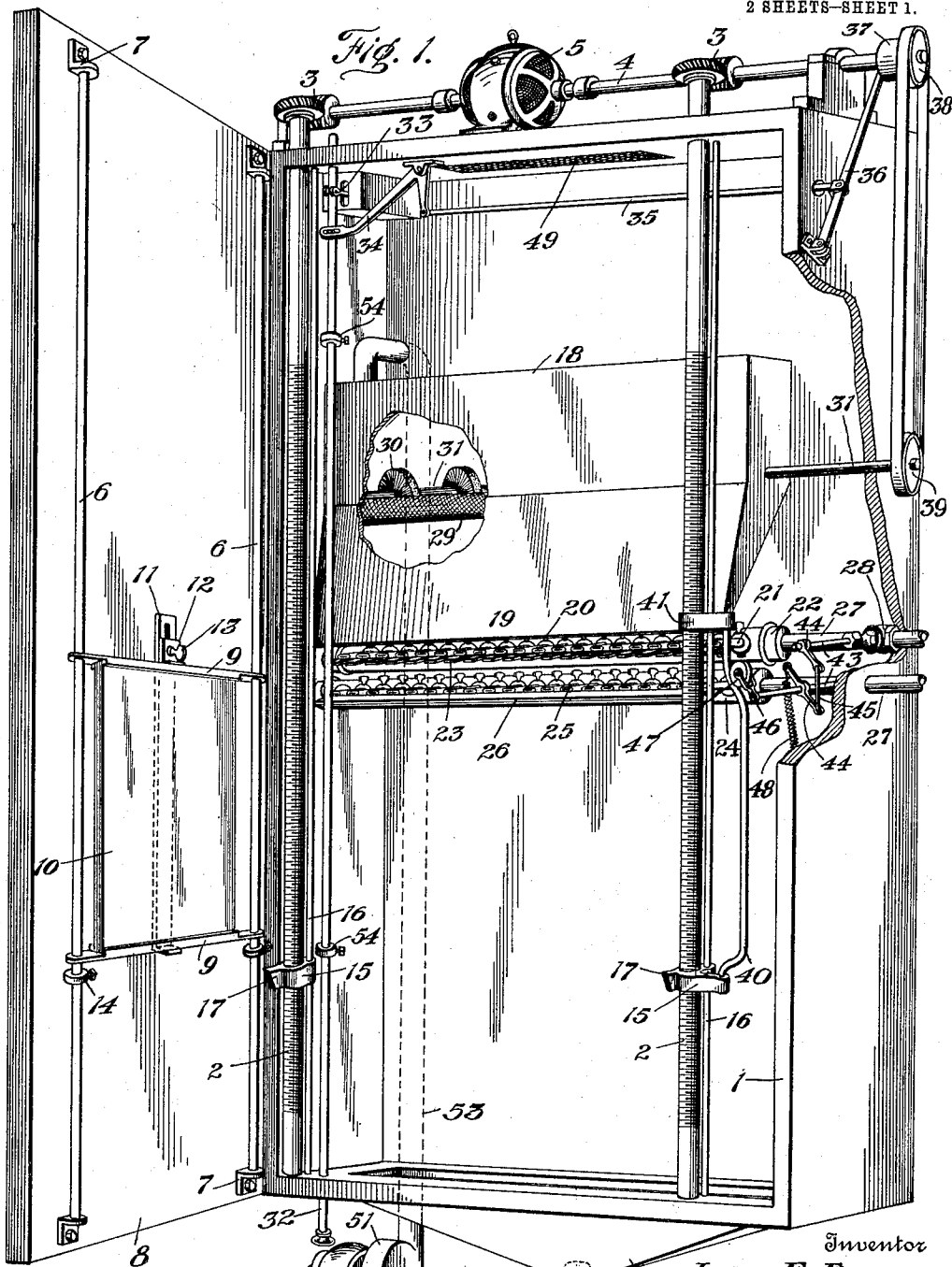


1,003,441.

L. F. EATON.  
BLACKLEADING MACHINE.  
APPLICATION FILED NOV. 4, 1910.

Patented Sept. 19, 1911.

