

(No Model.)

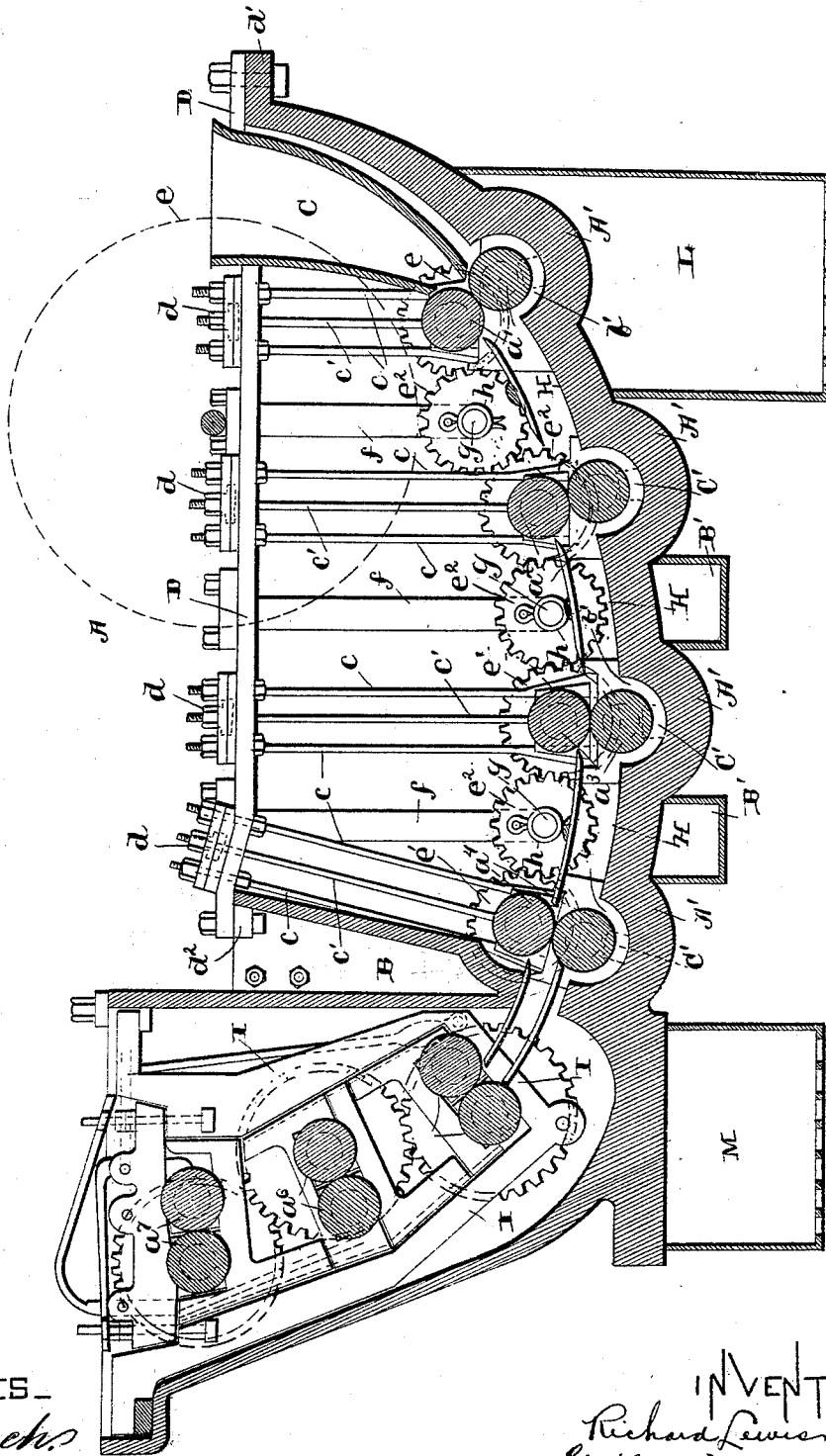
3 Sheets—Sheet 1.

R. LEWIS & G. MORGAN.

APPARATUS FOR COATING IRON OR STEEL PLATES WITH METAL
OR ALLOY.

No. 509,746

Patented Nov. 28, 1893.



