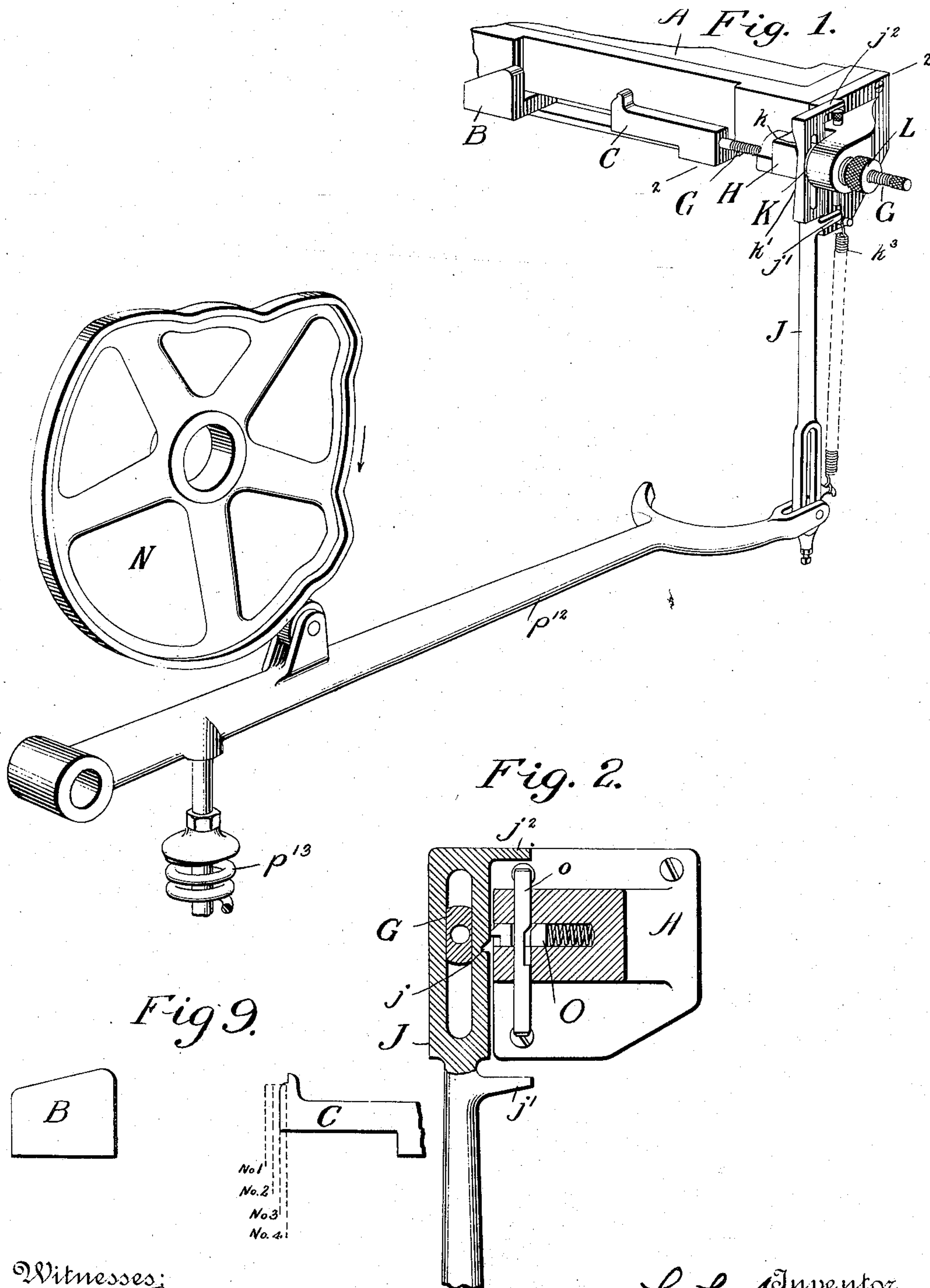


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 LINE CASTING MACHINE.  
 APPLICATION FILED MAY 5, 1908.

