working examples, the nature of the invention, the state of the prior art, the relative skill of those in the art, and the predictability or unpredictability of the art. *Wands, supra*, citing *Ex parte Forman*, 230 USPQ 546, 547 (Bd. Pat. App. & Int. 1986).

We agree with appellants, for the reasons given in their briefs, that the examiner has failed to establish that, *prima facie*, the claims violate § 112, first paragraph, enablement requirement. We add the following for emphasis. It is apparent from Shai that coating surfaces for use in a space environment was an established art with a high skill level at the time the present application was filed and, indeed, appellants have disclosed factors that would be encountered in such an environment at page 9 of the specification. Accordingly, given that the invention is in a recognized art area with a high level of skill and known elements necessary for success wherein testing in the actual use environment is undertaken, we cannot agree with the examiner that “sending a coated component into space for stability testing would seem to epitomize ‘undue experimentation’” (answer, page 6). Accordingly, we reverse this ground of rejection.

We now consider the ground of rejection of claims 16 and 19 under § 102(b) as being

refers to 35 U.S.C. § 112, first paragraph, in whole or by requirement, and thus we will not further refer in this decision to either of these MPEP sections.

anticipated by Shai. The dispositive issue with respect to this ground of rejection is the interpretation to be made of claim 16, mindful that the terms of this claim must be given the broadest reasonable interpretation consistent with appellants' specification as it would be interpreted by one of ordinary skill in this art. *In re Morris*, 127 F.3d 1048, 1053-56, 44 USPQ2d 1023, 1027-30 (Fed. Cir. 1997); *In re Zletz*, 893 F.2d 319, 321-22, 13 USPQ2d 1320, 1322 (Fed. Cir. 1989). Claim 16 is a method wherein "the *selected composition* of the multicomponent coating" is applied to the "surface of an article" with the requirement of

preparing a *selected composition* of a multicomponent coating whose absorptance can be selectively varied over a range of from about 0.20 to about 0.90, *according to the selected composition of the coating*, and whose emittance can be selectively varied over a range of from about 0.25 to about 0.90, *according to the selected composition of the coating . . .*
[Emphasis supplied.]

According to appellants' specification, the "multicomponent coating" is "a single coating *system*" wherein proportions of the components can be varied to obtain coatings having different thermal properties (e.g., page 4; emphasis supplied). We find no disclosure where a *single coating* applied to a surface exhibits an absorptance across the entire range of from about 0.20 to about 0.90 and an emittance across the entire range of from about 0.25 to about 0.90. Indeed, specification Examples 1 through 6 are directed to six different *single coatings*, each of which contains a different amount of any or all of aluminum, manganese dioxide, zinc oxide and potassium silicate, wherein the range of absorptance is 0.21 - 0.80 and the range of emittance is 0.25-0.81. In specification Examples 7 through 9, three different *single coatings* containing different amounts of any or all of aluminum, manganese oxide and potassium silicate have an absorptance range of 0.23 - 0.41 and an emittance range of emittance is 0.26-0.58. We note that neither of these two exemplified "multicomponent coating" *systems* are shown to meet exact ranges for absorptance and emittance specified in claim 16. We emphasize that it is clear from each of the specification Examples, that the specific composition therein is a *single* "coating," or, as described at pages 9-11 of the specification, a *single* "coatable mixture."

Appellants submit, *inter alia*, that "[c]laim 16 does not recite 'preparing a composition whose absorptance is in the range of 0.20 to 0.90 and whose emittance is in the range of 0.25 to 0.90,' note

that “[t]he title of the invention refers to a coating having ‘tailorable’ properties” and point to page 4 of the specification for the concept that the proportions of the components of a “coating system” can be varied “to realize . . . differing thermal properties” (principal brief, page 8; see also supplemental reply brief, pages 4-5). The examiner contends that claim 16 “does not require the particular coating to vary over the entire range” of absorptance and emittance (answer, pages 9-10). We agree with the examiner.

We find that one of ordinary skill in this art would interpret the above quoted clause of claim 16 in light of the plain meaning of the claim language and appellants’ specification to read on “preparing” a *single* “selected composition of a multicomponent coating,” that is, a *single* “composition” which has a measured absorptance and a measured emittance that falls within the range of absorptance and emittance specified in claim 16 for the “multicomponent coating” *system*.

Accordingly, in view of the interpretation that we have made of claim 16, and in the absence of a showing by appellants that the coating compositions disclosed in Shai, e.g., Shai Examples 2, 3 and 5, do not fall within the absorptance and emittance ranges specified for a multicomponent coating *system* in claim 16, we affirm the ground of rejection of claims 16 and 19 under § 102(b) as being anticipated by Shai.

We cannot affirm the ground of rejection of claims 1 through 15, 17, 18 and 20 under § 103 as being obvious over the combined teachings of Shai and Cordaro. In interpreting the terms of appealed claim 1 in light of appellants’ specification as it would be interpreted by one of ordinary skill in this art, *Morris, supra*; *Zletz, supra*, we must agree with appellants that the term “mixture” indeed has its well known ordinary meaning of an admixture of individual, separate ingredients (e.g., reply brief, page 4). Thus, because the radiation hardened, aluminum-doped zinc oxide of Cordaro does not contain free aluminum *per se*, we agree with appellants (principal brief, page 10) that at best, the combination of references would have motivated one of ordinary skill in this art to replace the zinc oxide used in the preparation of the compositions of Shai (e.g., Shai Method A) with the aluminum containing zinc oxide of Cordaro, which would not result in the coating mixture specified in appealed claim 1. See *Uniroyal, Inc. v. Rudkin-Wiley Corp.*, 837 F.2d 1044, 1050-54, 5 USPQ2d 1434,

1438-41 (Fed. Cir.), *cert. denied*, 488 U.S. 825 (1988). We point out that we would agree with the examiner that *if* the radiation hardened, aluminum-doped zinc oxide of Cordaro was a low absorptance pigment *and* a low emittance material, the combined teachings of the references would, *prima facie*, result in the coating mixture specified in claim 1 (answer, page 13). However, the examiner has *not* advanced any evidence or scientific reasoning on the record that this is indeed so.

We affirm the ground of rejection of claim 16 under § 103 as being obvious over the combined teachings of Shai and Cordaro for the same reasons that we affirmed the ground of rejection of this claim above under § 102(b) as anticipated by Shai, because evidence of a lack of novelty of the claimed invention is, of course, “the ultimate of obviousness.” *In re Fracalossi*, 681 F.2d 792, 794, 215 USPQ 569, 571 (CCPA 1982).

In summary, we have affirmed the ground of rejection of claims 16 and 19 under § 102(b) and the ground of rejection under § 103 with respect to claim 16, and reversed the ground of rejection of claims 1 through 13 under § 112, first paragraph, and the ground of rejection under § 103 with respect to claims 1 through 15, 17, 18 and 20.

The examiner’s decision is affirmed-in-part.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED-IN-PART

JOHN D. SMITH)	
Administrative Patent Judge)	
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CHARLES F. WARREN)	BOARD OF PATENT
Administrative Patent Judge)	APPEALS AND
)	INTERFERENCES

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TERRY J. OWENS
Administrative Patent Judge

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