(No Model.) 2 Sheets—Sheet 1.

D. COX & L. SPENCE.

TIN PLATE CLEANING AND POLISHING MACHINE.

No. 569,090. Patented Oct. 6, 1896.

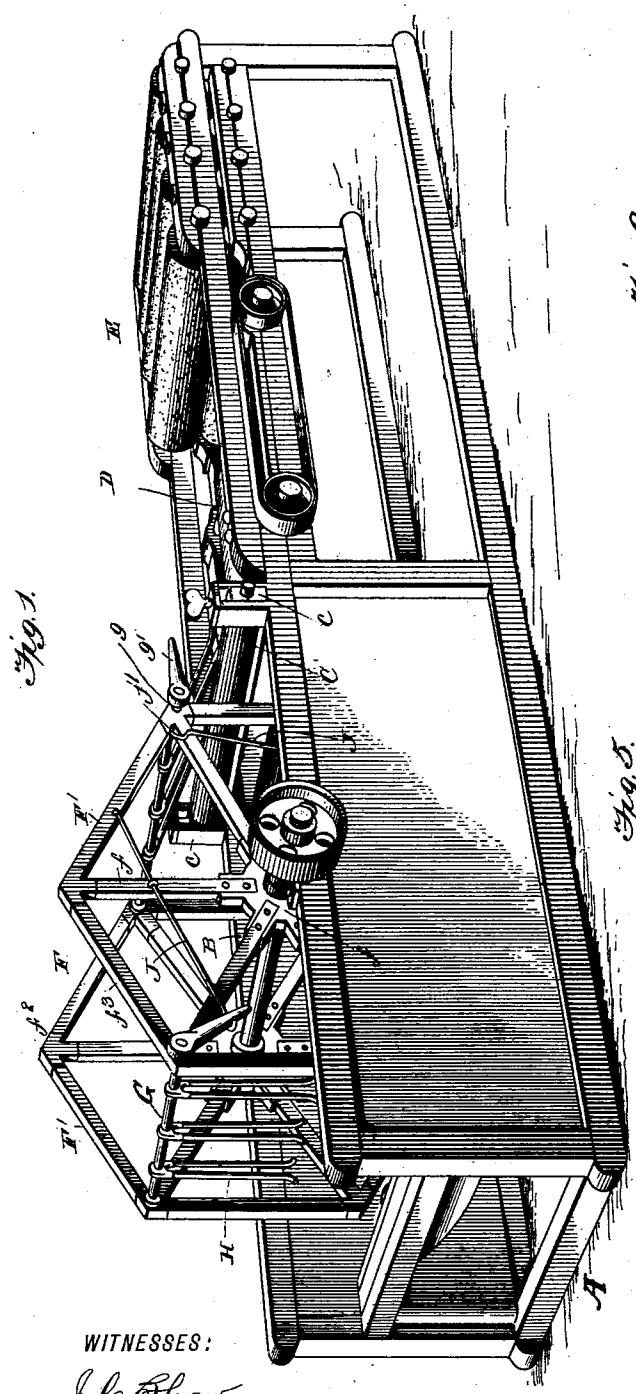

Fig. 1.

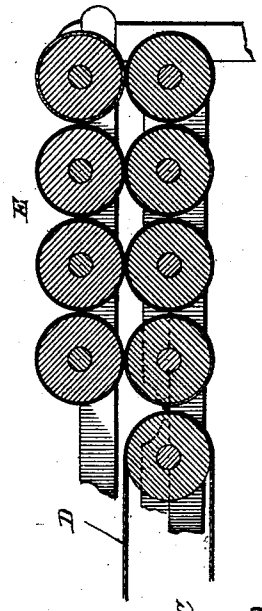

Fig. 6.

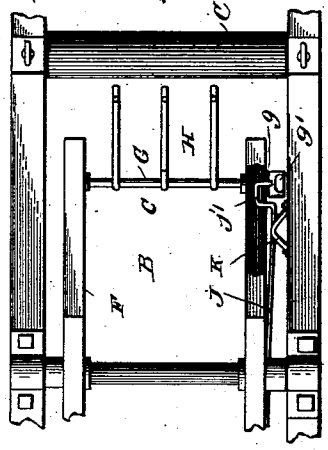

Fig. 5.

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(No Model.) 2 Sheets—Sheet 2.

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Fig. 2.