2 SHEETS—SHEET 1.



Witnesses  
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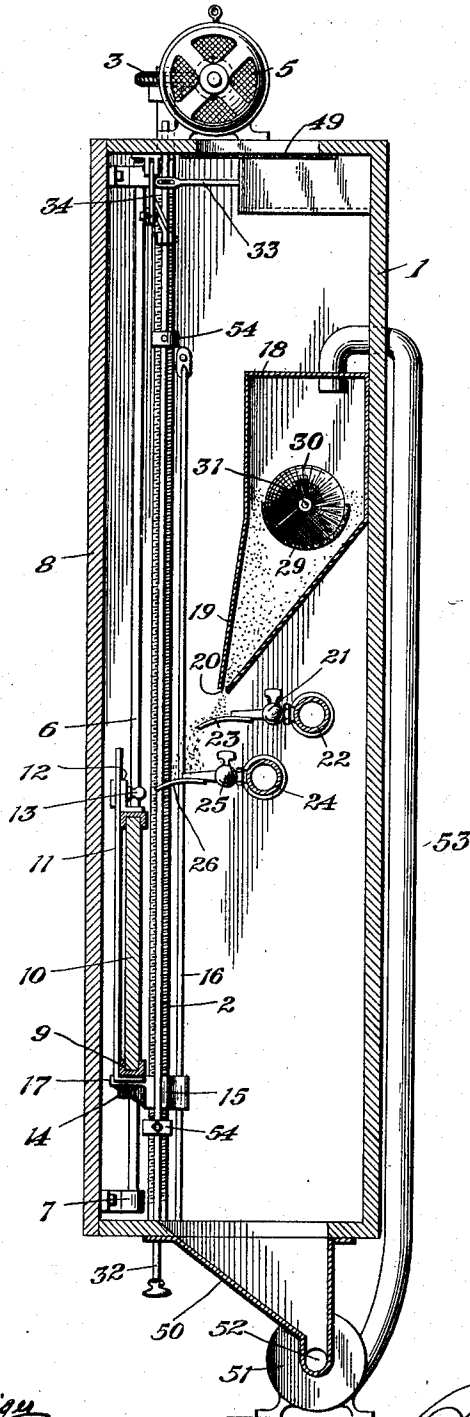


Fig. 2.

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# UNITED STATES PATENT OFFICE.

LEVI F. EATON, OF DETROIT, MICHIGAN.

BLACKLEADING-MACHINE.

1,003,441.

Specification of Letters Patent. Patented Sept. 19, 1911.

Application filed November 4, 1910. Serial No. 590,665.

To all whom it may concern:

Be it known that I, LEVI F. EATON, a citizen of the United States of America, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Blackleading-Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

In the process of black leading matrices for electro-types, good results are obtained only when the lead is applied evenly to the matrix and when superfluous material which might otherwise lodge in the fine lines and corners of a mold is completely removed so that the resultant electro-type accurately reproduces the lines of the original.

This invention relates to an apparatus for black leading electro-types in which one of the objects is to project the plumbago or lead in dry powdered form evenly over the surfaces of the matrix and then remove the superfluous material.

Another object is to provide an apparatus of this sort which is convenient in operation and which conserves the superfluous black lead or plumbago and returns it for use again.

The invention consists in the matters hereinafter set forth, and more particularly pointed out in the appended claims.

In the drawings, Figure 1 is a view in perspective partially broken away of an apparatus that embodies features of the invention; Fig. 2 is a view in longitudinal section of the same showing the casing closed.

Referring to the drawings a casing 1 of suitable design or material that is substantially rectangular supports a pair of upright parallel, screwthreaded shafts 2 which are connected by worms and gears indicated at 3 to a main shaft 4. A suitable motor, preferably electric as indicated at 5 drives the main shaft and may conveniently be mounted on the top of the casing 1. A pair of guide bars 6 are secured in parallel relation, as by brackets 7 on the inner face of the side 8 of the casing 1 adjacent the shafts 2 and in parallel relation thereto. A pair of matrix holders 9 preferably in the form of channel bars with apertured ends sliding on the guide 6 are so disposed that a matrix or mold 10 may be detachably secured between them, its ends lying between the in-

turned flanges of the holders and the latter being secured in contact therewith by a clamping bar 11 one of whose ends is hooked over a holder. A block 12 with hand screw 13 engaging a longitudinal slot in the other end of the clamp being moved up and secured against the other holder. Stop collars 14 on the guide 6 are used to define the lower limit of motion of the holders. A pair of travelers 15 each in screwthreaded engagement with the shaft 2 and each prevented from rotation by a bar 16 adjacent the shaft that passes through a guide aperture in the traveler, have fingers 17, which when the side 8 is closed against the casing are adapted to underlie and pick up the lower holder and move it with the attached matrix along the rods 6 if the shafts 2 are turned in the proper direction.

