No. 619,016. Patented Feb. 7, 1899.

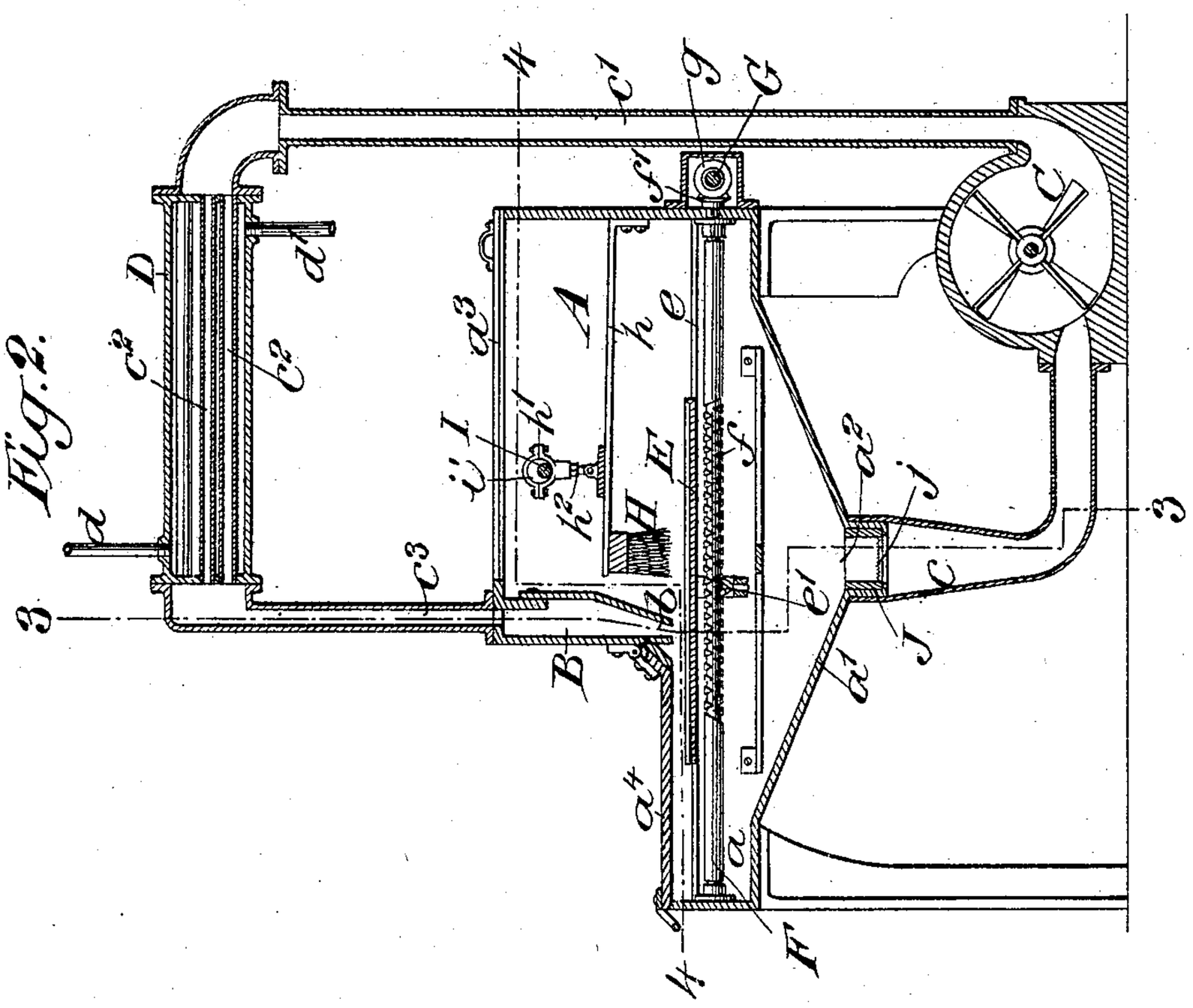
J. H. FERGUSON.

LEADING MACHINE.

(Application filed May 20, 1897.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 2.



