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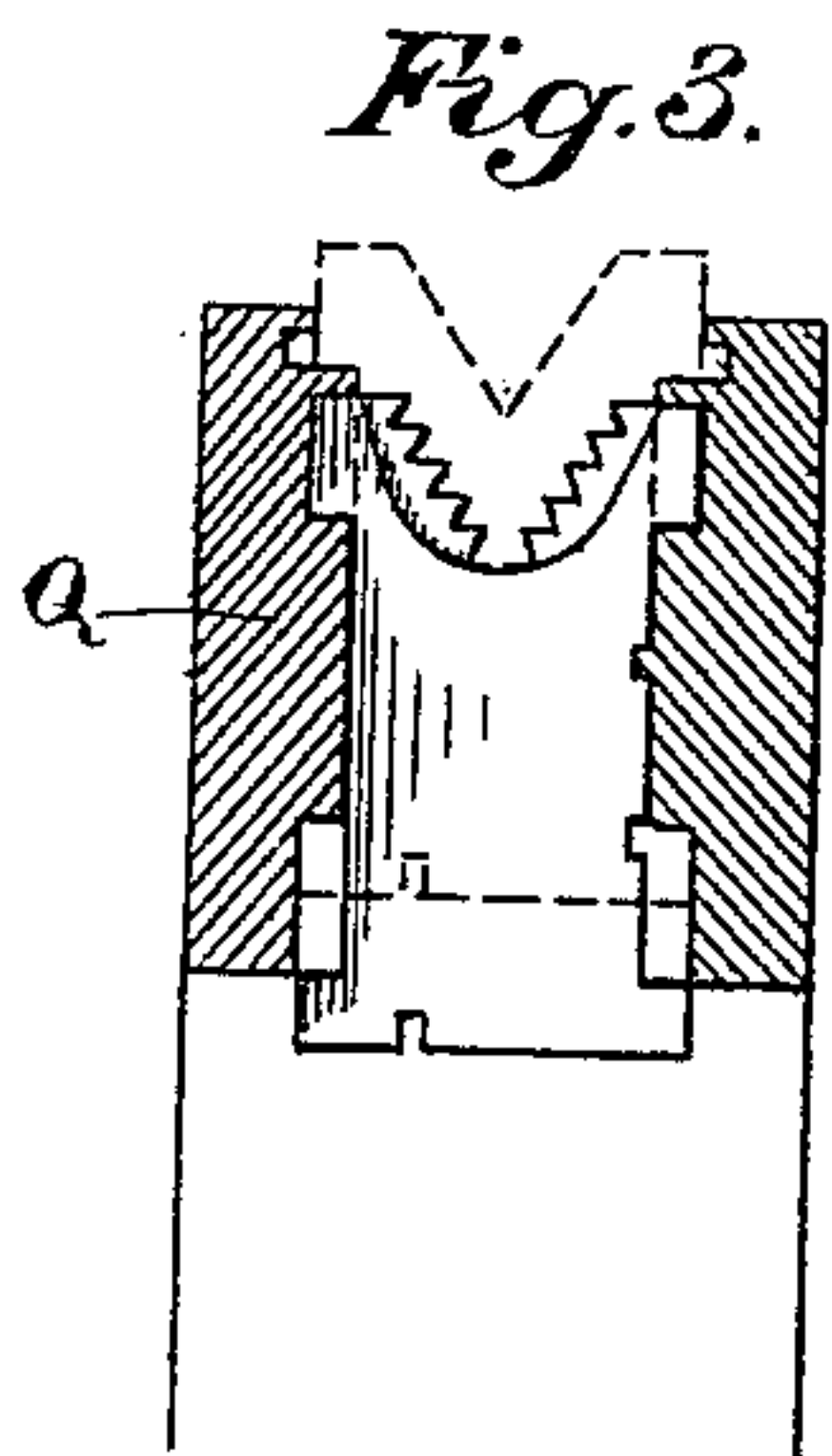
