

(No Model.)

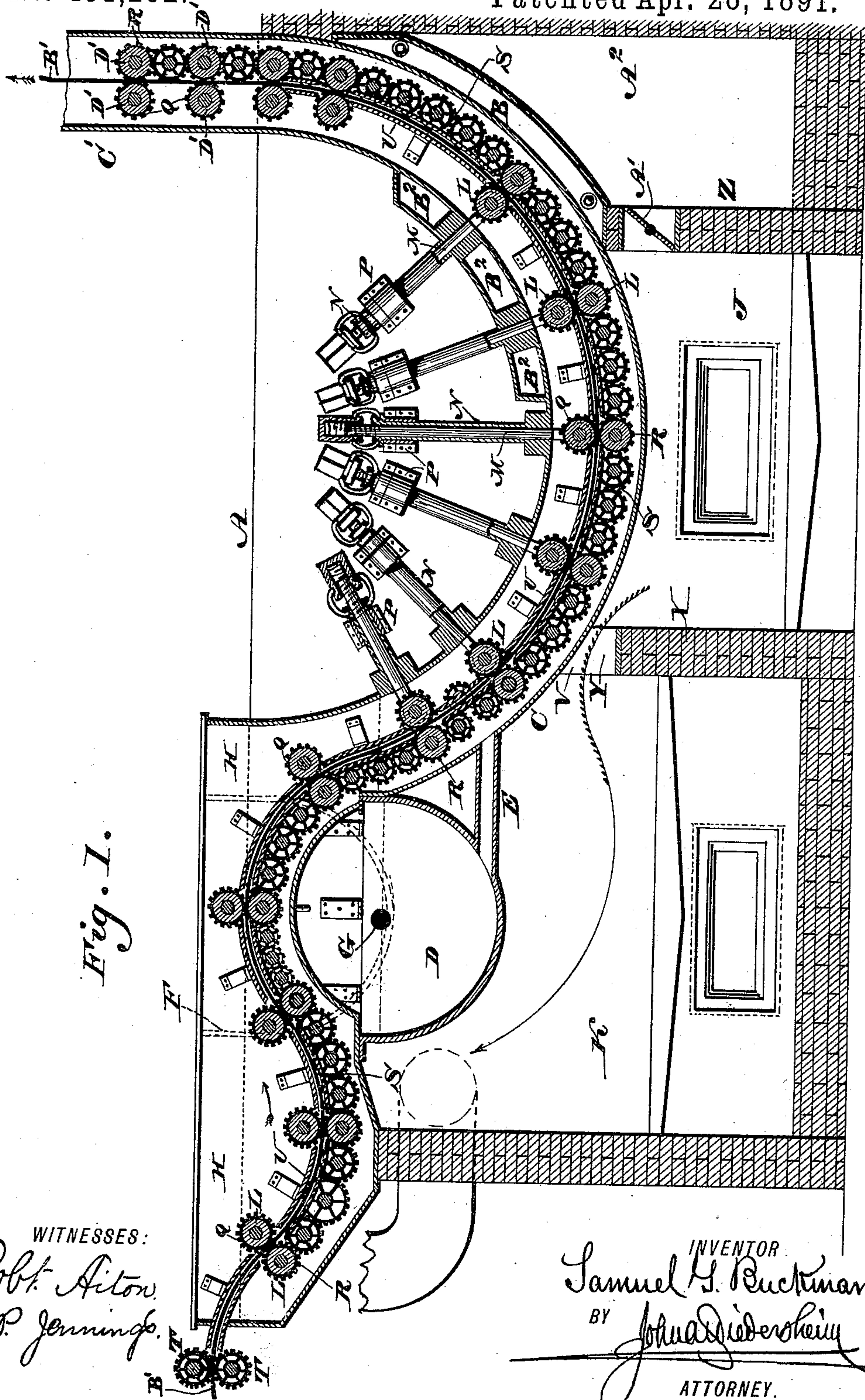
2 Sheets—Sheet 1.

S. Y. BUCKMAN.

APPARATUS FOR COATING SHEET METAL PLATES.

No. 451,262.

Patented Apr. 28, 1891.





(No Model.)

2 Sheets—Sheet 2.

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Fig. 2.

