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H. H. MAPOTHER, JR

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PROCESS OF MAKING PAINTS

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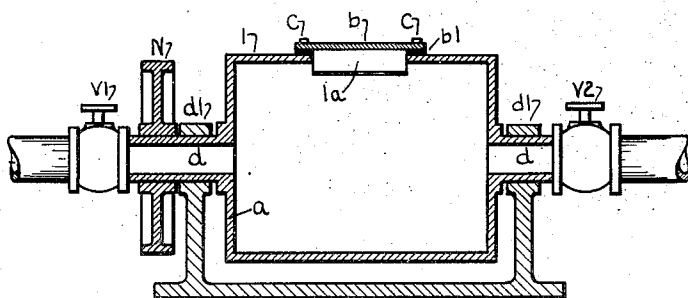


Fig. 1.

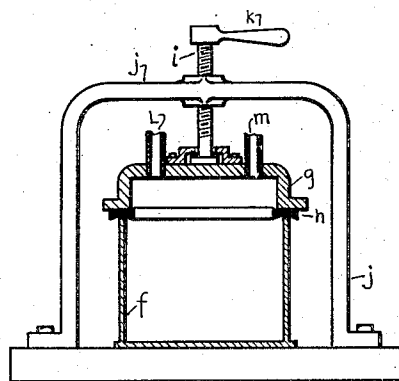


Fig. 2.

INVENTOR.
HENRY H. MAPOTHER, JR.
BY *John L. Milton.*
ATTORNEY

UNITED STATES PATENT OFFICE

HENRY H. MAPOTHER, JR., OF LOUISVILLE, KENTUCKY, ASSIGNOR TO VACUUM PROCESS CORPORATION, A CORPORATION OF KENTUCKY

PROCESS OF MAKING PAINTS

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This invention relates to a process of making paints by means of subjecting the dry contents or pigments to a vacuum and then adding the liquid constituents or vehicles while the former is continued to be subjected to a vacuum and has for its objects; first, to render the process more expeditious and at an appreciably less cost; second, to produce paint by eliminating the present day practice of grinding the pigments in oil after the pigments have been produced in their usual way.

By the term paint I refer to a liquid or vehicle usually composed of oils and volatile spirits, drying or oxidation, into which there is dispersed one or more base and inert pigments, generally of mineral origin, which have been previously ground to practically impalpable powders, added in a quantity only sufficient to render the vehicle opaque and hide or cover the surface on which it has been spread for the purpose of preserving the surface, preventing corrosion, for decoration or for a combination of these functions.

The pigments or dry contents are prepared in commercial form in a powdered condition, a mass of which necessarily carries with it a high percentage of air which fills the interstices formed between the irregular surfaces of the particles.

The existing methods of manufacturing paint call for a preliminary mixing of the pigments and vehicles in dough or lead mixers in order to get the two sufficiently incorporated for grinding. The grinding of paint is merely to effect the complete dispersion of the pigment particles in the oil or other liquid that constitutes the vehicle. The grinding is done on various well known types of mills.

In my new process I eliminate the major part of this old involved method by employing a vacuum to remove the moisture and air from a mass of pigment thus reducing the surface tension and increasing the capillary attraction, or as it is customarily termed the "wetting" characteristic of the pigment. The introduction of the vehicle is therefore followed by a rapid mixing of pigment and vehicle by which the former is completely

taken up in suspension with a minimum of occluded gases. In a corresponding degree the necessity for extended grinding is avoided as the dispersion of pigment in vehicle is in part accomplished by the condition of vacuum maintained at the time of mixing the details of the process will be understood in conjunction with apparatus described herein and represented by the drawings, in which:

Figure 1 represents a modified pebble mill carried on valve equipped hollow shafts mounted in suitable bearings. The cylinder *a* is provided with an opening *1^a* communicating with the outside and is arranged so as to be hermetically sealed with lid *b*, gasket *b¹* and bolts *c, c*. The hollow shafts *d, d* are carried in bearings *d¹, d¹*. The valves *v¹* and *v²* are attached to shaft *d* and rotated with same.

In Fig. 2, I have shown a standard container *f*, the top of which is open. Superimposed is a dome *g*, the major opening of which is so co-related to container *f* that by means of gasket *h*, a hermetically sealed joint may be effected when the screw *i*, carried in bracket *j* is forced downward by means of lever *k*. In the dome are openings *l* and *m*, the former being arranged for communication to a vacuum pump and the latter for the admission of liquid.

In using the apparatus shown in Fig. 1, I place a predetermined quantity of pigments in the mill with valve *v²* closed and *v¹* in communication with a vacuum pump. The cover *b* is secured in place and the vacuum drawn. At this stage a predetermined quantity of liquid material is admitted through valve *v²*, both valves are now closed and their connections removed, so as to allow the mill to be rotated by means of pulley *n*. The pebbles in this mill effect a complete dispersion. This is of particular use where a relatively large portion of liquid to dry content is employed. As a means of reducing the time period necessary for the mill to effect a complete dispersion, with certain formulas, I apply air pressure through valve *v¹* after the milling process is stopped.

In Fig. 2, I start with a predetermined quantity of dry content and liquid content

carried in external containers, a portion of the dry content is placed in container *f* and then a portion of the liquid content is applied after the vacuum has been drawn. This is repeated until the predetermined quantities have been treated in the container.

I employ this stage process to effect a rapid and complete penetration of the pigment with the liquid. This latter process is of particular use in the manufacture of low priced goods such as paste and semi-paste, as it eliminates very considerably wastage of material, labor and apparatus employed.

A clear conception of my invention will be had when it is considered that the pigment is in the form of minute particles having a maximum of surface area. The interstices between the particles are filled with air and thus resistant to the introduction of the liquid vehicle. By reducing the air pressure and thus rarifying the air by means of a vacuum, the liquid vehicle may be caused more readily to flood the mass of pigment particles which latter are thus dispersed in the liquid. The particles of pigment are found to remain in suspension to a greater degree by reason of the manner in which they have caused to disperse through the vehicle.

Many variations from the apparatus illustrated and described are possible, as well as the various steps in the process herein employed and described, therefore, I do not wish to be limited other than by the appended claims.

I claim:

1. The process of mixing paint which consists in subjecting the finely ground dry pigments to a vacuum, mixing a liquid vehicle with the said pigments which have been subjected to the vacuum and uniformly dispersing the pigments in the vehicle while maintaining the vacuum.

2. The process of mixing paint which consists in treating the dry ingredients by reduction of atmosphere pressure, then mixing a liquid vehicle with the said dry ingredients while subject to the reduction of pressure, and maintaining the pressure reduced while the vehicle substantially wets the entire surface of the ingredients.

3. The process of making a paint from a dry powdered pigment and a liquid vehicle, which includes the steps of removing occluded gases from the interstitial spaces between the pigment particles by means of a vacuum, bringing together said dry pigment particles and the liquid vehicle while maintaining said vacuum, whereby the liquid fills said interstitial spaces, and effecting the dispersion of the pigment particles in the liquid vehicle by thorough mixing.

In testimony whereof I affix my signature.