A box 18 is secured in the casing 1 with the discharge hopper 19 depending from it with a horizontal outlet slot indicated at 20 just above a series of jet nozzles 21 connected to a blast header 22. Each nozzle, which has preferably a horizontally slotted discharge opening is provided with a spreader finger 23 that is slightly down curved. A second header 24 below the header 22 is provided with a similar set of air jet nozzles 25 whose outlets are in staggered relation to the outlet of the nozzle 21. Preferably, also the distributing fingers are replaced by a continuous ledge or scatter-board 26. The headers are supplied through air pipes 27 from any source of compressed air and each has a controlling valve 28.

A concave trough 29 of foraminous material is secured in the box 18 above the discharge hopper. A spiral brush 30 is mounted on a shaft 31 to sweep the interior of the screen or trough 29 from end to end when the shaft is rotated.

A shifter rod 32 extends from end to end of the casing 1 connected at its upper end through suitable means indicated at 33 for a reversing switch for the motor 5 so that when moved upward from its lowest position to central position, the shifter rod starts the motor 5 in forward direction, reverses it when moved into extreme upward position and cuts it out or stops it when in lowest position. The shifter rod is likewise coupled by any preferred means, as for example by a bell crank lever 34, link 35 and arm 36 with a clutch indicated at 37 on the

main shaft which drives a pulley 38 belted to a pulley 39 on the brush shaft 31. These parts are so proportioned that when the shifter rod 32 is in neutral or reverse position the clutch 37 is inoperative but is thrown in to drive the pulleys and consequently the brush 30 when the shifter rod is in position. A pair of adjustable stop collars 54 are secured on the shifter rod 32 so as to lie in the path of motion of the matrix holder when the casing is closed.

One of the travelers 15 is secured to the lower end of the cam rod 40 whose upper end is supported on a rest 41 sliding freely on the shaft 2. Stems 43 of the air valves 28 are coupled together by arms 44 and link 45. The extended end of one of the stems 43 has a rock arm 46 with roller 47 thereon which is held in contact with a cam rod 40 by a suitably disposed spring 48. The cam rod is provided with an off-set portion near its upper end and is so proportioned that when the travelers 15 and consequently the matrix holders are at the lower end of their movement, the air valves are closed. As the movement of the travelers cause the main portion of the cam rod to underrun the rollers the air valves are opened and remain so until the travelers are returned to initial position.

The upper end of the casing 1 is provided with an opening shielded by a sheet 49 of foraminous material while the lower end is provided with a hopper bottom 50. The double acting blower or other suitable device indicated at 51 has a suction pipe 52 leading from the mouth of the hopper 50 and a return pipe 53 whose upper end discharges into one end of the trough 29.

In operation a matrix or mold is secured in position between the holders by the clamping bar and the casing closed. The operator by pushing up the shifted rod from initial position starts the motor. Resultant rotation of the screw shafts moves the travelers with the holders and matrix past the blast nozzles whose air valves are held open, by the action of the cam rod. The movement of the shifter rod into forward position throws in the screen brush operating clutch also and as a consequence plumbago or lead in powdered form previously placed in the screen, is sifted out and falls on to the fingers and scatter board of the air jet nozzles so that it is projected against the face of the passing mold. As the latter is in vertical position excess material does not lodge thereon readily during its upward movement. When the mold and travelers have passed the air jet nozzles in their upward motion the travelers encounter the upper stop on the shifter rod and throw the latter into reverse position. This reverses the motor and direction of rotation of the screw shafts so that the mold is returned past the

air jets; at the same time the screen brush clutch is thrown out by the action of the shifter rod as it is moved into reverse position, and this stops the brush. Consequently there is no plumbago or lead fed to the nozzles and the mold merely encounters the air jets which sweep its surface and remove the superfluous material. When the mold is returned to its initial position one of the holders encounters the lower gage or stop on the shifter bar and moves the latter into forward position. The mold is returned past the jet nozzles as before, and this reciprocation continues until the operator moves the shifter rod into neutral position, thereby stopping the mechanism by cutting out the motor. By this means, a mold is quickly and readily coated and the superfluous material is returned for use again. The device is effective in operation, simple in construction and eliminates the difficulties in the use of the so called wet leading process and in hand brushing. Furthermore, as the matrix or mold holders swing clear of the casing when the latter is opened, the matrix or mold is readily inspected and removed.

