F. E. JOHNSON.

METHOD OF COATING METAL ARTICLES.

APPLICATION FILED NOV. 5, 1920.

1,407,067. Patented Feb. 21, 1922.

FIG. 1

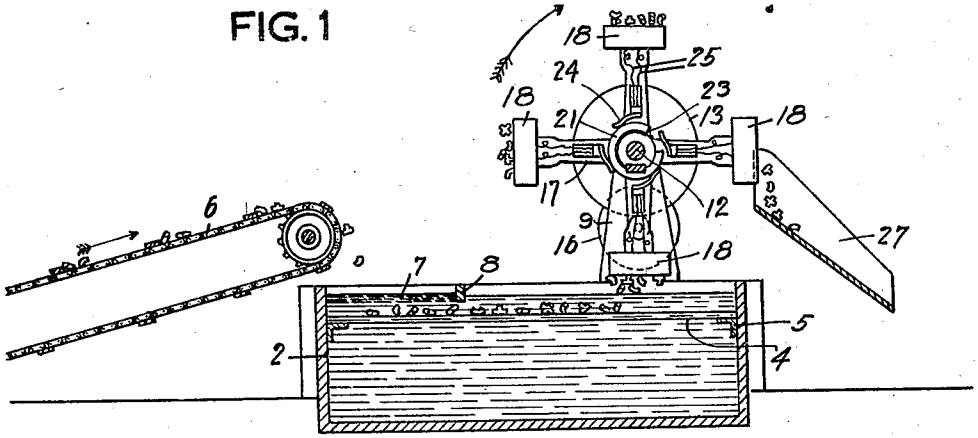
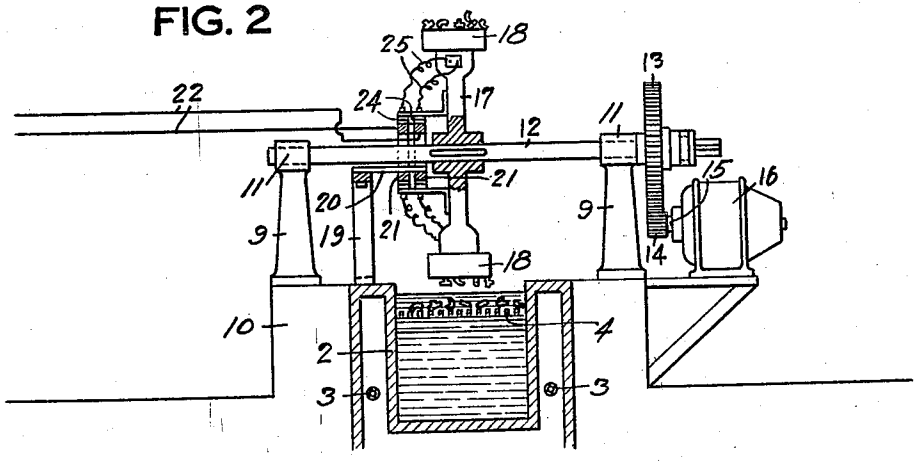


FIG. 2



INVENTOR

Frank E. Johnson

By Kay Fothergill Brown

Atty.

UNITED STATES PATENT OFFICE.

FRANK E. JOHNSON, OF GREENSBURG, PENNSYLVANIA.

METHOD OF COATING METAL ARTICLES.

1,407,067. Specification of Letters Patent. Patented Feb. 21, 1922.

Application filed November 5, 1920. Serial No. 422,098.

To all whom it may concern:

Be it known that I, FRANK E. JOHNSON, a citizen of the United States, and resident of Greensburg, in the county of Westmoreland and State of Pennsylvania, have invented a new and useful Improvement in Methods of Coating Metal Articles; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to a method of coating metal articles.

The object of my invention is to provide a simple and efficient method of coating metal articles by the employment of which the articles to be coated are removed from the bath of coating material without introducing the lifting device into the bath while at the same time the coating material is evenly distributed over the surface of the article to be coated, thereby insuring an even deposit of the coating material and a smooth surface on the article.

To these ends my invention consists, generally stated, in submerging the metal articles to be coated in a bath of coating material and drawing the articles directly from the bath by magnetic attraction.

