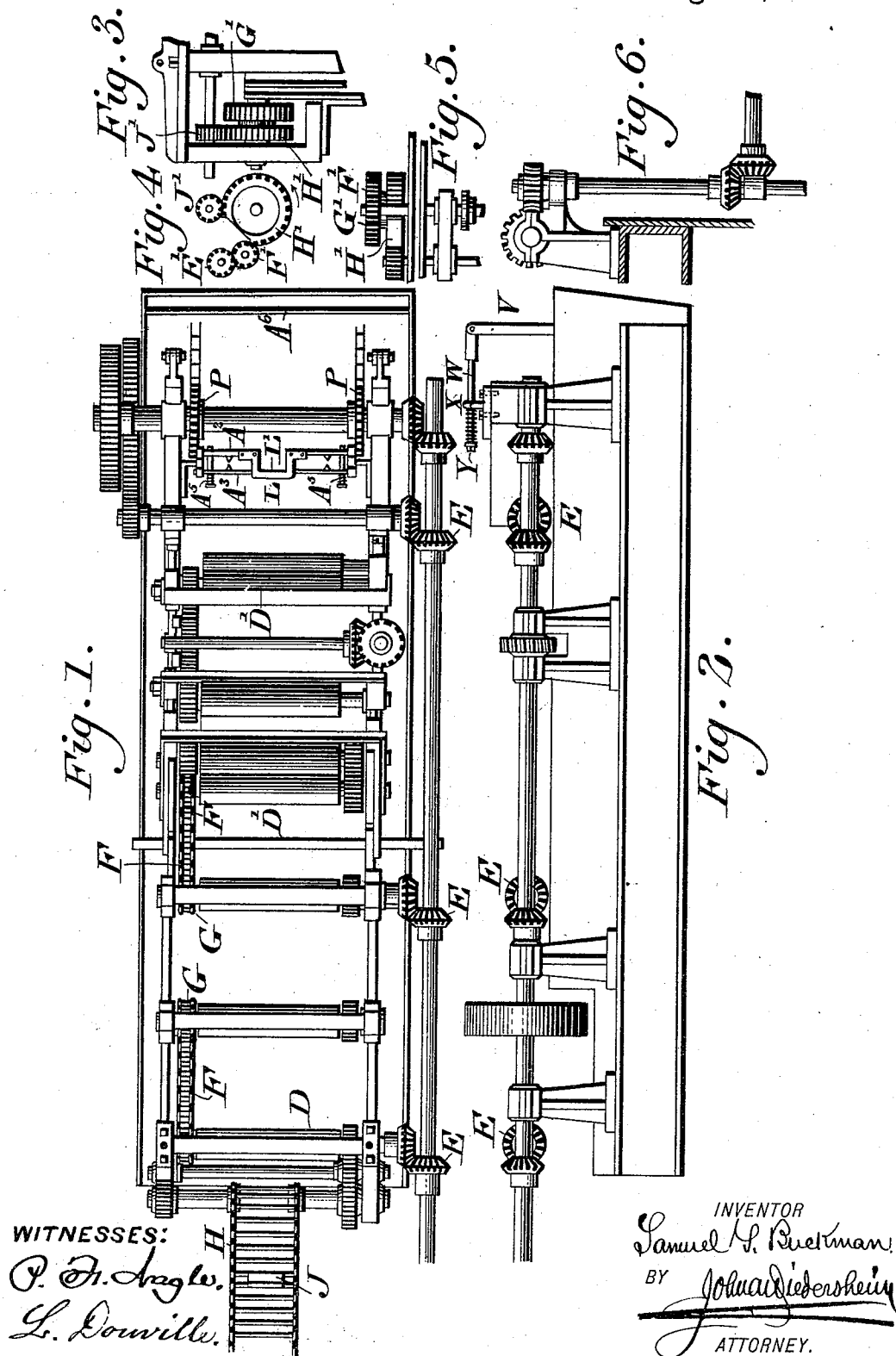


2 Sheets—Sheet 1.

MACHINE FOR TINNING OR COATING SHEET METAL PLATES.

