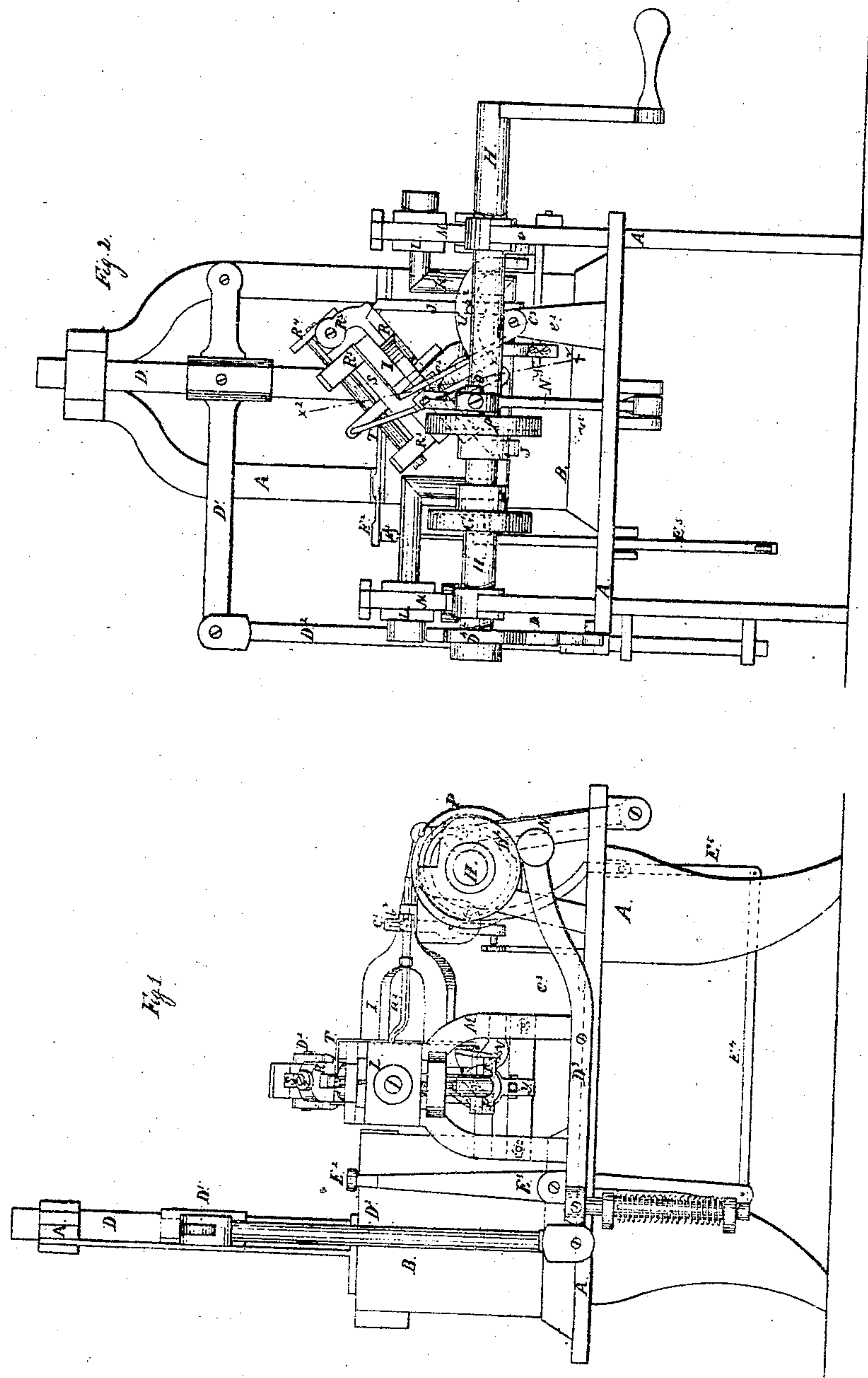
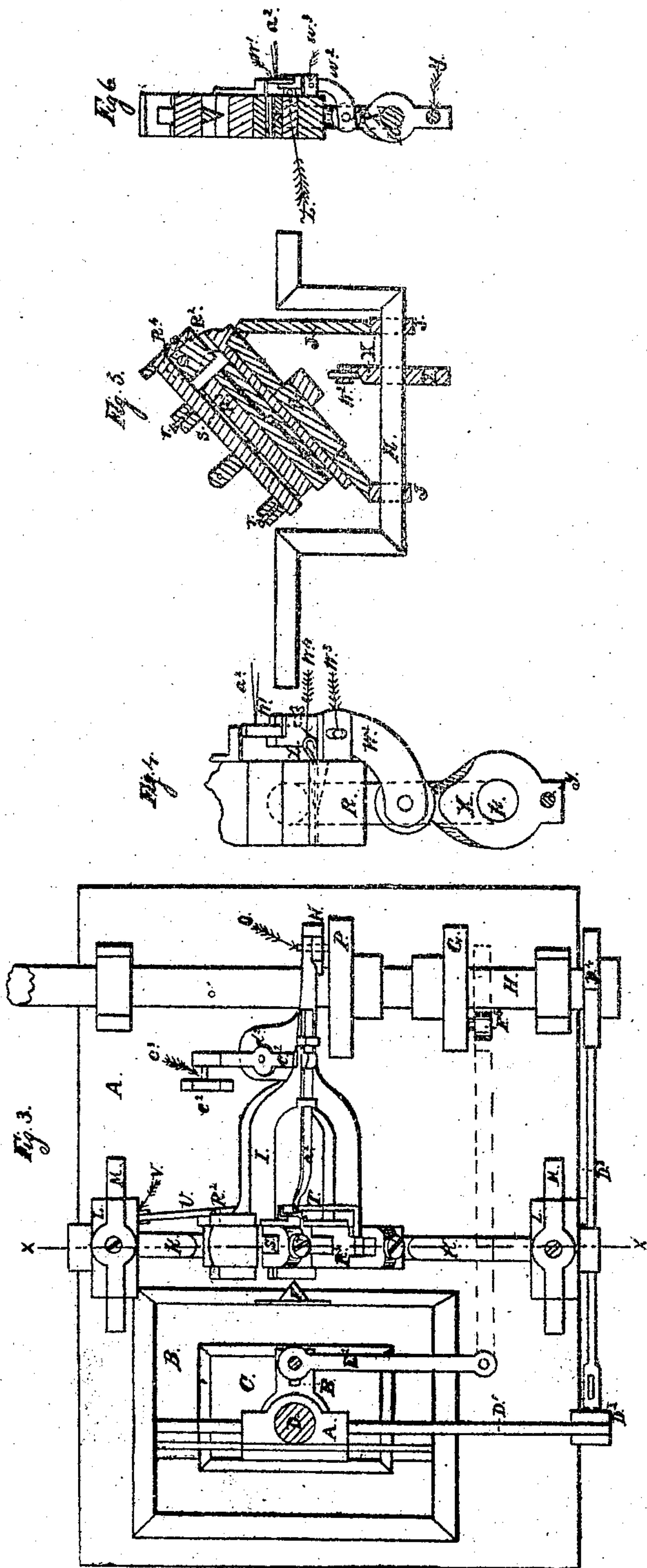