In the accompanying drawings I have illustrated suitable apparatus for carrying out my improved method, in which Fig. 1 is a longitudinal sectional view of the tank containing the coating material with the magnetic lifting device arranged above same; and Fig. 2 is a partial cross section of Fig. 1.

I will first describe the apparatus illustrated for carrying out my improved method, although it will be understood that any suitable form of apparatus may be employed.

The numeral 2 designates a suitable trough or tank which contains the coating material which, in the present instance let us assume, is zinc which is employed in coating elbows, T's, couplings, etc. The bath of zinc is maintained at the proper temperature by any suitable heating means, the burners 3 being illustrated in a more or less diagrammatic form for this purpose.

Supported within the tank 2 is the perforated plate 4 supported on brackets 5, said plate being submerged in the bath of zinc. This perforated plate 4 forms a support for the T's, elbows, couplings, etc., which are to be coated, and said plate is arranged at such a height within the tank 2 that the articles to be coated, when placed thereon will be completely submerged by the zinc or other coating material.

At one end of the tank 2 is a suitable conveyer 6 onto which the articles to be coated are delivered, and said articles are discharged from the upper end of said conveyer into the tank 2, said articles passing through the sal-ammoniac 7 which rests upon the coating material and is confined to one end of the said tank by the partition 8 extending down into the bath. The articles discharged into the tank in this manner fall down the perforated plate 4, and are advanced by a suitable pusher or other tool beyond the partition 8.

Suitable pedestals 9 are erected on the foundations 10, said pedestals having the bearings 11 in which is journaled the shaft 12. One end of the shaft 12 carries the gear-wheel 13 with which the pinion 14 on the motor-shaft 15 of the motor 16 meshes.

Keyed to the shaft 12 is the spider 17, each arm of the spider having at its outer end a suitable electro-magnet 18.

An upright 19 on the foundation 10 has the arm 20 which supports the rings 21 of copper or other suitable material, said rings being properly insulated and to which the wires 22 are connected for conveying the current to said rings. The rings 21 are provided with the gaps 23.

Brushes 24 are connected to the arms of the spider 17, said brushes moving in contact with the rings 23, and the electricity collected by said brushes from the rings 21 is conveyed by the wires 25 to the electro-magnets 18, thereby charging the same.

Carrying out my improved method with the above described apparatus, the couplings, T's, elbows, etc., are discharged through the body of sal-ammoniac 7 on to the perforated plate 4 and are then moved out beyond the partition 8 where they are completely submerged by the zinc or other coating material. Power is conveyed from the motor 16 through the gearing described to rotate the spider 17 and the electro-magnets 18 are in sufficiently close relation to the surface of the bath of coating material so that, as said electro-magnets come around over the said bath the articles submerged therein will be attracted by said electro-magnets and drawn up through the coating material and will

adhere to said electro-magnets. As the spider continues to revolve, the surplus metal which collects at the outer end of the article as it leaves the bath will gradually flow back over the article, the article being gradually inverted from the position in which it was drawn from the bath. In this manner provision is made for taking care of that portion of metal which always collects at the outer end of an article when lifted from a bath of molten metal. By the inversion of the article after it is drawn from the bath, this metal flows back over the article and is evenly distributed thereon so that the coating is not thicker on one part of the article than on another, thereby insuring even distribution of the coating material and an even, smooth surface on the article.

In order to release the articles from the electro-magnets the gaps 23 in the rings 21 are provided so that when the brushes 24 reach said gaps the current to the electro-magnets is cut off, and the articles coated fall by gravity into the chute 27, whence they are discharged into water or any other cooling apparatus.

What I claim is:

1. The method of coating metal articles consisting in submerging the articles in a bath of coating material, and drawing the articles directly therefrom by magnetic attraction.

2. The method of coating metal articles consisting in submerging the articles in a bath of coating material, drawing the articles directly therefrom by magnetic attraction, and moving the articles in the arc of a circle, thereby inverting the same.

3. The method of coating metal articles consisting in submerging the articles in a bath of coating material, passing a magnet in close relation to the surface of said bath, drawing the articles directly from said bath, moving the magnet in the arc of a circle to invert same, and deenergizing said magnet.

In testimony whereof, I, the said FRANK E. JOHNSON, have hereunto set my hand.

FRANK E. JOHNSON.

Witnesses:
ROBT. D. TOTTEN,
JOHN F. WILL.