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METHOD FOR COATING PIPES AND
THE LIKE

Walter J. Harper, Lakewood, and Gordon H.
Mutersbaugh, Olmsted Falls, Ohio, assignors
to The Glidden Company, Cleveland, Ohio, a
corporation of Ohio

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The present invention relates to the coating of pipes and similar elongated or other articles and particularly relates to a process whereby smoother more uniform coating which dries at least in part by oxidation may be applied to such articles.

It is customary following the formation of pipes and similar articles to immediately apply a corrosion resistant coating. After the coating is applied the article are then immediately handled by means of various mechanical equipment. It is desirable that a drying oil varnish type coating be used since such a coating when smooth and uniform has certain desirable advantages.

The varnish compositions of this type ordinarily employed for coating the pipe are called "pipe oils" and comprise a large amount of drying oils, a large proportion of which may be China-wood oil or similar rapidly drying oil, and some resin such as ester gum, etc. Due to the nature of the coating material and the relatively large surface area coated these materials when applied dry rapidly on the surface. This surface drying takes place before the handling of the coated articles is complete and the handling results in scuffing of the surface dried material resulting in an uneven coat and in a grainy coat caused by the displaced skin coat.

It is a primary object of this invention to provide a process whereby a drying oil type coating may be applied to pipes and the like, while improving the uniformity and smoothness of the dried coating.

The inclusion of non-drying oils in such coating compositions has been proposed but has not proven the solution of the problem. Nor does the use of large amounts of drier to speed up the dry overcome the difficulty. Thermoplastic material, such as asphalt, applied hot to cold pipes has been used but as indicated a drying oil type coating is preferred in many instances.

It has been found that if an antioxidizing agent, such as a phenol, is included in the composition that the articles may be handled after coating and at the same time a smooth uniform dried coating will result. The antioxidant prevents the formation of the skin coat so that when the articles are handled after coating no scuffing or grainy appearance results. Also the antioxidant permits flowing of the coating after handling so that any displacement of the initially applied coating during handling is corrected by the self-healing of the coat. The antioxidant permits a uniform drying of the coating which appears to take place from the bottom outwardly. This per-

mits evaporation of thinners and solvents before complete drying of the film has taken place.

The antioxidant also prevents washing of the pipes. This washing is caused by the fact that when freshly coated small pipes are stacked the solvents in the coating on the pipes in the interstices between adjacent pipes are prevented from evaporating and the coat "washes." When the pipes are removed from the stack, the formation of the skin coat results in an uneven coating and bare spots. By employing an antioxidant in the coating the coating is self-healing and results in restoring the uniformity of the coat.

The amount of antioxidant should not be such as to prevent the drying but preferably should be sufficient to retard the drying during handling and prevent the formation of the skin coat. By preventing formation of the skin coat the volatile solvents can evaporate before drying occurs and the film remains fluid whereby the film becomes self-healing so that any displacement of the coat before drying is corrected. The amount of the antioxidant will depend somewhat upon the particular antioxidant used and the particular varnish composition used but a range of from about 0.05 to 1 oz. per gallon will ordinarily suffice. Preferably the range is between 0.1 and 0.3 oz. per gallon. If a very active agent is used even less than 0.05 oz. per gallon may suffice.

As indicated phenolic antioxidants are preferred, such as guaiacol, pyrogallol, pyrocatechol, etc. and their derivatives. A crude mixture of phenols obtained from resinous pine woods in which guaiacol, pyrogallol, cresols and their derivatives predominate has been found to give excellent results.

A varnish was made by cooking together the following ingredients:

Ester gum.....	pounds..	100
Red lead.....	do.....	2
Cobalt drier.....	do.....	1/4
Bodied linseed oil.....	gallons..	20
China-wood oil.....	do.....	10

When the varnish cook was complete 37 gallons of mineral spirits were added to give a varnish containing 60% solids. To this varnish was added 8 oz. of mixture of phenols from resinous pine wood, of which guaiacol, pyrogallol, the cresols and their derivatives predominated.

This pipe oil or varnish may be applied by any suitable method such as spraying, by flowing it on the pipe and then passing the pipe through a wiper such as an air wiper or rubber squeegee or by any other suitable means. The thus coated

pipes are then handled and conveyed by such means as skids, rolls, cranes, etc. and then either stored or shipped. The coating was such that it flowed out and self-healed after the handling operation without skin coating and the formation of a grainy surface. Upon storage and shipment the coat dried hard.

This same coating without the added oxidant, while it did not skin in a can, formed an uneven, grainy coat when applied to pipes and handled in the same manner.

It is to be understood that throughout the examples and discussion the enumeration of specific features or ingredients are by way of illustration and not of limitation. Thus various changes and modifications may be made without departing from the spirit and scope of the invention. Other retarding agents or antioxidants than those mentioned may be used. Different varnishes or pipe oils may be used without departing from the invention.

We claim:

1. In the process of coating metallic pipes and the like in which the coated pipes are subjected to mechanical handling prior to the drying of the coating, the improvement comprising applying to the pipe a liquid coating composition comprising drying oil and containing a phenol antioxidant in an amount from 0.05 to 1.0 ounce per gallon of composition, whereby self-healing of the coating occurs after handling and graininess of the coating due to disruption of skin coat is substantially prevented, without preventing final drying of the coating.

2. The process of claim 1 in which from 0.05 to 0.3 ounce per gallon of composition of a mixture comprising a mixture of phenols obtained from resinous pine wood in which gualacol, pyrogallol, cresols, and their derivatives predominate is employed as the antioxidant.

WALTER J. HARPER.
GORDON H. MUTERSBAUGH.