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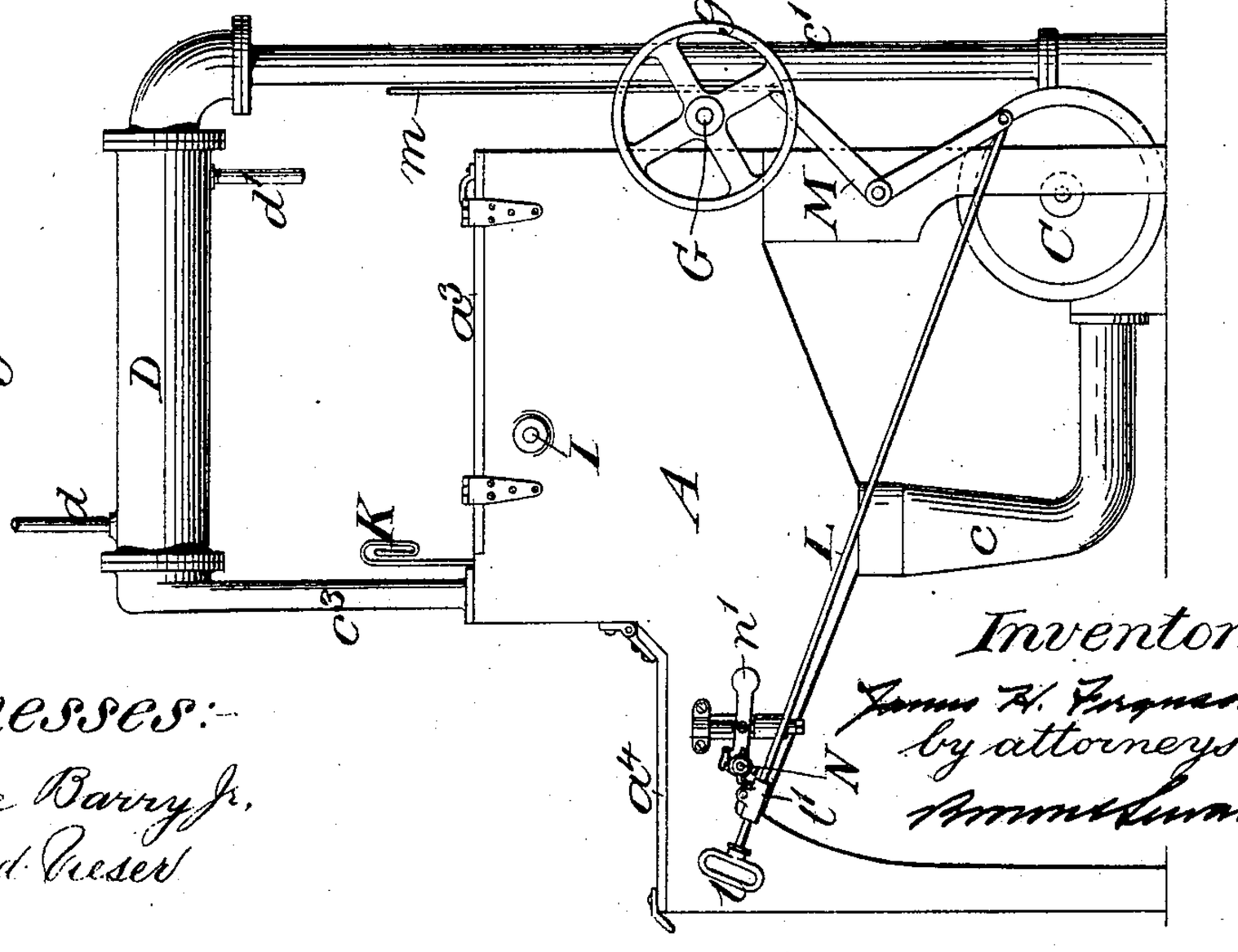

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Fig. 4.