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Type Casting Mach.
Nº 9787. Patented Jun 14. 1853.



J. I. Sturgis. Sheet 2. 2 Sheets.
Type Casting Mach.
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UNITED STATES PATENT OFFICE.

JOHN I. STURGIS, OF NEW YORK, N. Y.

IMPROVEMENT IN TYPE-CASTING MACHINES.

Specification forming part of Letters Patent No. 9,787, dated June 14, 1853.

To all whom it may concern:

Be it known that I, JOHN I. STURGIS, of the city, county, and State of New York, have invented certain new and useful Improvements in Type-Casting Machines; and I do hereby declare the following to be a full description of the same.

The nature of my invention consists in arranging upon a horizontal rock-shaft working in adjustable boxes in standards at each side of the bed-plate of the machine the mold-block rest in a horizontal position, having one edge inclining downward, so as to give the mold-block a downward slant to drop the type, and having its back end in a vertical rock-shaft having a pin in it to work in a groove of a cam on the main shaft for the purpose of producing a reciprocating motion to carry the mold-block to and from the nipple of the metal bath; second, in the combination of the levers and cam and spring movements for holding the matrix and "levering" it (technically) when in operation for molding type, and, third, in the mode of setting the upper half of the mold-block by means of a ∇ -shaped bar secured to a back piece, which is made adjustable by means of set-screws holding in the joint at the back of the mold block, and, lastly, in the arrangement of the several parts of the machine for the purpose of making a type-casting machine. But to describe my invention more particularly I will refer to the accompanying drawings, forming a part of this schedule, the same letters of reference, wherever they occur, referring to the same parts.

Figure 1 is a side elevation of the machine. Fig. 2 is a front elevation of the same. Fig. 3 is a plan view of the same. Fig. 4 is a detached view of the lower half of the mold-block, showing the matrix, spring, lever, and cam for holding and levering the matrix. Fig. 5 is a cut sectional view of the mold-block, through the red dotted line $x x$ of Fig. 3. Fig. 6 is a cut sectional view of the mold-block, matrix, cam, lever, and spring, through the red line $x^2 x^2$, Fig. 2.

Letter A is the frame of the machine.

B is the furnace and fused-metal bath, having a well, C, in it, and in which a plunger, D, works by means of levers $D' D^2 D^3$ operated upon by a cam, D^4 , on the end of the main

shaft H. In the fused-metal bath is also a nipple-stopper, E, which is operated to close the vent of the nipple F by the levers E^2 , E^3 , E^4 , and E^5 , and a cam, G, on the main shaft H.

Letter I is the mold-block rest or frame, the back end of which is supported by boxes J J on a rock-shaft, K, which is supported in adjustable boxes L L in standards M M at each side of the machine, and at its front end by a working-joint in the upper end of a vertical rock-shaft, N, attached at its lower end to the under side of the bed-plate of the machine. In this vertical rock shaft is a pin, O, which works in a groove in a cam, P, on the main shaft H, so that as the cam is rotated the mold-block rest is moved backward and forward to carry the mold-block to and from the nipple of the metal bath. The mold block rest is made forked at its back end to allow room for the motion of the lever to open the mold-block and operate the matrix, and also with a downward slant, so as to allow the type to fall freely from the matrix when the mold-block is opened.