WITNESSES_

Geo. E. French.

Poland A. Fitzgerald

INVENTORS.

Richard Lewis
Evelyn Morgan
per
Lehmann Patterson Nestle,
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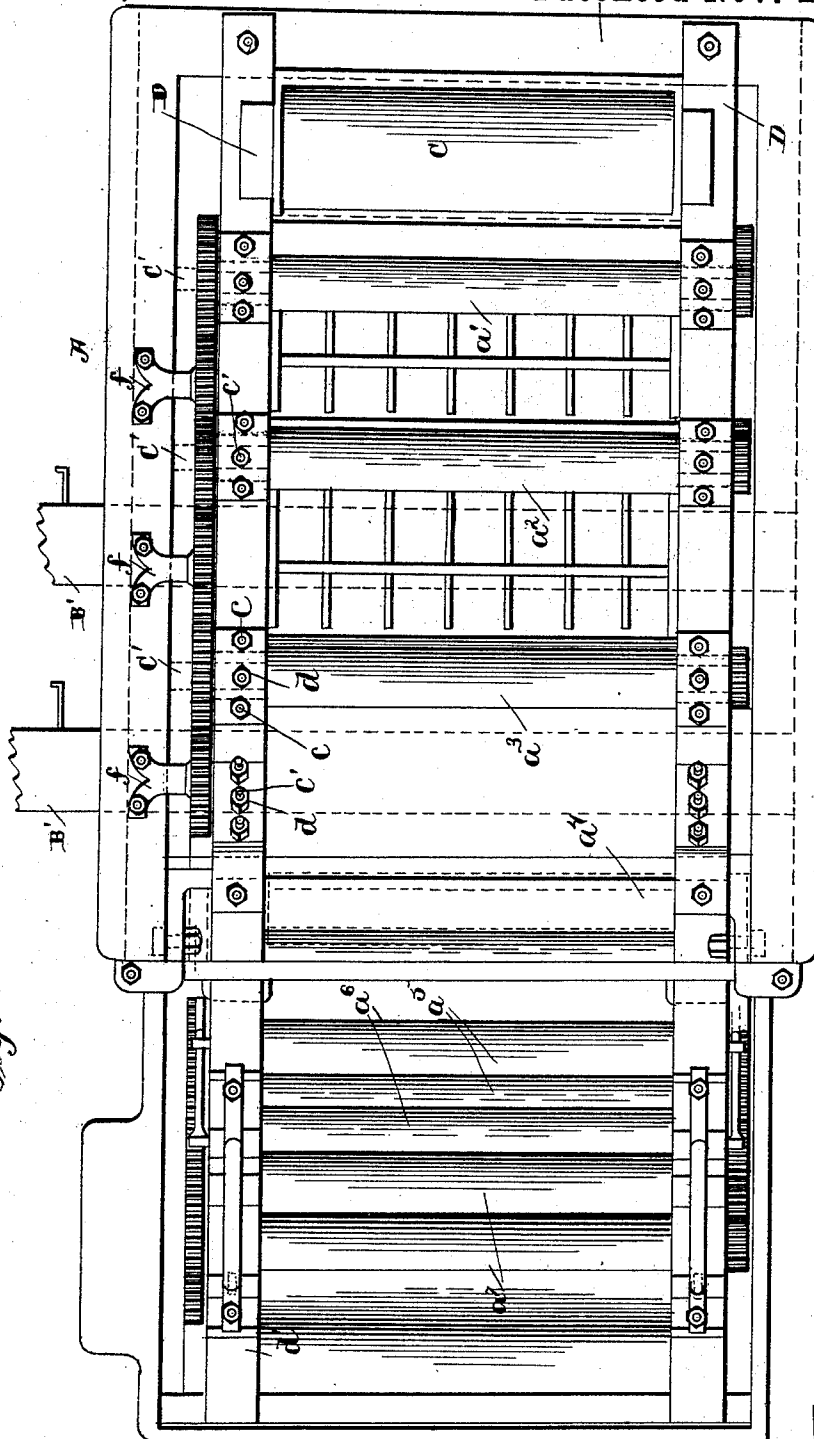


Fig. 2.

