No. 659,865. Patented Oct. 16, 1900.

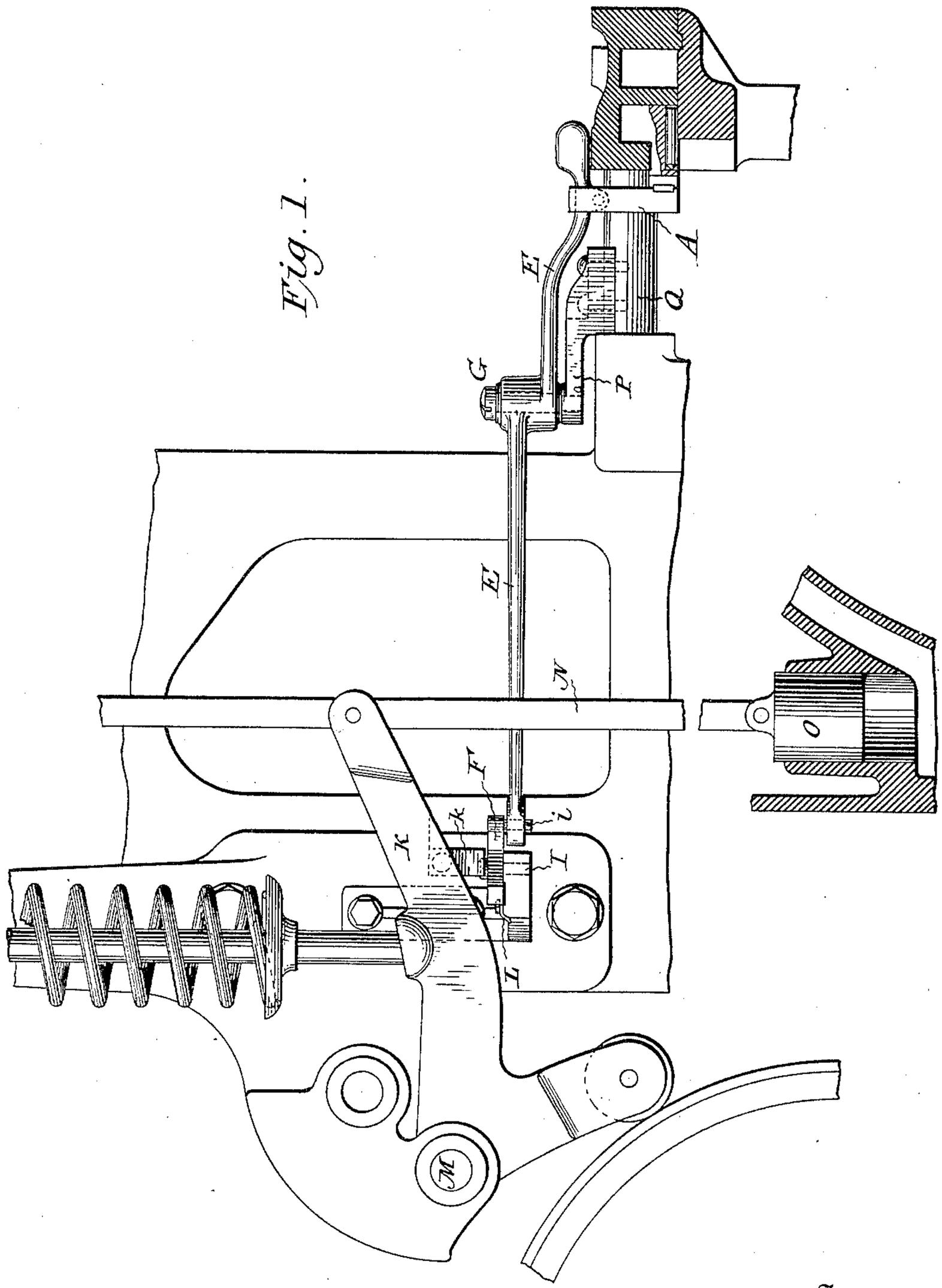
G. A. BATES.

LINOTYPE MACHINE.

(Application filed Feb. 17, 1900.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.



Witnesses
Sidney P. Hollingsworth
D. L. Elmore.

