

UNITED STATES PATENT OFFICE.

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PROCESS OF COATING WITH METAL.

No Drawing.

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The invention relates to a process of coating with metal and has as an object the provision of a process of applying a metal coating to articles of various characteristics.

5 It is a further object of the invention to provide a process of coating shingles with metal.

A further object of the invention is the provision of a shingle coated with a non-corroding metal such as copper.

10 For attaining the object of the present invention a process is provided for causing metal particles to adhere to an object of any desirable material, such as wood, tile, other metal, or felt or asbestos saturated with asphalt. The material thus carrying the applied metal particles is then treated by electrodeposition before the applied particles have been given an opportunity to become

20 oxidized or otherwise rendered, in any manner, non-conductors of electricity, whereby uniform coating of electrically deposited metal is quickly formed uniformly over the surface to be treated.

25 For the purpose of making metallic particles adhere to the article to be treated, it is first coated with some sticky substance such as paint, varnish, bituminous substance or the like. Because of the readiness with

30 which a coating of bituminous substance, such as asphalt, becomes set in proper condition for application of the metal particles, asphalt is preferred. The sticky coating is applied and allowed to set until it reaches its most "tacky" condition before application of the metal particles thereto.

When asphalt is adopted for attachment of the metal particles, as substance is chosen of such characteristics as not to liquefy under the influence of any heat to which the article is expected to be subjected in service nor to become brittle under the influence of intense cold.

45 When the coating is to be applied to an asphalt felt shingle, the superposed asphalt applied for the purpose of causing the metal particles to adhere may be of the same nature as that already present in the felt and will result in forming a substantially integral mass with the body of the shingle itself.

50 The metal particles may be applied to the coating in any suitable manner, but should be in a very fine state of subdivision and should be applied with clean surfaces so as to form a surface which is a good conductor of electricity.

It is preferred to apply the metal by such a means as the well known Schoop pistol, wherein metal is fused in any desirable manner, as by an oxyhydrogen flame or by means of an electric current, and the fused metal is projected against the surface in atomized condition by means of a blast.

60 The result of applying the particles in this manner will be that the particles themselves will be exceedingly minute and will not have an opportunity to become oxidized by the air after their fusion and before they are applied to the article.

70 The article thus coated, at all exposed surfaces, is then dipped into an electroplating bath, preferably of such a character as to deposit copper upon the film of particles adhering to the sticky coat. Because of the fact that the coating has not become oxidized and is clean, and therefore a fine conductor of electricity, immediate results are obtained by immersion in the electroplating bath. Moreover, since the metal applied in this manner will form a complete film over the whole surface, including all depressions, the electrodeposited coat will be complete over the entire article.

85 It is found that the result of this procedure is what is known by metal depositors as "a perfect strike". Furthermore, it is found that this "strike" occurs in about two seconds after immersion into the bath so that the action of the chemicals of the bath is prevented from injuring the layer of metallic particles deposited upon the sticky coating. Also, since all portions of the surface of the article are covered with a layer of particles which is clean a complete electrodeposited surface results over all portions of the article.

90 For depositing as a base for the electrodeposition it is preferred to use an alloy of equal parts of tin and lead, or 25 parts tin to 75 parts lead is found to be a very suitable proportion. The result of the application of this particular alloy, in a highly heated condition as described, is found to be a very smooth and even surface and the use of this particular alloy is found to give a much quicker "strike" in the electrodepositing bath than any other alloy which has been tried.

100 A further advantage of the use of the alloy named for application to the sticky coating is that this alloy is not affected by the materials of the electrodepositing bath as are other metals as iron, which are electro-

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positive to the noncorroding metals, as copper, which is preferred to use for the final coat.

The result of the process when shingles are produced thereby is found to be a metal-covered shingle which is light and strong and is practically indestructible in use.

I claim:

10 1. The process of coating an article with metal, which comprises placing a coating of sticky substance upon the surface of the article, applying an alloy of tin and lead in a finely divided condition to said coating and electrodepositing metal upon said coating.

15 2. The process of coating an article with metal, which comprises applying a sticky coating to the article, applying a layer of particles in finely divided condition comprising different metals by mechanical means upon said coating, and electroplating said thus treated article to deposit a continuous and impervious coating of metal thereupon.

3. A metal coated body comprising a body of asphalt saturated felt, a layer of adhesive asphalt carried by said body, a layer of lead-tin alloy particles adhering to said asphalt layer, and an electrodeposited layer of non-corroding metal adhering to said alloy layer.

4. A metal-coated shingle comprising a body of asphalt saturated felt, a layer of adhesive asphalt carried by said body, a layer of lead-tin alloy particles adhering to said asphalt layer, and a layer of electrodeposited copper adhering to said alloy layer.

5. The process of coating an article with metal, which comprises applying a metal coating upon said article by atomizing fused tin-lead alloy thereagainst whereby the particles reach the coating in highly heated solid state, and placing a layer of non-corroding metal upon the adhering layer of particles by electrodeposition.

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