

The opinion in support of the decision being entered today was **not** written for publication and is **not** binding precedent of the Board.

Paper No. 21

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte GERD BAUER, KARL OSTERRIED, CHRISTOPH SCHMIDT,
REINER VOGT, HELGE-BETTINA KNIESS, MICHAEL UHLIG,
NORBERT SCHUL and GUNTHER BRENNER

Appeal No. 1997-3169
Application 08/211,791

ON BRIEF

Before KIMLIN, GARRIS, and OWENS, *Administrative Patent Judges*.
OWENS, *Administrative Patent Judge*.

DECISION ON APPEAL

This is an appeal from the examiner's refusal to allow claims 29, 31-38, 45-54, 60, 61, 64, 65 and 67-69 as amended after final rejection. These are all of the claims remaining in the application.

THE INVENTION

Appellants claim platelet-shaped pigments coated with one or more layers of metal oxide, which are prepared by forming platelet-shaped matrix particles by fragmenting a solidified liquid precursor formed on a substrate and coating the matrix particles with one or more layers of metal oxide. Appellants also claim the process for making the particles. Claims 46 and 68 are illustrative and read as follows:

46. A process for the preparation of a platelet-shaped pigment having high luster and high covering power or high transparency, comprising an inorganic, platelet-shaped matrix, which matrix is coated with one or more thin, transparent or semi-transparent reflective layers of metal oxides, said process comprising:

- applying a liquid precursor of the matrix material to a continuous belt as a thin film,
- solidifying the liquid film by drying,
- producing the matrix from the precursor in the solidified film by means of a chemical reaction,
- separating the resulting layer from the belt as particles and washing them, and
- optionally, drying, igniting, grinding and/or classifying the particles, wherein the particles after being separated from the belt are then treated with an acid and coated with one or more reflective layers of metal oxides.

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68. A platelet-shaped pigment comprising a platelet-shaped matrix coated with one or more layers of metal oxides prepared by coating platelet-shaped matrix particles obtained by fragmentation of a solidified liquid precursor formed on a substrate, with one or more layers of metal oxide.

THE REFERENCES

Clark et al. (Clark)	3,767,443	Oct. 23, 1973
Saegusa	4,882,133	Nov. 21, 1989
Persello	5,074,917	Dec. 24, 1991
Itoh et al. (Itoh)	5,238,492	Aug. 24, 1993
		(filed Nov. 1, 1991)
Noguchi et al. (Noguchi)	5,271,770	Dec. 21, 1993
	(effective filing date Aug. 20, 1990)	
Clough et al. (Clough)	5,326,633	Jul. 5, 1994
	(effective filing date on or before Dec. 31, 1991) ¹	

THE REJECTION

Claims 29, 31-38, 45-54, 60, 61, 64, 65 and 67-69 stand rejected under 35 U.S.C. § 103 as being unpatentable over the combination of Clark, Saegusa, Persello, Itoh, Noguchi, Clough, and appellants' admitted prior art.

OPINION

We have carefully considered all of the arguments advanced by appellants and the examiner and agree with the examiner that the claimed invention would have been obvious to one of ordinary

¹The application filed on December 31, 1991 is preceded by numerous continuation-in-part applications.

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skill in the art at the time of appellants' invention over the applied references.² Accordingly, we affirm the aforementioned rejection.

Appellants state that the claims stand or fall in the following groups: 1) claims 67 and 68, 2) claims 29, 31, 32, 43, 45-49, 61 and 64, 3) claims 33-35 and 50, 4) claims 36-38, 51-54 and 60, and 5) claims 65 and 69 (brief, page 3). We therefore limit our discussion to one claim in each group, namely, claims 68, 29, 33, 36 and 69. See *In re Ochiai*, 71 F.3d 1565, 1566 n.2, 37 USPQ2d 1127, 1129 n.2 (Fed. Cir. 1995); 37 CFR § 1.192(c)(7) (1995).

Rejection of claim 68

Clark discloses a platelet-shaped pigment which includes a plurality of thin, clear layers of titanium or zirconium dioxide, or an alkaline earth metal titanate, separated by and adherent to one or more thin, clear layers of an interleaving agent which is either an organic film-forming substance or an inorganic oxide or

²Because the reply brief was not entered by the examiner (communication mailed March 3, 1997, paper no. 20), our consideration of appellants' arguments does not include the arguments on the reply brief.

hydroxide (col. 1, lines 46-60; col. 2, lines 38-63). The platelets are formed by fragmentation of a liquid precursor formed on a substrate (col. 6, lines 46-62; col. 7, lines 8-25).