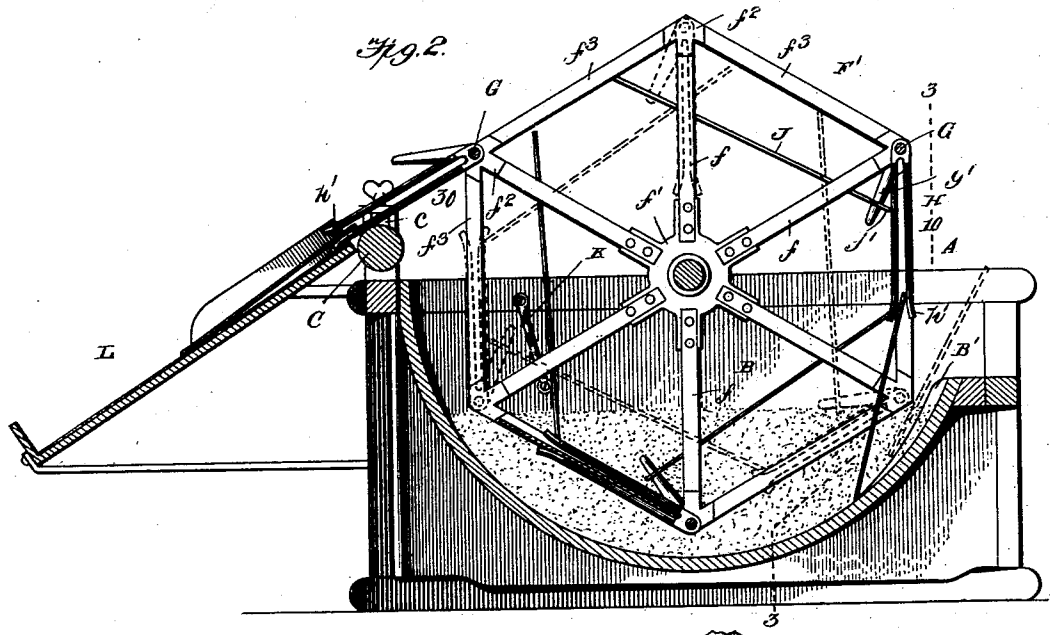


Fig. 3.

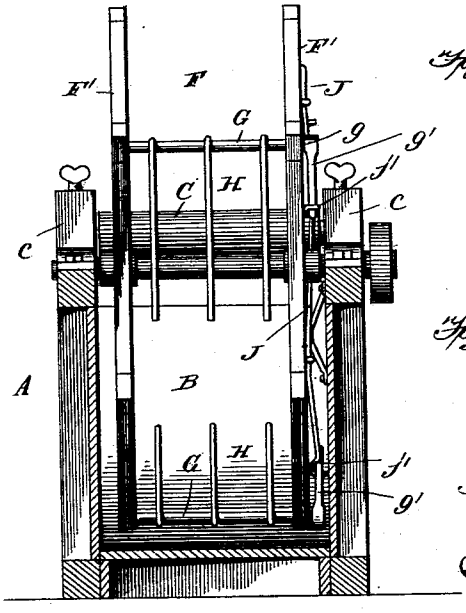


Fig. 4.

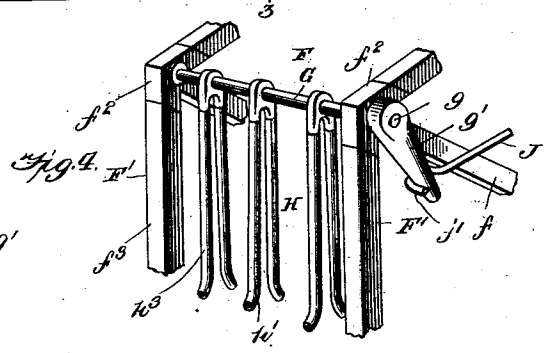


Fig. 7.

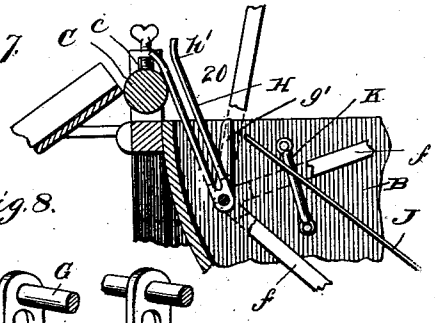
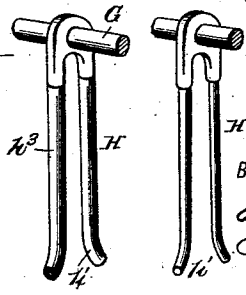


Fig. 8.



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UNITED STATES PATENT OFFICE.

