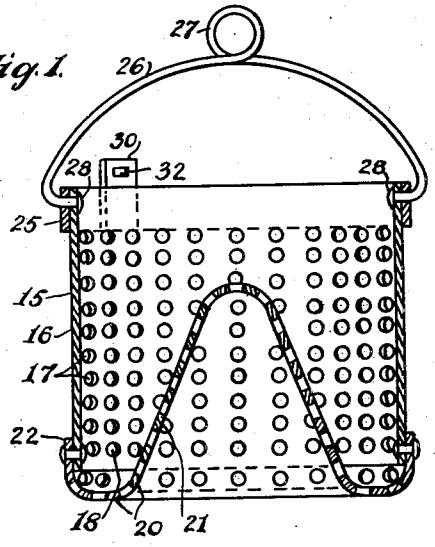
Dec. 28, 1926. 1,612,585

A. JACKSON

METHOD OF METAL COATING

Filed May 4, 1926

Fig. 1.



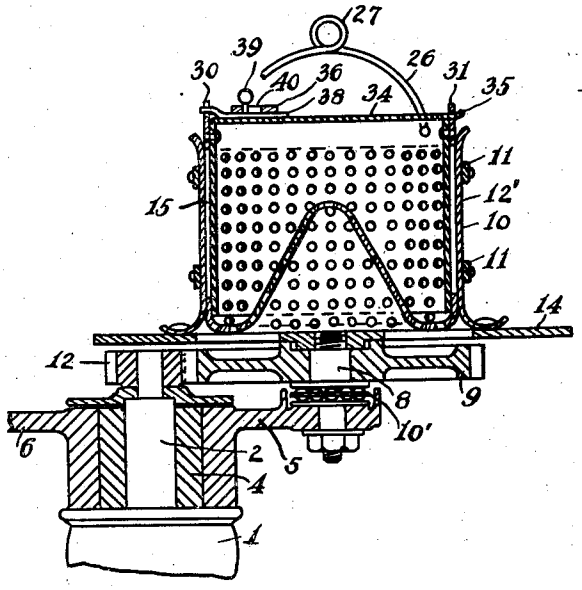


Fig. 2.

INVENTOR
Albert Jackson.
BY
Harold D. Penner ATTORNEY

Patented Dec. 28, 1926. 1,612,585

UNITED STATES PATENT OFFICE.

ALBERT JACKSON, OF PLAINFIELD, NEW JERSEY, ASSIGNOR TO HENRY B. NEWHALL, OF PLAINFIELD, NEW JERSEY.

METHOD OF METAL COATING.

Application filed May 4, 1926. Serial No. 106,674.

This invention relates to methods or processes of dipping screws, bolts or other articles into molten metal and draining the same during the process of galvanizing and to the throwing off the excess of molten metal in a centrifuge such, for instance, as that shown in the United States patent application of Henry W. Pleister filed April 10, 1922, Serial No. 551,373.

One object of this invention is to provide an improved method of dipping the articles to be galvanized, where in some instances, the different kinds of material to be galvanized are run wet from a previous treatment, as when this wet material is so run, the mass of articles must be interiorly vented to allow the gas and steam thereby formed to escape and thereby obviate the danger of throwing the spelter due to the rapid expansion of steam and thereby preventing explosions or blow-ups when the articles are dipped in wet condition.

Another object of the invention is to provide improved methods for facilitating a rapid and free draininge of the liquid spelter when the articles are removed from the metal and for throwing off the spelter in the centrifuge, without clogging.

Other objects of the invention are to improve generally the simplicity and efficiency of such methods and to provide a method or process of this kind which is economical and reliable in operation and in the use of metal and fuel.

Still other objects of the invention will appear as the description proceeds; and while herein details of the invention are described and claimed, the invention is not limited to these, since many and various changes may be made without departing from the scope of the invention as claimed in the broader claims.

The inventive features for the accomplishment of these and other objects are shown herein in connection with an improved method or process which, briefly stated, includes confining the articles in a mass which is interiorly vented from the bottom of the mass toward the upper part thereof; and dipping the mass into the molten metal. This venting and dipping may be conveniently performed in a container or basket which, briefly stated, includes a substantially cylindrical wall provided with perforations and a bottom provided with a lower perforated marginal part and a perforated upstanding substantially cone-shaped intramarginal part extending to near the upper part of the container for venting the mass.

