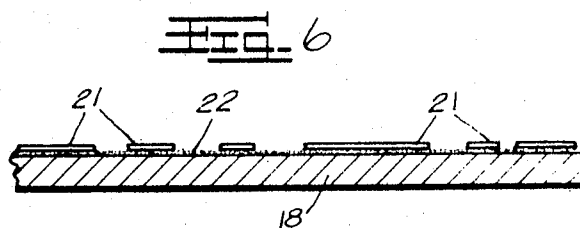
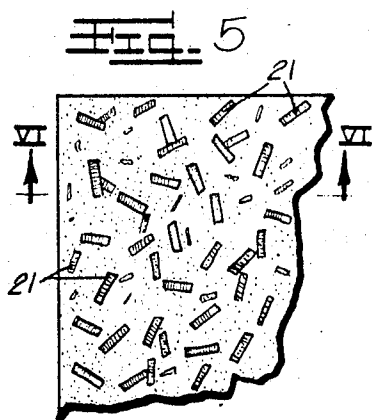
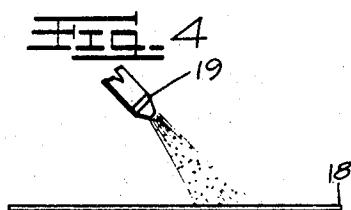
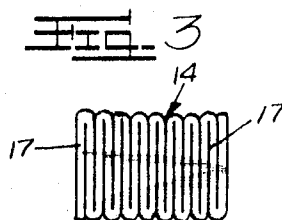
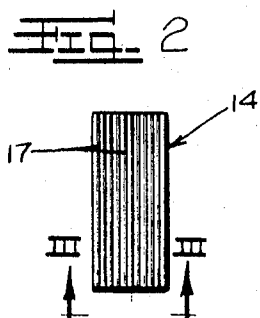
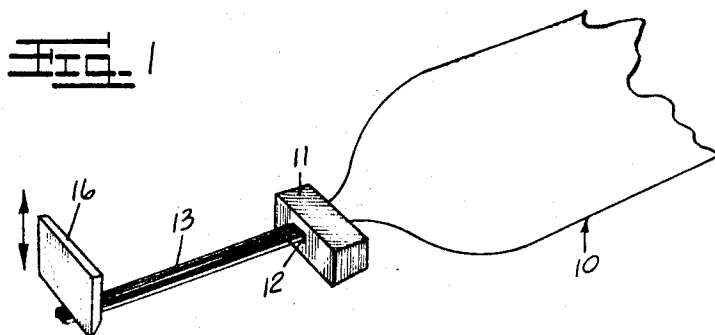


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COATING COMPOSITION CONTAINING PLEATED PARTICLES
AND METHOD FOR APPLYING SAME
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3,470,120



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**COATING COMPOSITION CONTAINING
PLEATED PARTICLES AND METHOD
FOR APPLYING SAME**

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11 Claims

ABSTRACT OF THE DISCLOSURE

Coating composition which includes conventional film forming coating ingredients and flexible, pleated particles of a colored resinous film material, the composition being sprayable by the conventional compressed air spray gun, whereupon the pleated particles open up to substantially larger dimensions than the particles have while dispersed in the vehicle.

The present invention relates to an improved coating composition, and to a method of applying multi-colored coating compositions to surfaces.

The composition of the present invention contains novel coloring material in place of the pigments previously employed in paint compositions. The invention is characterized by the inclusion of discrete, pre-folded, pre-pleated particles of colored organic resin film which can be combined with a suitable paint vehicle or binder and projected through a spray gun in the normal manner. Through the use of the present invention, it is possible to achieve unique multicolor effects by including more than one color of film particles in the vehicle.

In the past, some multi-color paints have been prepared containing colored wood powder particles or colored perlite. However, all of these multi-colored paints have suffered from the deficiency that they could not use coloring material of a particle size greater than the orifice diameter of the paint spray gun.

One of the objects of the present invention is to provide a unique coating composition using coloring matter which is in finely divided form in the vehicle, but which is enlarged in dimensions by the act of spraying the suspended coloring matter through the orifice of the compressed air spray gun.

Another object of the invention is to provide a coating composition which can include any number of colors to be sprayed simultaneously, without interaction between the coloring elements in the vehicle.

A further object of the invention is to provide a method for spray coating a plurality of colors simultaneously in a decorative pattern without intermixing of the colors, since the color providing agents are separate and distinct entities.

In accordance with the present invention, I provide a coating composition which includes a film forming binder of the type usually employed in paints and having dispersed therein coloring matter consisting of flexible, pleated particles of a colored resinous film material. For example, I can produce the coloring matter by starting with a flat thin film of the colored resin, measuring about 10 to 50 millimeters in width and then gathering the film, such as by passing it through a circular or elliptical orifice to provide a width of only 1 to 3 millimeters, thereby providing a plurality of pleats or folds in the longitudinal direction without permanently creasing the film. Then, the pleated film can be cut into lengths of say 1 to 3 millimeters, whereupon the severed masses are mixed with a binder. Any suitable type of sprayable binder can be used, provided only that the binder is substantially unreactive

with the material of which the pre-folded, pre-pleated coloring particles is composed.