Saegusa discloses a platelet-shaped pigment comprising platelets made by fragmenting a solidified precursor formed on a substrate (col. 1, lines 60-68; col. 3, lines 38-39; col. 4, lines 49-56).

Neither Clark nor Saegusa discloses coating the platelets with one or more metal oxide layers.

Itoh discloses, in his discussion of the prior art, that a calcined TiO_2 pigment can be made more resistant to chalking and discoloring by coating it with a mixture of chromium oxides, zirconium silicate and alumina (col. 3, lines 51-55).

Both Clark (col. 1, line 39; col. 7, lines 48-53) and Saegusa (col. 2, line 26; col. 4, lines 57-62) disclose that the platelets can be made of TiO_2 and can be calcined. Thus, Itoh would have fairly suggested, to one of ordinary skill in the art, applying the above-discussed metal oxide coating disclosed therein to the calcined TiO_2 platelets of Clark and Saegusa to make the platelets more resistant to chalking and discoloring.

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Appellants argue that Clark and Saegusa do not disclose coating the particles with a metal oxide and Itoh does not disclose making pigments by layering on a substrate (brief, pages 4-5). This argument is not well taken because appellants are attacking the references individually when the rejection is based on a combination of references. See *In re Keller*, 642 F.2d 413, 426, 208 USPQ 871, 882 (CCPA 1981); *In re Young*, 403 F.2d 754, 757-58, 159 USPQ 725, 728 (CCPA 1968).

Appellants argue that the Brückner declaration (filed March 14, 1995, paper no. 7) discloses that appellants' claimed invention produces unexpected results (brief, pages 5-6). In this declaration Brückner compares a platelet-shaped pigment consisting of three layers in the order $\text{TiO}_2\text{-SiO}_2\text{-TiO}_2$ made by Clark's process, versus a platelet-shaped pigment consisting of SiO_2 coated by TiO_2 according to appellants' process.

Initially, we note that Brückner does not disclose the thicknesses of the layers. Thus, it cannot be determined from the declaration whether the thicknesses of the layers were the same in the pigments of Clark and appellants. Consequently, the significance of any differences shown between the properties pigments is questionable.

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Brückner states that the pearl luster of the Clark pigment weakened after drying, and disappeared after calcining at 600°C due to delamination of the layers, whereas appellants' pigment had excellent luster and its edges were round and smooth, with no delaminations being seen. This does not appear to be a fair comparison with Clark because that reference states that "[g]ood results may generally be obtained by heating to about 450°C., but higher temperatures may be used if desired" (col. 7, lines 51-53). Appellants have not demonstrated that the observed delamination would take place at Clark's 450°C temperature.

Brückner states that when a pigment was incorporated into a lacquer and a glass plate coated with the lacquer was broken, the TiO₂ top layer was broken and the SiO₂ matrix was seen. It is not clear whether this statement pertains to the Clark pigment or appellants' pigment. Regardless, no comparison between these pigments in this respect is presented.

Brückner states that appellants' pigment had better gloss than Clark's pigment. The above-cited portion of Itoh, however, teaches that coating TiO₂ with the disclosed material improves resistance against chalking and discoloring. It reasonably

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appears that a pigment having less chalking and discoloring would have higher gloss. Thus, even if Brückner has provided evidence of unexpected results, the art of record provides expected benefits of forming a coating around a pigment particle. For evidence of unexpected results to overcome a *prima facie* case of obviousness, that evidence must overcome the evidence of expected results. See *In re Nolan*, 553 F.2d 1261, 1267, 193 USPQ 641, 645 (CCPA 1977). Appellants have not explained why the evidence submitted by Brückner overcomes the evidence of expected results.

Moreover, the evidence in the Brückner declaration is not commensurate in scope with the claims, particularly the independent claims, which encompass the use of any metal oxides and any layer thicknesses. See *In re Grasselli*, 713 F.2d 731, 743, 218 USPQ 769, 778 (Fed. Cir. 1983); *In re Clemens*, 622 F.2d 1029, 1035, 206 USPQ 289, 296 (CCPA 1980). The scope of the layer materials and thicknesses of Clark (col. 1, line 1 - col. 2, line 37; col. 6, lines 6-12) are comparable to those of appellants, but appellants have provided a comparison of only one set of materials and thicknesses. We find in the evidence of record no reasonable basis for concluding that the great number of materials encompassed by appellants' claims would behave as a

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class in the same manner as the particular materials tested. See *In re Lindner*, 457 F.2d 506, 508, 173 USPQ 356, 358 (CCPA 1972); *In re Susi*, 440 F.2d 442, 445-46, 169 USPQ 423, 426 (CCPA 1971).

