

(No Model.)

2 Sheets—Sheet 1.

W. W. McCARROLL.
ELECTROTYPE MOLD BUILDER.

No. 556,472.

Patented Mar. 17, 1896.

Fig. 1

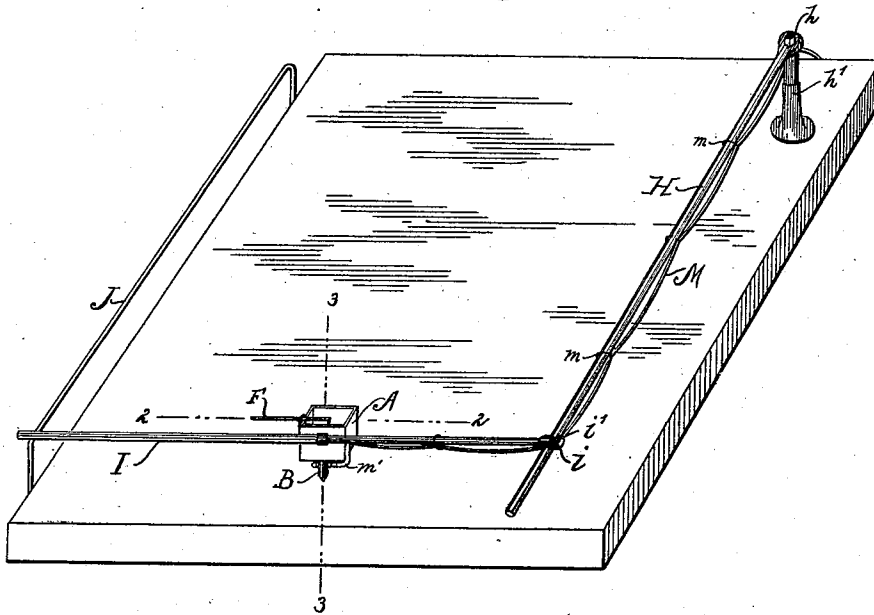


Fig. 2

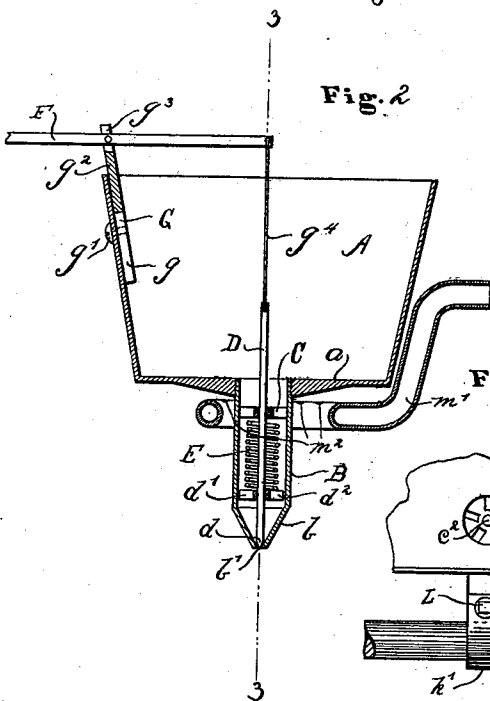


Fig. 3

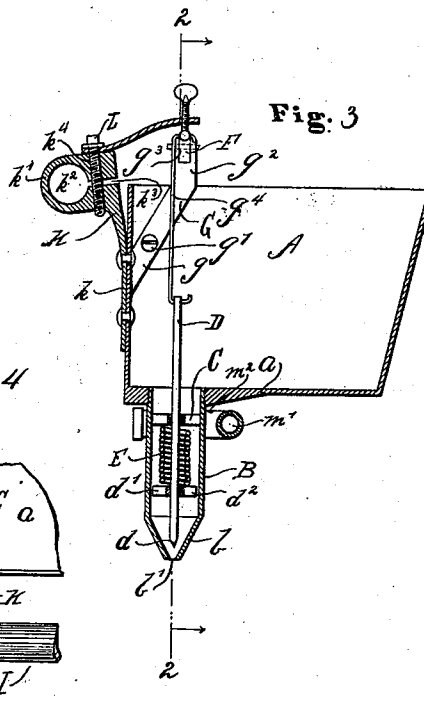
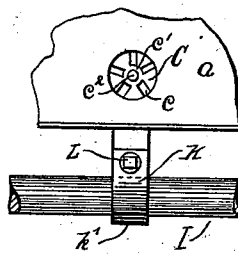


Fig. 4



Witnesses

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(No Model.)