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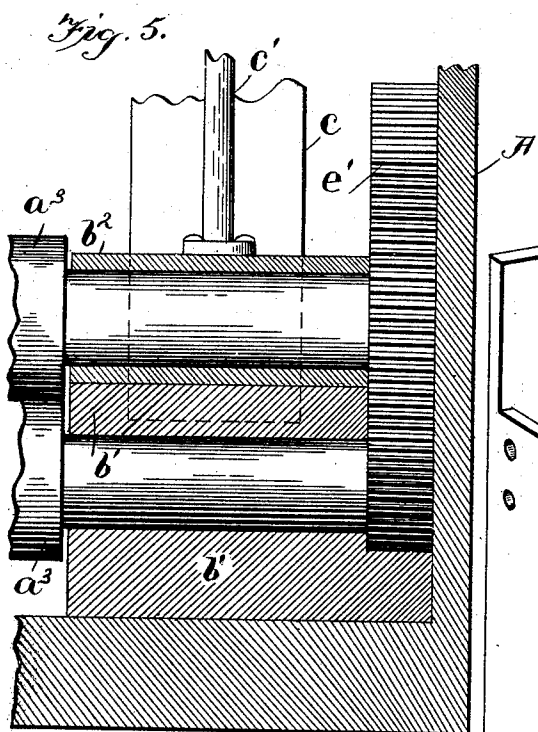
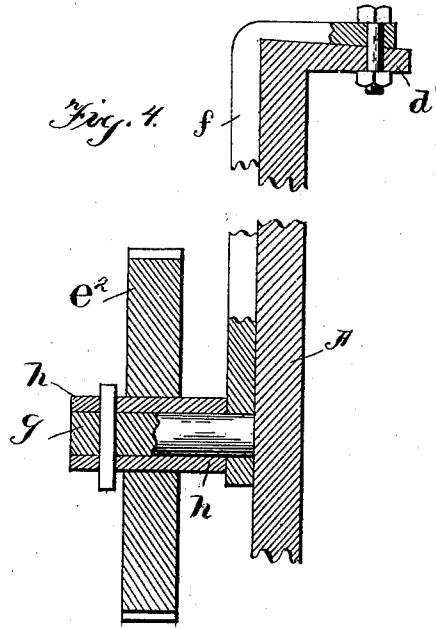
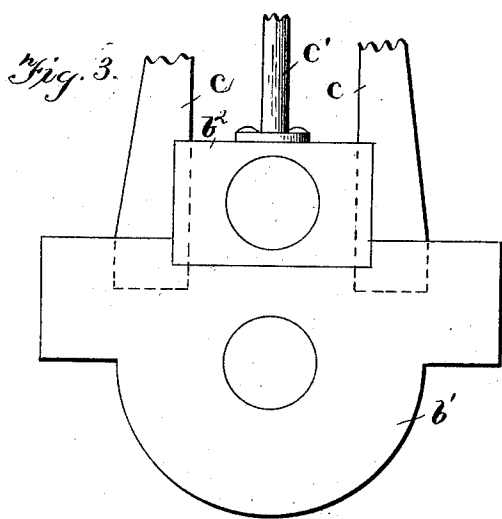
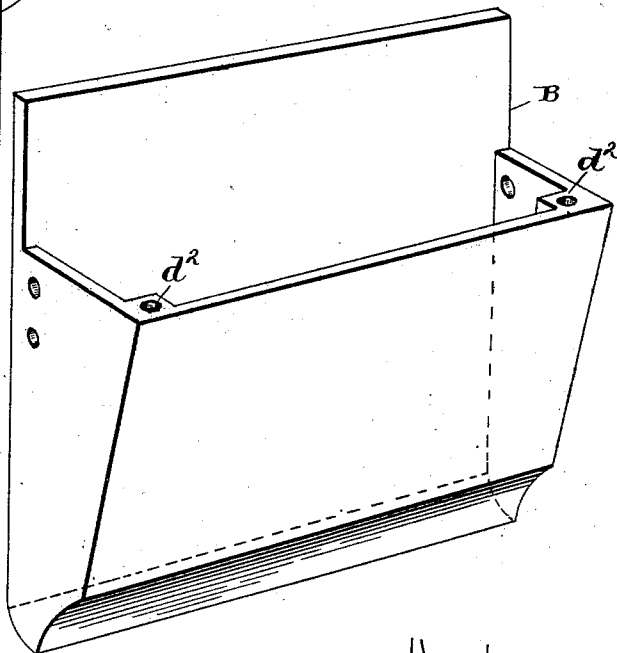


Fig. 6.