Inventor
G. A. Bates
By Phil. T. Dodge
Attorney

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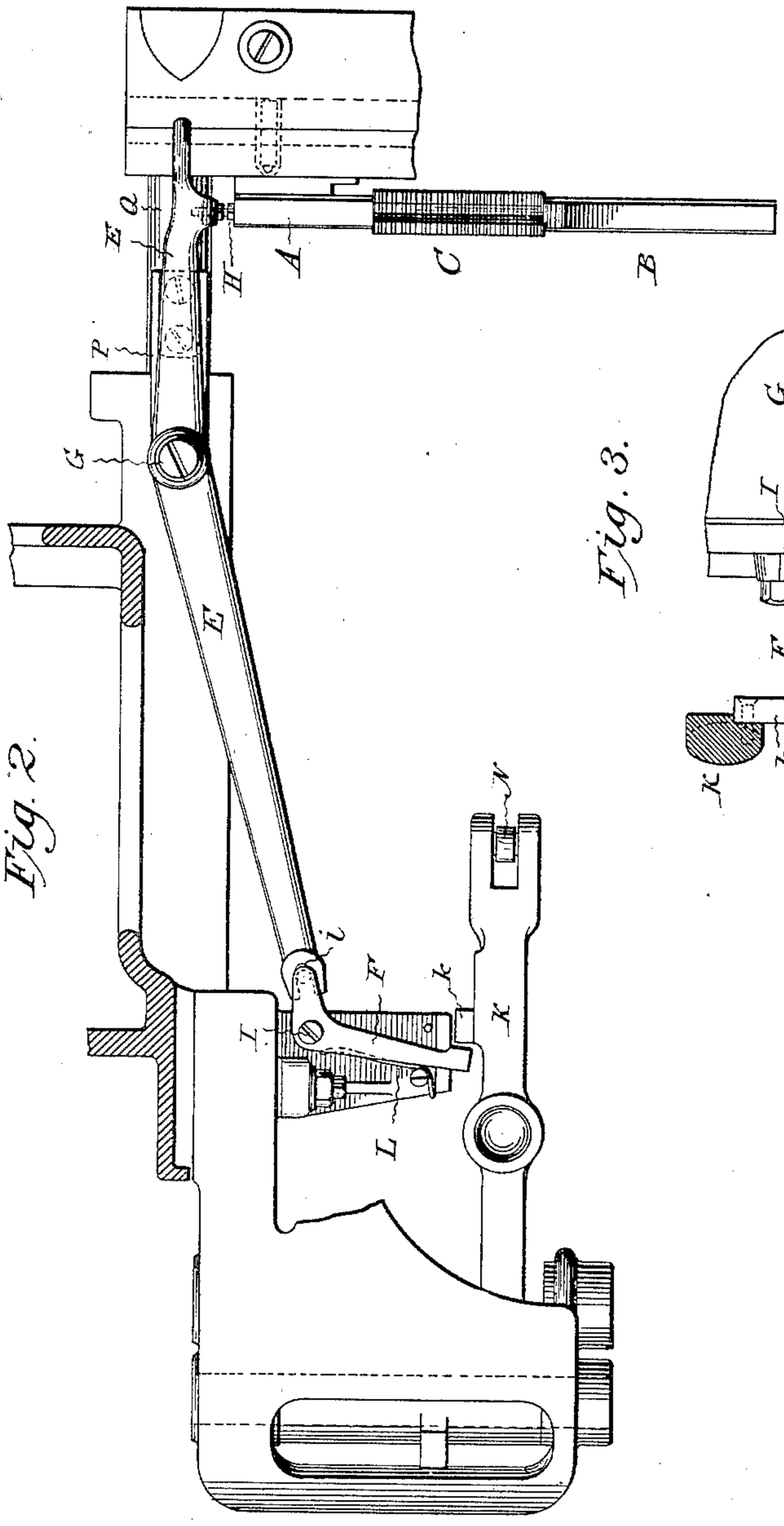

Fig. 2.

