E.I. du Pont de Nemours and Company

LEGAL DEPARTMENT PATENT DIVISION

U.S. PATENT APPLICATION

ATTORNEY Donald W Huntley REGISTRATION NO. 24,673

INVENTOR(S) TROY

INVENTOR(S) (Print name in full) Daniel J. Troy

TITLE Dual-Layer Coating Containing Aluminum-Flake Pigment and Coated Article

SERIAL NO. 721,215 FILING DATE April 8, 1985

Grp 154

ASSIGNMENT

DATE OF ASSIGNMENT

ASSIGNEE E.I. du Pont de Nemours and Company

DATE RECORDED 19 REEL FRAME

PROSECUTION PAPERS

DATE	PAPER
9-13-85	Rejection (Final) (Due 3 mos.)
11-13-85	Response w/Declaration & (Certif. of Mailing)
12-11-85	Allowed Due 3 mos.)

DATE	PAPER

ALLOWANCE DATE December 11, 1985 FINAL FEE MAILING DATE March 5, 1986

ABANDONMENT DATE

PATENT NO. 4590235 ISSUE DATE May 20, 1986

CASE NO. FF-7498-C

COUNTRY: United States of America

N36782

DEPT. F4FP
5423-6102
CLASS CODE 0
CHARGE 7354-222422

Send Copies of Official Papers and Correspondence to INVENTOR(S) and:

APPROVALS (Atty. Initials)

To Abandon _____ _____ (Date)

To pay Final Fee [illegible] 3 FEB 86 (Date)

DUP050302107

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In the Application of
DANIEL JOSEPH TROY
Serial No.: 721,215
Filed: April 8, 1985
For: DUAL-LAYER COATING CONTAINING ALUMINUM-FLAKE PIGMENT AND COATED ARTICLE

FF-7498-C
Group: 154
Examiner: H. LILLING

Wilmington, Delaware
Date: November 13, 1985

AMENDMENT

Hon. Commissioner of Patents and Trademarks
Washington, DC 20231

Sir:

In response to the Final Official Action dated September 13, 1985, please amend the above-identified application as follows:

Rewrite Claim 1 to read:

--1. (Amended) [An improved] In a high-solids enamel coating composition [of the kind] having

(1) binder constituents consisting essentially of a film-forming material and a crosslinker for the film-forming material wherein the film-forming material is selected from the group consisting of acrylic resins, polyester resins, and alkyd resins having a weight-average molecular weight of 500-10,000;

(2) a solvent for the binder constituents in an amount of no more than 100% by weight of the binder; and

(3) chromatic and metallic-flake pigments;

[wherein] the improvement [is characterized in that] wherein the metallic-flake pigment is present in the composition in an amount of 10-24% by weight, based on the weight of the binder constituents, and the chromatic pigment is present in an amount sufficient with the amount of the metallic-flake pigment to give a cured coating of this composition a flake orientation index of at least 40.--

REMARKS

Reconsideration of the present application and the entry of the above-amended Claim 1 is respectfully requested. The amendments to Claim 1, together with the following remarks and the accompanying Declaration under 37 C.F.R. 1.132, are considered to obviate the outstanding rejection under the two patents to Camelon et al., and place remaining claims 1-7, as amended, in condition for allowance.

The present application relates to an improved high-solids coating enamel of the type having both metallic flake pigment and chromatic pigment. The invention is based on the discovery that a concentration of metallic flake pigment and chromatic pigment, as specified in the present claims, results in a flake orientation index of at least 40. This flake orientation index, an objective characterization of the metallic glamour of the coating, has heretofore not been achieved using high-solids enamel systems.

The application of which the present case is a continuation, Serial No. 420,510, was similarly rejected over the two patents to Camelon et al. The applicant had previously pointed out that the Camelon patents relate to the preparation of powder paints, and, as such, contain no teaching relating to the present liquid coating enamels. The Examiner, in the Official Action issued in the parent case, pointed to certain preparatory procedures in Camelon in which a solvent was used, and particularly that disclosure appearing in the Camelon '731 patent at column 4, lines 15-19, as well as column 10, lines 1-9.