The particles are then stirred into the binder to provide a uniform dispersion of sprayable consistency, and then are applied to the object to be coated by projecting them through an orifice in the usual manner of operating a compressed air spray gun. The particles of the present invention are sufficiently flexible so that they can be forced through the orifice even though the maximum dimension of the particle may be somewhat larger than the spraying orifice maximum dimension. Nevertheless, the pressure exerted by the air in projecting the sprayable paint out of the orifice is sufficient to unfold or unpleat the particles so that they resume substantially their original unfolded dimension. This dimension may be 10 to 50 times or so the diameter of the orifice of the spray nozzle, and is always at least twice the maximum dimension of the dispersed particles.

The resinous film material may be any of a wide variety of resinous materials which can be colored and which provide a flexible film. Cellulosic derivatives are particularly preferred, particularly viscose films, and cellulose acetate films. However, other film or fibrous forming materials can also be used including such synthetic resins as polyamides, polyesters, polyvinyl formals, polyvinyl chloride, polyvinylidene chloride, polyacrylonitrile, polymethacrylonitrile, polyurethanes, and the polyolefins such as polyethylene or polypropylene. Copolymers or polycondensation products of these materials can also be used. However, it is preferable to use materials with relatively low water absorption properties, and low oil absorption properties, and, of course, those which exhibit substantial non-reactivity, that is, non-swellability with the material of the binder. The thickness of the film originally can be varied depending upon the ultimate use, but it is desirable to keep the thickness below 0.1 millimeter, and preferably at about 0.01 millimeter or less.

The initial flat film can be folded into the pleated form by passing a strip film of 10 to 50 millimeters in width through a circular or oval opening measuring 1 to 3 millimeters in diameter (or in maximum dimension), the opening being situated in a metallic plate.

The bunched and pleated film which results by passing through the opening is then cut and sub-divided by means of any suitable cutter. Then, the particles which result are mixed into the binder. It is also possible to cut the film to irregular shapes by using a cutting machine wherein the cutting direction is intermittently varied with respect to the longitudinal axis of the pleated film, thereby providing a novel decorative effect after application of the coating layer.

The cut film masses are subject to shearing forces at the time of cutting, and are blended into the binder in the form of folded and pleated masses having longitudinal folds. In this condition, the folds do not spread out to the original flat dimensions even if the cut film masses are subjected to rather intensive stirring and flowing of the binder. Actually, even if some of the folded and pleated particles would be partly spread out in the binder, it does not significantly impair the spraying operation, since the particles are quite elastic and can be forced through the spraying orifice without difficulty at conventional paint spraying pressures.

As a binder in the present invention, I can use either an aqueous solution, an organic solvent solution, or an aqueous or organic emulsion of a natural or synthetic resin. Such vehicles or binders are well known in the paint spraying art, and suitable examples include materials such as gum tragacanth, gum arabic, linseed oil, casein, cumarone resins, polyvinyl acetate, copolymers of styrene and butadiene, polyacrylonitrile, polyvinyl alcohol, methyl

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cellulose, ethyl cellulose, polymethylacrylate, polymethylmethacrylate, polyamides, and copolymers of the foregoing. All of these materials have hitherto been used as binders in paint coatings. If desired, supplementary agents such as lubricants, water repelling agents, plasticizers, and the like may be mixed in the binder for various purposes.

In the drawings, there is illustrated a method for producing the coating composition of the present invention, and the article produced.

FIGURE 1 is a somewhat schematic view of a means employed for gathering the film into the pleated particles;

FIGURE 2 is a greatly enlarged plan view of an individual particle;

FIGURE 3 is a view taken substantially along the line III—III of FIGURE 2;

FIGURE 4 is a schematic representation of the manner in which the coating composition is sprayed onto an object;

FIGURE 5 is a fragmentary view of an article coated with the composition of the present invention; and

FIGURE 6 is a greatly enlarged cross-sectional view taken substantially along the line VI—VI of FIGURE 5.

As shown in the drawings

In FIGURE 1, reference numeral 10 indicates generally a relatively thin, colored film of a natural or synthetic resin material. The film 10 is drawn through a metal plate 11 having an elongated aperture 12 therein, to produce a pleated ribbon 13. The ribbon 13 is severed into small particles 14 by the action of a cutting blade 16. The individual particles 14, as illustrated in FIGURES 2 and 3 consist of pleats 17 which are still flexible, but have a width only a small fraction of the width of the original film 10. These particles are then dispersed in a typical paint composition for spraying purposes, and sprayed onto a surface 18 by means of a conventional spray gun 19. The pressure exerted by the compressed air in the spray gun 19 serves to open up and flatten out the particles 14 into discrete flakes 21 held to the surface 18 by the paint vehicle film 22.