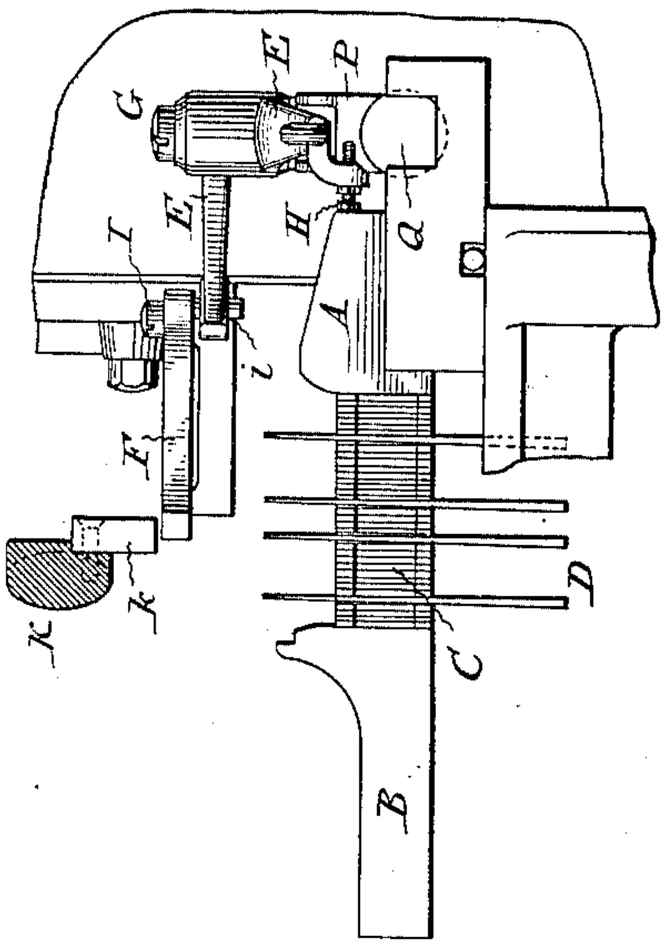

Fig. 3.

Witnesses
Sidney P. Hollingsworth
D. L. Elmore

Inventor
G. A. Bates
By Phil. T. Dodge Attorney

UNITED STATES PATENT OFFICE.

GEORGE A. BATES, OF NEW YORK, N. Y., ASSIGNOR TO THE MERGENTHALER LINOTYPE COMPANY, OF NEW YORK.

LINOTYPE-MACHINE.

SPECIFICATION forming part of Letters Patent No. 659,865, dated October 16, 1900.

Application filed February 17, 1900. Serial No. 5,582. (No model.)

To all whom it may concern:

Be it known that I, GEORGE A. BATES, of New York, (Brooklyn,) county of Kings, and State of New York, have invented a new and useful Improvement in Linotype-Machines, of which the following is a specification.

My invention has reference more particularly to Mergenthaler linotype-machines of the class represented in Letters Patent of the United States Nos. 436,532, 557,000, &c., although applicable with equal advantage to linotype-machines of other forms. In all machines of the class named the pump-plunger serves to deliver molten metal from the mouth of the melting-pot into a slotted mold and against a composed line of matrices temporarily locked against the face of the mold, the matrices serving to form type characters on the edge of the slug or linotype-cast in the mold. In order that the machine may operate properly, it is necessary that the line of matrices shall be assembled in close order and clamped tightly together between two confining-jaws, so that they may tightly close the front of the mold, and thus prevent the molten metal from escaping or flowing between the matrices.

The object of the present invention is to prevent the action of the metal-delivering pump unless the matrix-line is properly and tightly clamped together in front of the mold; and to this end it consists in a pump-stopping device actuated by one of the matrix-confining jaws or clamps, the arrangement being such that the pump is normally locked, and is unlocked only when a proper matrix-line acts to move the jaw, and thereby the locking mechanism, to release the pump.

In the accompanying drawings I have illustrated my device as applied to the Mergenthaler machine, the drawings being limited to my stop mechanism and such attendant parts as are necessary to an understanding of its operation.

Figure 1 is a side elevation of the pump, the matrix-confining jaw, the intermediate stop mechanism, and attendant parts, the pump being unlocked and ready for action. Fig. 2 is a top plan view of the parts represented in the preceding figure, in like position. Fig. 3 is a front elevation of the parts shown in the preceding figures, with the pump mechanism unlocked and the parts in position for the casting action.

Referring to the drawings, A and B represent the two horizontal movable jaws between which the composed line of matrices C and wedge-spacers D is confined in front of the mold, as usual. The extent of the separation of these jaws is limited by mechanism provided for the purpose in order to determine the length of the line, and after the matrices are in place between the jaws the wedge-spacers are pushed upward through the line in order to effect the justification or elongation of the line to the predetermined limit, the spacers serving at the same time to crowd the matrices tightly together in order to close the joints and prevent the flow of metal between them.

The right-hand jaw A is permitted a slight longitudinal movement and stands normally inward a slight distance from its final position, so that as the matrix-line is elongated by the action of the spacing or justifying wedges the jaw A is crowded backward to the right to its final position. This movement of the jaw A is utilized to affect the stop mechanism, which consists of the levers E and F, the latter forming the stop device proper. The lever E is mounted on a fixed vertical pivot G and acted upon at its forward end by the jaw A, which may bear either directly against the lever or against a screw H, seated therein for the purpose of permitting nice adjustment of the parts. The rear end of the lever E is connected at *i* by a sliding joint to the second lever F, which is connected by a vertical pivot I to the main frame and projected forward in position to swing under a stop-shoulder *k* on the pump-lever K, a spring L being attached to the frame and arranged to act on the lever F in order to throw the same under the shoulder of the pump-lever when the parts are in their normal position—that is to say, when the pump-lever K is elevated and the jaw A free from the pressure of the matrix-line.

