

934,519.

2 SHEETS—SHEET 1.



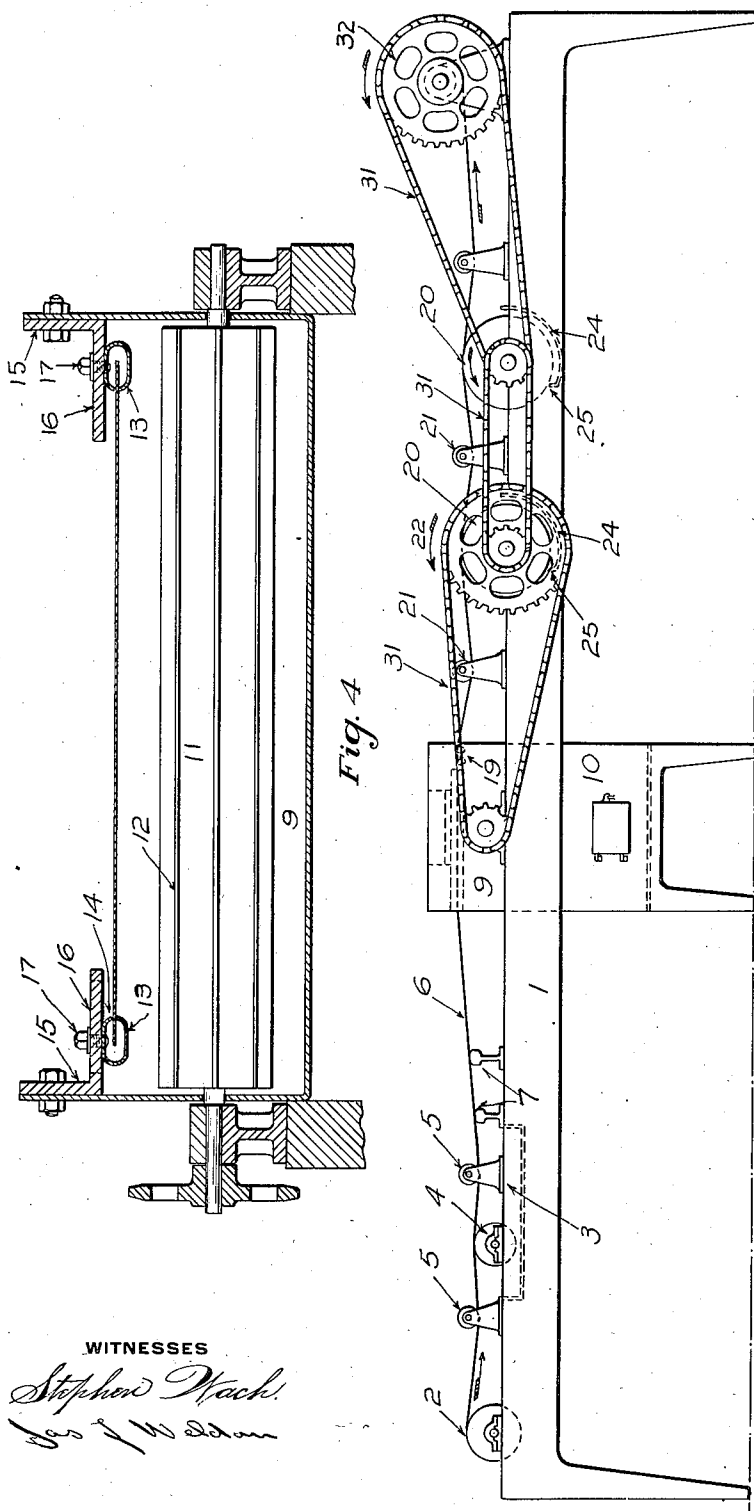
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 APPARATUS FOR COATING SHEET METAL.
 APPLICATION FILED JUNE 25, 1909.

934,519.

Patented Sept. 21, 1909.

2 SHEETS—SHEET 2.



WITNESSES
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UNITED STATES PATENT OFFICE.

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APPARATUS FOR COATING SHEET METAL.

934,519.

Specification of Letters Patent. Patented Sept. 21, 1909.

Application filed June 25, 1909. Serial No. 504,269.

To all whom it may concern:

Be it known that I, BERTHOLD GOLDSMITH, a resident of Lisbon, in the county of Columbiana and State of Ohio, have invented a new and useful Improvement in Apparatus for Coating Sheet Metal, of which the following is a specification.

This invention relates to apparatus for coating roll, sheet and plate metal with a coating of metal or alloy, and more particularly to apparatus for coating such metal on one surface only.

The object of the invention is to provide for this purpose an apparatus of simple construction, whereby roll, sheet or plate metal can be rapidly and thoroughly coated with a substantially uniform layer of the coating metal or alloy, and whereby the coating metal is prevented from getting onto the edges and the upper surface of the roll, sheet or plate metal and also prevented from being wasted.