Obviously, changes in the details of construction may be made without departing from the spirit of the invention and I do not care to limit myself to any particular form or arrangement of parts.

What I claim is:—

1. In a machine of the character described, mold holding means, mechanism for reciprocating the holding means, means for directing air jets across the path of motion of the holding means, and means controlled by the reciprocating mechanism to operate when the holding means is traveling in one direction only and adapted to introduce mold coating material into the air jets.

2. In a machine of the character described, mold holding means, mechanism for reciprocating the holding means, means for directing air jets across the path of motion of the holding means, and means controlled by the reciprocating mechanism to operate when the holding means is traveling in one direction only and adapted to introduce mold coating material into the air jets, between the jet directing means and the path traversed by the mold holding means.

3. In a machine of the character described, mold holding means, mechanism for reciprocating the mold holding means, air jet nozzles directed to discharge across the path of motion of the holding means, and means for discharging mold coating material across and in front of the outlets of the nozzles adapted to operate when the holding means is traveling in one direction only.

4. In a machine of the character described, mold holding means, means for reciprocating the holding means, means having outlets adapted to direct air jets across

the path of motion of the holding means, mold coating material distributing means adapted to discharge across and in front of the outlets of the air jet directing means, means for operating the mold coating distributing means and the mold holding reciprocating means, and means controlled by the mold holding means and adapted to throw the mold distributing mechanism into gear when the mold holding means is moving in one direction only.

5. In a machine of the character described, mold holding means, mechanism for reciprocating the mold holding means, air jet nozzles adapted to direct air jets across the path of motion of the holding means and to be connected to a source of air under pressure, means for introducing mold coating material into the air jets while the mold holding means is moving in one direction, means for controlling the air supply to the jet nozzles adapted to be held in open position when the holders are moved, and means controlled by the mold holding means and adapted to maintain coating material distributing means in operation when the mold holding means is moved in one direction only.

6. In a machine of the character described, a casing, mold holders reciprocable on guides therein, travelers adapted to engage and move the holders, means for reciprocating the travelers, jet nozzles adapted to be connected to a source of air under pressure and arranged to direct air jets across the path of motion of the holders, means controlled by the travelers and adapted to admit air to the nozzles when the travelers are reciprocating, mold coating material distributing means having an outlet discharging across and in front of the air jet nozzles, means for operating the distributing means,

and means controlled by the travelers and adapted to throw the mold coating distributing means out of gear when the mold holding means are moving in one direction. 45

7. In a machine of the character described, a casing, a pair of parallel screw shafts rotatably secured therein, a reversible motor for driving the screw shafts, means for reversing the motor, travelers in screw-threaded engagement with the shafts, a pair of guides in the casing parallel to the shafts, mold holders reciprocable on the guides adapted to be engaged and reciprocated by the travelers, air jet nozzles arranged to discharge across the path of motion of the travelers, and means for operating the motor reversing means adapted to be thrown by the travelers as they reach their limit of motion in either direction. 50 55 60

8. In a machine of the character described, mold holding means, mechanism for reciprocating the mold holding means, a row of air jet nozzles adapted to be connected with a source of compressed air and arranged to direct air jets across the path of motion of the holding means, distributing fingers each below the outlet of a nozzle, a second row of air jet nozzles in parallel staggered relation to the first row, a scatter board below the outlets of the second row, means for controlling the admission of air to the nozzles adapted to be operated by the reciprocating mechanism, and means for introducing mold coating material into air jets discharged from the nozzles. 65 70 75

In testimony whereof I affix my signature in presence of two witnesses.

LEVI F. EATON.

Witnesses:

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C. R. STICKNEY.