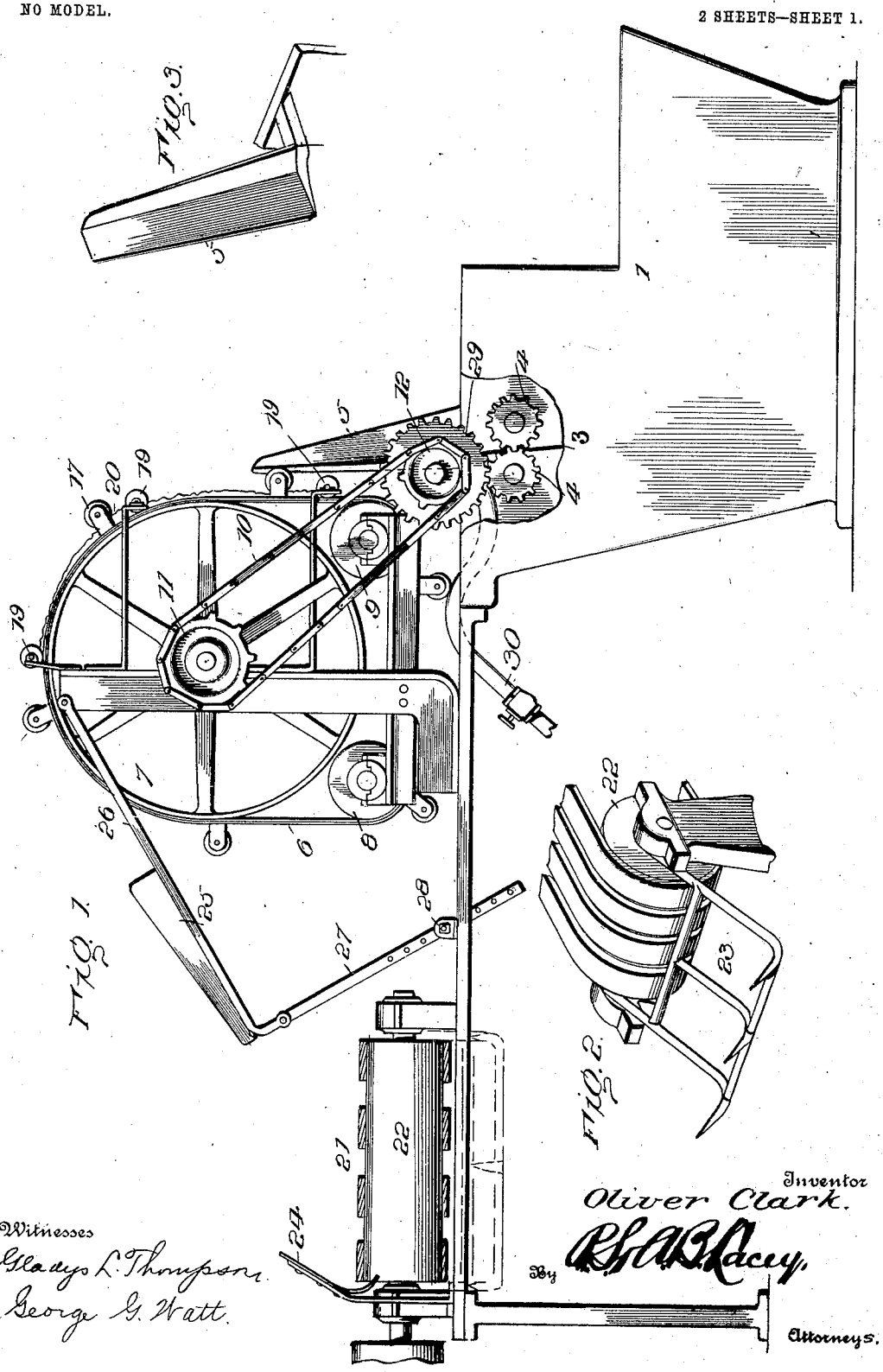
No. 727,291. PATENTED MAY 5, 1903.

O. CLARK.

APPARATUS FOR HANDLING SHEET METAL PLATES.

APPLICATION FILED JULY 23, 1902.

NO MODEL. 2 SHEETS—SHEET 1.



Witnesses
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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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NO MODEL. 2 SHEETS—SHEET 2.

Fig. 5.