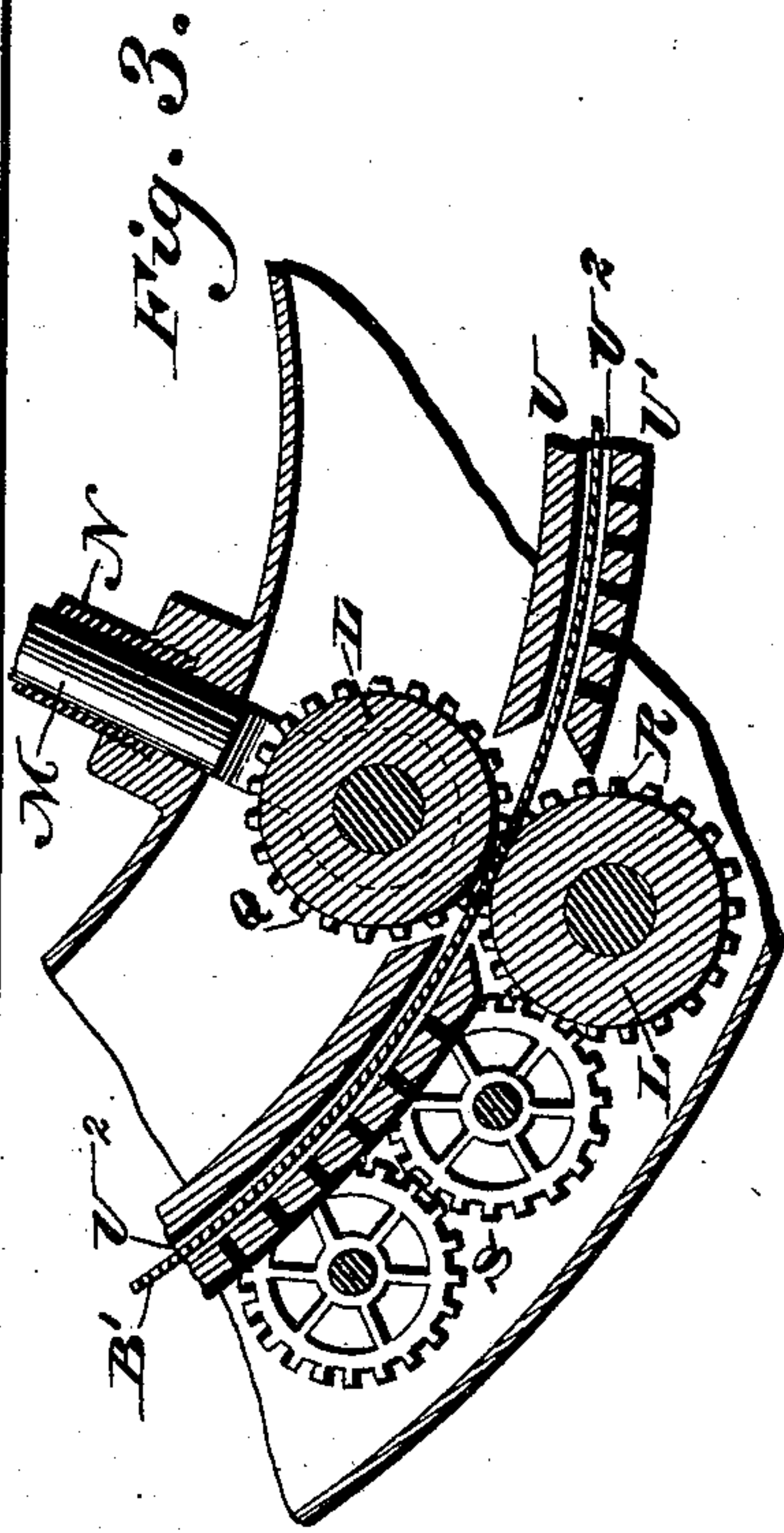
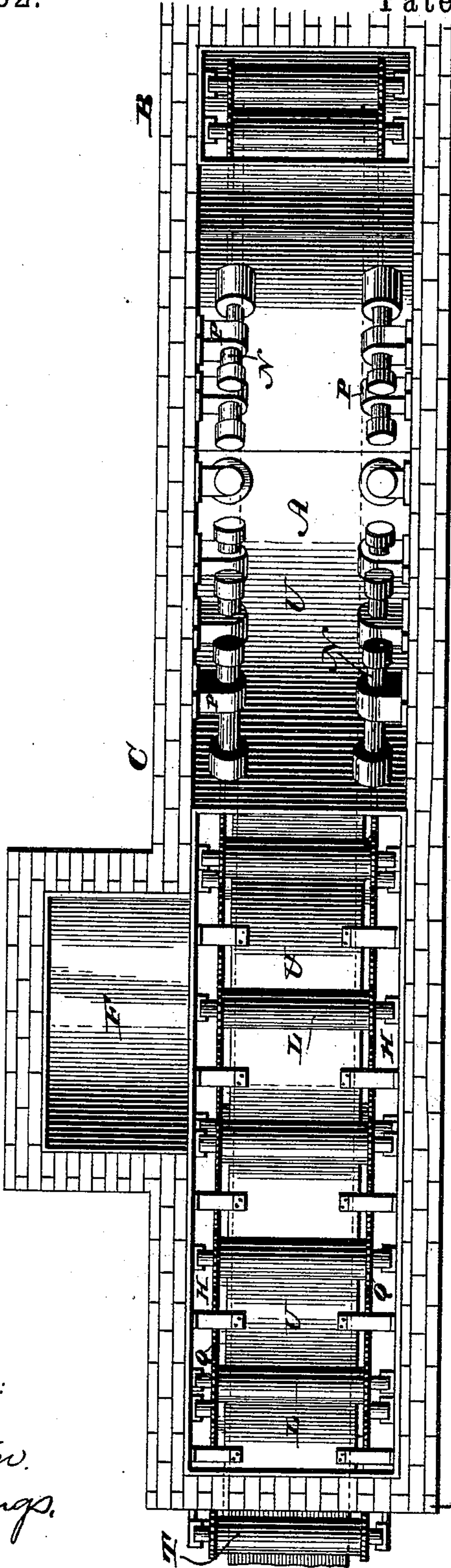