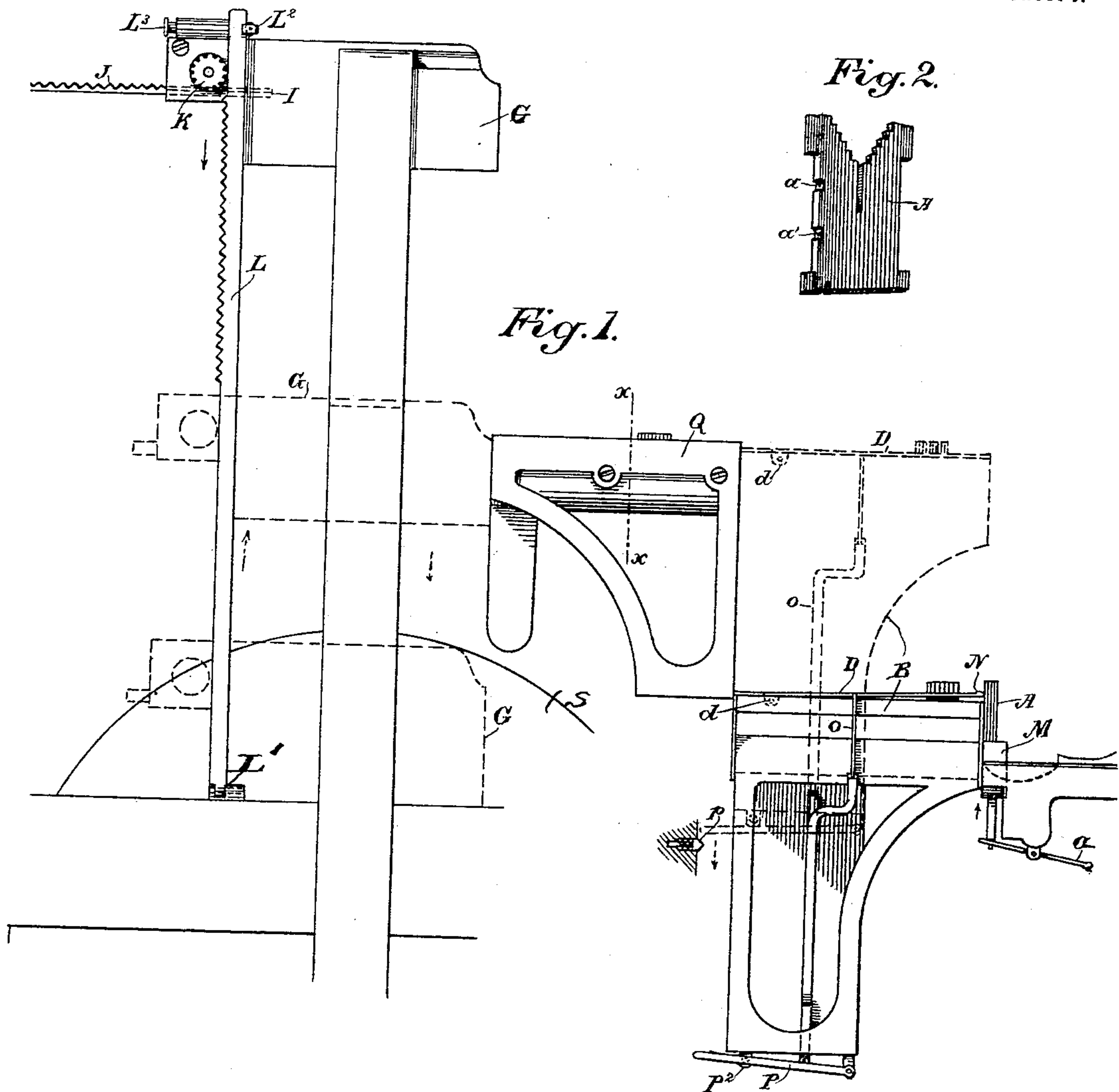
Patented Jan. 24, 1899.