Patented Aug. 13, 1895.



(No Model.)

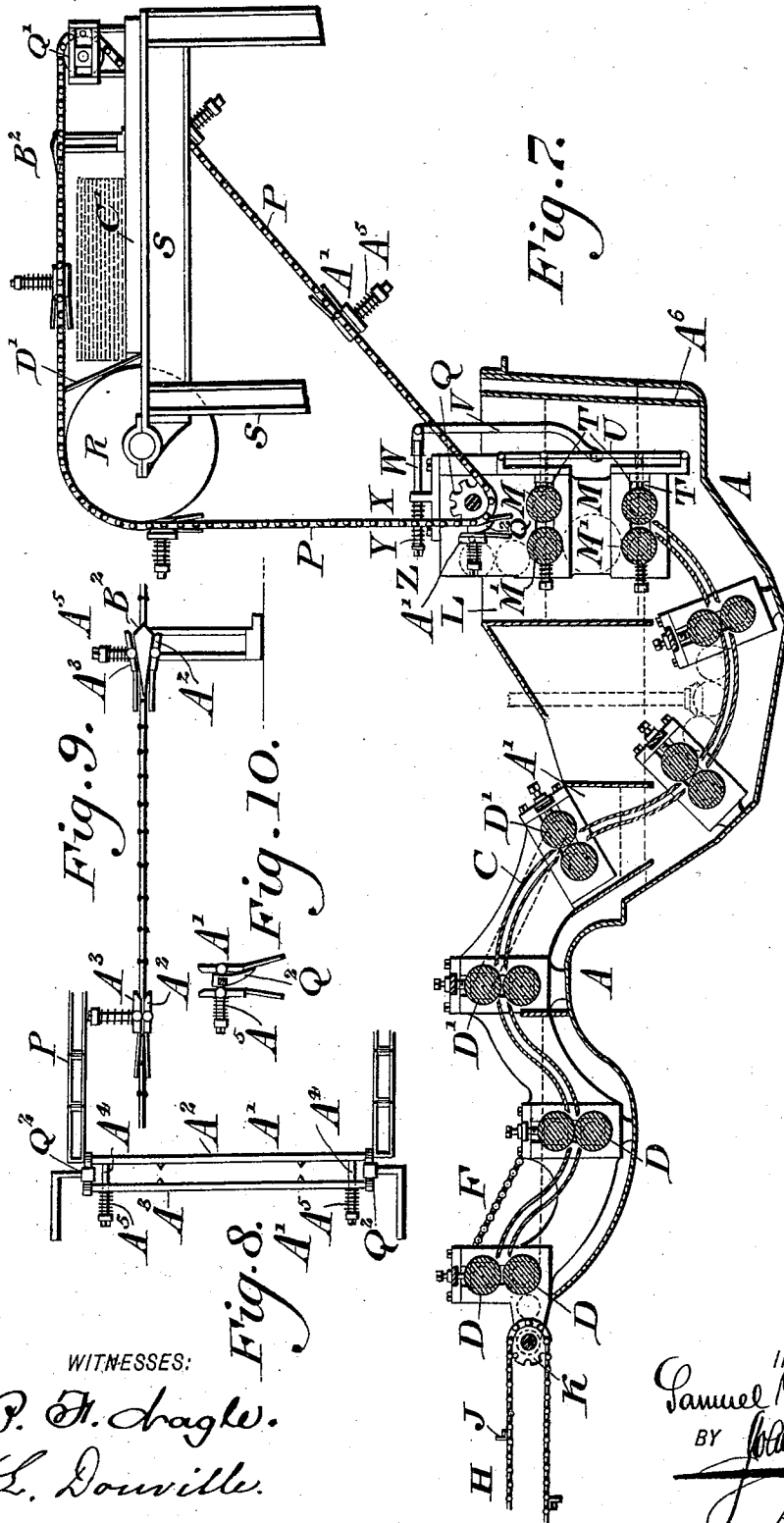
2 Sheets—Sheet 2.