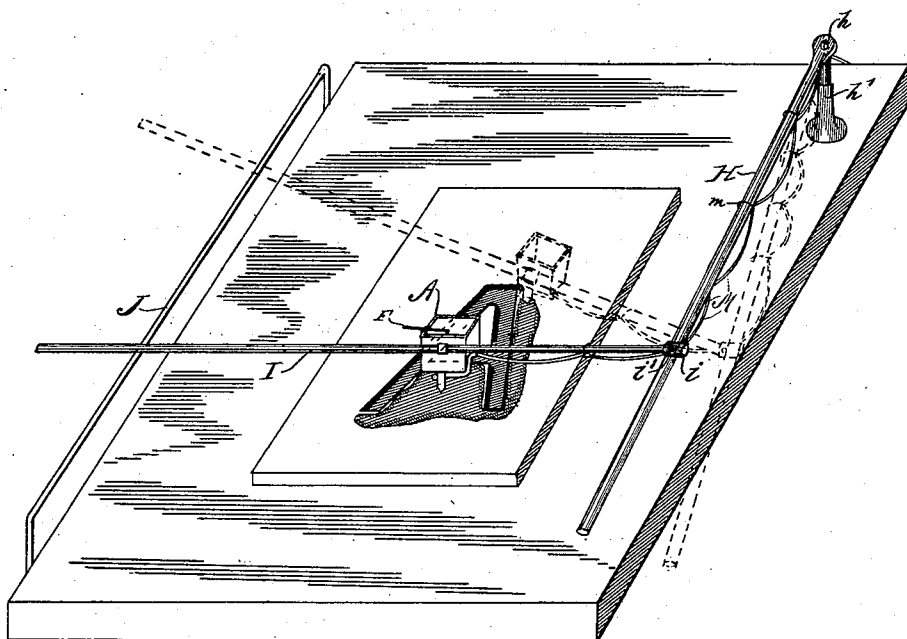
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Fig. 5



Witnesses

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UNITED STATES PATENT OFFICE.

WALKER W. MCCARROLL, OF CHICAGO, ILLINOIS.

ELECTROTYPE-MOLD BUILDER.

SPECIFICATION forming part of Letters Patent No. 556,472, dated March 17, 1896.

Application filed July 13, 1895. Serial No. 555,850. (No model.)

To all whom it may concern:

Be it known that I, WALKER W. MCCARROLL, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Electrotpe - Mold Builders, which are fully set forth in the following specification, reference being had to the accompanying drawings, in which—

Figure 1 represents a perspective view of a table-top with my invention applied; Fig. 2, a vertical section of the wax receptacle and discharger, detached from the table, taken on the line 2 2 of Figs. 1 and 3; Fig. 3, a similar section taken on the line 3 3 of Figs. 1 and 2; Fig. 4, a detail plan showing the support for the wax-receptacle and the discharge-opening at the bottom of said receptacle; and Fig. 5, a perspective view like Fig. 1, with the addition of a mold in position on the table and an illustration of the action of the wax-distributer thereon. In these drawings Figs. 1 and 4 are upon one scale and Figs. 2, 3 and 5 upon another and enlarged scale.

The invention relates to a device for melting wax and delivering it upon a mold-plate to form an elevation of wax thereon around the pattern of the device or article which the mold is intended to produce by electrotpe process. It consists in a receptacle for the unmelted wax with an attachment for melting the wax after introduction into the receptacle and movable with it; a discharge-passage for the wax when melted in the receptacle, controlled by a suitable valve device; mechanism applied to the table on which the mold-plate is placed, and devices applied to the upper face of this table, whereby the wax-receptacle can be moved about in any direction and to any extent over the said mold-plate for the purpose of discharging the hot wax upon the latter in a configuration conforming to the design of the article it is desired to produce, thereby forming a mold for electrotpe casting when the wax delivered upon the plate becomes cold.

The structure shown in the drawings and embodying a practical application of the present invention will now be fully described in detail, and the particular improvements which are believed to be new and which it is desired to secure by Letters Patent will then be

designated more definitely and distinctly in claims.

