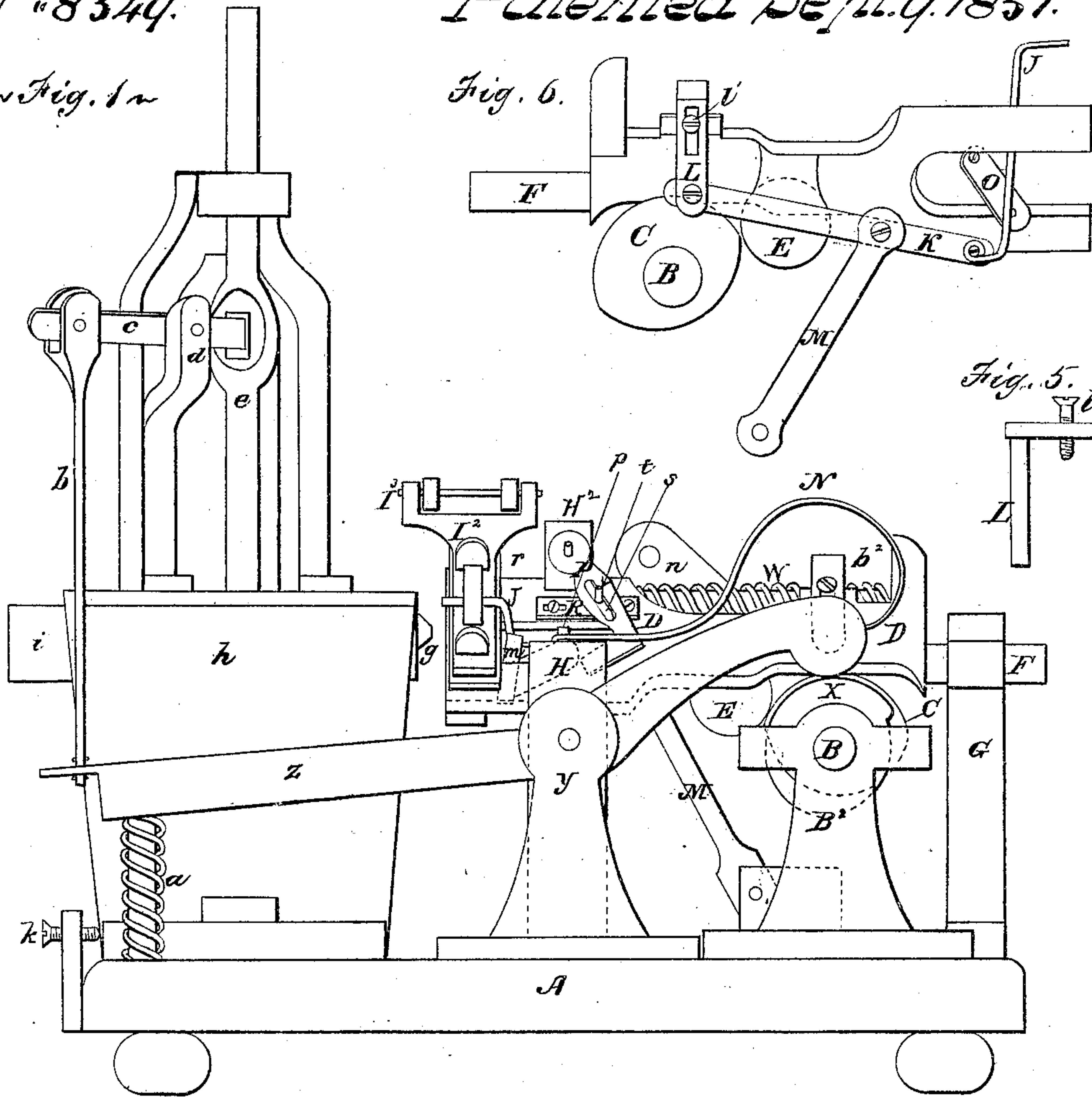


*J. I. Sturgis. Sheet 1 of 2 Sheets.*  
*Type Mach.*

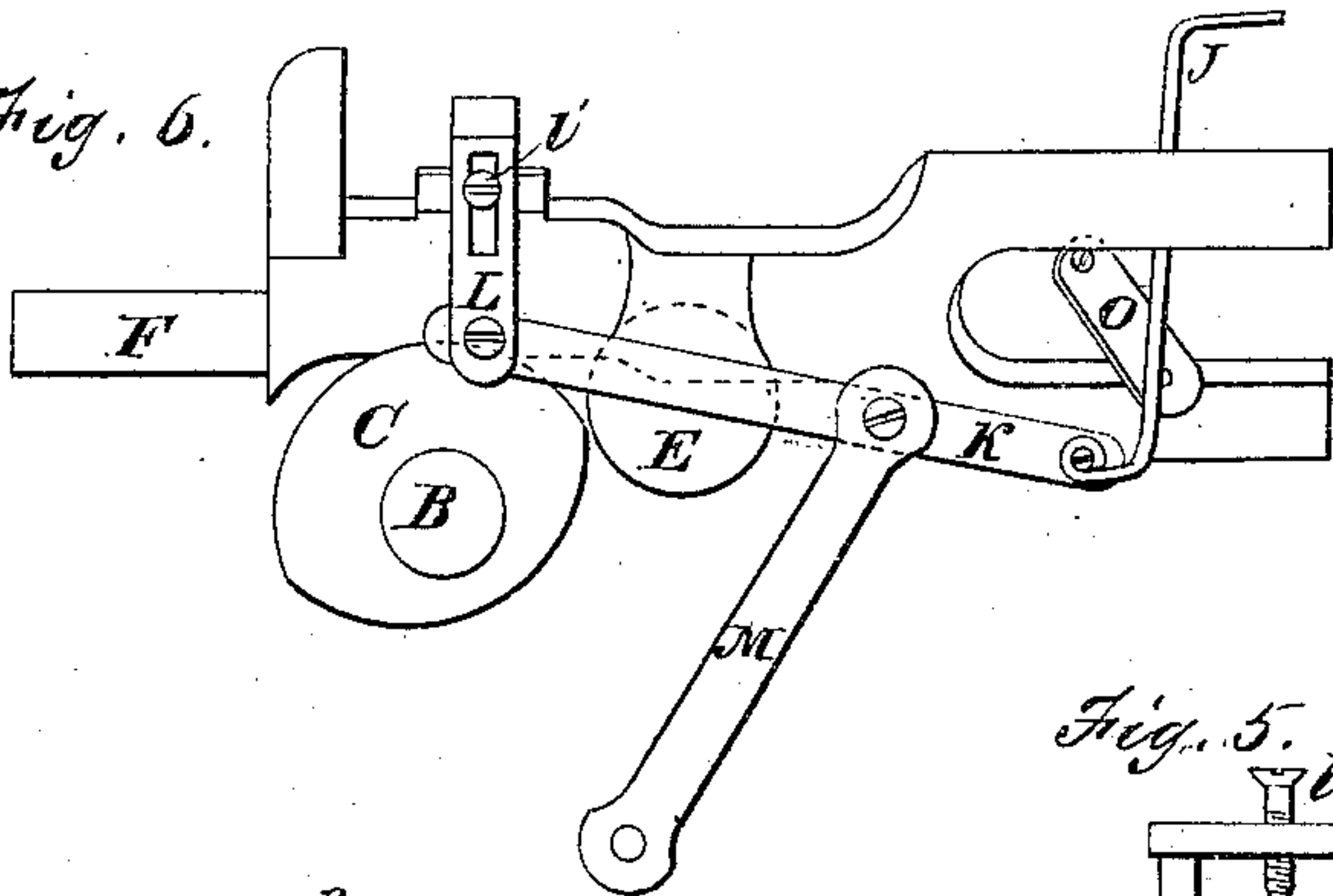
*N<sup>o</sup> 8349.*

