

UNITED STATES PATENT OFFICE.

AUGUST P. BJERREGAARD, OF NEW YORK, N. Y., ASSIGNOR TO CHARLES W. COOPER, OF SAME PLACE.

DRYING-VARNISH AND PROCESS OF PRODUCING SAME.

SPECIFICATION forming part of Letters Patent No. 629,331, dated July 25, 1899.

Original application filed July 21, 1898, Serial No. 686,488. Divided and this application filed May 5, 1899. Serial No. 715,640. (No specimens.)

To all whom it may concern:

Be it known that I, AUGUST P. BJERREGAARD, a citizen of the United States, residing at New York, borough of Brooklyn, in the county of Kings, State of New York, have invented a certain new and useful Drying-Varnish and Process of Producing the Same, of which the following is a description.

This is a divisional case from my application serially numbered 686,488, filed July 21, 1898. The former application relates to a process for imparting drying properties to varnishes made from copal, fatty drying-oil, and thinning agent. This invention relates, first, to a method of treating varnishes made of copal, fatty oil other than drying-oil, and a thinning agent with other substances which shall cause the same to receive drying properties, and, second, to the product thus obtained.

Hitherto in making fatty-oil and copal varnishes it has been necessary to select a fatty drying-oil for that purpose. By the process herein described, however, it is possible to use fatty oils other than drying-oils for that purpose, because by it the product may be made to dry. In general the oils which may be so used are those non-drying oils consisting entirely or principally of olein—that is, glycerid of oleic or similar unsaturated fatty acid. A few examples of such oils as are not fatty drying-oils are cotton-seed oil, corn-oil, fish-oil, fish-liver oil, and others from which very good results may be obtained.

In the preferred manner of carrying out my process I add to the previously boiled and cooled varnish (after thinning it with a suitable agent and when said varnish is at a temperature not above the boiling-point of the thinning agent and preferably at the ordinary atmospheric temperature) a small quantity—say two or three per cent.—of an oxid of a metal, preferably the oxid of lead known as “litharge,” for such oils as are non-drying. For such oils as are sometimes called “semi-drying” oils—that is, oils which possess slight drying properties when exposed to the air in thin films, but which do not dry to a hard coating—a lesser percentage may be used.

This is because such semidrying oils contain variable proportions of linolein or similar drying fatty glycerids. I also add to the varnish borate of manganese, sulfate of manganese, or other suitable manganese salt in quantity preferably about one chemical equivalent for each chemical equivalent of the lead oxid used. I then suitably agitate the mixture until the drying property of the varnish is sufficiently developed. This may take several hours, depending upon the amount of driers added, the characteristics of the varnish acted upon, and the manner of agitating the mass. The lead oxid, together with the manganese salt, may be added to the varnish, or either may be added first and the other afterward. While it is preferable to use the lead oxid and the manganese salt in equal molecular proportions—for example, in the ratio of two hundred and nineteen pounds oxid of lead to one hundred and ninety-five pounds commercial precipitated borate of manganese—I find it is not absolutely necessary to observe these exact proportions, for if, for instance, an excess of lead oxid is used it will remain in solution in the finished varnish with little, if any, detrimental effect upon it if the excess is not too great, while if an excess of the manganese salt is used it will simply remain undissolved, to be subsequently settled or filtered out, together with the insoluble lead salt formed by chemical reaction during the operation. I prefer, however, to avoid using an excess of lead, and in order to prevent any lead remaining in the finished varnish I often use an excess of manganese salt. The amount of lead oxid and manganese salt required in any particular case depends on the kind of varnish operated upon and also upon the drying quality desired in the product. The quicker the product is desired to dry the greater must be the proportion of the drying agents. If the product turns out after treatment by this process to dry too fast, the drying property may be reduced by adding a suitable quantity of untreated varnish. If, on the other hand, it does not dry fast enough, more lead oxid and manganese salt may be added, or there may be

added to the product enough of very strongly drying varnish to give the desired drying quality to the whole. Apparently the chemical changes involved in this process consist, 5 in the first place, of a combination between the oxid of lead and the varnish or one or more of its constituents and then, in the second place, of a double decomposition between the so-formed lead compound and the manganese salt, resulting in the formation of a compound of manganese oxid and the varnish or 10 one or more of its constituents and of a salt of lead insoluble in the varnish—as, for example, lead borate when manganese borate 15 is used.

As an illustrative example of how I may carry out my process in practical operations the following directions are given: Assuming it is desired to treat a varnish made (for 20 example, by the process described in my pending application for Letters Patent, Serial No. 644,009, filed July 9, 1897) of kauri, cotton-seed oil, and turpentine in the proportions of sixty pounds of the copal, fifteen gallons of the oil, and twenty-two gallons of the thinning agent, I take, say, about one hundred gallons of this varnish and place it in a closed tank fitted with a suitable stirring arrangement. I then add about eight pounds of 30 litharge and about eight pounds of commercial borate of manganese and stir the mass for about three or four hours. During the stirring or agitation it is well to provide against such currents of air as would cause a 35 wasteful loss of the thinning agent by evaporation. After this treatment the resulting product will resemble the varnish before being operated upon in all particulars, except in its drying properties. Before treatment it 40 might never have dried “dust free,” whereas after the treatment above described it will dry in a comparatively short time.

For convenience of expression in the claims I have used the term “non-drying” oils, by which I mean fatty oils other than fatty drying-oils, including, of course, the semidrying fatty oils. 45

What I claim is—

1. The process of treating a varnish made of copal, non-drying fatty oil, and thinning agent, so as to add drying properties thereto, 50 consisting in mixing with the said varnish, at a temperature not above the boiling-point of the thinning agent, driers consisting of an oxid of a suitable metal and a suitable manganese salt, the said driers being substantially in the relative proportions set forth. 55

2. The process of treating a varnish made of copal, fatty non-drying oil, and thinning agent, so as to add drying properties thereto, 60 consisting in mixing with the said varnish, at a temperature not above the boiling-point of the thinning agent, driers consisting of oxid of lead, and a suitable manganese salt, the said driers being substantially in the relative 65 proportions set forth.

3. A drying-varnish made of copal-gum, non-drying fatty oil, a suitable thinning agent, and driers consisting of an oxid of a suitable metal and a suitable manganese salt, 70 the driers being in substantially the relative proportions set forth.

4. A drying-varnish made of copal-gum, non-drying fatty oil, a suitable thinning agent, and driers consisting of oxid of lead, 75 and a suitable manganese salt, the driers being in substantially the relative proportions set forth.

In testimony whereof I affix my signature in presence of two witnesses:

AUGUST P. BJERREGAARD.

Witnesses:

R. C. MITCHELL,

GRACE P. BRERETON,