In the drawings, A represents a metallic receptacle of substantially rectangular or any other desired and suitable form. In the bottom *a* of this receptacle there is an aperture near one side of the latter in which is fixed a tube B, and consequently depending therefrom. The lower or outer end of this tube is tapered, thereby producing a contracted or tapering termination *b*, at the extremity of which there is a small aperture *b'*. This is a discharge-tube for the contents of the receptacle, and near its upper end there is fixed a small disk C within the tube provided with perforations *c*, arranged around the disk on any lines desired, but leaving a small section *c'* at the center, which is provided with a through-aperture *c''*. A valve-rod D is set in this aperture in the said fixed disk and is free to slide up and down therein. At its upper end it projects up through the inlet to the tube into the receptacle above, extending part way to the top thereof. At its lower end it is tapered regularly to form a short tapering point *d*, which is adapted to fit into the opening at the lower end of the discharge-tube and when seated completely close the latter. In order to effect the proper seating of this valve-rod for the purpose designated, a small disk or collar *d'* is fastened to the valve-rod near its lower end, but not at the extremity of the rod, because it is not intended to enter the contracted space at the lower end of the tube. This disk is also provided with a series of apertures or perforations *d''* similar to those in the fixed disk above, and the lower disk, fastened to the valve-rod, is preferably made with a diameter just a little smaller than the internal diameter of the tube, so that it can be readily moved up and down in said tube, which will obviously be the action produced by raising and lowering the valve-rod to which it is fastened. It is desirable to provide some device acting automatically upon this disk fixed on the valve-rod to hold the latter down upon its seat, so as to completely close the discharge-opening at the lower end of the tube. The device for this purpose shown in the drawings is a small spring-coil E arranged around the valve-rod between the two disks C and *d'*, being so constructed and arranged rela-

tively to the said disks that it will be under tension even when the valve-rod is actually seated in the discharge-opening of the tube. The automatic action of this spring will therefore always be to close and keep closed this discharge-opening in the tube, and obviously, when the valve-rod is lifted to open said aperture the tension of the spring will be increased by its compression between the said disk, so that as soon as released the valve will be thrown back immediately to its seat. The relative position of these valve devices when the valve is closed is illustrated in Fig. 2 of the drawings, and their position when the valve is lifted from its seat to open the discharge-opening at the lower end of the tube is illustrated in Fig. 3 of the drawings, and it will be clear from said figure that in this last position the tension of the spring is considerably increased because the space between the two disks has been diminished.

Some device for lifting the valve-rod against the tensile force of the spring to open the discharge-aperture at the bottom of the delivery-tube is evidently necessary. In the drawings this device consists of a small hand-lever F, which is pivotally mounted on the upper end of a kind of bracket or arm-support G. The lower end of this arm inside the receptacle commences at the angle formed by the junction of two sides of the latter, thence extends upward and inward at an incline to the upper edge of one of the receptacle sides, from which point it is bent to a straight upright position and extended a little above the said edge. The lower or inclined section, g , is secured to the inner face of the receptacle side along which it extends by a screw-bolt g' . The upper vertical section, g^2 , is provided with a recess g^3 in its outer end, and the lever F is pivotally mounted in this recess. The mounting of the lever is so arranged that its inner end will extend over the open top of the receptacle and terminate just above the outlet-opening at the bottom of the receptacle into the discharge-tube, and is connected with the upper end of the valve-rod by means of a short connecting-rod g^4 , hinged or pivoted at its ends to the inner end of the lever and the upper end of said rod, respectively, as seen in Figs. 2 and 3. This lever extends outward a short distance beyond the receptacle side on which it is mounted, as seen in Figs. 1, 2, and 5, so that it may be easily reached by an attendant for the purpose of manipulating the valve-rod, as described above.

The mounting of the wax-receptacle for use is effected, as shown in the drawings, by means of a horizontal rod H, set at one end upon an upright pin h , which is set loosely in a bearing-bracket h' , fixed on the table at one corner thereof. This rod is therefore free to swing about over the table. Another rod, I, is connected to the rod H by means of a collar i , adapted to be slipped upon the rod H and secured thereto at any point desired, temporarily,