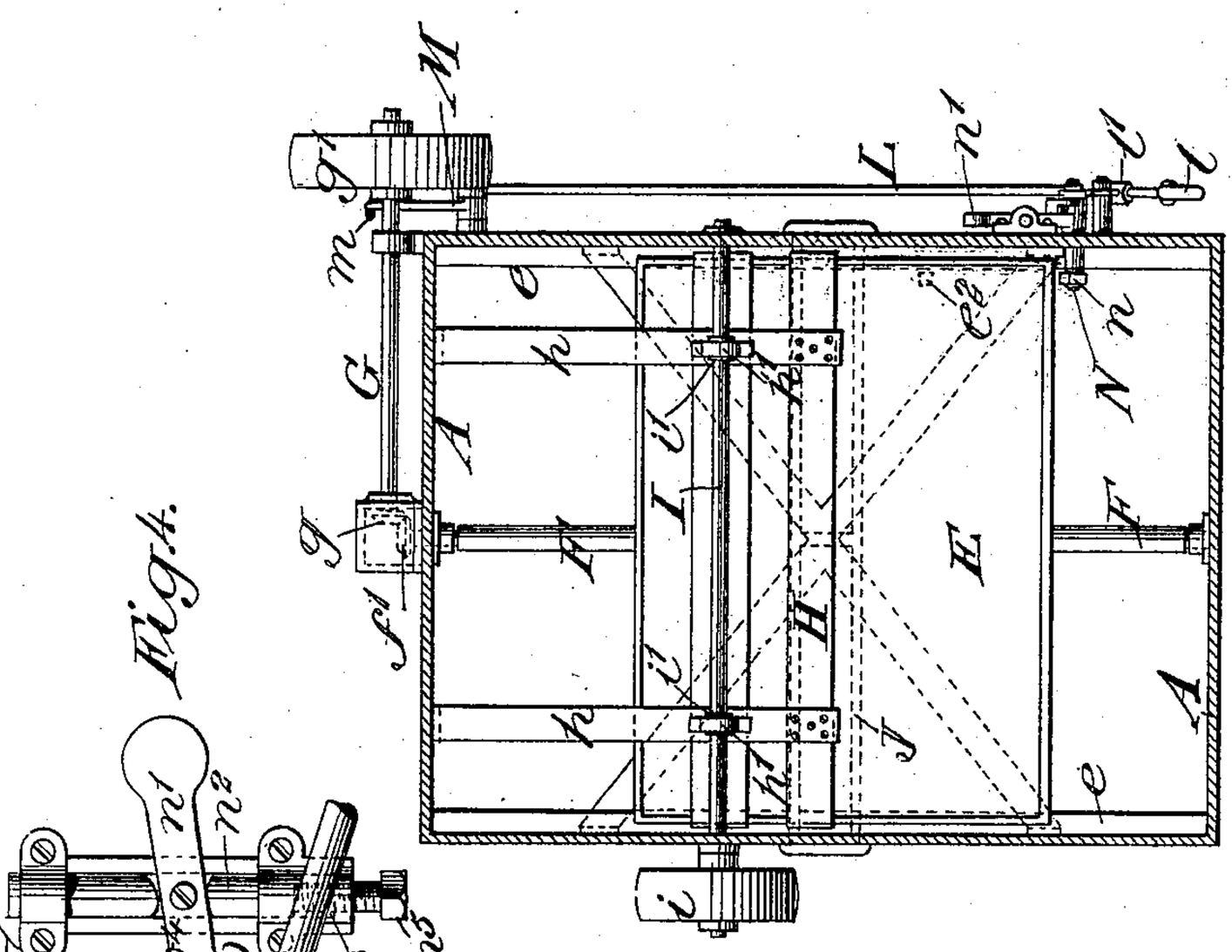


Fig. 5.

