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METHOD OF DRYING CORRODIBLE MATERIALS.

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This invention relates to methods of drying corrodible materials and particularly to a method for drying particles of electrolytic iron.

In the production of electrolytic iron, anodes of impure iron are suspended in a bath containing an iron salt in solution and upon the passage of an electric current, pure electrolytic iron is deposited in the form of plates upon suitable cathodes. During the passage of the electric current small shoots somewhat like tendrils and ordinarily called "trees" grow out from the cathode plates toward the anodes and tend to short circuit the bath and consequently lower the operating efficiency. To prevent short circuits from developing, the cathodes are raised from the bath at intervals and the trees are removed by scraping and are collected in a suitable container.

It is desirable that electrolytic iron be substantially free from oxides such as iron rust, particularly when it is to be used in a finely divided form in loading coil cores used for telephone purposes. Due to the relative smallness of the surfaces of the deposited plates they may be readily dried after being washed to remove the electrolyte without the iron becoming oxidized to any appreciable extent. Due to the smallness of the particles of iron trees which are scraped from the plates and due to their irregular shapes, a comparatively large surface of the material is exposed so that if they are dried by the usual methods, such as by centrifuging or direct evaporation, the trees become oxidized to such an extent that they are practically useless and consequently this portion of the electrolytic iron represents wasted energy and material.

It is the object of the present invention to provide an economical and efficient method whereby corrodible materials may be dried without becoming appreciably oxidized or rusted.

In accordance with the general features of the invention, the particles of iron are placed in a tumbling barrel and are thoroughly washed with water to remove the electrolyte adhering thereto. The wash water is then removed, a quantity of a suitable solvent for water such as denatured alcohol is added, and the mass is then agitated for a predetermined period of time when the liquid comprising an alcoholic solution of water is withdrawn. Alcohol is again added to the particles, the agitation is repeated, and the resulting liquid withdrawn. This operation is repeated until the water originally adhering to the particles is replaced by alcohol, when the surplus alcohol is drawn off and the iron particles are dried by means of an air blast.

In practice the following method has given satisfactory results. The scrapings from the cathodes are placed in a tumbling barrel as they are removed from the cathodes and covered with water until a batch of about 250 pounds is obtained. The batch is then tumbled in running water for about fifteen minutes to insure the removal of the electrolyte, when the water is drained off. About five gallons of denatured alcohol solution is then added by pouring along the sides of the barrel while it is running so as to remove the water clinging to the sides of the barrel. The alcohol solution used in this wash is that used in the last wash on a previous batch. The barrel is rotated for about two minutes and the alcohol is then drained off. About five gallons of unused denatured alcohol is then added to the barrel and the above operation is repeated, the alcohol withdrawn in the second wash being saved for use as the first wash in a succeeding batch. After draining off the alcohol the barrel is again rotated, an air blast is started and the particles are tumbled through the air blast until dried when they are removed and weighed, tested if necessary, and used for the purpose for which the original electrolytic iron was intended.

It is, of course, to be understood that various changes in the proportions of materials, times of washing, and numbers of washes may be made without departing from the scope of the invention as defined in the appended claims. Also other nonaqueous, volatile solvents may be used in place of denatured alcohol to replace the water adhering to the iron particles, among the suitable substitutes being methyl alcohol, amyl alcohol, acetone and ether.

What is claimed is:

1. The method of drying moist particles of a corrodible material, which consists in add-

ing a non-aqueous solvent to the particles, agitating the resulting mixture, withdrawing the liquid portion, repeating the above operations until the moisture upon the particles is replaced by the solvent, and removing the solvent on the surface of the particles by evaporation.

2. The method of drying moist particles of electrolytic iron, which consists in agitating the particles with alcohol, withdrawing the resulting liquid, repeating the above operations until the moisture upon the particles is replaced by the alcohol, and evaporating the remaining alcohol from the surface of the iron particles in a current of air.

3. The method of drying moist particles of electrolytic iron, which consists in adding 5 gallons of alcohol solution to about 250 pounds of iron particles, agitating the mixture, withdrawing the resulting liquid, adding a 5 gallon portion of alcohol to the particles, agitating the mixture, withdrawing the liquid, and evaporating the remaining alcohol from the surface of the particles in a current of air.

In witness whereof, I hereunto subscribe my name this 15th day of September A. D., 1926.

ALBERT PEARSON.