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ART OF COATING OR PLATING PIPES AND OTHER ARTICLES.

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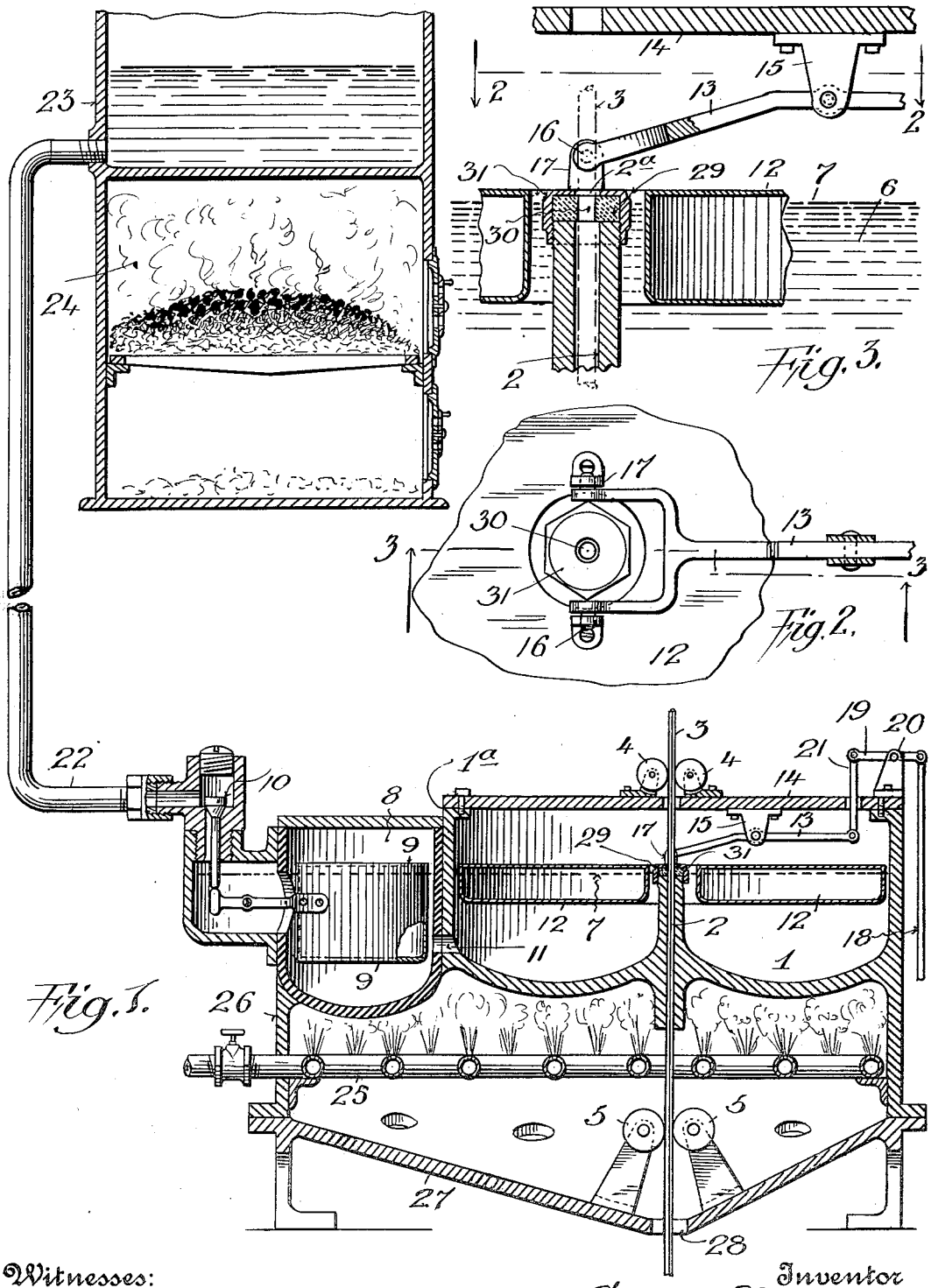


Fig. 1.

Fig. 3.

Fig. 2.

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ART OF COATING OR PLATING PIPES AND OTHER ARTICLES.

1,323,883. Specification of Letters Patent. Patented Dec. 2, 1919.