924,243.

Patented June 8, 1909.

2 SHEETS—SHEET 1.



Witnesses:  
*Jos. F. Collins.*  
*L. E. Morrison*

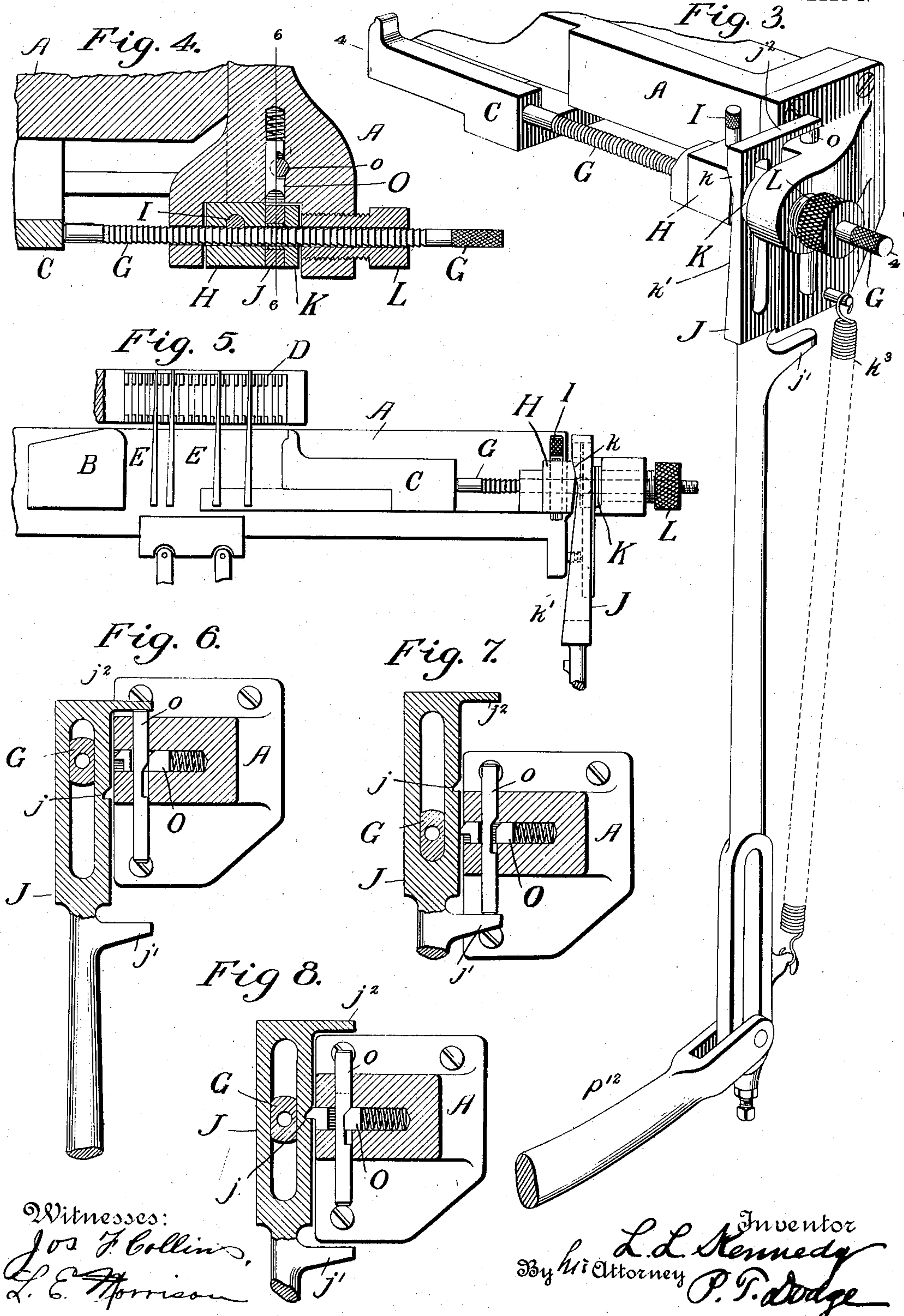
Inventor  
*L. L. Kennedy*  
 By his Attorney *P. T. Dodge*