In the interview with the Examiner on April 26, 1984, it was pointed out that the cited disclosure in the Camelon patent related to the preparation of coated aluminum flakes to be used in the powder paints of that reference, and not to the manufacture of coating compositions. This is particularly apparent when the exceptionally low concentration of binder is considered. Only one example in the two Camelon patents, that is, example 49E appearing at column 24 of the '731 patent, contains a binder concentration that could conceivably be high enough to prepare a coating composition. It was suggested, in the course of the interview with the

Examiner, that the teachings of Example 49E be tested to determine whether a suitable coating composition could be prepared using the Camelon et al. procedures.

As indicated in the accompanying Declaration by Mr. Troy, the choice of solvent in Example 49E would, of itself, preclude the successful spray application of a formulation prepared precisely according to Example 49E, since the solvent would evaporate prior to application to a substrate. Accordingly, Example 49 of Camelon was modified to the extent of using the less volatile methyl ethyl ketone solvent suggested in Camelon Example 50, along with methyl amyl ketone that was a carrier for some of the components.

The composition prepared according to Camelon et al., modified as discussed above with regard to solvent, was tested by comparison with an aluminum-containing coating composition of the present invention, prepared substantially according to the Example. Both the Camelon et al. composition as well as that of the present invention were sprayed onto a primed aluminum panel, according to the testing procedure described in the present application. A clear top layer was prepared and applied over the pigment compositions, the clear coat containing 0.18% of an anti-cratering additive which was found necessary to give a smooth coating with the spray conditions used. Good-looking coatings were obtained in both cases, except that the clear coat over the Camelon et al. compositions spontaneously developed several long intersecting line cracks in each 4 x 6 panel. No similar cracks were observed in the coating composition of the present invention.

Both base coatings, with and without clear coats, were subjected to a standard tape adhesion test. The coating composition of the present invention provided excellent performance. By contrast, the coatings of Camelon et al. failed cohesively, giving a substantial, almost continuous, silver deposit on the tape when removed.

The laboratory comparisons confirm the obvious teaching of the Camelon et al. patents, namely, that none of the preparations described therein relates to a coating enamel as presently claimed, but, rather, a fundamentally dissimilar powder coating.

Accordingly, the teachings of the two Camelon et al. patents are not considered to adversely reflect on the patentability of the present inventions.

The present response is considered to obviate the outstanding rejection in this application. Particularly since these issues were discussed with the Examiner in the parent case at the inverview on April 26, 1984, and further in view of the fact that the outstanding Official Action is the first action issued in the present application, the entry of the present amendments and Declaration is respectfully requested. If, for reasons not understood by the applicant, the present claims are not in condition for allowance with the benefit of the present response, the Examiner is urged to contact the undersigned attorney by telephone to expedite the resolution of any remaining issues.

Respectfully submitted,

Donald W. Huntley
Attorney for Applicant
Registration No. 24,673
Tel.: (302) 774-3811

DWH:lcd

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Hon. Commissioner of Patents and Trademarks, Washington, D.C. 20231, on November 13, 1985.

D. W. HUNTLEY

13 NOV 85

DATE

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

file

In the Application of

Daniel Joseph Troy FF-7498-C

Serial No.: 721,215

Filed: April 8, 1985

For: Dual-Layer Coating
Containing Aluminum-Flake
Pigment and Coated Article

DECLARATION UNDER 37 CFR 1.132

I, Daniel J. Troy, hereby declare THAT:

I am a Chemical Engineer residing at 530 Kerfoot Farm Road, Wilmington, Delaware 19803;

I attended Villanova University and was awarded the degree of Bachelor Of Science in Chemical Engineering from that institution in 1940. I attended the University of Delaware and was awarded the degree of Master Of Science in Chemical Engineering from that institution in 1948;