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To all whom it may concern:

Be it known that I, GEORGE A. LUTZ, a citizen of the United States, and resident of Cranford, in the county of Union and State of New Jersey, have invented certain new and useful Improvements in the Art of Coating or Plating Pipes and other Articles, of which the following is a specification.

The object of my invention is to plate or coat pipes, rods, wires, sheets and other articles, without immersing them bodily in the plating or coating material. My invention may be utilized in conjunction with hot plating, such as for utilizing molten metal for galvanizing and analogous coatings, or may be utilized for applying insulating coatings in a hot or cold state, such as for applying insulation upon pipes, rods, wires and the like.

In carrying out my invention I cause the article to be plated or coated to be propelled or moved in juxtaposition to the plating or coating material, and cause a small portion or film of such material to be brought into contact with the surface of the article to be plated while the latter is being propelled, whereby but a small quantity of the plating or coating material need be kept adjacent to such articles, and where hot plating is carried out a relatively small quantity of heated or molten metal need be kept adjacent to the articles to be plated.

A further advantage of my invention is that as the articles to be plated or coated are not immersed in the plating or coating material, the latter is kept free from extraneous matter to which baths of plating or coating material are subject when the articles to be plated or coated are immersed or dipped therein.

In accordance with my invention, as illustrated in the accompanying drawings, I provide a vessel to contain the plating or coating material, and I provide said vessel with a passageway through which the articles to be plated may be propelled or passed, with means to maintain the plating or coating material normally at a level at a suitable distance below the upper orifice or edge of said passageway, to prevent the flow of such material into such passageway except when required, and with means adapted to raise the level of such plating or coating material as required, while the article to be plated is within or is being passed through said passageway, to cause said material to engage the surface of such article to apply the plating or coating material thereto, and whereby when such article has been removed from said passageway the level of the plating or coating material may be again lowered to prevent said material from flowing out through such passageway.

My invention comprises novel details of improvement and combinations of parts that will be more fully hereinafter set forth and then pointed out in the claims.

Reference is to be had to the accompanying drawings forming part hereof, wherein;

Figure 1 is a substantially central sectional elevation of an apparatus embodying my invention;

Fig. 2 is an enlarged detail plan view of part thereof, substantially on the line 2, 2, in Fig. 3 and

Fig. 3 is a section on the line 3, 3, in Fig. 2.

At 1 is a vessel, of any suitable construction, adapted to contain the plating or coating material to be used, which vessel is provided with a passageway at 2 adapted to permit the passage therethrough of articles to be plated or coated, such as pipes, wires, rods, sheets or the like, indicated at 3. The upper orifice or opening 2^a of passageway 2 is below the upper edge 1^a of vessel 1. In the example illustrated the vessel is of a circular character and the passageway 2 is adapted to receive pipes, rods, wires or the like, but the dimensions and shape of the vessel and of the passageway 2 may be such as to permit passage therethrough of sheets of metal or other articles to be plated or coated. At 4 and 5 are indicated opposed rollers having passes therebetween adapted to propel lengths of pipes, tubes, rods or the like, which rollers may be operated in any known manner, and the articles to be plated or coated may be passed through the passageway 2 from below upward, or from above downward. Where material to be coated is of continuous lengths, such as wires, strips, or the like, they may be pulled through the passageway by any suitable means known in the art for such purpose, such as to and from suitably operated reels and the like. The plating or coating material 6 may be kept at a substantially definite or desired level, preferably slightly or suit-

ably below the upper edge or orifice 2^a of passageway 2, as indicated at 7, by any suitable means. For this purpose I have shown a chamber 8 containing a suitable float 9 adapted to operate a controlling valve 10, the vessel 1 and chamber 8 being suitably connected, as through port 11, whereby the level of the plating or coating material in vessel 1 may be maintained substantially constant.

Any suitable means may be provided to raise the normal level of the plating or coating material 6, so that it may come in contact with the article 3 at the upper orifice of passageway 2. To this end I have shown a member or body 12 within vessel 1 adapted to vary the level 7 of the plating or coating material 6, the arrangement being such that the level of the plating or coating material will be properly normally maintained notwithstanding the presence of such member. When article 3 is in proper position in passageway 2 to receive the plating or coating material, such as when the article 3 has reached or a portion thereof has passed the orifice 2^a of passageway 2 a desired distance, the member 12 will be depressed to cause the level of the material 6 to rise to the desired height to come in contact with the article 3 above or at the orifice of passageway 2. Any suitable means may be provided for operating member 12 for such purpose. I have illustrated a lever 13 pivotally connected with the vessel, as by being pivoted upon its cover 14 at the bracket 15, which lever is shown pivotally connected at 16 with member 12, as by the lugs 17 secured to said member. A rod 18 connected with lever 13 is adapted to control the member 12. I have shown the rod connected with a lever 19 pivotally supported at 20 and pivotally connected by link 21 with lever 13. The member 12 may be in the nature of a float.