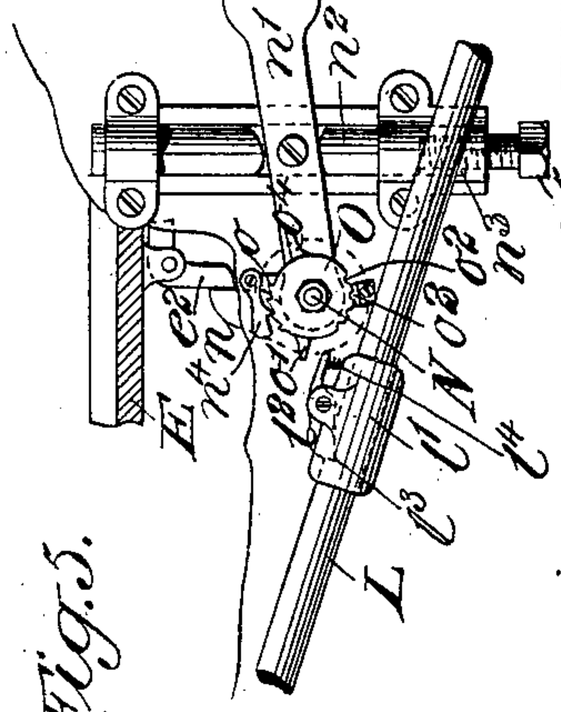
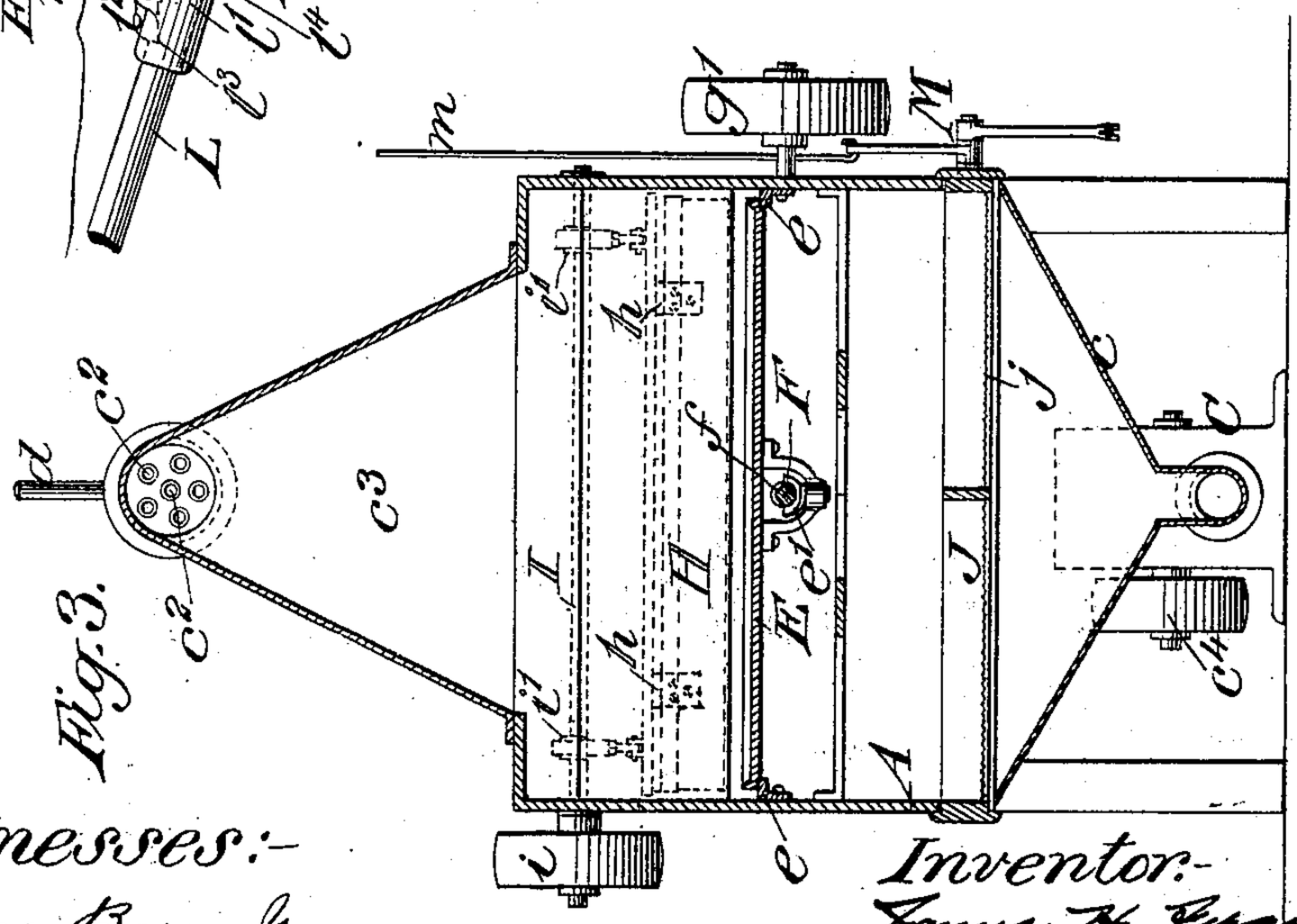


Fig. 3.



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UNITED STATES PATENT OFFICE.

JAMES H. FERGUSON, OF NEW YORK, N. Y., ASSIGNOR TO THE LOVEJOY COMPANY, OF SAME PLACE.

LEADING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 619,016, dated February 7, 1899.

Application filed May 20, 1897. Serial No. 637,337. (No model.)

To all whom it may concern:

Be it known that I, JAMES H. FERGUSON, of New York, (Brooklyn,) in the county of Kings and State of New York, have invented a new and useful Improvement in Leading-Machines, of which the following is a specification.

My invention relates to an improvement in leading-machines in which the molds may be leaded with great rapidity and in which the lead is distributed evenly over the face of the molds.