For the above reasons we conclude, based upon the preponderance of the evidence, that the invention recited in appellants' claim 68 would have been obvious to one of ordinary skill in the art within the meaning of 35 U.S.C. § 103. We therefore affirm the rejection of this claim.

Rejection of claim 29

Appellants argue that the applied references fail to render obvious a pigment which has been prepared using an acid washing step before the particles are coated with metal oxide (brief, page 8). The examiner argues that one of ordinary skill in the art would have been motivated to use acid to remove residual impurities from the particles (answer, page 15). Appellants disclose acid washing (specification, page 5, line 34; page 15, line 29 - page 16, line 7), but do not disclose the step in any of the examples or otherwise indicate that the acid washing step is anything other than a conventional step for washing away alkali metal residues as argued by the examiner (answer, page 8;

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final rejection, paper no. 10, pages 4-5). Thus, we conclude that a pigment made using the acid washing recited in appellants' claim 29 would have been obvious to one of ordinary skill in the art. For this reason and those given above regarding the rejection of claim 68, we affirm the rejection of claim 29.

Rejection of claim 33

Appellants argue that Noguchi discloses (col. 2, lines 23-27) coating a substrate with barium sulfate or calcium sulfate to improve spreadability, gloss and skin adhesion, but does not suggest dispersing barium sulfate into the matrix material (brief, page 9). The examiner argues that it would have been obvious to one of ordinary skill in the art to obtain the desired effect on the particle surfaces by mixing the barium sulfate into the particles rather than by coating the particles if such a person desired to have barium sulfate on the particle surfaces yet eliminate a coating step (answer, page 16). This rationale, which was set forth in the final rejection (page 6), is reasonable and has not been challenged by appellants. Thus, we accept it as being correct. Accordingly, for this reason and the reasons given above with respect to claim 68, we affirm the rejection of claim 33.

Rejection of claim 36

Appellants argue that it is a characterizing feature of the Clark pigments that the interleaving layer(s) be transparent and colorless, and that incorporation of an insoluble colorant into these layers would be contrary to this feature (brief, page 10). Clark's layered product is colored due to optical interference (col. 1, lines 38-45; col. 2, lines 11-13). The examiner makes a reasonable argument that it would have been obvious to one of ordinary skill in the art to add an insoluble colorant to the layers which are separated by the interleaving layers in order to obtain variations in color (answer, pages 16-17), and appellants have not pointed out any error in the examiner's reasoning. Moreover, appellants do not present any argument on this point regarding Saegusa, which discloses addition of coloring matter to the particles (col. 3, lines 25-28). For these reasons and those given above regarding the rejection of claim 68, we affirm the rejection of claim 36.

Rejection of claim 69

Appellants argue that the Kuntz declaration (filed February 9, 1996, attachment to paper no. 13) shows the advantage of the low layer thickness tolerance of their pigments compared to coated mica substrates (brief, page 11). Appellants, however,

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do not explain how the comparison with coated mica substrates is relevant to the Clark and Saegusa references, neither of which is directed toward coated mica substrates. Moreover, Clark discloses that the layers have low thickness variation (col. 6, lines 3-21) and Saegusa indicates that the particles have a uniform thickness (col. 3, lines 20-21). Both references, therefore, indicate that the particles have a low layer thickness tolerance. For these reasons and those given above regarding the rejection of claim 68, we affirm the rejection of claim 69.

DECISION

The rejection of claims 29, 31-38, 45-54, 60, 61, 64, 65 and 67-69 under 35 U.S.C. § 103 over the combination of Clark, Saegusa, Persello, Itoh, Noguchi, Clough, and appellants' admitted prior art, is affirmed.

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

AFFIRMED

EDWARD C. KIMLIN)	
Administrative Patent Judge)	
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)	BOARD OF PATENT
BRADLEY R. GARRIS)	
Administrative Patent Judge)	APPEALS AND
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