The method herein described and claimed is the method described in my United States application Serial No. 723,839 filed July 2, 1924, for galvanizing baskets.

In practice I may use one basket for dipping the articles and another for throwing off the molten metal. The difficulties heretofore experienced are overcome in the operation of the two baskets.

One cone-bottom perforated basket is used for immersing and coating the material in the kettle and another cone-bottom perforated basket is used in the centrifuge into which the material is dumped before rotating. Preferably a smaller basket is used in which the material is loaded when it is immersed into the kettle of molten zinc, while a larger perforated basket is set in the centrifugal machine. The material, after it has been coated in the kettle, is dumped from the smaller basket into the larger basket. The cone in the bottom of the basket is perforated in the same manner as the sides and bottom.

In the accompanying drawing, showing suitable means for carrying out the process herein claimed,

Fig. 1 is an axial vertical sectional view of the basket; and

Fig. 2 is a similar view of the basket shown in connection with parts of the centrifugal machine.

While in practice the ratio of the diameter to height in the larger basket may be somewhat greater than the same ratio in the smaller basket, the invention is in no way limited to these ratios, nor is the invention limited to baskets of different sizes nor to the use of the smaller baskets as the dipping basket. Therefore, in the drawing the basket shown may represent both baskets.

Herein only enough parts of the centrifugal machine are shown to explain the operation of the basket. These parts include a belt-driven pulley 1 rotatable on a fixed vertical shaft 2 and carrying fast thereon a hub 4 on which is fixed a rotatable table member 5 carrying at one end 6 counterbalancing means (not shown herein) and the

other end a rotatable stud 8 on which is fixed a large gear 9 supported by thrust bearings 10′ and meshing with a pinion 12 fast on the fixed shaft 2.

A table 14 fast on said gear 9 carries a frame 10 comprising bands 11 and a number of uprights 12′ mounted fast on said table.

Rotation of the pulley 1 imparts a planetary motion to the basket 15.

The basket or container 15 is made of mild steel suitable for use in dipping and galvanizing the small articles or for removing excess metal therefrom by the use of the centrifugal machine. Said container comprises a substantially cylindrical wall 16 (Fig. 1) provided from near the top to the bottom with closely adjacent perforations 17 and 18. The bottom for said container includes a lower perforated marginal part 20, a perforated upstanding substantially cone-shaped intramarginal part 21, and an upstanding edge flange 22 receiving and riveted to the lower part of said cylindrical wall and provided with perforations registering with the lower perforations 18 of said wall. All of said perforations are small enough to retain in the retainer the smallest articles to be galvanized and large enough to permit the easy passage of molten metal therethrough when dipping the articles or slinging excess metal therefrom.

As shown, the perforated part of the container wall 16 extends from the bottom nearly to the top thereof. The marginal part 20 has a width approximately one-sixth the diameter of the container, while the cone-shaped part 21 has a diameter about two-thirds the diameter of the container and a height approximately equal to seven-ninths the height of said perforated part; though the invention is not limited to these exact dimensions.

A strengthening band 25 received and riveted on the upper edge part of said wall 16 has secured thereto, a bail handle 26 coiled to form a middle suspending loop 27 and provided with headed inturned ends 28, passed through and retained in said band and wall for pivotal movement.

A pair of diametrically opposite upstanding brackets 30, 31 (Fig. 1) riveted on said band are provided with locking openings 32 therein.

A lid 34 disposable on the container is provided with a tongue 35 engageable in one of said locking openings. A guide block 36 on the edge of the lid opposite to said tongue is provided with a lower guide groove slidably receiving a bolt latch 38 and engageable in the locking opening 32 of the basket 30 and having a manipulating pin 39 passing through a slot 40 in the block. Said container and the associated parts of the machine are made of metal resistant to the centrifugal force exerted by said metal articles, and also resistant to the heat of molten zinc or other metal and the articles being galvanized.

During the process or method of dipping the small articles in molten metal for galvanizing said articles, the basket serves for confining the articles in a convenient mass and the cone-shaped part 21 serves to form a vacant space in the mid part the mass extending from the bottom of the mass to above the middle part thereof, for venting the interior of the mass during the dipping of the mass into the molten metal. This results in the following advantages:

1. Safety to the operators in avoiding explosions or blow-ups when the mass is immersed into the molten metal.

2. More rapid and freer draining of the liquid spelter when the basket is taken from the kettle.

3. Cleaner and quicker ejection of the excess spelter in the centrifuge without clogging the bottom of the basket as is done where a flat bottom basket is used.