The following specific examples are for the purpose of illustrating the practice of the invention, recognizing that many variations can be made to the specific details as mentioned heretofore.

EXAMPLE I

A viscose rayon strip film dyed with a red sulfur containing color and measuring 0.01 millimeter in thickness and 50 millimeters in width was passed through an opening having a minor axis of 1 millimeter and a major axis of 3 millimeters formed in a metallic plate. The resulting folded film, with a gathered pleated structure was cut into 2 millimeter lengths transversely to the direction of the major film length using a standard cutting machine. These particles were then dispersed in a binder composed as follows:

	Parts by weight
Emulsion of a copolymer of styrene and acrylic acid (50% solids) -----	40
10% aqueous solution of polyvinyl alcohol, molecular weight 1400, 99% saponified -----	40
Micaceous flakes -----	20
	100

The above described components were blended with a conventional three roll blender to provide a paste-like emulsion, and 100 parts of the resulting binder were combined with 1 part of the red colored cut film mass, and 1 part of a similarly constituted black colored mass. After 10 minutes stirring, a sprayable paint composition was obtained.

The paint composition was sprayed on a wall with a conventional spray gun at normal operating pressures, the spray gun having an orifice of 2 millimeters. A coating

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layer was produced having red and black film pieces measuring 10 to 50 times the width and length of the orifice diameter resulting from the spreading pressure exerted by the compressed air from the gun. The film pieces in the coating layer exhibited a durable adhesion to the surface to be coated.

EXAMPLE II

A thin flat film strip of polyvinylidene chloride containing a dye was shaped into small, pleated masses as in Example I. These particles were combined with a binder having the following constitution:

	Parts by weight
Polyvinyl acetate emulsion, molecular weight 1500 (45% solids) -----	50
10% aqueous solution of polyvinyl alcohol, molecular weight 1700, 95% saponified -----	10
Rubber latex (20% solids) -----	40
	100

The coloring particles and the binder were mixed together as in Example I, using 1 part by weight of cream colored particles and 1 part by weight of deep brown colored particles for 100 parts by weight of the binder. After the mixture had become uniform, it was sprayed onto a wooden plate to produce a coating layer having a large pattern of combined cream colored pieces and deep brown colored pieces measuring 10 to 50 times the width and length of the spray gun orifice, and evidencing good durability.

EXAMPLE III

The cut film masses were prepared similarly to Example I, using a film strip (0.05 millimeter in thickness, 5 millimeters in width) of colored polyvinyl formal. The binder was composed as follows:

	Parts by weight
Carboxymethyl cellulose -----	7
Polyvinyl alcohol, molecular weight 500, 85% saponified -----	3
Water -----	90
	100

One part of the above described cut film particles having a light green color and 2 parts of the same type of cut film having a deep green color were combined with 100 parts of the binder and blended. The resulting composition was sprayed onto a wooden wall. The coating layer exhibited a very attractive combination of color film in a large pattern.

While the ranges of composition can be varied widely, it is usually advisable to use less than about 5% by weight of particles in the vehicle. Generally from 1 to 3% by weight of the cut film in the vehicle will be appropriate.

While spraying represents the best embodiment of the invention, it is also possible to use a brush or a trowel to apply the paint composition of this invention.

It should be evident that various modifications can be made to the described embodiments without departing from the scope of the present invention.

I claim as my invention:

1. A coating composition comprising a film forming liquid binder having dispersed therein coloring material consisting of flexible, particles of a colored resinous film material having a plurality of pleats.

2. A coating composition comprising a film liquid forming binder having dispersed therein coloring matter consisting of flexible, particles of colored resin film material having a plurality of pleats, said particles being pleated to a width of no more than one half the fully extended width thereof.

3. The coating composition of claim 2 in which said binder includes a synthetic resin.

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4. The coating composition of claim 2 in which said resinous film material is a cellulose derivative.

5. The coating composition of claim 2 in which the pleated width of the particles is in the range from about 1 to 3 millimeters and the fully extended width is in the range from about 10 to 50 millimeters.

6. The method of spray coating which comprises pressure spraying a composition of a liquid film forming binder containing coloring matter consisting of flexible, particles of a colored resinous film having a plurality of pleats dispersed therein through an orifice at the object to be coated, the pressure of spraying being sufficient to open up said pleated particles to substantially larger dimensions than said particles have while in dispersed condition.

7. The method of claim 6 in which said colored resinous film is a cellulosic derivative.

8. The method of claim 6 in which said colored resinous film is a polyvinyl resin.

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9. The method of claim 6 in which said colored resinous film is a polyester resin.

10. The method of claim 6 in which said colored resinous film is a polyurethane resin.

11. The method of claim 6 in which said colored resinous film is a polyolefinic resin.

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