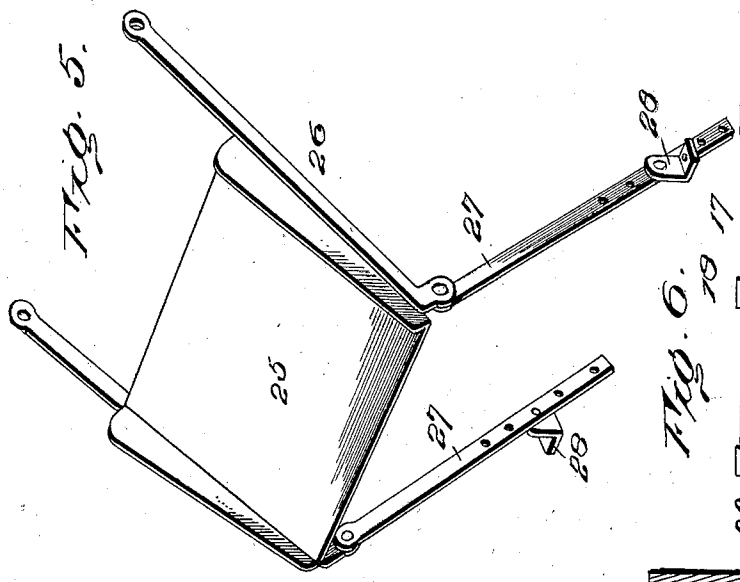
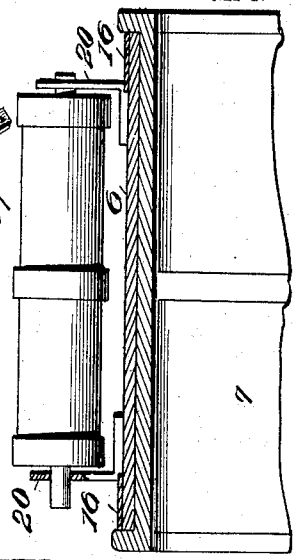


Fig. 6.



