(No Model.) 2 Sheets—Sheet 1.

S. Y. BUCKMAN.

APPARATUS FOR CLEANING SHEET METAL PLATES.

No. 451,263. Patented Apr. 28, 1891.

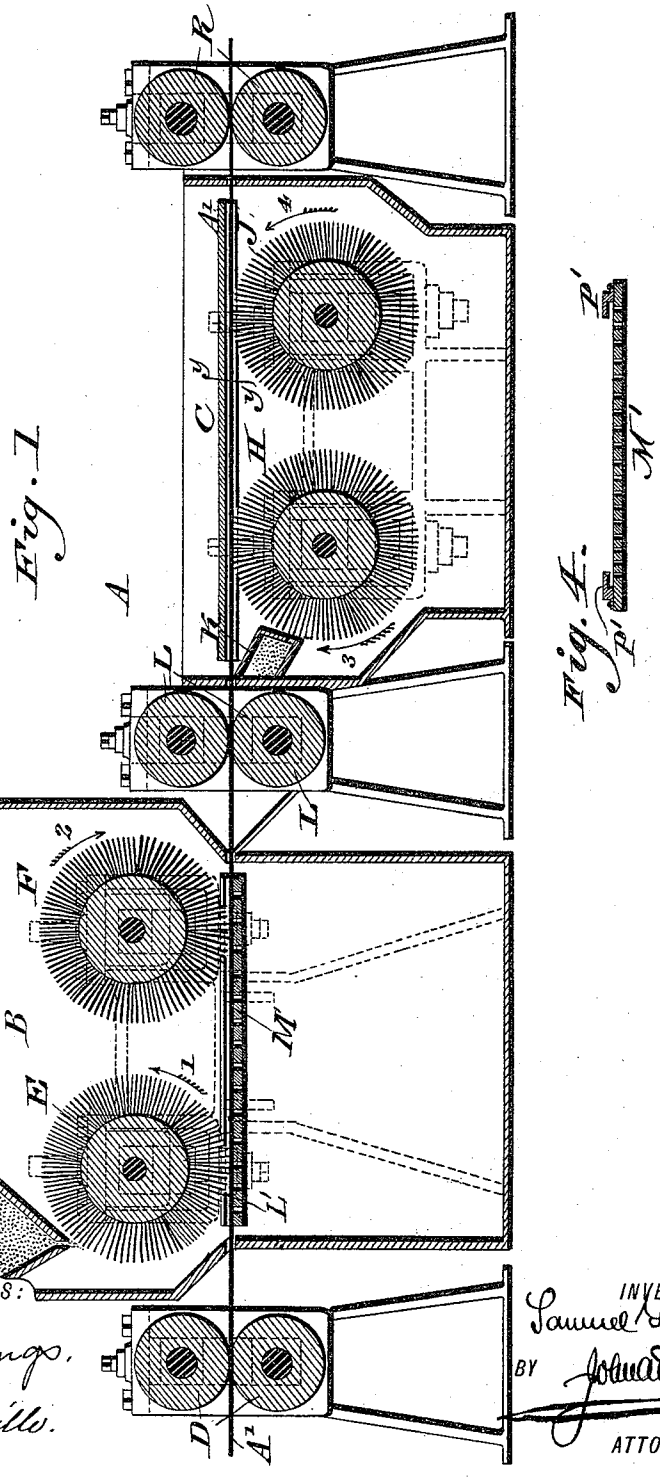


Fig. 1.

Fig. 4.

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(No Model.) 2 Sheets—Sheet 2.