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 Jos. F. Collins,  
 L. E. Harrison

Inventor  
 L. L. Kennedy  
 By his Attorney P. T. Dodge



# UNITED STATES PATENT OFFICE.

LUTHER L. KENNEDY, OF BROOKLYN, NEW YORK, ASSIGNOR TO MERGENTHALER LINOTYPE COMPANY, A CORPORATION OF NEW YORK.

## LINE-CASTING MACHINE.

No. 924,243.

Specification of Letters Patent.

Patented June 8, 1909.

Application filed May 5, 1908. Serial No. 430,926.

*To all whom it may concern:*

Be it known that I, LUTHER L. KENNEDY, of the borough of Brooklyn, county of Kings, and State of New York, have invented a new and useful Improvement in Line-Casting Machines, of which the following is a specification.

This invention relates to machines of the general character represented in Letters Patent of the United States No. 436,532, for producing type metal slugs or bars each having on one edge, properly justified, the characters to print a line. In these machines circulating matrices are selected in the required order and assembled temporarily in line. Each line is presented momentarily to the face of a slotted mold in which the slug is cast. While in this position the matrix line is elongated or justified to a predetermined length technically known as "the measure", between two confining jaws or abutments by the expansion of double wedge spacers seated in the line between the word groups of matrices.

The operating mechanism is sufficiently powerful to advance a large number of justifying wedges simultaneously through the line. In some classes of work it happens that only one or two wedges are employed, and when the line is subjected to the very powerful expansive influences they are liable to cause a yielding of the parts and the excessive elongation of the line, so that the type characters overhang the edge of the slug at one or both ends.

The object of the present invention is to overcome this evil by automatically supporting the line-confining devices very firmly and in the exact positions desired; and this although the operation of the machine requires the line to be repeatedly confined and released endwise.

The mechanism shown is a modification of, or an improvement upon, that shown in Letters Patent of the United States No. 817,646.

In the drawings,—Figure 1 is a perspective view of the line-clamping mechanism and attendant parts. Fig. 2 is a vertical cross-section on the line 2—2, Fig. 1. Fig. 3 is a perspective view of the principal parts shown in Fig. 1, with the movable line-confining jaw in its first, or innermost position; effected by the first downward movement of the actuating wedge. Fig. 4 is a horizontal section on the line 4—4, Fig. 3. Fig. 5 is a

rear elevation of the line-confining jaws and adjacent parts, the jaws in their first or innermost position—(also shown in Fig. 3) to resist the entrance of an overset line. Fig. 6 is a vertical section on the line 6—6, Fig. 4, with the parts in the same position as in Figs. 3 and 5. Fig. 7 is a vertical section on the line 6—6, with the movable jaw slightly retracted from its first position; due to the first upward movement of the actuating wedge. Fig. 8 is also a vertical section on the line 6—6, the parts being in such position that the distance between the jaws is exactly equal to the length of the required line; due to the second downward movement of the wedge. Fig. 9 (Sheet 1) is a diagram illustrating the successive positions of the movable jaw.

Referring to the drawings, A, represents a portion of the rigid main-frame commonly known as the "vise-frame"; B and C, the two matrix-confining jaws; D, the matrices in the composed line; E, the expanding wedge spacers or justifiers seated in the line between the matrices; G, an adjustable rod seated behind, and supporting, the horizontally sliding jaw, C; H, a block surrounding and sustaining the rod G and adjustably connected thereto by a removable toothed pin, I.

J, is a vertically movable slotted wedge seated on one side against the block H and on the opposite side against a bearing plate, K, which is in turn seated against and supported by a tubular screw, L, threaded horizontally into the main-frame and around the rod G, which is free to slide therethrough when released from the pin, I. The wedge J is urged constantly upward by a spring  $k^3$ , connected with the main-frame, and is drawn downward at the proper times, and to a greater or less extent, by a lever,  $p^{12}$ .