The objects of my invention are, first, to provide a leading-machine which will perform the above results in which a cooling-chamber is provided intermediate the blower and air-discharge for reducing the temperature of the compressed air, so that the machine may be operated continuously irrespective of the temperature of the outside air; secondly, to provide means for preventing particles of wax and other foreign substances which would be liable to obstruct the free passage of air through the discharge-opening from passing from the interior of the machine to the blower; thirdly, to provide means for detecting any obstruction in the machine which would change the air-pressure therein; fourthly, to provide a suitable stop mechanism under the control of the reciprocating movement of the mold-carrier for stopping the machine when the molds have been passed back and forth under the air-discharge opening and brush the required number of times, and, fifthly, to provide a new and improved means for hanging and operating the leading-brush.

A practical embodiment of my invention is represented in the accompanying drawings, in which—

Figure 1 represents a side view of the machine. Fig. 2 represents a vertical central section from front to rear through the same. Fig. 3 is a transverse vertical section in the plane of the line 3 3 of Fig. 2. Fig. 4 is a transverse horizontal section in the plane of the line 4 4 of Fig. 2, and Fig. 5 is a detailed view of the stop mechanism.

The body of the machine consists of a suitable casing A, having a forwardly-extended portion a and a hopper-shaped bottom a', the said hopper-shaped bottom having an opening a^2, extending transversely across the machine.

The top of the main portion of the casing A is provided with a pair of doors a^3 for gaining access to that portion of the casing, and the forwardly-extending portion a of the casing is provided with a suitable door a^4, through which the molds are inserted and removed from the machine.

An air-chamber B is formed at the front of the casing A, and the said air-chamber is provided with an air-discharge outlet b, opening into the interior of the casing.

The means which I have shown for forcing air through the air-discharge opening and keeping the air cool is as follows: A pressure-blower C, of usual construction, is located at the rear of the machine and is provided with an air-tube c, extending to the bottom a' of the casing A, for exhausting air from the said casing. The blower C is further provided with a discharge-tube c', which extends upwardly to a point a short distance above the casing A, where the said tube is extended forwardly and at the same time divided into a plurality of smaller tubes c^2. The forward ends of these tubes c^2 are connected with the air-chamber B by an air-tube c^3. The tubes c^2 are surrounded by a suitable casing D, which is provided with a suitable water inlet d and outlet d' for permitting the circulation of water within the casing D around the tubes c^2. The blower C is driven by a suitable drive-pulley c^4.

The track upon which the mold-carrier is adapted to travel forward and back within the casing A and its forward extension consists of a pair of side rails e, extending along the side walls of the casing. The carrier for supporting the molds is denoted by E and is of tray form, the side edges of the carrier being engaged with the track-rails e, the said carrier being of any required depth. The means which I have shown for reciprocating the carrier consists of a rotary shaft F, extending from front to rear within the casing below the mold-carrier E, the said shaft being provided for a considerable distance with a right and left hand cross-threaded screw f, which is engaged by a traveling switch-nut e', carried by the carrier E. The carrier-re-

ciprocating shaft F is provided at its rear end with a bevel-gear f', which is engaged by a bevel-gear g upon a cross-shaft G, which cross-shaft is provided with a suitable belt-pulley g', which is driven by any suitable mechanism.

The mold-engaging brush is denoted by H, and it may be of badger or other suitable hair. The brush extends across the machine within the casing to the rear of and in close proximity to the air chest or chamber B. The brush is supported by the free ends of a pair of spring-arms h, and the other ends of the arms h being secured to the back of the casing A. The brush H is reciprocated vertically for causing the same to repeatedly engage the faces of the molds in the following manner: A shaft I extends across the machine within the casing A at a point a slight distance above the brush H, the said shaft having a drive-pulley i, by means of which it may be driven by any suitable mechanism.

The shaft I is provided with a pair of eccentrics i', which are engaged by suitable straps h', connected to the brush-supporting arms h. The distance of the brush H from the molds is regulated by means of suitable screws h^2.

A drawer J, having a gauze bottom j, is mounted within the opening a^2 in the bottom a' of the casing A, the said drawer being removable through one side of the casing. This drawer is adapted to receive and retain small particles of wax, large grains of lead, or other foreign substances to prevent them from passing through the air-tube c to the blower C. The compressed air which is forced into the casing A is thus kept pure and free from foreign matter of all kinds.

A pressure-gage K is attached to the top of the casing A and communicates with the interior of the same, whereby the pressure of air within the casing can be at all times determined, and the amount of air fed to the machine may be regulated in accordance therewith.