S. Y. BUCKMAN.

MACHINE FOR TINNING OR COATING SHEET METAL PLATES.

No. 544,500.

Patented Aug. 13, 1895.



UNITED STATES PATENT OFFICE.

SAMUEL Y. BUCKMAN, OF PHILADELPHIA, PENNSYLVANIA.

MACHINE FOR TINNING OR COATING SHEET-METAL PLATES.

SPECIFICATION forming part of Letters Patent No. 544,500, dated August 13, 1895.

Application filed September 5, 1893. Serial No. 484,819. (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 and State of Pennsylvania, have invented a new and useful Improvement in Machines for Tinning or Coating Sheet-Metal Plates, which improvement is fully set forth in the following specification and accompanying drawings.

My invention consists of improvements in the class of apparatus designed for coating plates with tin or other metal, as hereinafter set forth.

Figure 1 represents a top or plan view of a machine for coating sheet-metal plates embodying my invention. Fig. 2 represents a side elevation of a portion thereof. Figs. 3, 4, and 5 represent views of detached portions thereof. Fig. 6 represents a detached view of a portion of the gearing. Fig. 7 represents a longitudinal vertical section of the machine. Figs. 8, 9, and 10 represent views of grippers and adjacent portions.

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

Referring to the drawings, A designates a pot of different depths and containing flux and metal and having the serpentine curved guide C, through which the plates to be coated are passed, and the feed-rollers D D', to which motion is imparted by means of the gearing E, the sprocket-chains F and sprocket-wheels G. In front of the wheels D is an endless apron H, on the face of which is a shouldered or angular carrier J, said apron passing around the sprocket-wheels K, to which motion is imparted at a less rate of speed than the rollers D. In the discharge end of the pot A is an oil-receiving tank L, which communicates with said pot, the discharge end of the guide C being at the base of said tank.

M M' designate finishing-rollers in the tank L, the same being located above each other and serving to direct the coated plates to the conveyer or carrier P, which is passed around the sprocket-wheels Q Q' and guide-pulley R, said wheels and pulley being suitably mounted on the frame S of the machine. The rollers M are mounted in sliding boxes T, which are connected by links with the divided pivotal rod U, to which is attached the

arm V, whose upper ends are attached to the sliding rods W, which are guided in ears X and provided with springs Y and nuts Z, whereby the rollers M may be set relatively to the rollers M' and the pressure on the plates passing between said rollers M M' may be adjusted.

On the conveyer P are grippers A', formed of cross-bars A² A³, the cross bar A³ being movable to and from the cross-bars A² and guided on rods A⁴, on which are springs A⁵, adapted to force the bars A³ toward the bars A², and thus grip or take hold of the metal plate directed between the same.

Secured to the sides of the frame of the machine adjacent to the sprocket-wheels Q are shoes Q², over which the bars A² A³ are adapted to ride, thus separating the same, when the metal plate then enters between the same, said bars closing after leaving said shoes and firmly grasping said plate, said plate being directed upward from the tank L by the action of the rollers M M' and thus reaching the gripper. In order to set the plate in proper position between the grippers I employ a stop L', which is secured to the conveyer P above said grippers and is adapted to have the plate abut against the same.

On the frame at the top of the conveyer P there are shoes B², which are adapted to have the grippers ride over the same and thus be opened and release the plate, which then drops on the table C' on the frame S. Rising from the said table next to the guide roller or pulley R is an arm D', on which the plate is supported until the grippers have fully opened, thus preventing the plate from primarily dropping or leaving the carrier P.

In order to impart intermitting motion to the wheels Q, and consequently to the conveyer P, I employ the gearing shown in Figs. 3, 4, and 5, where the pinion E' receives power from the gearing of the machine and meshes with the pinion F', the latter meshing with a large pinion G', on whose shaft is the mutilated pinion H', with which gears the pinion J', on whose shaft are the sprocket-wheels Q, it being evident that the mutilated pinion H' imparts intermitting motion to the pinion J' and consequently to the sprocket-wheels Q and conveyer P.