From 1947 until my retirement earlier this year, I was employed by E. I. du Pont de Nemours and Company. From 1947 to 1965, I conducted research in the Engineering Department relating to automatic chemical analysis. I was then appointed a Research Fellow, and, at the Du Pont Experimental Station in Henry Clay, Delaware, conducted research relating to the measurement of appearance of coating and film products and the process parameters responsible for that appearance;

I am the inventor of the invention described and claimed in the above identified patent application. To compare the performance of the presently claimed coatings with certain compositions described in Camelon et al., U.S. Patent 3,941,731, I, or a laboratory technician working under my direct supervision carried out certain experiments;

A coating composition prepared substantially according to the example in the present application was formulated for comparison with a composition prepared according to the teachings of Example 49E of U.S. Patent 3,941,731. The coating of the present invention was prepared

using 70.4 part by weight of the acrylic polymer used in the present Example, 23.47 parts of methyl amyl ketone, and 29.6 parts of hexamethoxy methylmelamine crosslinking agent. 0.18 parts of Silicone L-45 anti-cratering additive was also added, in 3.42 parts of methyl amyl ketone. The catalyst was 0.5 parts of a solution of 70% dodecyl benzene sulfonic acid in 30% isopropanol, added with 2.0 parts of methanol. In addition, 0.09 parts of n-propyl amine catalyst neutralizer was added to prevent premature gellation. Aluminum paste was added which was made up of 18 parts of aluminum flake in 9.69 parts of mineral spirits;

In preparing the Camelon composition, a solvent other than methylene chloride was used. Methylene chloride, if used to prepare a coating composition, because of its high volatility, would evaporate prior to application by spray techniques to a substrate. Accordingly, the less volatile methyl ethyl ketone solvent suggested in Example 50 of the Camelon et al. patent was used. 39 parts of poly(methy-methacrylate) having a number average molecular weight of 15,000 and 26 parts of glyme solvent was combined with 0.23 parts of poly(lauryl methacrylate) in 0.24 parts of toluene. Aluminum paste was prepared from 19.5 parts of aluminum flake and 10.5 parts mineral spirits. In addition to the solvent previously used, 96.6 parts of methyl ethyl ketone and 44.4 parts of methyl amyl ketone was added;

In the testing of the composition of the present invention and those of Camelon et al., the aluminum-containing compositions were sprayed onto a primed aluminum panel, according to the testing procedure described in the present application. A clear cop layer was prepared and applied over the pigment compositions. The clear coat was the same as the base coat, but without pigment. In addition, the solvent added to the formulation was 32 parts of methyl ethyl ketone and 16 parts of propylene glycol monoethyl ether acetate. Good-looking coatings were obtained in both cases, except that the clear coat over the Camelon et al. composition spontaneously developed several long intersecting line cracks in each 4 x 6 inch panel. No similar cracks were observed in the coating composition of the present invention;

Both base coatings, with and without clear coat, were subjected to a standard tape adhesion test. The coating composition of the present invention provided excellent performance. By contrast, the coatings of Camelon failed cohesively, giving a substantial, almost continuous, silver deposit on the tape when removed.

I further delcare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and that these statements were made in knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Daniel J. Troy

Date: November 13, 1985

RELATED APPLICATIONS –
Divisions, Continuations, Continuations-in-part, Reissues:

FOREIGN COUNTERPARTS – Filed in _____ (No.) Countries

N36782.03

DUP050302115

ALLOWED CLAIMS

In the Application of
DANIEL JOSEPH TROY FF-7498-C
Serial No.: 721,215
Filed: April 8, 1985 Allowed: December 11, 1985
For: DUAL-LAYER COATING CONTAINING ALUMINUM-FLAKE PIGMENT AND COATED ARTICLE

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1. In a high-solids enamel coating composition having (1) binder constituents consisting essentially of a film-forming material and a crosslinker for the film-forming material wherein the film-forming material is selected from the group consisting of acrylic resins, polyester resins, and alkyd resins having a weight-average molecular weight of 500-10,000; (2) a solvent for the binder constituents in an amount of no more than 100% by weight of the binder; and (3) chromatic and metallic-flake pigments; the improvement wherein the metallic-flake pigment is present in the composition in an amount of 10-24% by weight, based on the weight of the binder constituents, and the chromatic pigment is present in an amount sufficient with the amount of the metallic-flake pigment to give a cured coating of this composition a flake orientation index of at least 40.

