

Oct. 18, 1932.

V. P. WENDLE

1,883,427

FLUX BOX GATE

Filed June 23, 1931

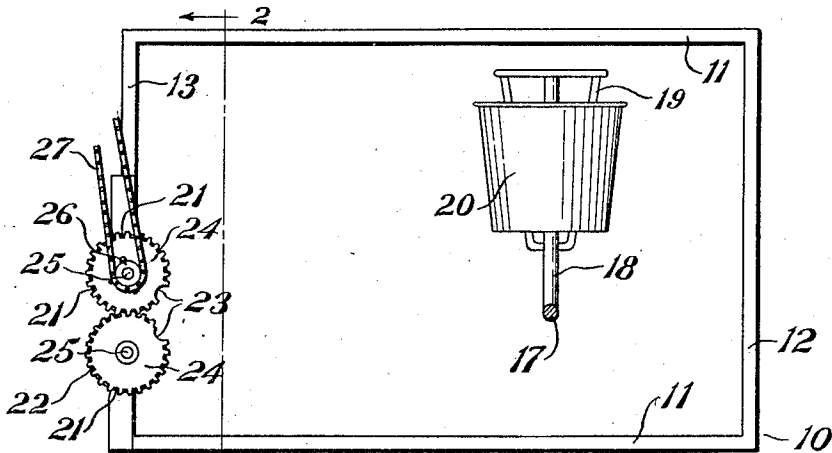


Fig. 1.

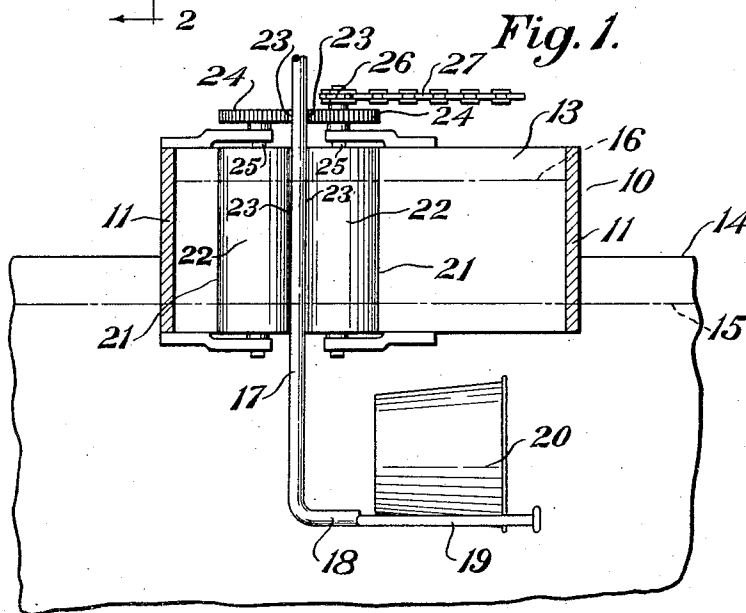


Fig. 2.

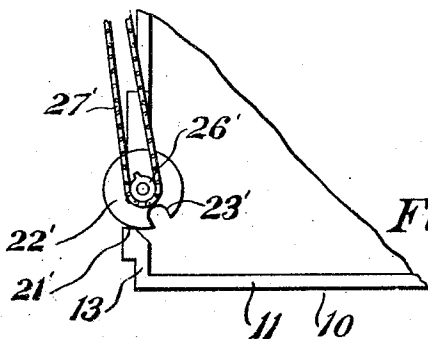


Fig. 3.

Inventor

Virgil P. Wendle

334

Freese and Bishop

Attorneys

# UNITED STATES PATENT OFFICE

VIRGIL P. WENDLE, OF DOVER, OHIO, ASSIGNOR TO THE REEVES MANUFACTURING COMPANY, OF DOVER, OHIO, A CORPORATION OF OHIO

## FLUX BOX GATE

Application filed June 23, 1931. Serial No. 546,260.

The invention relates to the coating of pails, buckets and other articles with zinc, tin or other coating materials, and more particularly to a gate for the flux box of apparatus for mechanically coating such articles.

In the production of high grades galvanized, tinned and other coated pails and other metal articles, it is customary under present practice to form such articles from uncoated sheets and then dip the formed article into the molten metal for coating the same.

