

UNITED STATES PATENT OFFICE.

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PROCESS AND MATERIAL FOR PREPARING METAL FOR COATING.

No Drawing.

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To all whom it may concern:

Be it known that I, JAMES H. GRAVELL, a citizen of the United States, residing at Elkins Park, in the county of Montgomery and State of Pennsylvania, have invented a new and useful Process and Material for Preparing Metal for Coating, of which the following is a specification.

This invention relates to the cleaning of surfaces and although it may be used to advantage in plating operations and washing dishes, yet it is particularly directed to the preparation of metal for painting.

One object of the invention is to provide an improved material and process for removing oily coatings to produce a desirable surface.

According to the present practice the metal to be plated or painted is treated with a hot aqueous solution containing free hydroxyl ions to remove the oily materials and in some cases the metal is washed with water to remove the excess solution before the coating is applied.

I have discovered that the action of the hydroxyl bath may be greatly improved by the addition of an alcohol which boils at a higher temperature than ethyl alcohol, such for instance as amyl or butyl alcohol. I prefer to use butyl alcohol due to its lack of objectionable odor and I will describe the invention in connection with that material but I wish it understood that other alcohols may be used as equivalents.

According to my invention I provide a wash or bath consisting of water in which is dissolved a material to generate hydroxyl ions such as trisodium phosphate and in addition an alcohol of relative high boiling point such for instance as butyl alcohol. Although the proportions used may be varied to a great extent, I find the following proportions satisfactory:

Trisodium phosphate	1.00 pound
Water	4.00 gallons
Butyl alcohol	.20 gallon

The trisodium phosphate and the butyl alcohol may be mixed together to make a sort of a paste and stored in that form, and thereafter mixed with water to form the bath.

My process as commercially carried out consists in treating the metal with the above described admixture either hot or cold. After the work has been made as clean as

desired, it is ready for subsequent operations.

In case the work is to be painted after treatment with my bath, it may be allowed to dry, or it may be washed in water and then allowed to dry, but if it is first washed in a dilute acid and then washed in water and allowed to dry, the acid neutralizes every trace of alkali so that none remains on the work to act on the paint and shorten its life. Although almost any acid can be used for this purpose, phosphoric acid produces the best results when the metal is iron or steel because it does not tend to cause the metal to rust. This acid may be used in the following proportions:

Phosphoric acid	1 pound
Water	100 gallons

The addition of the higher alcohol to the alkali bath or wash greatly improves it in that it removes oil and dirt quicker and may be operated at a lower temperature; in many cases room temperatures produce satisfactory results. The acid bath or wash prevents any alkali from remaining on the work with the result that the paint adheres better and lasts longer than when no acid bath is used.

The benefit of the doctrine of equivalents as applied in chemical cases is reserved and the invention is not limited to mere matters of form or otherwise than as the prior art and the appended claims may require.

I claim:

1. The method of cleaning metal consisting in subjecting it to the action of an alkali metal compound in the presence of an alcohol which boils at a higher temperature than ethyl alcohol.

2. The method of cleaning metal consisting in subjecting it to the action of an admixture comprising butyl alcohol and trisodium phosphate.

3. The method of cleaning metal consisting in subjecting it to the action of an admixture comprising butyl alcohol and trisodium phosphate and then washing the metal in water.

4. The method of cleaning metal consisting in subjecting it to the action of an admixture comprising butyl alcohol and trisodium phosphate and then to the action of a dilute acid.

5. The method of cleaning metal consisting in subjecting it to the action of an ad-

mixture comprising butyl alcohol and trisodium phosphate, then to the action of a dilute acid, and then to the action of water.

6. A composition of matter for cleaning surfaces consisting of an admixture containing hydroxyl ions and an alcohol which boils at a higher temperature than ethyl alcohol.

7. A composition of matter for cleaning metal consisting of an admixture compris-

ing an alkali metal compound and butyl alcohol.

8. A composition of matter for cleaning metal consisting of an admixture comprising trisodium phosphate and butyl alcohol. 15

9. A composition of matter for cleaning metal consisting of an admixture comprising basic sodium phosphate and alcohol.

JAMES H. GRAVELL.