2. The composition of claim 1 wherein the film-forming material is a polyester resin.

3. The composition of claim 2 wherein the film-forming material is a polyester resin that is a mixture of the condensation products of (1) aliphatic diols and aliphatic dibasic acids, and (2) aliphatic diols and aromatic dibasic acids, and wherein the crosslinker is an aminoplast.

4. The composition of claim 1 wherein the film-forming material is an acrylic resin.

5. The composition of claim 4 wherein the film-forming material is a copolymer of an alkyl acrylate, alkyl methacrylate, and at least one of a hydroxy alkyl acrylate and hydroxy methacrylate, and wherein the crosslinker is an aminoplast.

6. The composition of claim 1 in which the film-forming material is an alkyd resin.

7. The composition of claim 6 wherein the film-forming material is an alkyd resin that is the reaction product of a glyceride of a fatty acid, a diol, and a dicarboxylic acid.

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In the Application of
DANIEL J. TROY
SERIAL NO.: Unknown FF-7498-C
FILED: Concurrently Herewith

Wilmington, Delaware
Date: April 4, 1985

Hon. Commissioner of Patents and Trademarks
Washington, DC 20231

Sir:

This is a request for a continuation application under 37 CFR 1.60, of pending prior application serial no. 612,658 filed on May 21, 1984, of Daniel J. Troy for Improved Dual-Layer Coating Containing Aluminum-Flake Pigment and Coated Article. The prior application is a continuation of application serial no. 420,510, filed September 20, 1982, and now abandoned, which was a continuation-in-part of application serial no. 080,084, filed September 28, 1979, now U.S. Patent 4,359,504.

1. Enclosed is a copy of the prior application, including the declaration as originally filed. The undersigned hereby verifies that the enclosed papers are a true copy of prior application serial no. 420,510, as originally filed on September 20, 1982.
2. The filing fee is calculated below:

CLAIMS AS FILED IN THE PRIOR APPLICATION, LESS ANY CLAIMS CANCELLED BY AMENDMENT BELOW

For	Number filed	Number extra	Rate	Basic fee $300
Total claims----------	7	-20	X $10 =	0
Independent claims----------	1	-3	X $30 =	0
Total filing fee----------				300

N36782.04

DUP050302118

3. A check in the amount of $300 is enclosed. The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Account No. 04-1925. A duplicate copy of this sheet is enclosed.
4. Cancel in this application original claims 8 to 11 of the prior application serial no. 420,510 before calculating the filing fee.
5. Amend the specification by inserting before the first sentence: --This is a continuation of application serial no. 612,658, filed May 21, 1984, which is a continuation of application serial no. 420,510, filed September 20, 1982, which is a continuation-in-part of U.S. application serial no. 080,084, filed September 28, 1979, now U.S. Patent 4,359,504 --.
6. Abandon the prior application serial no. 612,658 as of the filing date accorded this application. A duplicate copy of this sheet is enclosed for filing in the prior application file.
7. The prior application is assigned of record to E. I. du Pont de Nemours and Company. The power of attorney in the prior application is to William H. Thrower, registration no. 28,122, with an associate power of attorney to Donald W. Huntley, registration no. 24,673, both of whose post office addresses are E. I. du Pont de Nemours and Company, Legal Department, Wilmington, Delaware 19898. Please address all future communications to Donald W. Huntley.

The undersigned declares further that all statements made herein of his own knowledge are true and

that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

4 APRIL 1985
(date)

Donald W. Huntley
Attorney of record
Registration No. 24,673