When the plating or coating material is of such character as not to require heating for the plating or coating operation, such material may be conducted to vessel 1, as through a pipe 22 leading to valve 10, from any suitable source, the article 3 being preheated or not as may be required. Where, however, the plating or coating material is required to be heated, it may be supplied to vessel 1 from any suitable heating appliance, as by means of the cauldron or chamber 23 connected with pipe 22 and heated from the furnace or other suitable heating appliance 24. In such case it may also be desirable to maintain the vessel 1 and its contents in a heated condition, for which purpose heat may be applied thereto in any suitable manner. For the purpose of simplicity I have illustrated gas burners at 25 beneath vessel 1. To retain the heat in the burners the latter may be inclosed in a chamber 26 beneath vessel 1, shown having the bottom wall 27 provided with an opening at 28 for the passage of the articles 3 to the passageway 2 above.

To provide a substantially close fit between the articles 3 and the upper orifice of passageway 2 I have shown packing material at 29 secured at the upper end of passageway 2 and having an opening 30 therethrough, providing the orifice of said passageway, for the passage of the articles 3. Such material at 29 may be in the nature of asbestos or other suitable material according to the character of the plating, and at 31 is a gland or apertured packing nut shown screw threaded to fit upon passageway 2 whereby the packing 29 may be retained in place and compressed as may be required to keep it in the desired close relation to article 3. The material 29 may serve in the nature of a brush or wiping medium, and is in such position that the material 6, as elevated by the depression of member 12, will rise slightly above such material to engage the article 3.

In accordance with my invention the plating or coating material 6 being maintained at the proper height in vessel 1, but below the upper orifice of passageway 2, the pipe, rod, wire or the like is inserted in such passageway, and when in the desired position to receive the plating or coating material the level of the latter is raised, as by depressing the member 12, until such material, as in the form of a relatively thin film, engages the article 3, whereupon the latter is propelled through the passageway and as soon as, or at any time before, such article passes clear of the orifice of passageway 2, the member 12 is released or raised, permitting the level of the material 6 to descend to prevent its overflow through passageway 2. During the passage of article 3 through passageway 2, and while said article is in contact with but a small portion of material 6, a proper quantity of the latter will adhere to the article 3 for plating or coating the latter. Where the article 3 is propelled from below upwardly, the material 29 will preferably be at the upper end of passageway 2 only, but if the article 3 is propelled downwardly similar material 29 may be at the lower end of the passageway, whether or not such material be at the upper end of such passageway.

Where lengths of rods, pipes or the like are to be plated or coated, they may be passed continuously one after the other through passageway 2 and the pipes or the like may be fed so as to be in contact end to end with one another in passing through passageway 2. The same also applies to sheets or other analogous articles not of considerable length. Where wire, strips and the like that are of considerable length or continuous are to be plated they may be

pulled through passageway 2 either upwardly or downwardly without interruption. In either case, the speed of travel of the article or articles 3 will be such as to enable the material 6 to properly adhere thereto. When the articles 3 are of such character as to require preheating, or where it is preferable to preheat the same, any suitable means may be provided to heat them before they are passed into or through the passageway 2, and by having the articles 3 passed through the lower heating chamber 26, which may be quite close to the preheater, such articles may be prevented from cooling off before reaching the passageway 2, which of course, is maintained heated by the hot material 6 in the vessel 1.

As the articles 3 to be plated or coated merely are in contact at any one time with a very small proportion or volume of plating or coating material, there is little likelihood of scale and foreign matter being transmitted to the material 6, as is the case where articles are immersed or dipped in a bath of plating or coating material. Furthermore, the vessel 1 may be relatively small, so that but a relatively small proportion of plating or coating material need be maintained in proximity to the articles to be coated, and loss incident to cooling of the metal, such as zinc, is materially reduced, since but a relatively small quantity of molten zinc need be maintained in vessel at any time.