The invention comprises the construction and arrangement of apparatus hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a plan view of the apparatus; Fig. 2 is a side elevation of the same; Fig. 3 is a vertical longitudinal section through the coating tank or pot taken on the line 3—3, Fig. 1 and showing the same on an enlarged scale; Fig. 4 is a vertical transverse section of the same taken on the line 4—4, Fig. 1; and Fig. 5 is a cross section through one of the flux distributing and absorbing pads taken on the line 5—5, Fig. 1.

In the drawings, 1 illustrates a suitable frame of any adaptable construction or material upon which the operating parts are mounted. Mounted in one end of the table or frame 1 is a suitable spool or drum 2 upon which is placed a coil or roll of the metal to be coated, when roll metal is used.

3 represents a fluxing pan or tank, preferably a lead pan, for containing the fluxing material such as chlorid of zinc. Mounted in frame 1 to revolve in pan 3 is fluxing roll 4. This fluxing roll is preferably covered with cotton or other suitable soft material for depositing flux on the under side of the roll, sheet, or plate. The sheet or plate 6 is held in contact with said roll by means of two idler rolls 5, one on each side of the pan 3 and underneath which the sheet or plate passes. By this arrangement the under surface of the sheet or plate is thoroughly

fluxed. The sheet or plate then passes over one or more distributing and absorbing pads 7 which preferably are constructed of wood or metal covered with a fibrous substance, such as cotton cloth. These pads distribute the flux evenly over the under surface of the sheet or plate and also absorb any surplus flux which may have been deposited thereon by the fluxing roll. The fluxing roll 4 preferably is not driven positively but rotates by means of the frictional drag of the sheet or plate over the same. The sheet then passes over the pot or tank 9 containing the coating metal or alloy. This pot or tank may be heated in any suitable way, such as by means of a gas or oil burner, or by setting the same into a suitable stove or furnace 10 in which a fire of any character may be maintained, in order to maintain the coating metal or alloy in a suitable fluid condition.

Mounted transversely in the pot or tank 9 so as to dip down into the same, is a paddle wheel 11 provided with a suitable number of longitudinal vanes 12 for splashing the coating metal or alloy up against the under surface of the sheet or plate from the pot or tank. The paddle wheel 11 is positively rotated in the direction of the arrow 12, that is in a direction contrary to the direction of travel of the metal being coated.

To properly guide the sheet or plate over the tank and also to prevent the coating metal or alloy from being splashed on to the edges or on to the upper surface thereof, I provide suitable guides at the sides of the pot or tank for receiving the edges of the sheet or plate. These guides 13 are of special construction being of a flattened tubular or elliptical shape, as shown in the drawings, with longitudinal slits 14 on their inner sides into which the edges of the sheet or plate are entered. The peculiar construction of these guides prevents any of the coating metal or alloy from being splashed onto the edges or onto the upper surface of the sheet or plate, and any coating metal which is splashed up against these guides mostly drops back into the pot. In order to adapt the apparatus to coat roll, sheet or plate metal of varying widths the guides 13 are adjustable transversely of the apparatus, or toward and from each other. This is preferably effected by supporting the guides from angle plates 15 projecting inwardly from the sides of the frame or pot and provided with transverse slots 16 for receiving

bolts 17 which connect the guides to said plates. This permits of the ready adjustment of the guides toward and from each other as will be readily understood.

5 Over the rear edge of the tank are arranged one or more stripping rods 19 in position to have the sheet or plate drag over the same, and which serve to distribute the coating metal or alloy over the sheet or plate
10 and also remove a considerable portion of the surplus coating metal or alloy, which removed portion drops back into the pot 9.

The sheet or plate then passes over one or more rotary wipers or brushes 20, two such
15 brushes being shown. These are in the form of rolls and are covered by a suitable yielding wiping material, preferably tow, although the covering may be of any other fibrous material. The sheet or plate is held
20 down against the wiping brushes by being passed beneath the idler rolls 21, three such idler rolls being shown. The brushes 20 are positively rotated in the direction of the arrow 22, that is in a direction contrary to the
25 direction of travel of the sheet or plate and serve to wipe off surplus coating material and to finish the lower coated surface of the sheet or plate. In conjunction with each of
30 said wiping rolls, I provide a scraper and guard in the form of a curved plate 24 attached to the frame or table and having a scraping edge 25, serving to scrape off from the wiping roll 20 any coating material
35 which may adhere thereto, and also serving as a guard to prevent such coating material from being thrown up against the lower surface of the sheet or plate.

Any suitable mechanism may be used for drawing the roll, sheet or plate metal
40 through the apparatus described. As illustrated, this is effected by means of a spool or drum 27 rotatably mounted in suitable bearings on the table or frame 1 and upon which the roll, sheet or plate metal is or
45 could be wound. The driving mechanism for the various rotating rolls and the spool or drum may be arranged in any desired or preferred way. The drawings show one arrangement of such mechanism. Power is
50 applied to the fast and loose pulleys 29 on the spindle or shaft 30 of the winding spool or drum 27. From this spool or drum rotary movement is communicated to the wiping rolls or brushes 20 and to the paddle
55 wheel 11, by sprocket chains 31 working on sprocket wheels 32 secured to the spindles or shafts of the spool or drum 27, the wiping rolls or brushes 20 and paddle wheel 11. The driving mechanism is arranged to rotate
60 the various parts in the direction indicated by the arrows and at the necessary speeds.