The operation is as follows: A plate to be

coated is placed on the apron H and engaged by the carrier J, whereby it is advanced to the rolls D and passed between the same, after which it enters the guide C and is directed through the same by the feed-rollers D', and consequently through the flux and metal in the pot A. As the rollers D rotate more rapidly than the sprocket-wheels K the plate is taken quickly from the apron H, whereby it leaves the carrier J before the latter is moved around said sprocket-wheels, by which provision the plate is prevented from being bent as said carrier descends and turns with the apron on said wheels. After the plate leaves the guide C it is fed upwardly by the finishing-rollers M M' and caught by the grippers A', so that it is carried to the top of the conveyer P. When the grippers reach the shoes B² they ride upon the same in such manner as to open, whereby the plate is released and it drops on the table C'. Meanwhile another plate has been fed to the rollers D and it follows the operations to which the first plate has been subjected. In the pot A is a box A^x, which receives flux above the level of the molten metal, said box being open so as to be freely in communication with said pot, the flux rising in said box and so being prevented from entering the adjacent portion of the pot. The oil-tank L is open at bottom and likewise connected with the pot A, the molten metal forming the bottom of said tank and having the oil superimposed thereupon. The wall A⁶ of the oil-tank adjacent to the end wall of the pot is separated therefrom, but extends to the bottom of said pot, forming a close joint therewith, there being between said end walls an air space, which is open at the top to the atmosphere, whereby the heat of the flux escapes into the atmosphere, thereby preventing undue heating or firing of the oil in the tank.

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

1. A coating or tinning machine having feed rollers and a serpentine guide on its frame, an endless apron adjacent to the feed end of said frame, an angular carrier on said feed apron, mechanism for rotating said rollers, and mechanism for operating said feed apron at a less rate of speed than said feed rollers are rotated, said parts being combined substantially as described.

2. In a tinning or coating machine, the finishing rollers M, M', with sliding bearings for

the rollers M, the pivotal rod U connected with said bearings, the arm V connected with said rod U, the rod W pivoted to said rod V, and the springs Y bearing against said rods W, said parts being combined substantially as described.

3. A tinning machine having a gripper consisting of two cross bars, one of which is provided with rods on which the other bar moves, and springs bearing against said movable bar, pressing it toward the other bar, and a shoe bearing against said bars, said parts being combined substantially as described.

4. In a coating or tinning machine, a conveyer having the cross bar A² with the rods A⁴ thereon, the cross bar A³ movable on said rods, the springs A⁵ bearing against said bar A³, and shoes secured to the frame of the machine and in position to actuate said cross bar A³, said parts being combined substantially as described.

5. A tinning machine having finishing rollers in the exit end thereof, a conveyer with grippers adapted to receive the tinned sheet above said finishing rollers, and a stop thereon to limit the position of said sheet, shoes for operating said grippers, and an arm to sustain said sheets, said parts being combined substantially as described.

6. In a tinning or coating machine, a conveyer extending from the finishing rollers, and a gripper thereon, in combination with a table at the discharge portion of said conveyer, a shoe for opening said gripper above said table, and a supporting arm at one end of said table, substantially as described.

7. In a tinning or coating machine, a conveyer leading from the finishing rollers, and a gripper on said conveyer in combination with means for imparting intermitting motion to said conveyer, the same consisting of a wheel around which said conveyer passes, a pinion on the shaft of said wheel, a mutilated pinion on said shaft, and gearing for said pinion, substantially as described.

8. A tinning pot with an oil tank therein, said tank having a wall which is adjacent to the end walls of the tank, separated therefrom but extending to the bottom thereof, and forming a tight joint therewith, there being an air space between said walls which is open at top, substantially as described.

SAMUEL Y. BUCKMAN.

Witnesses:

JOHN A. WIEDERSHEIM,
A. P. JENNINGS.