Although these articles have formerly been hand dipped into the molten zinc or tin, for the purpose of coating them; machines, such as disclosed in the patent of John Carroll, No. 1,787,141, of Dec. 30, 1930, have recently come into use for mechanically coating pails and other formed articles.

Such machines provide carriers, suspended from a conveyer, for supporting the pails or other articles to be coated; these carriers being arranged to move the articles down through a flux box, into and through the molten zinc, or other coating metal, after which the coated articles are moved up out of the molten metal at a point beyond the flux box, drained and carried to an unloading point.

This movement of the article to be coated through the flux box and into the molten metal bath and then out of the bath at a point removed from the flux box necessitates the provision of a slot in one wall of the flux box to permit the carrier to pass therethrough. It will be seen that unless this slot is closed at all times, the sal ammoniac or other flux contained in the flux box will leak through the slot and over the surface of the molten metal used for coating.

The object of the present improvement is to provide a simple, inexpensive and efficient mechanism in the form of a flux box gate which permits the carrier to pass through this slot in the wall of the flux box and at the same time maintains the slot closed or sealed against leakage at all times.

The objects of the invention may be attained by providing an opening or slot through one wall of the flux box and locating within said openings a pair of coating rolls, which substantially fill the opening;

the rolls being provided with longitudinal grooves arranged to register with each other and receive the carrier to pass the same out of the box as the rolls are rotated. Means may be provided for driving the rolls a surface speed equal to the movement of the carriers.

A modification of the invention contemplates the provision of only a single roll substantially filling the opening in the wall of the flux box and provided with a longitudinal groove adapted to receive the carrier and pass the same out of the flux box; means being preferably provided for driving the roll at the proper speed.

The above and other objects which will be obvious from the following detail description and an inspection of the accompanying drawing, may be attained by constructing the apparatus as illustrated in the drawing, in which

Figure 1 is a top plan view of a flux box showing the improved gate therein;

Fig. 2, a section on the line 2—2, Fig. 1, showing a carrier passing through the gate; and

Fig. 3, a fragmentary plan view of a portion of a flux box provided with a modified form of gate comprising a single roll.

Similar numerals refer to similar parts throughout the drawing.

The flux box 10 is open at the top and bottom and comprises the side walls 11 and the end walls 12 and 13. This flux box is mounted above the galvanizing tank or pot indicated generally at 14, the lower portion of the flux box extending below the molten metal level indicated by the dot and dash line 15. Sal ammoniac or other flux is contained in the flux box, above the level of the molten metal, to a height such as indicated by the dot and dash line 16.

In order to pass the articles to be coated through the flux and then into and through the molten metal in the tank or pot 14, carriers for supporting the articles are suspended from a suitable conveyer which moves the articles through the desired path.

Each carrier, as shown in the drawing, may include a substantially vertical arm or rod

17 suspended from the conveyor and having at its lower end an angular portion 18 provided with a suitable frame 19 upon which the articles to be coated, such as the pail indicated at 20, may be supported for passing through the flux and molten metal.

In order to permit this carrier to pass the pail, or other article to be coated, down through the flux in the flux box 10, and then into and through the molten metal, in the tank or pot 14, and afterwards out of the molten metal at a point removed from the flux box, it is necessary that some opening be provided in a wall of the flux box to accommodate the carrier either as it enters or leaves the flux box.

It will be seen that such opening in the wall of the flux box must be covered or closed to prevent the sal ammoniac from leaking through the same and onto the surface of the molten metal outside of the area of the flux box.

For this purpose an opening 21 is formed in the end wall 13 of the flux box, preferably nearer to one side wall than the other in order to accommodate the carrier and article to be coated within a flux box of minimum width.

Mounted within this opening and substantially entirely filling and closing the same is a pair of vertical rolls 22, having longitudinal grooves 23 adapted to register with each other. These rolls are preferably geared together so as to rotate in unison and for this purpose gears 24 may be fixed to the upper ends of the shafts 25 of the rolls, the gears meshing with each other and each having therein a notch 23 corresponding to the grooves 23 in the rolls.

The rolls may be driven at the same surface speed at which the carrier 17 travels, and for this purpose a sprocket 26 may be fixed upon the shaft of one roll and connected by a chain 27 with any suitable source of power arranged to operate the rolls at this speed.