DANIEL COX AND LAVOSIER SPENCE, OF MARTIN'S FERRY, OHIO.

TIN-PLATE CLEANING AND POLISHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 569,090, dated October 6, 1896.

Application filed March 31, 1896. Serial No. 585,621. (No model.)

To all whom it may concern:

Be it known that we, DANIEL COX and LAVOSIER SPENCE, residing at Martin's Ferry, in the county of Belmont and State of Ohio, have invented a new and Improved Tin-Plate Cleaning and Polishing Machine, of which the following is a specification.

Our invention relates more particularly to that class of metal-plate cleaning and polishing machines in which a suitable trough for holding the bran or other cleansing material is employed, through which the plate is carried before it is fed to the duster and polishing rolls.

In one form of cleaning-machine for this purpose the trough or holder has guideways on the bottom, over which the plate is pushed or drawn by the action of the carrier devices.

In the practical use of such form of cleaning means we have found that when the trough is provided with guideways on the bottom the plates frequently rub against such guideways, and in consequence become scratched and tarnished.

To overcome this objection is the essential feature of this invention, which also has for its object to provide a branning or cleansing means of a very simple and economical construction which will serve to carry the plate through the bran in such a manner that the oil or greasy particles will become positively removed without danger of bending, scratching, or tarnishing, and such plate discharged, after it has been passed through the cleansing material, onto a suitable receiving-table or to the polishing or duster devices.

Our invention also seeks to provide a rotating carrier having a simple form of plate-engaging member which automatically adjusts itself to engage the plate and push it through the bran and then automatically adjusts itself to dump the plate out onto a suitable receiver as it is moved out of the cleansing material.

With other objects in view, which will appear as the character of our improvements are hereinafter definitely set forth, the invention consists in a machine for the purposes stated, such as will be first described in detail, and then be specifically pointed out in the appended claims, reference being had to the accompanying drawings, in which—

Figure 1 is a perspective view of our improved tin-plate cleaning and polishing machine. Fig. 2 is a vertical longitudinal section of the bran-holder and the rotary carrier, the holder-frame being shown with a receiving-platform for the cleansed plates. Fig. 3 is a transverse section taken on the line 3 3 of Fig. 2. Fig. 4 is a detail view of one of the pivoted gravity-operated plate pusher or carrier members. Fig. 5 is a top plan view of a portion of machine. Fig. 6 is a detail view of the polishing or duster rolls. Fig. 7 is a detail view illustrating the throw-off for releasing the carriers, and Fig. 8 is a detail view of the guides or pushers.

In the preferred construction our invention embodies a main frame A, having at the front end a trough B, substantially semicircular in shape, the bottom of which, except at the feed end, is smooth, and free of ribs, guides, or other projections.

The front or feed end of the trough B is at a point below the plane of the discharge end, and at such point and extended a short distance down over the bottom the said trough has a number of guide-ribs B′, for a purpose presently explained.

At a point just above the discharge end of the trough is disposed a transverse roller C, which is preferably held for vertical adjustment in the bearings *c c*.

As shown in Fig. 1, the discharge end of the trough B is on a plane level with a carrier belt or table D, which is adapted to carry the cleansed plate to the duster and polisher mechanism, which consists of a series of rolls E, arranged in pairs and preferably of the same diameter and provided with a yielding covering, such as felt.

F indicates the plate-revolving pusher or carrier, which consists of two spider-wheels F′ F′, each formed in the nature of a hexagonal reel having radial arms *f f*, preferably of wood, and joined at one end to a central hub *f′* and at the outer end to socket members f^2, to which the rim-bars f^3 are also connected.

G indicates a series of transverse shafts which extend across and join the wheels F′ F′, they being loosely pivoted in the outer corners or angles of the rim of the said wheels, so as to rock freely.

To each of the shafts is fixedly connected a series of forked or ∩-shaped guides H, which are so arranged that when the shafts G are held to rock freely they will hang pendent by gravity and assume the position shown at 10 in Fig. 2, by reference to which it will be seen that guide H reaches a pendent position just in advance of the point where it begins to pass over the upper edge of the plate last set into the bran. At this point it should be stated that the several parts of the carrier and cleansing mechanism are so arranged that when the guides H reach the position indicated at 10 the operator plunges a tin-plate down into the bran, guiding the lower edge against the ribs B', which will serve to cause the plate to assume an approximately vertical position, as shown. Now as the carrier-wheel rotates, the ∩-shaped pushers or carriers will come down and pass over the plate without engaging its side faces until the base h' of the carrier engages the upper edge of the tin-plate, it being manifest that the continued movement of the wheel will cause the guide or pusher H to force the plate through the bran. During the pushing action on the tin-plate, that is, during the time the plate is pushed from the receiving to the discharge end of the trough, the pushers H are held in a fixed position, and for such purpose we employ a lock device, which automatically locks the shafts G from rocking during the pushing movement above referred to, and which is automatically unlocked to permit a free rocking of such shafts when they reach the discharge end of the trough.