These advantages are further explained as follows:

Safety.—When a flat bottom basket is immersed containing a quantity of small articles, especially such articles as are run better wet with the muriatic acid still on them, great case must be exercised in lowering the basket into the zinc bath for bubbles of air or steam may collect underneath or within the mass causing an explosion or blow-up, which in many cases not only throws molten zinc all around the room but also throws basket and contents in all directions. This cone-shaped perforated bottom acts as a vent while the basket is being immersed, and with this construction a great improvement has been found in the absence of explosions or blow-ups.

Rapid drainage.—When the basket is raised from the molten bath after it has remained there long enough for the mass to have acquired the same heat as the zinc, it is necessary to drain out all liquid spelter as quickly as possible so as to get the material quickly into the centrifuge. With the old flat bottom basket, in order to get the liquid spelter to drain out, it was necessary to tilt the basket on the edge of the tank preparatory to dumping into the centrifuge, and then the basket would drain only at one point. With the perforated cone bottom the perforated surfaces through which the zinc may drain are considerably spread and the drainage will occur through different planes, and accordingly the metal will free itself much more readily from the new basket than from the flat bottom type. In the flat bottom type the zinc will clog up the perforations. The new basket shortens the time required for drainage to a minimum and al-

lows the material to be dumped into the rotating basket with much less delay than heretofore, thereby allowing the material to go into the machine at a higher temperature than heretofore.

Rapid ejection.—Where a flat bottom basket is used, the zinc which is still in a fluid or semi-fluid state will run to the bottom and remain there and harden so that after two or three operations the basket is rendered useless until it is placed in the tank of molten metal to melt off the spelter which has adhered to the bottom perforations, and sometimes to the side perforations. With the perforated cone bottom basket the zinc may be expelled through a greater area of perforated wall, which will prevent it clogging at the bottom of the basket. The excess spelter is more quickly expelled as the mass is more spread out in this basket, which prevents deposits of excess spelter from one article upon another and further prevents one article freezing to another.

I claim:

1. A method comprising confining articles in a mass with a vent therein; and dipping the mass into molten metal.

2. A method comprising confining articles in a mass with a vent from the exterior to the interior of the mass; and dipping the mass into molten metal.

3. A method of dipping small articles in molten metal, said method comprising confining the articles in a mass with a vent in the interior of the mass from the bottom of the mass toward the upper part thereof; and dipping the mass into the molten metal.

4. A method of dipping small articles in molten metal for coating said articles, said method comprising confining the articles in a mass having an upwardly pointed conical vacant space in the mid part thereof extending from the bottom of the mass to above the middle part thereof, for venting the interior of the mass; and then dipping the mass into the molten metal.

5. A method comprising dipping a mass of articles into molten metal; confining the articles in a mass with a vent from the exterior to the interior of the mass; and subjecting the mass to centrifugal force while the vent is therein.

6. A method of removing excess molten metal from small articles, said method comprising dipping the mass in molten metal; confining the articles in a mass having a vacant space in the mid part thereof extending from the bottom of the mass to above the middle part thereof; and then subjecting the mass to planetary motion.

7. A method comprising dipping a mass into molten metal; confining articles in a mass in such a manner that the lower part is in the form of a relatively narrow annulus; and then draining the mass.

8. A method comprising dipping small articles in molten metal; confining the articles in a cylindrical mass with an upwardly pointed conical vacant space in the interior of the mass from the bottom of the mass toward the upper part thereof; and draining the molten metal from the mass; the lowest diameter of said space being nearly as large as that of the mass to facilitate draining.

9. A method of removing excess molten metal from small articles during coating; said method comprising confining the articles in a mass having an upwardly pointed conical vacant space in the mid part thereof extending from the bottom of the mass to above the middle part thereof; dipping the mass into the molten metal; draining the mass; and then subjecting the mass to centrifugal force.

Signed at Garwood in the county of Union and State of New Jersey this 12th day of April, A. D. 1926.

ALBERT JACKSON.