The pump-lever K is mounted on a horizontal pivot M and arranged to swing vertically under the influence of the usual operating devices and is connected at its forward end to the pump-rod N, attached at its lower end to the pump-plunger O, by which the metal is driven from the pot into the mold.

The operation of the parts is as follows: Until the matrix-line is presented between the jaws and expanded to its full length the jaw A stands in its inward position and the end of stop-lever F stands below the shoulder on pump-lever K, so that the lever is prevented from falling and effecting the delivery of metal to the mold. When the matrix-line is presented between the jaws and elongated to the proper limit, the jaw A is forced slightly backward thereby, moving the lever E and causing it in turn to move the stop-lever F back from under the shoulder of the pump-lever, thus unlocking the latter, so that at the proper and customary time it will be permitted to fall and actuate the plunger, thereby delivering metal to the mold. If the matrix-line presented between the jaws is too short, either because of its containing an insufficient number of matrices or because of the spaces failing to properly elongate it, or if for any reason there is a failure of the machine to present matrices between the jaws, the pump will remain in its locked condition, and though the machine may continue its operation in every other respect the pump will be prevented from delivering metal.

It will be observed that the forward arms of the levers E and F are short as compared with their rear arms, the result being that a very short movement of the jaw A is sufficient to impart a long movement to the operative end of the stop-lever F. This permits the lever to be given a good solid bearing under the pump-lever.

The lever F is preferably mounted, as shown, on a projecting arm or bracket, by which it is given support close to its operative end, this construction permitting the parts to be made light and sensitive in action, while at the same time they are enabled to lock the pump-lever securely.

The essence of the invention resides in the employment of a lever actuated by the matrix-confining jaw as a means of operating a pump-locking device at the rear, and it will be manifest that the pump-locking device may be varied in form and arrangement without changing, essentially, its mode of action or departing from the limits of my invention.

The pivot G of the main lever is preferably sustained, as shown, on an arm or bracket P, screwed to the vise-holding stud Q, forming a part of the main frame, since this arrangement of parts permits the stop mechanism to be readily attached to existing machines, the bracket P and the two levers E and F constituting jointly the automatic stop mechanism.

Inasmuch as the jaw A, which actuates my stop mechanism, is carried by the usual vise-frame, hinged to swing forward and downward, as usual, when access is to be had to the inside of the machine, it follows that whenever the machine is thus opened and the jaw A carried away from the lever E the pump is left in a locked condition, so that the accidental ejection of metal at an improper time is prevented.

When long lines or lines consisting of wide type-faces are being composed, it is desirable to give the jaw F longer range of motion than under other circumstances, and the adjusting-screw H is advantageous in this connection, as well as in compensating for wear or spring of the parts.

I am aware that automatic pump-stopping devices have been variously constructed and used in linotype-machines. In one case the stop is operated by the lever which lifts the justifying-wedges in the event of a short line permitting this lever to rise beyond a predetermined point. In another form the stop-controlling devices are attached to and carried by the swinging pot and caused to operate by the matrix-confining jaw in the event of the matrix-line being too short to slide this jaw back out of the path of the operating devices.

The present construction differs from those heretofore known in that it is the first in which the movement of the matrix-confining jaw under the influence of the matrix-line serves directly and positively to operate the pump-controlling device. In other words, the present is the first mechanism in which the sliding jaw moved by the expansion of the matrix-line has served directly and irrespective of the movement of the pot and other parts to control the pump-stop.

What I claim as my invention is—

1. In a linotype-machine, the combination of a pump mechanism, a stop device therefor, a matrix-confining jaw arranged to move under the influence of the matrix-line, and an intermediate mechanism arranged to impart motion from the moving jaw to the stop device, whereby the stop device is actuated by the movement of the jaw, irrespective of the movement of the other parts of the machine.

2. In a linotype-machine, the combination of the yielding matrix-confining jaw A, lever E, mounted on a fixed support, and actuated by the moving-jaw stop-lever F, pump-lever K, and a spring to hold the parts normally in a locked position.

3. The pump-stop attachment for a linotype-machine, consisting of a lever E, adapted for coöperation with the matrix-confining jaw, a support for said lever, a second lever F connecting with the first and adapted to engage the pump-lever, and a support for said second lever, said parts being constructed and adapted for operation in con-

nection with each other and with a linotype-machine, substantially as described.

4. In a pump-stopping attachment for linotype-machines, the combination of the stop-lever F, actuating-lever E, jaw A, and intermediate adjusting device H.

In testimony whereof I hereunto set my hand, this 29th day of January, 1900, in the presence of two attesting witnesses.

GEORGE A. BATES.

Witnesses:
CHAS. E. GRANT,
F. W. DAVIS.