In the operation of the device each carrier is arranged to move downward, carrying the pail 20 down through the flux box and into the molten metal below the same substantially at the point shown in Fig. 1, and preferably to about the depth shown in Fig. 2, the carrier then moving toward the left as viewed in Fig. 1, the vertical portion 17 thereof being received in the grooves 23 as shown in Fig. 2 and as the movement continues, the carrier passes through the rolls and beyond the flux box, after which it may be raised out of the molten metal and the coated pail removed therefrom.

It will be seen that during this entire operation there is no time at which the rolls do not close the flux box, thus preventing leakage of a flux through the opening 21.

The invention may be carried out with only

a single roll 22' as shown in Fig. 3, this roll being located within an opening 21' in the end wall 13 of the flux box.

In this case the roll is provided with a longitudinal groove 23' of sufficient proportion to receive the vertical arm 17 of the carrier and the roll may be driven at a surface speed equal to the movement of the carrier as by a sprocket 26' fixed upon the shaft of the roll and connected as by a chain 27' to a suitable source of power.

I claim:

1. Apparatus for coating articles including a tank of molten metal, a flux box at the top of the molten metal and provided with an opening through one side, a moving carrier for supporting an article to be coated and for moving the article down through the flux box and through the molten metal in the tank, and a roll located within and substantially filling the opening in the flux box and having a longitudinal groove arranged to receive said carrier.

2. Apparatus for coating articles including a tank of molten metal, a flux box at the top of the molten metal and provided with an opening through one side, a moving carrier for supporting an article to be coated and for moving the article down through the flux box and through the molten metal in the tank, a roll located within and substantially filling the opening in the flux box and having a longitudinal groove arranged to receive said carrier, and means for driving the roll at a surface speed equal to the movement of the carrier.

3. Apparatus for coating articles including a tank of molten metal, a flux box at the top of the molten metal and provided with an opening through one side, a moving carrier for supporting an article to be coated and for moving the article down through the flux box and through the molten metal in the tank, and a pair of rolls located within and substantially filling the opening in the flux box and having longitudinal grooves arranged to receive said carrier.

4. Apparatus for coating articles including a tank of molten metal, a flux box at the top of the molten metal and provided with an opening through one side, a moving carrier for supporting an article to be coated and for moving the article down through the flux box and through the molten metal in the tank, a pair of rolls located within and substantially filling the opening in the flux box and having longitudinal grooves arranged to receive said carrier, and means for causing the rolls to rotate in unison.

5. Apparatus for coating articles including a tank of molten metal, a flux box at the top of the molten metal and provided with an opening through one side, a moving carrier for supporting an article to be coated and for moving the article down through the flux

box and through the molten metal in the tank, a pair of rolls located within and substantially filling the opening in the flux box and having longitudinal grooves arranged to receive said carrier, and means for driving  
5 the rolls at a surface speed equal to the movement of the carrier.

6. Apparatus for coating articles including a tank of molten metal, a flux box at the top of the molten metal and provided with  
10 an opening through one side, a moving carrier for supporting an article to be coated and for moving the article down through the flux box and through the molten metal in the tank, a pair of rolls located within and  
15 substantially filling the opening in the flux box and having longitudinal grooves arranged to receive said carrier, means for causing the rolls to rotate in unison, and means for driving the rolls at a surface speed equal  
20 to the movement of the carrier.

7. Apparatus for coating articles including a tank of molten metal, a flux box at the top of the molten metal and provided with  
25 an opening through one side, a moving carrier for supporting an article to be coated and for moving the article down through the flux box and through the molten metal in the tank, a roll located within and substantially  
30 filling the opening in the flux box and having a longitudinal groove arranged to receive said carrier, and gears fixed to said rolls and meshing with each other.

8. Apparatus for coating articles including a tank of molten metal, a flux box at  
35 the top of the molten metal and provided with an opening through one side, a moving carrier for supporting an article to be coated and for moving the article down through the flux box and through the molten metal in  
40 the tank, a roll located within and substantially filling the opening in the flux box and having a longitudinal groove arranged to receive said carrier, gears fixed to said rolls and meshing with each other, and means for  
45 driving the rolls at a surface speed equal to the movement of the carrier.

In testimony that I claim the above, I have hereunto subscribed my name.

50 VIRGIL P. WENDLE.

55

60

65