WITNESSES.

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UNITED STATES PATENT OFFICE.

RICHARD LEWIS, OF NORRISTOWN, PENNSYLVANIA, AND GWILYM MORGAN,
OF WEST NEW BRIGHTON, NEW YORK.

APPARATUS FOR COATING IRON OR STEEL PLATES WITH METAL OR ALLOY.

SPECIFICATION forming part of Letters Patent No. 503,746, dated November 28, 1893.

Application filed January 26, 1893. Serial No. 459,920. (No model.)

To all whom it may concern:

Be it known that we, RICHARD LEWIS, of Norristown, in the county of Montgomery and State of Pennsylvania, and GWILYM MORGAN, of West New Brighton, in the county of Richmond and State of New York, have invented certain new and useful Improvements in Apparatus for Coating Iron or Steel Plates with Metal or Alloy; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

Our invention relates to improvements in apparatus for coating iron or steel plates with tin or other metals or alloys; and it consists in the construction and combination of parts which will be fully described hereinafter and fully pointed out in the claims.

The objects of our invention are to simplify and improve apparatus for manufacturing tin, terne or other metal coated or galvanized plates; to economize material and labor in the manufacture of such plates; to effect the coating of the plates, especially in the case of tin plates, in a shorter time than has heretofore been accomplished, and to make every part of our machine easily accessible for inspection or repairs without removing other parts of the machine or the metal.

The means by which these objects are, we believe, accomplished are fully set forth in drawings attached to this specification, which we proceed to describe.

In the drawings like letters of reference refer to the same parts of our machine.

Figure 1, is a central vertical sectional view of the machine. Fig. 2, is a plan view. Figs. 3 and 4, are sectional detail views on a larger scale. Fig. 5 is a sectional detail of the roll journals and blocks. Fig. 6, is a detached view of the pan-like division chamber between the metal and grease pots.

A represents a combined metal and grease pot of new and improved shape. The bottom of the metal part of the pot is cast with recesses A' A' in which the lower roller of each pair of guide-rolls works.

B is a removable chamber composed of side and end walls forming a pan-like division between the grease pot and the metal pot which is placed wholly within the side walls of the pot A and serving to keep the metal in the grease pot at a low temperature, which is very important for well finished plates. The flues B' B' placed beneath the pot in the spaces intervening between the recesses described above also help to keep the temperature low, by means of a current of air passing through them into the stack. The current of air may be regulated by means of dampers G, as shown in Fig. 2.

C is a flux box.

a^1, a^2, a^3 , are pairs of guide rolls which serve to convey the plates automatically from the hand of the "tin man" through the metal and grease and to deliver them in a finished state to the "riser." The rolls a^1, a^2, a^3 , and a^4 , turn in blocks b^1, b^1 , and b^2, b^2 . b^1, b^1 , are stationary blocks fitting securely into the recesses at the bottom of the pot and prevented from moving laterally by the lugs extending to the side of the pot, as shown in Fig. 5, and dotted lines in Figs. 1 and 2. The rods c, c, c , also serve to keep the blocks b^1, b^1 , in position.

b^2, b^2 , are adjustable blocks which may be raised or lowered by the rods c', c' , by means of the socket nuts d, d, d .

D, D, are bars of iron to which the rods c, c , and c', c', c' , are fastened. These bars are bolted at one end to the flange d' , of the pot A, and at the other end to the flanged removable chamber B. The dotted line e represents the toothed driving wheel which actuates the guide-rolls in the tin pot by means of the toothed wheels e', e' , and the intermediate toothed wheels e^2, e^2 . The intermediates e^2, e^2, e^2 , are supported by the bars f, f, f , which are bolted on the flange of the pot A, as shown in Fig. 2.

g, g, g , are studs fixed to the bars f, f, f , having cast iron bushes h, h, h to carry the intermediates e, e, e . The rolls a^5, a^6, a^7 , are fixed in a frame I.