The lever,  $p^{12}$ , pivoted at its rear end to the main-frame, is urged constantly upward by a spring,  $p^{13}$ , and is forced downward at the proper times, and to the proper extent, by an overlying cam, N.

It will be observed that the upper end of the wedge is provided with two reversely inclined faces,  $k$  and  $k'$ , so that whether forced upward or drawn downward from the neutral position, it will advance the block H, its rod G, and the matrix-confining jaw C, toward the opposing jaw B, thus limiting or decreasing the space within which the matrix line is confined.



So far as described the foregoing parts are of essentially the same construction and have the same mode of operation as those described in Patent 817,646.

5 In carrying my invention into effect I modify the form of the cam N so that the movements of the wedge J and the jaw C differ both as to time and extent from those in the patent referred to; and I provide means for  
10 positively locking the jaw-supporting wedge J in a predetermined position before the casting action occurs, so that there can be no variation as to the distance between the jaws due to variation in the position of the wedge,  
15 as occasionally occurred in the original mechanism.

With the parts of the form shown, the action of the new mechanism is as follows: The jaws stand normally at a distance apart slightly  
20 greater than the length of the slug to be cast. The first downward movement of the wedge J advances the jaw C so that the distance between the two jaws is about twenty thousandths of an inch less than the length of the  
25 required slug. While the jaws are in this position the composed line is lowered toward the casting position between the jaws. If the line is overset, or of excessive length, it is unable to enter the contracted space between  
30 the jaws, and the action of the machine is arrested until correction is made in the line. If the line is within the proper limits of length—so that it can be justified to the final length—it will descend freely between the  
35 jaws. This entrance is accompanied or followed by the first upward movement of the wedge, which permits the jaw C to recede until the distance between it and the jaw B is about ten thousandths of an inch less than  
40 the length of the line required. While the jaws are in this position the wedge justifiers are forced upward through the line, as usual, to effect the first or preliminary justification. After this action the second downward move-  
45 ment of the wedge occurs, slightly relieving the line endwise, so that the matrices may be alined edgewise, or facewise, against the mold, as usual. After this action the second upward movement of the wedge occurs, and  
50 the jaw C is advanced until the distance between it and the jaw B is exactly equal to the length of the line demanded. While the parts are in this position, and after the second, or final elevation of the justifying  
55 wedges, casting occurs.

To recapitulate: The distance between the jaws is first reduced to about twenty thousandths of an inch less than the required length of line; the distance is then increased  
60 to ten thousandths of an inch less than the required length; preliminary justification then occurs; the distance between the jaws is then increased until it corresponds with the exact length of the line; final justification  
65 and casting then occur; and finally the jaws

are separated to permit the free removal of the line.

In order to secure precision in the length of the line it is necessary that the wedge always stand in the same position during the casting  
70 action. To insure its stoppage at this point I propose to provide an automatic locking device of any suitable form. In the form shown it consists of a horizontal spring-actuated bolt, O, seated in the main-frame and  
75 having its forward end adapted to enter a notch, j, in the wedge, so as to arrest the wedge at a definite point in its upward movement.

In order to throw the latch O into and out  
80 of action at the proper times I provide a vertically sliding pin, o, mounted in the frame and having an inclined face seated against a shoulder on the latch, so that when the pin is moved upward, as shown in Fig. 8, it will  
85 permit the latch to advance and arrest the wedge; and when it is forced downward, as shown in Figs. 2 and 6, it will force the latch backward and hold it out of engagement.

The movement of the pin o is effected by  
90 two lips j' and j<sup>2</sup>, on the side of the wedge.

The latch is held out of action until the second upward movement of the wedge sets the jaw C in the casting position. When  
this point is reached the dog springs forward under the influence of a spring, and enters the notch in the wedge.