*Patented Sept. 9. 1851.*

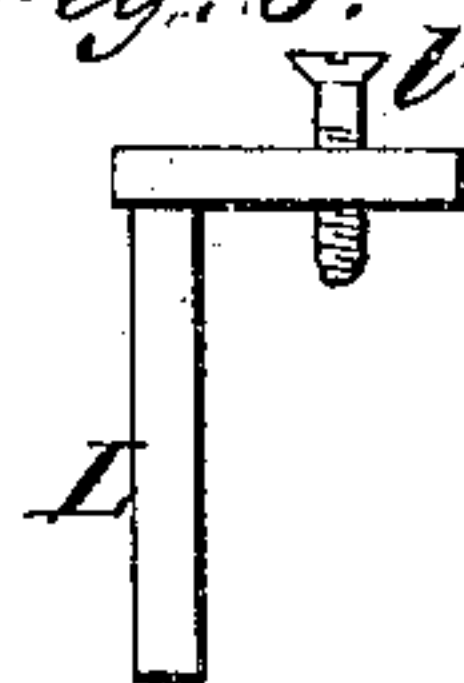
*Fig. 1.*



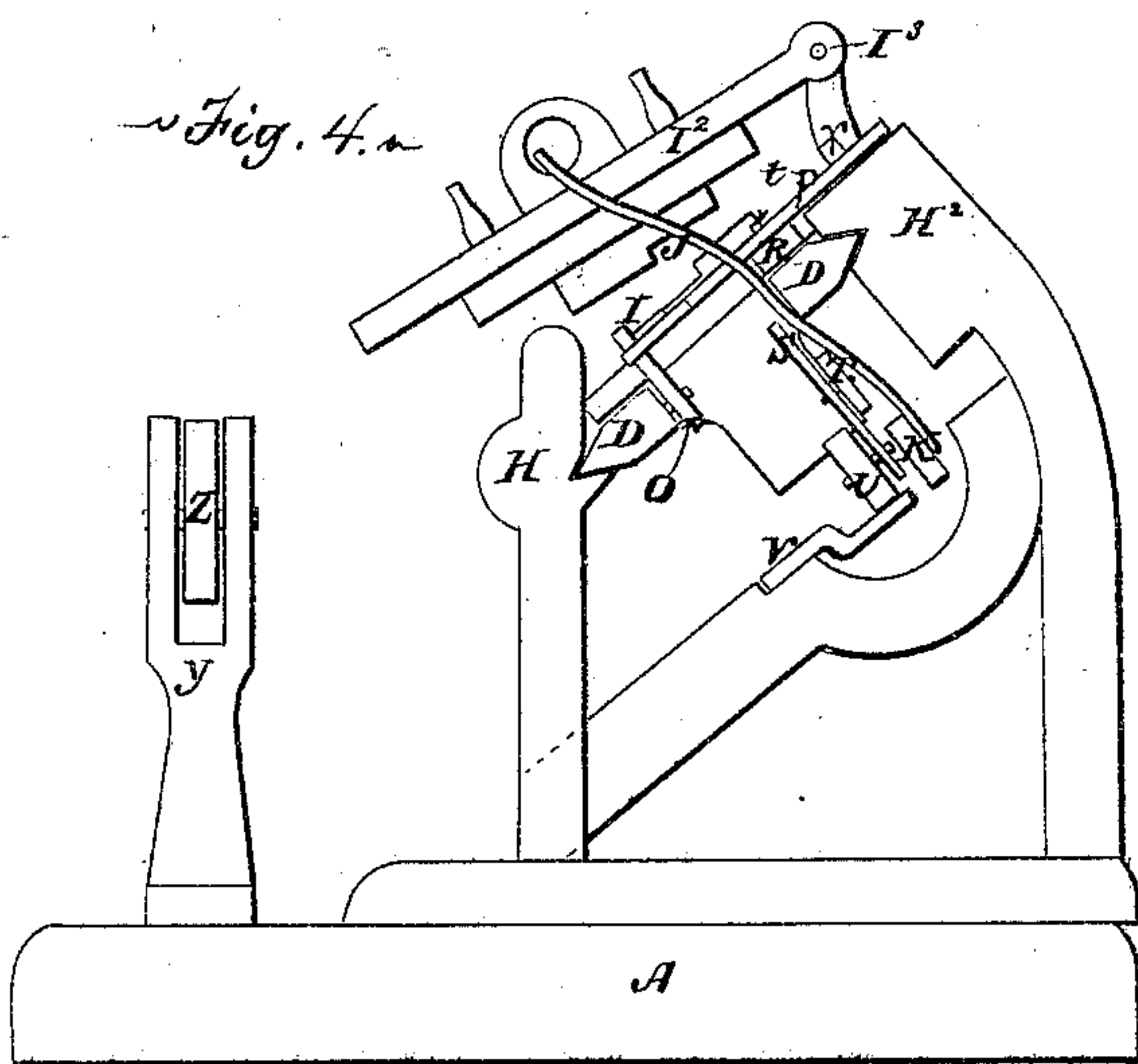
*Fig. 6.*



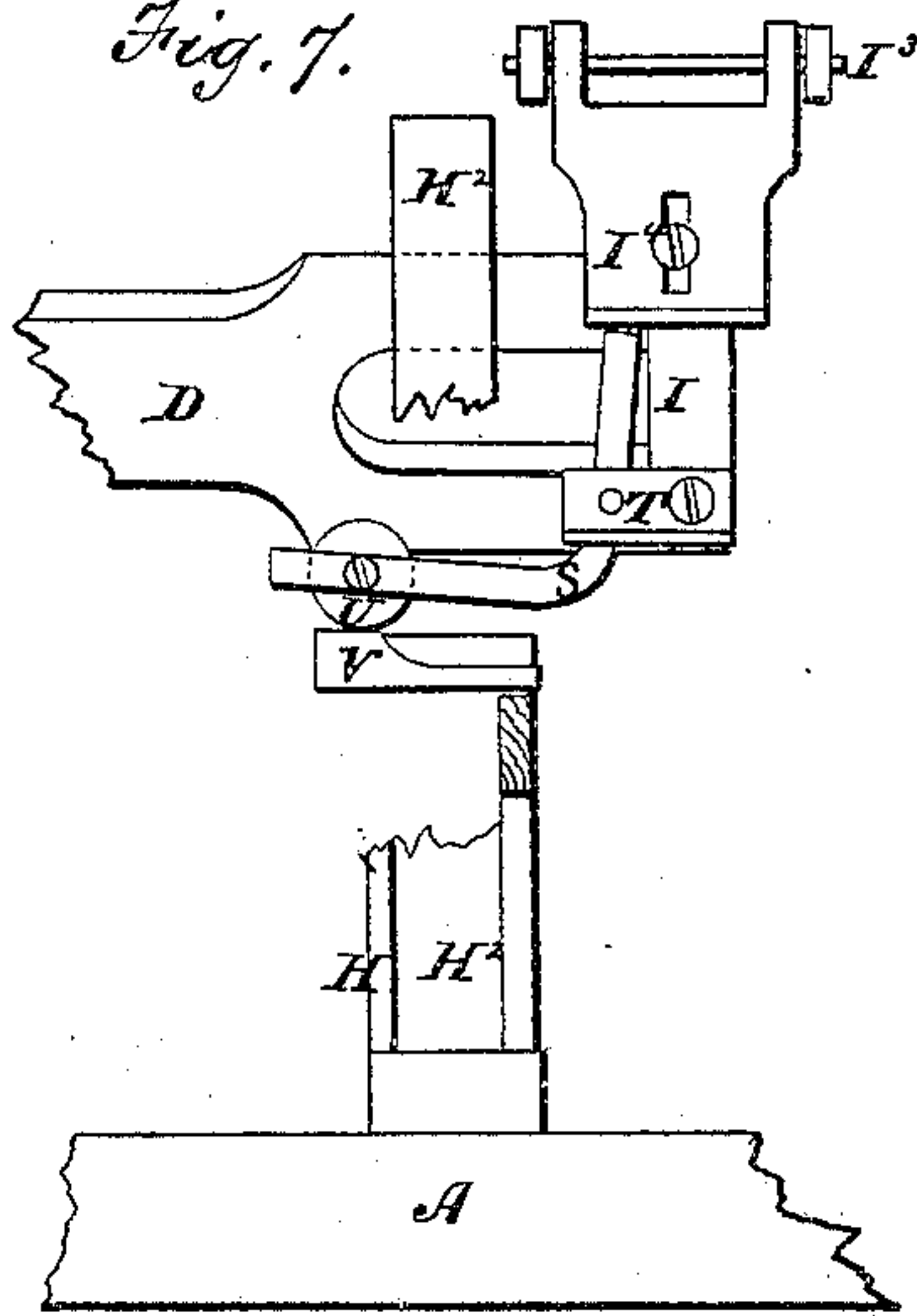
*Fig. 5.*



*Fig. 4.*



*Fig. 7.*



*Tyne Mach.*

9.1851.

*Type Mach.*  
No. 8349. Patented Sept. 9. 1851.

Fig. 2.

This technical drawing illustrates a mechanical assembly, possibly a pump or engine component, shown in a cross-sectional view. The device is housed within a rectangular frame. Key components include:

- Frame and Housing:** The main body is labeled *A*. A large rectangular section on the left is labeled *j*. A horizontal section at the bottom is labeled *i*.
- Central Shaft and Handle:** A vertical shaft passes through the center, with a handle *n* at the top. A horizontal shaft *z* is connected to the vertical shaft via a coupling *g*.
- Internal Mechanism:** The central part of the device features a complex arrangement of parts, including a central shaft *h* with a handle *e*. A large, curved component *h* is visible on the left. A horizontal shaft *h* is connected to a vertical shaft *h* via a coupling *e*.
- Valves and Ports:** Several ports and valves are labeled, including *I*<sup>1</sup>, *I*<sup>2</sup>, *I*<sup>3</sup>, *H*, *H*<sup>2</sup>, *P*, *Q*, *R*, *S*, *T*, *U*, *V*, *W*, *X*, *Y*, *Z*, *A*, *B*, *C*, *D*, *E*, *F*, *G*, *H*, *I*, *J*, *K*, *L*, *M*, *N*, *O*, *P*, *Q*, *R*, *S*, *T*, *U*, *V*, *W*, *X*, *Y*, *Z*.
- Section Line:** A dashed line *x-x* indicates a section cut through the device.



# UNITED STATES PATENT OFFICE.

JOHN I. STURGIS, OF NEW YORK, N. Y., ASSIGNOR TO H. H. GREEN.

## IMPROVEMENT IN TYPE-CASTING MACHINES.

Specification forming part of Letters Patent No. 8,349, dated September 9, 1851.

*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 a new and useful Improvement in Machines for Casting or Molding Printers' Type; and I do hereby declare the following to be a full description of the same.

The nature of my invention consists in the arranging of a slide-rest for the support of the mold-blocks in a frame, so as to have an oblique side inclination for facilitating the dropping of the type from the mold-block when opened and a forward horizontal slide motion for presenting the mold-block to the nipple of the fused-metal bath; also, the combining therewith the mold-blocks and the arrangement of certain levers for the opening and closing the said mold-blocks and operating or relieving the matrix, all for the purpose of producing a more perfect and expeditious mode of casting printers' type; but to describe my invention more particularly I will refer to the accompanying drawings, the same letters in the several drawings referring to the same parts wherever they occur.

Figure 1 is a left-hand side elevation of the machine, and Fig. 2 a right-hand side elevation of the same. Fig. 3 is a horizontal view, (except the slide-reacting spring;) Fig. 4, a cut section view through the line of the arrows in Fig. 3; Fig. 5, the adjusting-holder of the front end of the mold-block-opening lever; Fig. 6, a detached view of the slide-rest and cam on the main shaft for operating it with the mold-block levers; and Fig. 7, a detached sectional view of a part of slide-rest frame and slide-rest and back of the mold-block with the lower lever for relieving the matrix attached thereto.

Letter A is the platform, B the main shaft, and B<sup>2</sup> and B<sup>3</sup> bearings on which it rests.

C is the cam on the main shaft for operating the horizontal slide D by means of a projection or roller E, bolted or secured to the underside of it. The shape of this horizontal slide-rest is made bowing, so as to accommodate the rotation of the driving-cam C under its center of action, and fork-shaped at the mold-block end, that the levers for opening the mold-block and relieving the matrix may work up between the branches of the forked end without interfering with its forward or backward motion in being charged with the fused

metal and discharging it when molded into the type.

F is the stem on the front end of the horizontal slide.

G is the stand or support for the stem F.

H H<sup>2</sup> represent the frame or ways on which the forked end of the horizontal slide runs. These ways are arranged obliquely downward to each other at an angle of about forty-five degrees, so as to allow the horizontal slide to present the mold-block to the nipple of the fused-metal bath in an oblique, sidewise, and downward position, that when the mold-block is being drawn back from the nipple and the upper half of it opened the type by their own gravitation will free themselves from it.

I is the mold-blocks, composed of an upper and lower half, and attached by means of screws to the forked end of the horizontal rest I<sup>2</sup>. The upper half of the mold-block works on a center I<sup>3</sup>, secured to the back of the lower half of the mold-block by the screw I<sup>4</sup>, working in an adjusting-slot so as to allow of elevating or depressing it to suit the various-sized type cast.

J is the mold-block-opening lever, having its upper end passing up between the branched ends of the slide and bent at right angles, so as to fit or work in a loop or bracket secured on the top of the upper half of the mold-block for opening and shutting it, and attached by its lower end to a lever K for depressing and elevating or opening the mold-block. This lever K is arranged nearly parallel with the slide, and is secured at its front end by an adjustable support-piece L. Secured by adjusting-screws L<sup>1</sup> and L<sup>2</sup> to the front end and upper edge of the horizontal slide, at about the middle (lengthwise) of the lever K, is attached by a screw the upper end of a depressing-lever M, and by its lower end to the base of main shaft-support B<sup>3</sup>, for the purpose of operating the lever J, having its slower end attached to the back end of K for opening and shutting the mold-block as the horizontal slide is moved forward or backward.