The metal in the metal pot is heated by means of a furnace L, and a furnace M is provided for the grease pot to keep the metal

therein as near the melting point as possible, but below the temperature of the metal in the metal pot, the same being gradually cooled toward the grease pot by means of the intermediate flues B', before mentioned.

By providing the metal pot with the transverse grooves C', in which the lower feed rolls rotate, thus are formed the upwardly projecting intermediate portions H, whereby a great saving in the quantity of coating material within the pot is effected, over that necessary in the usual curved bottom not provided with recesses.

A further advantage of this construction, is, that we are enabled to place intermediate these recesses cooling flues for gradually cooling the metal as it passes over the projecting portions H to the grease pot. Attention is also called to our particular construction, which is the casting of the walls and bottom of grease and metal pot integral, that is of a single casting, and then forming the grease pot by placing therein a transverse vertical partition separated at its lower end from the bottom of said casting sufficiently to allow the passage of the plates from the metal pot into the grease pot, as clearly shown in Fig. 1.

It will be noticed that the left hand end wall of the pot extends above the opposite end thereof, and that the outer or adjacent side wall of the pan-like partition extends a corresponding distance above the opposite wall thereof which forms a grease pot above the plane of the metal pot to afford a receptacle for the grease above the metal line of the metal pot. As will also be seen, we provide the metal pot with feeding rolls for catching and carrying them forward through the metal to the grease pot, in contradistinction to the usual method of pushing them through by means of tongs, thus only requiring the placing of the plates by the operator in the flux box. In this manner one person can feed a double machine thus increasing the output, and doing away with the expense of one man, as two would be necessary if the feed rolls were not provided. We also make the feed rolls removable, as before described, the particular object of which is to permit any one or more of the operating parts to be removed from the pot without interfering with any of the other parts, and without removing the metal for that purpose. We are thus allowed ready and convenient access to all the parts for the purpose of inspection or repair, as will be readily understood.

Having thus described our invention, what we claim, and desire to secure by Letters Patent, is—

1. A combined metal and grease pot having the walls and bottom thereof cast integral and the side walls unbroken, a detachable pan-like vertical transverse partition placed

wholly within the side walls of the pot and extending to near the bottom thereof to make two distinct receptacles, and heating means for maintaining the metals in the two receptacles at different temperatures.

2. A combined metal and grease pot having the walls and bottom thereof cast integral, one end of the pot extended above the other, and a vertical transverse partition composed of side and end walls, the outer side wall being extended to correspond with the extended end of the pot to form a grease pot above the metal pot.

3. A metal pot for the purpose described, having transverse recesses forming projecting portions between them, and cooling flues beneath the said projecting portions, substantially as described.

4. The combination with a metal pot having transverse recesses in its bottom, of a series of rolls, and separate and removable boxes for said rolls placed in said recesses.

5. The combination with a metal pot having transverse recesses in its bottom, of a series of rolls, series of separate boxes for said rolls seated in the recesses, and separate removable holding means for each box extending above the metal line.

6. The combination with a metal pot, of a series of pairs of rolls, upper and lower boxes for the rolls of each pair, parallel vertical rods for holding the lower box of each pair, and a central rod for holding the upper box of each pair of rolls.

7. The combination with a metal pot, of a series of pairs of rolls, separate upper and lower boxes for the rolls of each pair, and separate removable holding means for the upper and lower boxes which means extend above the metal line.

8. The combination with a metal pot having transverse recesses in its bottom of a series of pairs of rolls, lower boxes for the lower rolls seated in said recesses, separate upper boxes seated on the lower boxes, and a removable holding means for said boxes.

9. The combination with a metal pot of a series of pairs of rolls, lower boxes for the lower rolls of each pair, parallel vertical rods engaging and holding the lower boxes, and separate upper boxes for the upper rolls supported between the said parallel rods.

In testimony whereof we affix our signatures in presence of two witnesses.

RICHD. LEWIS.
GWILYM MORGAN.

Witnesses for Richard Lewis:

HENRY S. SECHLER,
GEO. W. GROFF.

Witnesses for Gwilym Morgan:

J. M. NESBITT,
ROLAND A. FITZGERALD.