by a set-screw i' . The rod I is hinged to this support so that it is free to swing laterally and is of sufficient length to extend across the table and rest at its other end upon an upright bent rod J, secured to the opposite edge of the table. A bracket K, provided with an arm k , is secured to the outer face of one side of the receptacle. It extends up a little above the edge of the latter and is enlarged to provide a head k' , which is constructed with a perforation k^2 and a slit k^3 , passing outward through one side of the casing about the said aperture, thus providing for some movement of the extreme upper portion of the bracket. A threaded perforation k^4 passes down through the two parts of this divided section, and there is fitted into it a screw-bolt L, by means of which the two parts are closed tightly around the rod I, thus fixing the receptacle at any desired point on said rod. This rod I is free to be swung upon its hinge connection to the rod H, so that as both rods turn freely on their pivots the receptacle may be moved in any direction over the mold-plate and to any position desired, so that the melted wax may be deposited in any direction and upon any pattern proposed for the mold. Means for heating and melting the wax must also be provided, and the device shown in the drawings for this purpose is a long flexible tube M, connected at one end with a gas-supply, carried to the table, and thence along the pivoted rod H, to which it is connected by small suitable loops m to the junction between the two pivoted rods, from which point it is extended outward along the rod i , with the same means for support thereon to the receptacle, where it terminates in an end ring m' , arranged around the discharge-tube B, just below the bottom of the receptacle, and provided with a series of apertures m^2 , passing through its upper side so as to open out directly underneath the bottom of the receptacle. In preparation for use the gas is turned on and as it begins to escape from these apertures is lighted, so that the receptacle will soon be heated sufficiently to melt the wax which has been placed therein, changing it to a liquid condition.

In operation, after the wax has been melted and is sufficiently hot to run readily, the attendant swings the supporting-rods as required to bring the receptacle over the starting-point for the pattern or figure on the mold-plate. The valve is then raised from its seat, thereby opening the discharge for the melted wax, which flows down through the contracted end of the discharge-tube and drops upon the mold-plate. The pivoted supporting-rods are then moved by the attendant in any direction required to deposit on the mold-plate melted wax after the pattern found thereon, as indicated in Fig. 5, and when this operation is completed, the pattern being laid out or surrounded by wax, the handle connected to the valve-rod is released, when the retracting-spring surrounding the latter will force it down at once into its seat, thereby

entirely stopping the outflow of melted wax. Of course the wax deposited on the mold-plate will cool very quickly and the said plate is then ready for use. The receptacle and swinging supporting-arms may be removed from the table whenever desired and replaced when required for the work described.

There may be modifications in some of the specific devices here shown and described without losing the controlling features of the invention, and such changes are contemplated in the practical use of the improvements and are included within the limits of the invention, so long as the general features of the machine and their operation are substantially retained.

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

1. In an electrotpe-mold builder, a mold-plate, in combination with a wax-receptacle provided with a discharge-tube, a valve arranged in said tube to close the discharge-aperture, swinging supports for the receptacle mounted on the table, and a heating device whereby the wax is melted in the receptacle, substantially as described.

2. In an electrotpe-mold builder, a metallic receptacle, A, for the wax, in combination with a tube, B, set in the bottom thereof and provided with a small aperture, *b'*, at its lower end, a perforated disk, C, fixed in the upper part of said tube, a valve-rod, D, mounted loosely in said disk, pointed at its lower end to set into and close the aperture at the lower end of the tube and having a perforated disk,

d', fixed thereon near its lower end with freedom to move vertically in the tube, a retracting-spring, E, arranged between said disks, a lever, F, mounted on the receptacle and connected at one end to the valve-rod D, a swinging support above the table on which said receptacle is mounted, a heating device connected to the receptacle underneath the bottom thereof, and a mold-plate set upon a suitable support below the swinging support for the receptacle, substantially as described.

3. In an electrotpe-mold builder, a table, in combination with a mold-plate laid thereon, a rod, H, pivotally mounted at one end of said table, a rod, I, hinged or pivotally connected to said rod H, a wax-receptacle, A, adjustably secured to the rod I, a discharge-tube, B, set in the bottom of the receptacle and having a contracted opening at its lower end, a perforated disk, C, fixed near the upper end of said tube, a valve-rod, D, set loosely in said disk and provided with a similar disk, *d'*, fixed thereon and movable with the valve-rod, an actuating-spring, E, arranged between said disks, a bracket, K, secured to one side of the receptacle, extending upward and provided at its upper end with a perforated head, *k'*, slitted at one side, as seen at *k*³, and a screw-bolt passing through apertures in the said divided bracket-sections to secure the wax-receptacle on one of the swinging rods, substantially as described.

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Witnesses:

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I. A. HELMICH.