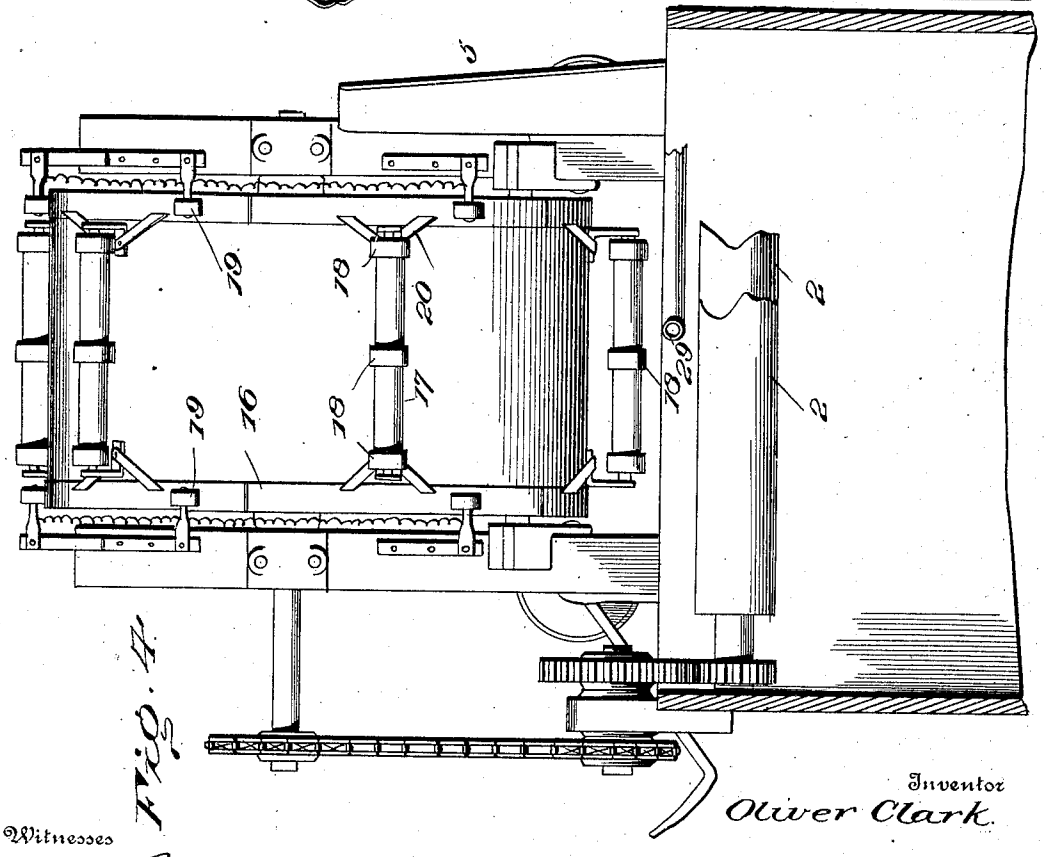


Fig. 4.

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UNITED STATES PATENT OFFICE.

OLIVER CLARK, OF NEWCASTLE, PENNSYLVANIA, ASSIGNOR OF TWO-THIRDS TO JOHN BAXTER, OF NEWCASTLE, PENNSYLVANIA, AND CHARLES HILLMAN, OF MIDDLETOWN, INDIANA.

APPARATUS FOR HANDLING SHEET-METAL PLATES.

SPECIFICATION forming part of Letters Patent No. 727,291, dated May 5, 1903.

Application filed July 23, 1902. Serial No. 116,682. (No model.)

To all whom it may concern:

Be it known that I, OLIVER CLARK, a citizen of the United States, residing at Newcastle, in the county of Lawrence and State of Pennsylvania, have invented certain new and useful Improvements in Apparatus for Handling Sheet-Metal Plates during the Process of Coating with Molten Metal, of which the following is a specification.

This invention has relation to mechanical appliances for handling sheet metal during the process of tinning, galvanizing, or coating the same with any metal or compound in a molten state, the purpose being to simplify the general construction and to render more efficient the working parts and to arrange the same in a compact form.

Other objects and advantages will suggest themselves to the skilled artisan as the nature of the invention is unfolded, and for this purpose reference is to be had to the following description and the drawings hereto attached, in which—

Figure 1 is a side elevation of a machine embodying the invention, a portion of the pot being broken away and the conveyer being in section. Fig. 2 is a perspective view of the delivery end of the conveyer, showing the rack for receiving the plates after being coated and preliminary to the cleaning operation. Fig. 3 is a perspective view of the guard arranged at one side of the carrier and adjacent to the pot for properly positioning the plates as they emerge from the molten bath. Fig. 4 is a front view of the machine, the pot being in section and an end portion of the rollers being broken away. Fig. 5 is a perspective view of the chute and the adjustable support therefor. Fig. 6 is an enlarged section of a portion of the large drum, showing the carrier, the electromagnet, and the supports therefor.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

In the drawings the pot or receptacle for containing the molten metal is indicated at 1, and 2 indicates a pair of rollers near one end of the pot for receiving the sheet-metal plate 3 after it has been immersed in the molten bath, so as to carry the same upward. These rollers 2 are located near the mouth or top side of the pot or receptacle 1 and are positively driven by means of intermeshing gearing 4. A guide 5 is arranged at one side of the pot or receptacle 1 and inclines toward the carrier, so as to force or compel the coated plate 3 to incline toward the carrier, so as to be attracted and taken hold of by means of an electromagnet forming a part of the carrier. This guide 5 is located so as to engage with an edge portion of the plate 3, thereby avoiding scratching, marring, or otherwise injuring the surface of the plate after it has been coated. The receptacle 1 may be of any size and shape so long as it will contain the metal in a molten state for coating the plates passed therethrough.

The carrier 6 may be of any construction and as shown is preferably a belt, and it may consist of a single piece or be composed of a number of strips or elements arranged with their longitudinal edges touching or spaced apart, as desired. The carrier 6 may be supported in any way, three drums 7, 8, and 9 being shown, the drum 7 being about three times the diameter of either one of the drums 8 or 9, the drums 8 and 9 being placed below the drum 7 and about in the same horizontal plane. Motion may be imparted to any one of the drums or to either of the pulleys. A sprocket-chain 10 and sprocket-wheels 11 and 12 may serve to connect the axis or shaft of the drum 7 with the axis or shaft of one of the rollers 2, or any well-known form of gearing may be employed to transmit motion from the drum 7 to the rollers 2, or vice versa. The carrier 6 may be of leather, textile, or other material found best adapted for the purpose.