The mechanism which I have shown for shifting the several belts which drive the blower, the mold-carrier-reciprocating shaft, and the brush-actuating shaft is as follows: A belt-shifter rod L is located upon one side of the casing A, exterior thereto, and is connected at its rear end to an angle-lever M, from which a rod m runs to the belt-shifter. (Not shown.) The rod is provided with a suitable handle l at its forward end and near its forward end is mounted to slide in a suitable bearing l'. The tendency of the rod L is to be slid backwardly for shifting the several belt mechanisms for stopping the machine. The rod L is held at the limit of its forward movement by means of a suitable spring-actuated pawl l^2, which is adapted to engage a notch l^3 in the rod L. The pawl l^2 is provided with a suitable tailpiece l^4, which is adapted to be engaged by the tripping mechanism for releasing the pawl from the notch l^3.

The tripping mechanism is as follows: A short shaft N is mounted to rock in suitable bearings in the side of the casing A, a portion of the said shaft extending into the interior casing and the other portion of the shaft extending exterior thereto. The shaft N is provided with an arm n within the casing, which arm extends upwardly to within a short distance of the bottom of the carrier E. The carrier E is provided with a dog e^2, which is adapted to engage the arm n and rock the shaft as the carrier moves forwardly, the said dog being pivoted so as to travel freely over the arm n as the carrier E travels backwardly. After the arm n has been forced forwardly and the shaft N rocked the said shaft is returned to its normal position by means of a weighted arm n', secured to the shaft exterior to the casing. The weighted arm n' is connected to an air-cushioning device for preventing the too rapid return of the shaft N, which cushion arrangement consists of a plunger-rod n^2, pivoted to the arm n' and having its lower end located within an air-cushioning chamber n^3. The arm n' is provided with a suitable pawl n^4, which is adapted to engage teeth o upon the periphery of a disk O, mounted upon the shaft N to rotate independently therefrom. There are a number of these teeth o, (in the present instance four are shown,) and each forward movement of the carrier E causes the said disk O to rotate the distance of one tooth, and as the shaft N returns to its normal position the pawl n^4 will trip within the next succeeding tooth o the distance of another tooth. The disk O is provided with a tripping abutment or lug o', which abutment is caused to engage the tailpiece l^4 of the pawl l^2 and depress the same as the disk O is rotated for releasing the rod L and permit it to slide backwardly for shifting the driving-belts and stopping the machine. The disk O is provided with a number of depressions o^2 upon its periphery opposite the teeth o, which depressions are engaged by a spring-latch o^3, extending outwardly from the casing A, which spring-latch tends to yieldingly hold the disk O against movement until positively rotated by the rocking movement of the shaft N.

The disk O is provided with a thumb-piece o^4, by means of which the disk can be rotated, so that the pawl l^2 will be tripped by the first, second, third, or fourth forward movement of the mold-carrier E. The movement of the shaft N in one direction is limited by means of a set-screw n^5, which screws into the bottom of the air-chamber n^3 and engages the bottom of the rod n^2 for limiting its downward movement. This set-screw n^5 accurately adjusts the throw of the pawl n^4, so as to permit it to rotate the disk O the distance of a single tooth each time the shaft N is rocked forwardly.

What I claim is—

1. In a leading-machine, a casing for receiving therein the molds to be leaded, the said casing having a hopper-shaped bottom and

provided with an air-outlet opening in the bottom and a suitable air-inlet opening, means for forcing air to and withdrawing it from the casing and a screen-drawer inserted in the said outlet-opening in the bottom of the casing, substantially as set forth.

2. In a leading-machine, a casing, a traveling carrier within the casing for the molds to be leaded, a plurality of flexible arms secured to the casing, a mold-engaging brush carried by the free ends of the said arms, a rotary cross-shaft and an eccentric carried thereby connected with the said arms for vibrating them whereby the brush is caused to repeatedly strike the face of the mold, substantially as set forth.

3. In a leading-machine, a casing, a traveling carrier mounted within the casing, means for reciprocating the carrier back and forth therein and a stop-motion mechanism under the control of the carrier for automatically stopping the movement of the carrier at predetermined intervals, substantially as set forth.

4. In a leading-machine, a casing, a traveling carrier mounted within the casing, means for reciprocating the carrier back and forth therein, a belt-shifter and a stop-motion mechanism under the control of the movement of the carrier for automatically operating the belt-shifter to stop the movement of the carrier at predetermined intervals, substantially as set forth.

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