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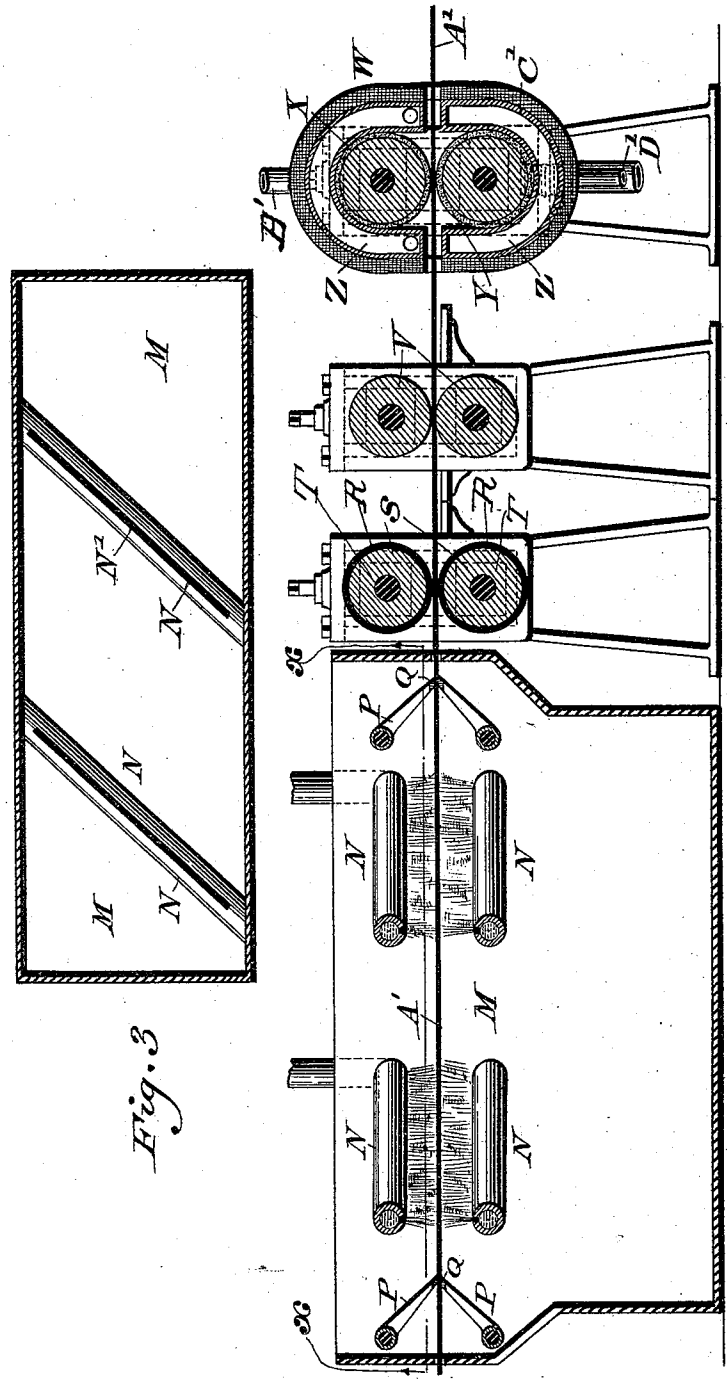


Fig. 2.

Fig. 3

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UNITED STATES PATENT OFFICE.

SAMUEL Y. BUCKMAN, OF PHILADELPHIA, PENNSYLVANIA.

APPARATUS FOR CLEANING SHEET-METAL PLATES.

SPECIFICATION forming part of Letters Patent No. 451,263, dated April 28, 1891.

Application filed September 11, 1890. Serial No. 364,689. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL Y. BUCKMAN, a citizen of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Improvement in Apparatus for Cleansing Sheet-Metal Plates, which improvement is fully set forth in the following specification and accompanying drawings.

My invention relates to improvements in apparatus for cleansing sheet-metal plates preparatory to coating the same with tin or an alloy thereof; and it consists, first, of a novel scrubbing device, substantially as hereinafter described.

It further consists of a washing device, substantially as hereinafter described.

It further consists of drying-rollers, constructed substantially as hereinafter described.

It also consists of a novel steam-drying device for the drying-rollers, and it finally consists of the combination of parts hereinafter set forth.

Figure 1 represents a longitudinal sectional view of the scrubbing device of the apparatus. Fig. 2 represents a longitudinal sectional view of the spraying device and the drying-rollers with steam-drying device as embodied in my invention. Fig. 3 represents a sectional view on line *x x*, Fig. 2, looking upward of the spraying device. Fig. 4 represents a sectional view on line *y y*, Fig. 1.

Similar letters of reference indicate corresponding parts in the several figures.

Referring to the drawings, A designates the scrubbing device or portion of the cleansing apparatus, consisting of the boxes B C, arranged in line, and having openings or slots in their ends through which the sheet-metal plates A′ may be passed. At the entrance to the box are the rollers D for feeding the plates A′ to the device. Journaled on any suitable supports, and above the path of the plates within the box, are the rotary brushes E and F, having on their journals gearing or other suitable mechanism for rotating them in opposite directions, as indicated by the arrows 1 2. A hopper or chute G leads into the box B at one end for supplying the box with the sand or other material used in scrubbing or scouring the plates. By rotating the brushes in opposite directions the friction of the same on the plates is neutralized, and at the same time the use of the sand is economized, being kept longer between the brushes than if the latter were rotated in the same direction.

The box C has within it, on the under side of the path of travel of the plates A′, two brushes H and J, adapted to be rotated in opposite directions (see arrows 3 and 4) for the same reason as the brushes E and F are so operated. A chute K leads into the box to supply sand or other scouring material thereto, said sand falling on the brush H, which carries it to and against the under side of the plate.

In the drawings feed-rollers are shown between the two boxes B and C, the said rollers serving also to sustain the plates and with the guides L′ prevent their sagging, so that they may travel through the boxes in a straight line, and thereby be the more readily and efficiently operated on by the brushes. The said guides are formed of a perforated part M′, with which the plates A′ are in contact, and the side pieces P′ for retaining the plates against the said part M′.