The apparatus described is of simple construction and so arranged as to quickly, thoroughly, and uniformly coat roll, sheet
65 or plate metal. Surplus coating material is

scraped and wiped off from the roll, sheet or plate metal so as to give a practically uniform coating and the edges and top surface of the sheet or plate metal are kept reasonably clean from the coating metal.

The operation of the apparatus described will be readily understood from the foregoing description.

What I claim is,

1. Apparatus for coating roll, sheet or
75 plate metal comprising a pot or tank for the coating material, a rotary paddle wheel therein, means for drawing the sheet or plate over the said tank and paddle wheel, and guides arranged at the sides of the tank to
80 receive the edges of the sheet or plate and being so formed as to prevent the coating metal from being splashed onto the edges and upper surface of the sheet or plate.

2. Apparatus for coating roll, sheet or
85 plate metal comprising a pot or tank for the coating material, a paddle wheel rotatably mounted therein, means for drawing the sheet or plate over the tank and paddle wheel, and guides at the sides of the tank,
90 said guides being in the form of tubes provided with slits on their inner sides to receive the edges of the sheet or plate.

3. Apparatus for coating roll, sheet or
95 plate metal comprising a pot or tank for the coating material, a rotary paddle wheel therein, means for drawing the sheet or plate over the tank and paddle wheel, and guides at the sides of the tank mounted for adjustment toward and from each other and
100 formed to prevent the metal from being splashed onto the edges and upper surface of the sheet or plate.

4. Apparatus for coating roll, sheet or
105 plate metal comprising a pot or tank for the coating material, a rotary paddle wheel therein, means for drawing the sheet or plate over the tank and paddle wheel, guides at the sides of the tank formed to receive the edges of the sheet or plate, and scraping bars
110 at the rear edge of the tank in position to contact the lower surface of the sheet or plate.

5. Apparatus for coating roll, sheet or
115 plate metal comprising a fluxing pan, a fluxing roller therein, an absorbent wiper to the rear of the fluxing pan, a pot or tank for the coating material, guides for the edges of the sheet or plate, at the sides of said pot or
120 tank, means in the pot or tank for supplying coating material to the lower surface of the sheet or plate, a rotary wiping brush to the rear of the tank, and mechanism for drawing the sheet or plate over said parts
125 and in contact with the fluxing, the absorbent wiper and the rotary wiping brush.

6. Apparatus for coating roll, sheet or
130 plate metal comprising fluxing means, absorbent wipers to the rear thereof, a coating pot or tank, a rotary paddle wheel in the lat-

ter, rotary wiping brushes, means for drawing the sheet or plate over said parts, and mechanism for rotating the wiping brushes and paddle wheel in a direction contrary to the travel of the sheet or plate.

7. Apparatus for coating roll, sheet or plate metal comprising a pot or tank for the coating material, means therein for applying the coating material to the under surface of the sheet or plate passing over the same, one or more rotary wiping brushes over which said sheet or plate passes, mechanism for rotating said wiping brush or brushes in a direction contrary to the sheet or plate, and a scraper and guard associated with said brush or brushes for removing therefrom adhering coating material and preventing the same from again coming into contact with the sheet or plate.

8. Apparatus for coating roll, sheet or plate metal comprising in combination a fluxing pan and fluxing roll therein, means for holding the sheet or plate in contact with the fluxing roll, a distributing and absorbing member to the rear of the fluxing pan, a pot or tank for the coating material, a paddle wheel therein, guides at the sides of the pot or tank for receiving the edges of the sheet or plate, a scraper device over the rear of the pot or tank, a rotary wiping brush or brushes, means for holding the sheet or plate down against said brush or

brushes, a drum or spool for receiving the sheet or plate and drawing the same through the apparatus, and driving mechanism for said drum or spool, for the wiping brush or brushes and the paddle wheel, and arranged to drive the wiping brush or brushes in a direction contrary to the direction of travel of the sheet or plate.

9. Apparatus for coating roll, sheet or plate metal comprising in combination a fluxing pan and fluxing roll therein, means for holding sheet or plate in contact with the fluxing roll, a distributing and absorbing member to the rear of the fluxing pan, a pot or tank for the coating material, a paddle wheel therein, guides at the sides of the pot or tank for receiving the edges of the sheet or plate, a scraper device over the rear of the pot or tank, a rotary wiping brush or brushes, means for holding the sheet or plate down against said brush or brushes, and mechanism for drawing the sheet or plate through the apparatus and driving the paddle wheel and wiping brush or brushes in a direction contrary to the direction of travel of the sheet or plate.

In testimony whereof, I have hereunto set my hand.

BERTHOLD GOLDSMITH.

Witnesses:

J. S. GOLDSMITH,

M. GOLDSMITH.