Conducting-strips 16 are applied to the edge portions of the carrier 6 and may be continuous or composed of sections, the latter construction being preferable, as it admits of demagnetization of the electromagnets at any point in the travel of the carrier, so as to release the plate 3 at any determinate point. The carrier 6 may be provided with one or more electromagnets 17, depending upon its

length and the capacity of the apparatus. In the event of a plurality of electromagnets being employed they will be properly spaced to admit of proper action upon the plate 3. The electro magnet or magnets 17 are arranged with their axis parallel with the axis of the drums 7, 8, and 9, and each electromagnet comprises a series of pole-pieces 18 of annular formation, so as to attract the sheet-metal plates 3 at different points throughout their transverse extent, thereby obviating slipping and insuring positive holding of the sheet-metal plates in their outward and rearward travel with the carrier after being released from the delivery-rollers 2 and until said plates assume a position to be properly delivered to the conveyer for transfer to the rack preparatory to the cleaning operation. The terminals of the wire wound around the core of the electromagnets are attached to opposite conducting-strips 16 or section thereof, and the electric current is supplied to the conducting-strips 16 by means of brushes 19 of any type, preferably of the rotary form, as shown, which in practice is found to give the best results. The electromagnets 17 may be attached to the carrier in any determinate way, and, as shown, two brackets 20 are employed for each, the same being secured to the carrier in any substantial manner and their offstanding portions being apertured to receive the terminals of the electromagnet-core, which are journaled therein to admit of rotation of the magnets over the plate 3 should the latter be retarded from any cause.

The conveyer 21 is of the endless type and is arranged transversely of the apparatus in the rear of the carrier 6 and consists of a belt or a series of belts mounted upon rollers 22. The conveyer 21 travels in a plane at a right angle to the plane of movement of the carrier 6, and one end is positioned so as to receive the sheet-metal plates 3 when released from the carrier 6, and a rack 23 is located at the opposite end of the conveyer to receive the sheet-metal plates, which are subsequently put through the cleaner, (not shown,) usually located adjacent to and at one side of the apparatus for handling the plates during the coating operation. A guard 24 is located at one side of the conveyer and projects vertically above the topmost portion, so as to arrest the movement of the sheet-metal plates and prevent their passage over or by the conveyer when released from the carrier and directed thereto by means of an intermediate chute 25, located so as to direct the lower portion of the plates 3 outward and away from the carrier 6 in the rearward and downward movement of the plates. The rack 23 may be of any construction and is adapted to receive the plates from the conveyer.

The chute 25 is preferably constructed of plate metal, having its side portions flanged to prevent lateral displacement of the plates 3.

Bars 26 are pivoted at their upper ends to the frame of the machine and incline rearward and downward, and the chute 25 is attached thereto, braces 27 supporting the lower ends of the bars 26 and being pivoted thereto and having their lower ends adjustably connected to brackets 28, applied to the framework of the machine. By moving the braces 27 up or down the inclination of the chute 25 is adapted to be regulated. To prevent the plates 3 from passing over the outer edge of the conveyer 21, the lower edge portion of the guard 24 is curved so as to extend around the outer edge of the upper portion of said conveyer, as shown most clearly in Fig. 1.

It is proposed to set the molten metal upon the plates 3 as they emerge from the molten bath, and for this purpose a blast-pipe 29 is employed and arranged so as to deliver a current or blast of air upon the plates as they pass from between the delivery-rollers 2 or from the bath. This blast-pipe 29 is arranged parallel with the delivery-rollers 2 and adjacent thereto and may be connected with any device or source for supplying air under pressure. The pipe or tube 30 for conveying a current of air to the blast-pipe 29 is provided with a valve to admit of regulating the blast of air delivered upon the plates for setting the metal applied thereto.

Having thus described the invention, what is claimed as new is—

1. In apparatus of the character described, a carrier, and electromagnets arranged transversely of the carrier each having a plurality of pole-pieces in its length, substantially as described.

2. In apparatus of the character described, a carrier, and electromagnets arranged transversely of the carrier, each adapted to turn about an axis parallel with the axis of the carrier, substantially as specified.

3. In apparatus of the character described, a carrier, corresponding bearings at opposite edge portions of the carrier, and transverse electromagnets having their cores journaled in the said bearings, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

OLIVER CLARK. [L. S.]

Witnesses:
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C. W. FENTON.