M designates a box slotted at its ends and having therein a number of pipes N, the latter being located on opposite sides of the path of the plates A′ and at an angle thereto, so as to have a greater length within the box. Each of the said pipes N is slotted, as at N′, on its side adjacent to the plates, so as to be adapted to spray water, which is fed thereto directly on the plate, and remove therefrom all the sand and other loose particles which may be thereon. Secured to the side walls of the box, and extending across the same, are the guides P, having their ends, which contact with the plates, re-enforced with leather tips Q, so as to more reliably keep the water which is on the plate from escaping at the slots in the ends of the box. Between the spraying-box M and the scrub-box C are feed-rollers R, which serve also as supports, similar to the rollers L.

S designates rotary drying-rollers for removing the water from the faces of the plates, each consisting of an iron or other metal body T, having a rubber covering U thereon, which latter comes in contact with the plates A′ as

they leave the spraying device. Adjacent to the rollers S are the feed-rollers V, which are similar in construction and function to the feed-rollers L and R.

W designates a drying device consisting of metal rollers X, having a felt covering Y. Partially surrounding each of the rollers, and in contact with the felt covering thereof, is a steam-jacket Z, having a suitable supply-pipe B′. The said jackets have a manganese covering C′ thereon, so as to prevent the radiation of the heat therefrom. The jackets are connected at their ends, and are provided with a drip-pipe D′. Several pairs of rollers X with felt covering and surrounding jackets may be used, if desired.

The operation of the device is as follows: The plates A′ to be cleansed are drawn into the box B by means of the feed-rollers D, so that the one side of each one thereof is brought into contact with the rotary brushes E and F, which apply the sand fed by the chute G to the same, so that the loose scales or other impurities clinging thereto are detached. Owing to the brushes rotating in opposite directions, the amount of resistance offered by one brush to the advance of the plate is neutralized by the assistance given by the contact of the other, so that the plate is neither impeded nor advanced by the contact therewith of the said brushes, thus permitting the feed-rollers with their operating mechanism to perform the entire work of drawing the plate through the device. After passing through the box B the plate is drawn into the box C, where a similar operation to that performed on the upper side thereof by the brushes E and F is performed on the under side by the brushes H and J, which also rotate in opposite directions for the same reasons as the brushes E and F. The plate thus scoured or scrubbed passes into the spraying-box M, where the water from the pipes N is sprayed through the slots N′ against the sides of the said plate, washing the same and removing all of the loosened particles of matter therefrom. From the spraying-box the plate is drawn between the rubber-coated rollers S so as to remove the moisture or water adhering to the plate, and then it is passed into the drying-box W and between the felt-covered rollers X thereof, the said felt covering being dried by contact with the steam-jacket Z.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A cleansing device for sheet-metal plates, having a box with slotted opposite sides, feed-rollers adjacent to said slots, a pair of rotary brushes between said slotted sides and on the same side of the path of travel of a sheet passing through said box, and mechanism for rotating at the same time one of the said brushes in an opposite direction to the other, said parts being combined substantially as described.

2. In an apparatus for cleansing sheet metal, a scrubbing device consisting of boxes with chutes leading therein and having slots in their sides, two sets of rotary brushes, a set thereof being on each of the opposite sides of the path of travel of the material to be cleansed, and mechanism for operating the brushes of either pair in opposite directions, said parts being combined substantially as described.

3. In an apparatus for cleansing sheet metal, a box with slots in its sides and provided with diagonally-arranged pipes having slots therein on both sides of the path of travel of the sheet, guides in said box, and a feed-roller on the outer side of said box, said parts being combined substantially as described.

4. In an apparatus for cleansing sheet-metal plates, a drying-roller having a felt covering and a surrounding steam-jacket, said parts being combined substantially as described.

5. In an apparatus for cleansing sheet metal, a box with slotted sides, slotted pipes in said box above and below the plane of said slots in the sides, and depending guides P with leather ends, said parts being combined substantially as described.

6. In an apparatus for cleansing sheet-metal plates, a drying-roller having a surrounding steam-jacket with a manganese coating thereon, substantially as described.

7. In an apparatus for cleansing sheet-metal plates, rotary brushes, and perforated guides adjacent to said brushes and between which the said plates are adapted to pass, said parts being combined substantially as described.

8. In an apparatus for cleansing sheet-metal plates, a scouring device having one set of rotary brushes on one side of the path of travel of said plates, another set of rotary brushes on the opposite side of the path of travel of said plates, and guides respectively above and below said sets of brushes, one of said guides being perforated, said parts being combined substantially as described.

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Witnesses:
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