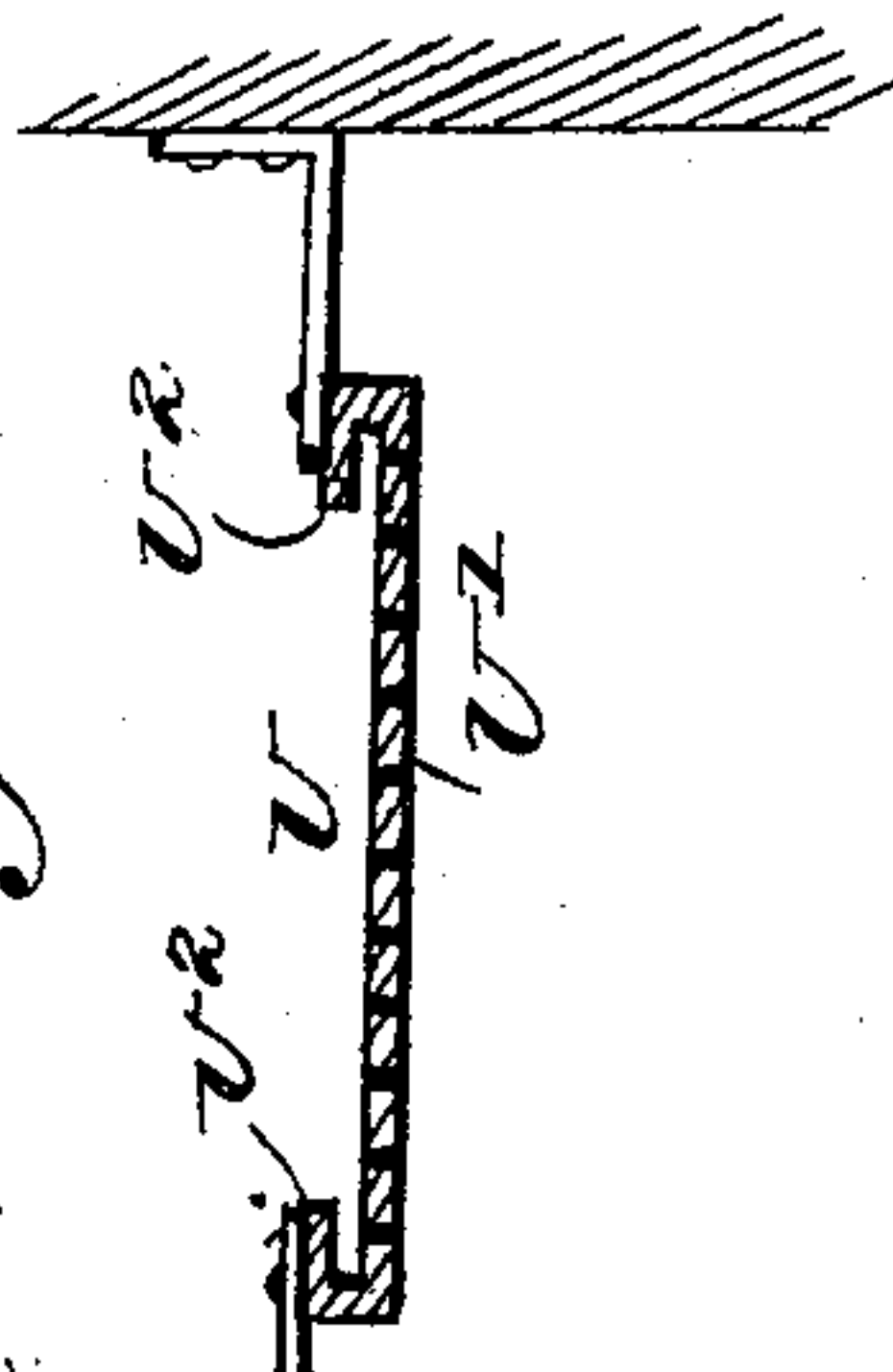


