UNITED STATES PATENT OFFICE.

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PROCESS OF EFFECTING THE DRYING OF NON-DRYING OILS AND PRODUCT PRODUCED BY SUCH PROCESS.

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To all whom it may concern:

Be it known that I, WILLIAM N. BLAKEMAN, Jr., of the borough of Manhattan, in the city, county, and State of New York, have invented a new and useful Process of Making Drying Paint Compounds from Non-Drying Fatty Oils and a new and useful Product Produced by Such Process, which invention is fully set forth in the following specification.

The object of this invention is to utilize the non-drying fatty oils as paint-oils by so combining them with certain pigments that the compounds formed when applied as paints will dry and harden and produce economical and satisfactory results.

The invention will first be described in detail and then set forth in the claims.

The drying of oil combined with a pigment when spread as a paint results from three actions—namely, an increase of surface area exposed, the formation of a metallic soap or insoluble saponaceous compound, and the absorption of oxygen—and in the majority of technical works referring to the subject and as at present understood in trade circles the absorption of oxygen is regarded as the primary and most important step. My investigations and experiments have demonstrated, however, that the formation of a metallic soap or insoluble saponaceous compound between the pigment and the oil is the first step in the drying of a paint and that the absorption of oxygen is a secondary step. I have also discovered that the character of the soap formed, whether a hard soap or a soft or glutinous soap, is also of the highest importance, for if a soft or glutinous insoluble soap be formed by a pigment with its oil vehicle no amount of oxygen subsequently absorbed or imparted can dry and harden the paint, and I have further discovered that certain substances used as pigments in paints, while they will form hard soaps when ground in the drying oils will form soft soaps when ground in the non-drying fatty oils, and thus retard or prevent the drying of the latter. Thus lead oxids and salts in the proportions in which they are used as pigments in paints form hard soaps with linseed or other drying oils, but form soft soaps when incorporated in a non-drying fatty oil. These facts appear to have been overlooked in all attempts heretofore made to dry the non-drying fatty oils, for by the persistent use of white lead as a pigment the drying of the non-drying fatty oil with which it has been incorporated has been defeated, owing to the formation of a soft metallic soap between the lead and the oil. I have discovered that certain metallic and earthy oxids and salts if incorporated with a non-drying fatty oil in proper proportions to constitute a paint will form a hard insoluble soap with the oil, and thus cause the compound when spread as a paint to dry and harden. Hence by employing these substances as pigments in proper proportions and rejecting white lead and other pigments which form soft soaps with the non-drying fatty oils these oils may be employed as paint-oils.

The non-drying fatty oils at present falling within the economical scope of my process are cotton-oil, sunflower-oil, corn-oil, and the like. The pigments which may be used are such metallic and earthy oxids and salts as will form hard insoluble soaps when ground in the oil. Examples of such pigments are oxid of zinc or zinc-white, zinc carbonate, manganese carbonate, calcium carbonate, barium carbonate, barium sulfate, strontium carbonate, and aluminium oxid, the pigment which I have found most suitable being oxid of zinc.

In carrying out my invention I first select a non-drying fatty oil and one or more pigments capable of forming a hard metallic soap therewith, and I then thoroughly incorporate such pigment or pigments with the oil by grinding or in any other suitable manner. The result of this simple process is that when the compound so produced is spread as a paint a hard insoluble soap or saponaceous compound is formed between the non-drying fatty oil and the pigment, and the mixture will thoroughly dry and harden.

The oil and pigment should be combined in substantially equal parts—for example, one hundred parts of cotton-seed oil and one hundred to one hundred and twenty parts of zinc-white—in order that a compound may be formed of the proper consistency to be applied as a paint, it being understood, of course, that following the universal custom in trade

circles the pigment may be first ground in only a portion of the oil—say fifteen to twenty parts—to form a thick paste or "pigment ground in oil" and the balance of the oil be subsequently added, so that when the paint is ready for spreading it will consist of substantially equal parts of oil and pigment. By reason of a difference in density from sixty to eighty parts of either barium, manganese, calcium, or strontium carbonate will be equivalent to one hundred parts of zinc-white. Hence I do not limit myself to exact proportions of oil and pigment. It will also be understood that suitable proportions of two or more pigments—for example, sixty parts of zinc-white and forty parts of chalk—can be combined and that two or more non-drying fatty oils—for example, eighty parts of cotton-oil and twenty parts of sunflower-oil—may be mixed to form the vehicle.

The time of drying of the paint will be reduced considerably if a drier be added to the oil or to the pigment or to the compound formed, and the drier used for this purpose may be any animal, vegetable, metallic, or mineral substance that will perform the function of hastening the drying or hardening of the compound, a commercial liquid drier, such as turpentine-japan, being well adapted for this purpose.

Having thus fully described my invention, I claim—

1. The process herein described of making a paint compound possessing drying and hardening properties, which consists in combining, substantially in the proportions specified, a non-drying fatty oil and a pigment capable of forming a hard metallic soap therewith.

2. The process herein described of making a paint compound possessing drying and hardening properties, which consists in combining, substantially in the proportions specified, a non-drying fatty oil and a pigment capable of forming a hard metallic soap therewith, and adding a drier.

3. The process herein described of making a paint compound possessing drying and hardening properties, which consists in combining, substantially in the proportions specified, a non-drying fatty oil and oxid of zinc.

4. The process herein described of making a paint compound possessing drying and hardening properties, which consists in combining, substantially in the proportions specified, a non-drying fatty oil and oxid of zinc, and adding a drier.

5. A paint compound, possessing drying properties, composed of a non-drying fatty oil and a pigment capable of forming a hard metallic soap therewith, combined substantially in the proportions specified.

6. A paint compound, possessing drying properties, composed of a non-drying fatty oil and a pigment capable of forming a hard metallic soap therewith, combined substantially in the proportions specified, and a drier.

7. A paint compound, possessing drying properties, composed of a non-drying fatty oil and oxid of zinc, combined substantially in the proportions specified.

8. A paint compound, possessing drying properties, composed of a non-drying fatty oil and oxid of zinc, combined substantially in the proportions specified, and a drier.

9. A paint compound, possessing drying properties, composed of cotton-seed oil and a pigment capable of forming a hard metallic soap therewith, combined substantially in the proportions specified.

10. A paint compound, possessing drying properties, composed of cotton-seed oil and a pigment capable of forming a hard metallic soap therewith, combined substantially in the proportions specified; and a drier.

11. A paint compound, possessing drying properties, composed of cotton-seed oil and oxid of zinc, combined substantially in the proportions specified.

12. A paint compound, possessing drying properties, composed of cotton-seed oil and oxid of zinc, combined substantially in the proportions specified; and a drier.

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