Letter R is the lower half of the mold-block secured to the end of the mold-block rest. To the outer end of the lower half of the mold-block is a working-joint, R^2 , to which is attached a ∇ -shaped bar, S, by means of an adjusting-plate and screws, R^4 , holding the ∇ -shaped bar and plate against the end of the mold-block, so as to allow of adjusting the upper half of the mold-block secured on the ∇ -shaped bar. On this bar is adjusted the upper half of the mold-block R^3 , having binding-screws $r r$ working through R^3 and against the bar, Fig. 1, for holding it firmly in its adjusted place on the bar—that is, the lower edge of the ∇ -bar is forced into the ∇ -seats cut in r^3 in the upper half of the mold-block by means of the screws $r r$, so as to hold it firmly from slipping and at the same time adjustment of the upper half of the mold-block in less time and with more certainty than by any other adjusting arrangement now known.

Letter T is a rod or lever for opening the mold-block, the lower end of which is jointed to a curved lever, U. This lever is secured by a center screw or pin, W^2 , to one of the supports J of the mold-block, rest so as to have a simultaneous backward and forward motion with the mold-block and has its outer end

working in an inclined slot, V, in a plate secured to one of the standards M, so that as the mold-block is moved backward and forward the pin in the lower end of the lever U, working in the inclined slot V, operates the lever T and closing thereby the upper half of the mold-block. Letters W¹ and W² are the matrix and matrix-holder, the latter secured by a center pin, W³, working through a slot in the matrix-holder to the lower side of the lower half of the mold-block and having in its lower end a roller which works on a cam, X, secured on the rock-shaft K. This cam is operated by the reciprocating motion of the rock-shaft K and a partial rotating motion caused by a pin, Y, secured to one of the standards, M, and holding the lower pendent end of the cam X, so that the action of the cam on the matrix-holder holds the matrix up to the mold-block. In the inner face of the matrix-holder W² is a notch, W⁴, in which the end of a spring, Z, (secured to the underside of the mold-block,) works for the purpose, also, of assisting to give the matrix a more elastic and perfect motion, in combination with the cam-motion, than otherwise could be done by the cam-motion acting alone on the matrix-holder.

Letter a² is a rod for holding the matrix up to the mold-block. This rod is arranged to slide on the upper side of the mold block rest and is operated by a pin, b², in the upper end of a lever, c², having a center pin or screw, d², in a pendent projection on the under side of the mold-block rest and a set-screw, e³, in the lower end of it to act against a post, e², secured to the bed-plate of the machine, so that as the mold-block rest is pushed forward the set-screw e³ comes in contact with the post and forces the rod a² against the back of the matrix to hold it while the type is being cast firmly to the mold-block.

The operation of these several parts is that when the main shaft is rotated it causes the cam on the outer end of it to operate the plunger in the fused-metal well at the same time that the second or middle cam operates the nipple-stopper. While this also is being done the cam P causes the mold-block to be moved forward and operates the lever U, turning on its pivot w², working in the inclined slot V, to shut down the upper half of the mold-block,

and also causes the lower end of the matrix-holder to run over the cam X on the rock-shaft, this cam having its lower side held by the pin Y, so as to prevent too much motion to raise the matrix, in combination with the spring Z, to its seat against the mold-block, in which position it is firmly held by the rod pressing against the back of it by means of the set-screw e³ in the end of the lever c² acting against the post e² to hold the matrix firmly in its seat till the type has been formed by the jet of metal thrown in the mold-block by the plunger. In this position the type is formed, and the cams having passed their greatest diameters the mold-block is drawn back, and in doing so the upper half of the mold-block is opened, when the matrix is levered (technically) by the operation of the spring and levers acting upon the matrix-holder and freed from the face of the type, so that it may fall freely from the mold into a box for that purpose.

Having now described my invention and its operation, I will state what I claim and desire to secure by Letters Patent of the United States—

1. The use of the horizontal mold-block rest, in combination with the vertical and horizontal rock-shafts and cam P for the purpose of obtaining a motion of the mold-block as nearly horizontal as practicable, substantially as set forth.

2. The use of the lever c² and rod a², in combination with the horizontal mold-block rest and matrix, substantially as set forth.

3. The use of the matrix-holder having a slot in it to allow of a lifting motion on its center pin, w³, and a notch in its back side, w⁴, for the end of a spring, Z, to act against, in combination with the spring Z, inclined plane or cam X on the horizontal rock-shaft K, and pin Y for holding it, substantially as set forth.

4. The ∇-shaped bar S, secured to an adjustable end plate, R⁴, attached to the outer end of the lower half of the mold-block, in combination with the upper half of the mold-block, for the purposes substantially as set forth.

JOHN I. STURGIS.

Witnesses:

CHARLES L. BARRITT,
LEWIS TOWSON VOIGT.