Fig. 4.



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## APPARATUS FOR COATING SHEET-METAL PLATES.

SPECIFICATION forming part of Letters Patent No. 451,262, dated April 28, 1891.

Application filed August 30, 1890. Serial No. 363,498. (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 Coating Sheet-Metal Plates, which improvement is fully set forth in the following specification and accompanying drawings.

My invention relates to improvements in apparatus for coating sheet-metal plates; and it consists of a dipping-pot constructed substantially as hereinafter described and claimed.

It further consists of adjustable feeding mechanism, substantially as described and claimed, and, finally, it consists of the combination of parts hereinafter described and claimed.

Figure 1 represents a partial longitudinal sectional view of an apparatus embodying my invention. Fig. 2 represents a plan view thereof. Fig. 3 represents a view of a detail part thereof on an enlarged scale. Fig. 4 represents a transverse sectional view of the guides, showing the side pieces thereof.

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

Referring to the drawings, A designates a dipping-pot having top and bottom walls of U shape, thereby forming two opposite limbs B and C, through which a sheet B', composed of the connected plates of sheet metal to be coated with tin or an alloy thereof, is passed.

D designates a supply-pot having a duct E, leading from its lower portion to the upper portion of the dipping-pot, and F designates a melting-pot, in which the coating material is first placed, and which is located on the side of and above the supply-pot D, so that a duct G at its base leads into the upper portion of the said pot D.

Above and seated on the supply-pot D, so as to be highly heated thereby, is the flux-box H, which at one end is adapted to receive a sheet formed of plates to be coated, and at the other end communicates with the entrance-limb C of the dipping-pot A, so that at its exit from the flux-box the said sheet enters the dipping-pot. The said dipping-pot has a separate furnace J from the melting and supply pot furnace K, but has also its limb C so exposed to the said furnace K as

to receive heat therefrom, in addition to the heat received from its own furnace J, whereby the contents of the said limb become more highly heated or are raised to a greater temperature than the contents of the opposite limb B thereof.

The dipping-pot A and the flux-box H are provided with a series of feed-rollers L, each pair of which extends transversely thereof, and is adapted to be in contact with the sheet of metal plates, so as to advance the same through the said pot and box. The upper one of each pair of said rollers L in the pot A is journaled in the lower ends of bars or rods M, which are adapted to be adjusted in the tubes N, the latter being secured to the brackets P, fastened to extensions of the sides of the walls of said pot. The said rods M are adjusted in the tubes N by drawing them either in or out of the same by any suitable means, such as nuts or caps mounted on the screw-threaded upper ends thereof and so secured to the tubes as to have no longitudinal motion thereon.

Mounted on the journals of the upper rollers L are gear-wheels Q, which mesh with gear-wheels R on the journals of the lower rollers, the said gear-wheels R meshing with a train of gearing S, and the journals of the said train S and wheels R having bearings on the inner side walls of the dipping-pot and flux-box.

At the entrance of the flux-box are feed-rollers T, which receive motion by means of any suitable connecting gearing or mechanism.

U designates guides, which are formed of a perforated base portion U' with side pieces U<sup>2</sup>, and are secured to the inner side of the walls of the flux-box H and dipping-pot A between the feed-rollers L therein, so as to insure the proper passage of the plates through said parts.

V designates a supporting-leg of the dipping-pot, which rests on the separating-wall X of the furnaces J and K, and which is provided with an opening Y therein for the passage of the products of combustion from the furnace J into the fire-chamber of the furnace K, so as to aid in superheating the limb C of the dipping-pot, as well as to utilize the heat from the said furnace in melting the coating material in the pot D.

In the side wall Z of the furnace J is a



damper A', by means of which the heat of the furnace K can be directed to a chamber A<sup>2</sup>, and so uniformly heat all portions of the dipping-pot.