N is the matrix-spring, secured to the upper side of the horizontal slide by means of a screw near the front end of the slide, and at its opposite end extending back so as to present its point in contact with the upper end of the matrix.

O is the matrix-spring holding or steadying



lever, secured by a pin to the inner edge of the lower branch of the slide, and near the middle of it. This lever is some two to three inches in length, and has in and near its upper end a small projecting pin *p*, around which the end of the spring makes a turn or is fastened, and thereby keeps it always steady and firmly against the upper end of the matrix when the slide is pressed in.

*P* is the matrix-spring operating or pushing lever, having a center pin *r* in the upper end of the slide-rest frame *H*<sup>2</sup>. This lever is about four inches long, and bent at its lower end at right angles, so as to press against the edge of matrix-spring holder *O*.

Down the middle of the long arm of *P* is a slot *s*. Through this slot a pin *t* is inserted. This pin *t* is secured to an adjustable slide-piece *R*, secured on the face of the upper branch of the horizontal slide, and is so made by means of slots and screws passing through as to admit of regulating the extent of motion of the lever *P* when the horizontal slide is pushed up to receive the charge of metal.

*S* is the matrix-lever, in the shape of a bent right-angle lever, and supported by a pin or screw through the angle or near it, and a shoulder or supporting-piece *T*, attached to the back and lower side of the mold-block *I* as the fulcrum on which the lever works. On the lower or horizontal leg of the lever and near the end is a roller *U*, which, as the horizontal slide and mold-blocks are carried backward or forward, rolls up and down the inclined plane *V*, and causes thereby the upper leg of the lever to work the lower end of the matrix and throw the upper end back as the mold-blocks are being drawn back from the nipple, so as to free the face of the type and allow it to fall as the upper half of the mold-block is opened.

*W* is the reacting-spring, attached at one end to the supporting-frame *H*<sup>2</sup> and at the other to the horizontal slide for the purpose of reacting it or drawing back from the nipple the mold-blocks.

*X* is the plunger-cam secured on the main shaft.

*Y* is a plunger-lever support.

*Z* is the plunger-lever.

*a* is the reacting-spring for depressing the plunger or piston in the fused-metal well.

*b* is the connecting-rod from the plunger-lever *Z* to the upper plunger-lever *c*, supported by a pin to the piston-frame *d*.

*e* is the piston for expelling the fused metal from the well *f* through the nipple *g* to the mold-block.

Letter *h* is the hot-metal bath.

*i* and *j* are the feed and smoke boxes from the furnace underneath the hot-metal bath.

*k* represents adjusting-screws for the hot-metal bath.

*n* is the crank.

The operation of these various parts is that when the main shaft is turned the cam *C*, acting on the roller *E* on the lower side of the horizontal slide, causes it to move toward the bath. In doing this it draws against the lever *M*, which, having its lower end made fast to the foot of the main-shaft support, causes it to draw down the end of the levers *K* and *J*, attached thereto, to close the mold-block. At the same time the mold-block is being shut the roller *U* descends the inclined plane *V* and throws the lower end of the matrix *m* back, while the matrix-spring-pushing lever *P*, pressing against the matrix-spring holding or steadying lever *O*, causes the point of the matrix-spring to press against the back and upper end of the matrix *m* to hold it firmly to the mold while the metal is being ejected into it by the reaction of the piston *e*, after having passed the elevating point on the cam *X*. When the mold has been charged, the cam *C* has passed its greatest diameter, and immediately the spring *W* draws back from the bath the mold-block, and in doing so reverses the position of the several parts to that supposed to be the position of the parts herein described.

Having now described my invention and the operation of the same, I will proceed to set forth what I claim and desire to secure by Letters Patent—

1. The employment of the lever *P*, having an adjusting-slot, adjuster *R*, matrix-spring holder *O*, and their combination with the horizontal slide *D*, slideways *H H*<sup>2</sup>, and matrix-spring *N*, substantially in form and manner and for the purposes herein set forth.

2. The employment of the adjusting supporting-piece *L* and the combination therewith of the horizontal slide and levers *K*, *J*, and *M*, substantially in form and manner and for the purposes herein described.

3. The combination and arrangement of the horizontal slide, slideways, and levers operated thereby, for the purpose of obtaining a horizontal and oblique action of the machine.

JOHN I. STURGIS.

Witnesses:

T. A. C. FRENCH,  
CHARLES L. BARRITT.