It will be understood by the skilled mechanic that the essence of the invention lies in combining with the movable line confining  
100 jaw automatic means for placing it in the successive positions named, and in combining with the jaw-actuating mechanism means for locking this mechanism positively in a definite position when the jaw is at the cast-  
105 ing point.

It will be manifest to the skilled mechanic that the parts may be widely varied in form and arrangement without essentially changing their mode of action.

I believe the present to be the first mechanism in which the movable line-confining  
110 jaw is set first in an advanced position to arrest overset lines, secondly in a position to confine the line in less than its final length, 115 thereafter in the casting position, and finally in a retracted position, to release the line.

It will be understood that my invention is applicable to all machines of the general  
120 class described, that is to say, all machines in which the composed line of matrices is confined between jaws or abutments combined with mechanism for changing the distance between them.

The word "line", as used in the present  
125 specification and claims, in connection with the matrices, includes a line or series of matrices of any form when composed or assembled for coöperation with the mold in which the slug or printing bar is to be cast.  
130



Having thus described my invention, I claim and desire to secure by Letters Patent:

1. In a machine of the class described, jaws to confine the composed line of matrices and wedge justifiers, means for presenting the line between the jaws, and means for operating the justifiers, in combination with automatic means for setting the jaws in the following positions: first, at a distance substantially less than the length of the required line; second, at a greater distance, but less than the length of the required line; third, at a distance equal to the length of the required line; fourth, at a distance greater than the length of the required line, substantially as described.

2. In a machine of the class described, line-confining jaws, automatic means for setting one jaw at four successive distances from the opposing jaw, substantially as described.

3. In a machine of the class described, two line-confining jaws, means for presenting the composed line of matrices and wedge spacers between the jaws, and automatic means for adjusting the distance between the jaws as follows: first, at a distance substantially less than the predetermined measure, to prevent the entrance of over-set lines; second, at a greater distance, but less than the measure for the first justification; third, at a distance corresponding to the measure for the justifying and casting actions; fourth, at a greater distance to permit the removal of the justified line subsequent to the casting action.

4. In a machine of the class described, a line-confining jaw movable both inward and outward past the casting position, movable means for supporting the jaw in the casting position, and automatic means for positively determining the position of the supporting device at such time.

5. In a machine of the class described, a movable line-supporting jaw, a spring-actuated device for advancing the jaw to the casting position, and automatic means for positively arresting such jaw at the predetermined point; whereby the stoppage of the jaw at the casting point is insured.

6. In a machine of the class described, the

combination of a movable line-supporting jaw C, a movable wedge J, intermediate parts through which the wedge acts to advance the jaw, and means for positively arresting the movement of the wedge at a fixed point.

7. In combination, the sliding jaw C, the movable wedge acting to advance the jaw toward the line, and a stop to positively arrest the wedge when the jaw is in the casting position.

8. In a machine of the class described, a movable jaw-actuating wedge J, means for moving the edge to and fro, and means for automatically arresting the wedge at a fixed point within its limit of movement to maintain the jaw in the casting position.

9. The wedge J having oppositely inclined faces, and the line-confining jaw C actuated thereby, in combination with the spring tending to move the wedge in one direction, the lever to move the wedge in the reverse direction, and the lever-actuating cam formed to set the wedge in four positions as described.

10. In a machine of the class described, a jaw-actuating wedge J, in combination with a spring-actuated latch to arrest the same in a definite position, and automatic means for throwing the latch into and out of action.

11. In combination with the jaw-actuating wedge J, a latch to arrest the wedge in a definite position, and latch-controlling devices actuated by the wedge; whereby the wedge is permitted to move to and fro and thereafter locked in a definite intermediate position.

12. In combination, the reciprocating wedge J having shoulders  $j'$  and  $j''$ , in combination with the spring-actuated latch O and the latch-controlling slide  $o$  actuated by the shoulders of the slide.

In testimony whereof I hereunto set my hand this twenty seventh day of April, 1908, in the presence of two attesting witnesses.

LUTHER L. KENNEDY.

Witnesses:

JOHN R. ROGERS,  
JESSIE L. SMITH.