By referring more particularly to Figs. 1 and 4 it will be observed that one end of the shaft G is projected at g and carries a crank or trigger arm g', which when the shaft G rocks by gravity engages a spring-detent J and at a proper time becomes locked thereto and remains locked during the pushing action on the tin-plate. As a simple means for locking the arm g' the detent J has a depressed or hook portion j' to receive the said arm g', as shown. At a point just in advance of the discharge end of the trough B, at one edge thereof, is disposed a throw-off in the nature of a projecting lug K, with which the detent J engages and by which it is depressed sufficient to release the arm g' from the hook portion j' and thereby admit of the shaft G again being rocked by gravity.

By the aforesaid construction and arrangement of parts it will be manifest that when the pushers H reach the position indicated by 20 in Fig. 2 the ends h^2 thereof will ride up against and over the roller C and rest thereon until the pusher assumes the position indicated by 30, when the tin-plate will slide out by gravity onto the feed table or belt, or, if desired, direct to the polisher and duster rolls, or, when the polisher and duster devices are separated from the branner, into a suitable receptacle L, as shown in Fig. 2, which in practice has its bottom covered with a suitable yielding material to avoid any possible scratching of the plate as it slides over the ends thereof.

By making the roller C adjustable vertically it can be set to the position best suited to admit of a proper discharge of the tin sheet from the pusher.

After the pushers H have discharged the tin-plate they by gravity assume their vertical pendent position, it being obvious that as the shafts G rock the arms g' will gradually ride over the detents J and become locked in engagement therewith.

From the foregoing description, taken in connection with the drawings, it will be readily apparent that as the pushers have a fixed position relatively to the bottom of the trough as they pass thereover they will serve to carry the said plate through the bran in such a manner as to thoroughly clean both the upper and lower faces thereof, and at the same time hold it from contacting with the bottom of the trough, and thereby positively overcome any danger of buckling, bending, or scratching.

If desired, the pushers H may be covered with a yielding material h^3 to avoid any possible scratching of the tin-plate as it is carried thereby and discharged over the roller C.

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

1. In a machine for polishing tin-plate, a revolving frame having one or more carriers, means for locking said carrier while moving through the cleaning substance, and releasing said carrier as it emerges from said substance, substantially as shown and described.

2. In a machine for polishing tin-plate, a revolving frame having one or more swinging carriers, the locking and releasing devices, and a fulcrum-roller over which said carrier drops to discharge, substantially as shown and described.

3. In a machine as described, a trough for holding the abrasive material, having a smooth bottom, a frame held to revolve therein having members held pendent by gravity, means for automatically locking such pusher members to a fixed or non-swinging position as they swing to a pendent position, substantially as shown and for the purposes described.

4. In a machine as described, the combination with the trough and the rotary carrier, having swinging pendent members arranged substantially as shown, of the adjustable roller C, arranged at the discharge end of the trough as and for the purposes specified.

5. A tin-plate cleaning and polishing machine comprising a trough for holding the abrasive material, a carrier-frame rotatable therein, one or more transverse rock-shafts journaled in such frame, having pendent forked pusher members, spring-actuated detents for locking the shafts from movement during the passage of the pusher members

through the abrasive material, a throw-off located in the trough-frame adapted to engage the detents and move them to a released position, substantially as shown and for the purposes described.

6. In a machine as described, in combination with the trough and the rotary frame mounted therein, rock-shafts G, having pendent pusher-fingers, having yielding contacting portions, substantially as shown and described.

7. A machine for the purpose described, comprising a main frame having a trough for holding the abrasive material, dusting and polishing rolls, a fulcrum or guide roll arranged in advance of the dusting and polishing roll and at the discharge end of the trough, a rotary carrier held within the trough, having swinging pendent pusher members adapted to engage the fulcrum-roll as they pass it and discharge the cleaned plate over such rolls to the polisher and duster rolls, all arranged substantially as shown and for the purposes described.

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LAVOSIER SPENCE.

Witnesses:
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T. E. BARBER.