My improvements are cheap to install and operate, relatively rapid in use, and not liable to get out of order.

My invention is not limited to the details of construction and arrangements of parts shown and described, as the same may be varied, within the scope of the appended claims, without departing from the spirit of the invention.

Having now described my invention what I claim is:—

1. The method of plating or coating consisting in passing the article to be plated in proximity to plating or coating material, changing the level of said material to cause it to engage said article, in wiping the coating on the article as it passes from said material and automatically feeding said material for said article.

2. The method of plating or coating consisting in maintaining a fluid-like material at a substantially normal level adjacent to and below a passageway, propelling an article to be coated through said passageway, changing the level of said material to cause a film thereof to adhere to the passing article, and automatically feeding said material for said article.

3. The method of plating or coating consisting in maintaining a fluid-like material at a substantially normal level adjacent to a passageway, propelling an article to be coated through said passageway, and depressing an object in said material to cause the latter to rise to engage the article passing from said passageway.

4. An apparatus of the class described comprising a vessel having a passageway therein, means to automatically maintain plating or coating material in said vessel, the top of the material being normally below the upper orifice of said passageway, and means to cause said material to rise to the orifice to engage an article to be plated.

5. An apparatus of the class described comprising a vessel having an inner passageway therethrough for the passage of an article to be plated, means to maintain a substantially constant level of plating or coating material in said vessel below the upper orifice of said passageway, and means to raise the level of said material to cause it to engage an article in said passageway.

6. An apparatus of the class described comprising a vessel having a passageway for the passage of an article to be plated, means to maintain a substantially constant level of plating or coating material in said vessel below the upper orifice of said passageway, a body adapted to engage said material to raise its level in the vessel to cause the material to engage said article at said passageway, and means to at will operate said body.

7. An apparatus of the class described comprising a vessel having an inner passageway for the passage of an article to be plated, means to maintain a substantially constant level of plating or coating material in said vessel below the upper orifice of said passageway, a float upon said material, and means to depress said float to displace said material upwardly to cause the material to engage an article in the passageway.

8. An apparatus of the class described comprising a vessel having a passageway, a constant-level float chamber having communication with said vessel for maintaining plating or coating material at a substantially constant level therein normally below the upper orifice of said passageway, and means to raise the level of said material to engage an article in said passageway.

9. An apparatus of the class described comprising a vessel having a passageway, a constant level float chamber having communication with said vessel for maintaining plating or coating material at a substantially constant level therein normally below the upper orifice of said passageway, a float in said vessel, and means to depress said float in said material to cause the latter to rise to said orifice of said passageway to engage an article therein.

10. An apparatus of the class described comprising a vessel having an orifice opening within the vessel at a distance below its

upper edge, means to propel an article through said passageway, means to maintain fluid-like material in said vessel normally below the upper orifice of said passageway, means to vary the level of said material in said vessel to cause said material to rise and engage the article in the passageway and means to automatically supply said material to said vessel.

11. An apparatus of the class described comprising a vessel having a stationary passageway therein, means to maintain plating or coating material in said vessel, the top of the material being normally below the upper orifice of said passageway, means to cause said material to rise above the passageway to engage an article to be plated, relatively soft material at the upper end of the passageway to wipe the articles as they pass therefrom, and means to automatically supply said material to said vessel.

12. An apparatus of the class described comprising a vessel having a stationary passageway therein, means to maintain plating or coating material in said vessel, the top of the material being normally below the upper orifice of said passageway, means operable within said material to cause said material to rise above the passageway to engage an article to be plated, relatively soft material at the upper end of the passageway to wipe the articles as they pass therefrom, and an apertured gland securing said material upon said passageway.

13. An apparatus of the class described comprising a vessel having an inner passageway for the passage of an article to be plated, means to heat said vessel, a constant level float chamber having communication with said vessel for maintaining plating or coating material at a substantially constant level therein normally below the upper orifice of said passageway, means to vary the level of said material to cause it to engage an article in said passageway, a supply chamber, a pipe providing communication between said chamber and the constant level float chamber, and means to heat said supply chamber.

Signed at New York city, in the county of New York and State of New York, this 11th day of February, A. D. 1915.

GEORGE A. LUTZ.

Witnesses:
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