5 In contact with the limb B of the dipping-pot and extending across the same are chambers or passages B<sup>2</sup>, through which currents of cold water may be passed for cooling the contents of the said limb B.

10 The manner of the operation is as follows: A sheet of metal is drawn by the feed-rollers into the flux-box H, which latter is of such length and has the feed-rollers and guides therein located in such manner as to expose  
15 to the flux at one time substantially as much surface of the sheet as will be exposed to the coating material when the sheet is in the dipping-pot. Only pure coating material enters the dipping-pot from the supply-pot D,  
20 as the flow into the same is from the bottom of the supply-pot, thus leaving any dross or impurities therein at the surface or above the duct E in the said supply-pot. As the sheet enters the limb C, it comes in contact with  
25 the superheated melted coating metal therein, and passing through the pot and entering the limb B it comes in contact with the melted metal of a less degree of temperature than that in the limb C. By having the melted  
30 coating in the pot at two different temperatures the one passage therethrough serves in place of two separate dippings in different pots, so that by this process what is termed as a "rolled" or "hand-dipped" plate can be  
35 produced. On the exit of the sheet from the limb B of the dipping-pot it enters a flux-box C', formed in the upper part and continuous of the said limb, leaving which it passes between the squeezing-rollers D',  
40 which are geared to the train of gearing S, and regulate or control the thickness of the coating on the said plate.

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

1. In an apparatus for coating sheet-metal plates, a dipping-pot and a supply-pot, the latter with a duct near its base leading into the upper part of one limb of the dipping-pot,  
50 and separate furnaces for said pots, the side of the said limb of the dipping-pot forming a portion of the wall of the combustion-chamber of the supply-pot, whereby one side of the dipping-pot is adapted to receive more  
55 heat than the other side, said parts being combined substantially as described.

2. In an apparatus for coating sheet-metal plates, a melting-pot, a supply-pot, and a dipping-pot with entrance and exit limbs, said  
60 melting-pot leading from near its base into the supply-pot and said supply-pot leading from near its base into the upper part of the dipping-pot, a furnace for the dipping-pot, and a single furnace for said melting and supply  
65 pots, said parts being combined substantially as described.

3. In an apparatus for coating sheet metals,

a melting-pot, a supply-pot, a duct leading from said melting to said supply pot, a single furnace for said melting and supply pots, a  
70 dipping-pot with entrance and exit limbs, a duct leading from near the base of the supply-pot to the upper part of the dipping-pot, a flux-box on the supply-pot and communicating with the dipping-pot, and a separate  
75 furnace for the dipping-pot, said dipping-pot having one of its walls forming part of the wall of the fire-chamber of the supply-pot furnace, said parts being combined substantially  
80 as described.

4. In an apparatus for coating sheet metals, a melting-pot and a communicating supply-pot, a furnace for said pots, a dipping-pot with a duct leading into the upper part thereof from the lower part of the supply-pot, a separate  
85 furnace for the dipping-pot, and a supporting-leg for the dipping-pot provided with an opening affording communication between the fire-chamber of the two furnaces, said parts being combined substantially as described.  
90

5. In an apparatus for coating sheet metals, communicating melting and supply pots having a single furnace, and a communicating dipping-pot with a furnace and provided with a supporting-leg having an opening affording  
95 communication between the fire-chambers of the two furnaces, said parts being combined substantially as described.

6. In an apparatus for coating sheet metals, a supply-pot with a furnace, a dipping-pot  
100 communicating with said supply-pot and having a furnace, a supporting-leg for said dipping-pot having an opening affording communication between the fire-chambers of said furnaces, a flux-box on said supply-pot and  
105 communicating with said dipping-pot, and rollers and guides in said flux-box and dipping-pot, said parts being combined substantially as described.

7. In an apparatus for coating sheet metals,  
110 a twin dipping-pot of U shape, having a furnace and a separate air-chamber beneath the same, a damper in a side or inner supporting-wall of the pot controlling the admission of the products of combustion to said air-chamber, and means, substantially as described, for  
115 cooling the limb of the dipping-pot below which the said air-chamber is situated, said parts being combined substantially as described.  
120

8. In an apparatus for coating sheet-metal plates, a dipping-pot having feed-rollers therein, one of each pair of said rollers having stationary journal-bearings, rods in which the other roller of each pair has bearings, tubes  
125 connected with the walls of the pot and in which the rods are adjustable, and means, substantially as described, for moving said rods endwise in said tubes, said parts being combined substantially as described.

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Witnesses:

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