J. D. HARVEY.
LINOTYPE OR LINE CASTING MACHINE.

(Application filed Jan. 11, 1898.)

(No Model.)

2 Sheets—Sheet 1.



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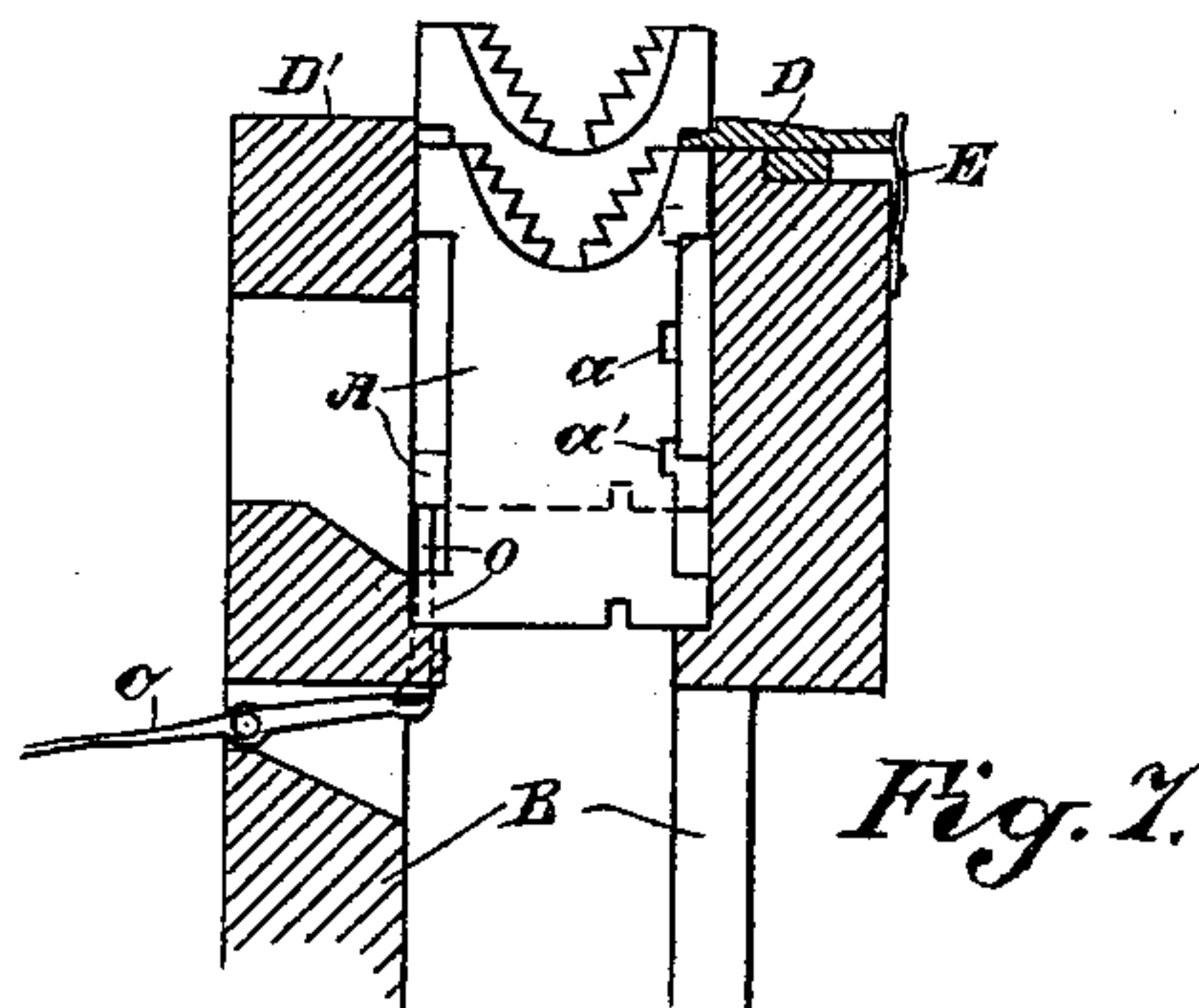
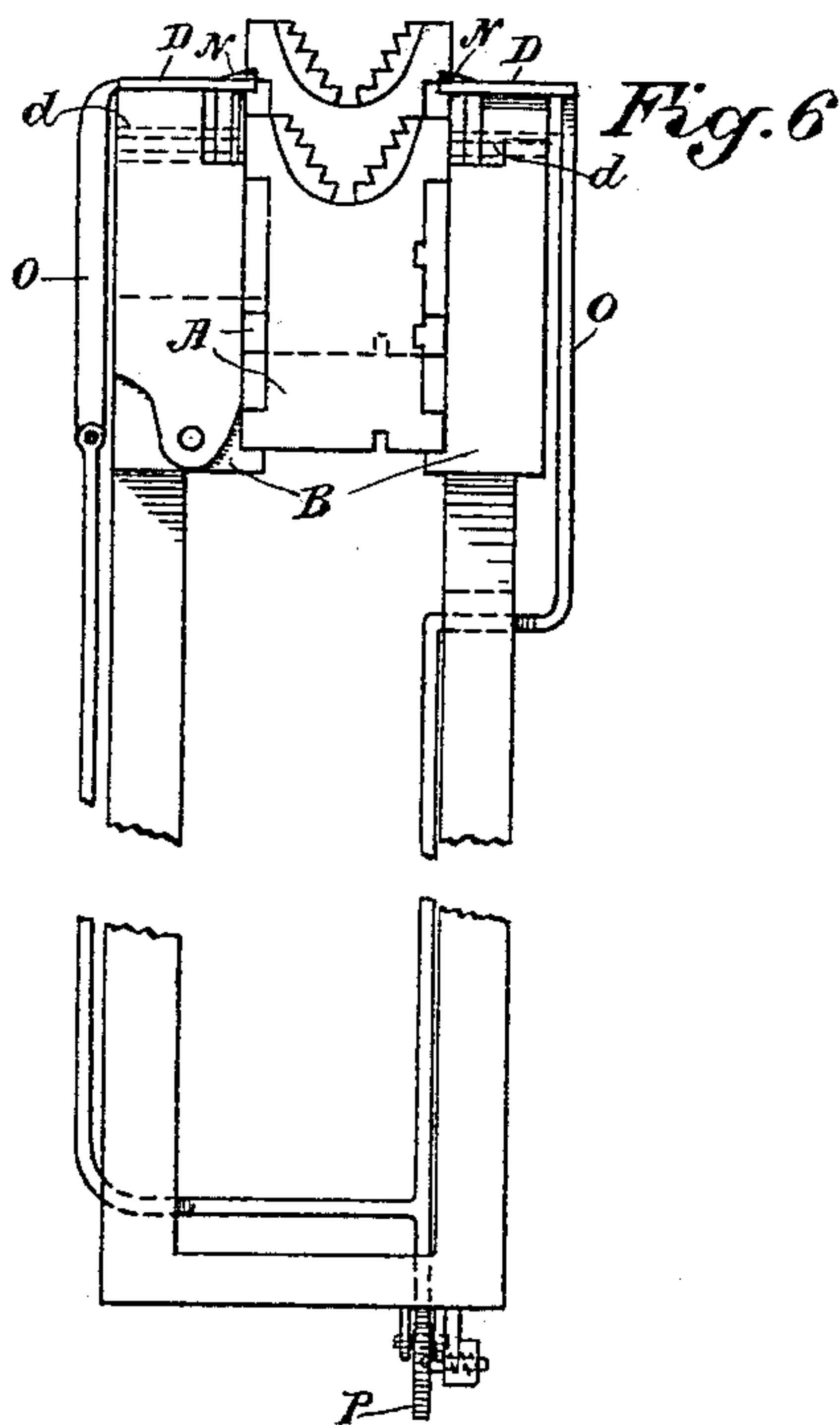
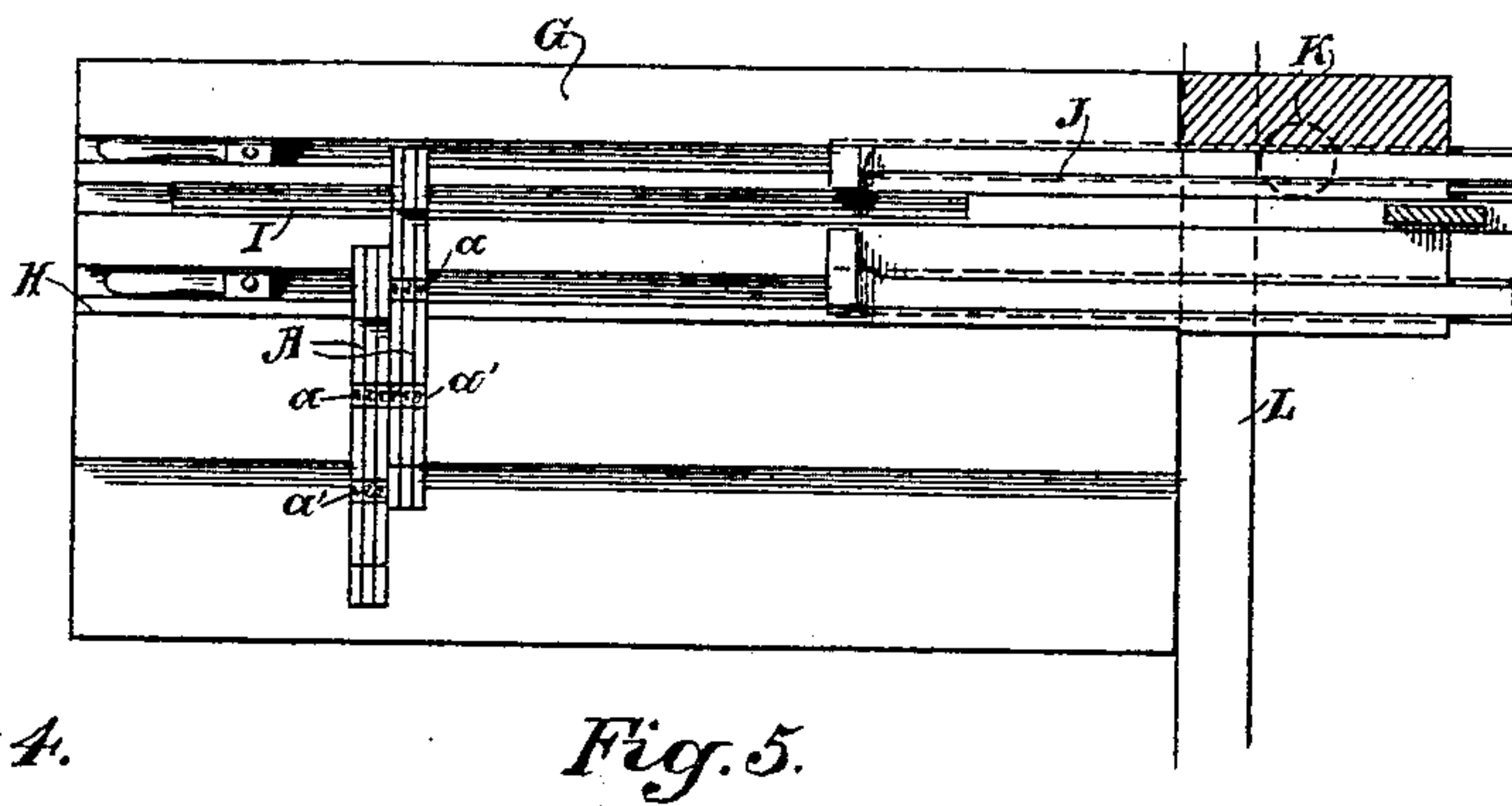
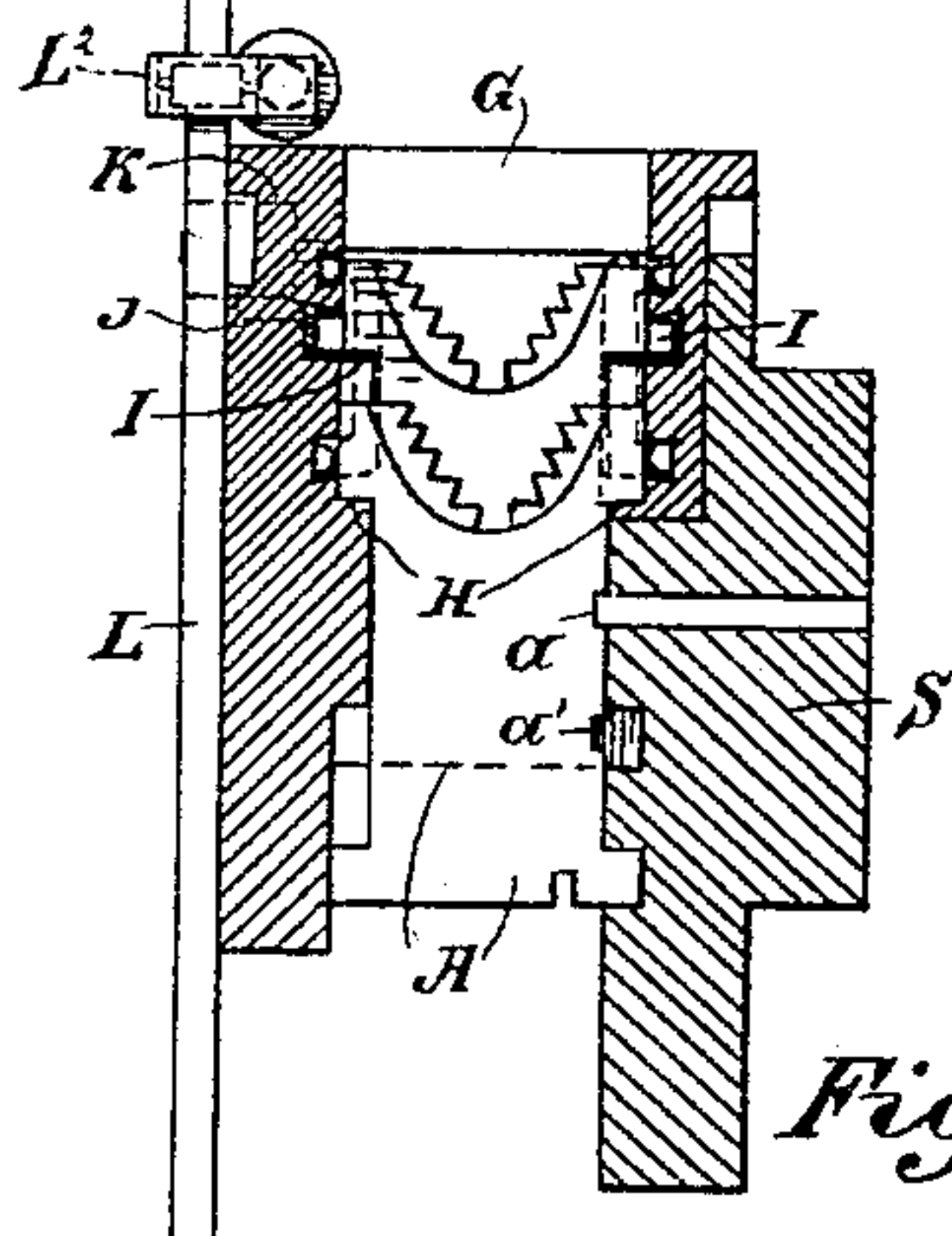
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2 Sheets—Sheet 2.

(No Model.)



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UNITED STATES PATENT OFFICE.

JOHN D. HARVEY, OF SAN FRANCISCO, CALIFORNIA.

LINOTYPE OR LINE-CASTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 618,348, dated January 24, 1899.

Application filed January 11, 1898. Serial No. 666,346. (No model.)

To all whom it may concern:

Be it known that I, JOHN D. HARVEY, a citizen of the United States, residing in the city and county of San Francisco, State of California, have invented an Improvement in Linotype or Line-Casting Machines; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to certain improvements in that class of machines known as the "linotype" or "line-casting," in which lines of matrices are assembled and the metal afterward cast to form a complete line of type.

My invention consists of the parts and the constructions and combinations of parts, which I shall hereinafter describe and claim.

Figure 1 is a view showing the different parts of a linotype-machine on which improvements are made to carry out my invention. Fig. 2 is a view of matrix with the additional line on its face. Fig. 3 is a section through the intermediate guideway. Fig. 4 is a section through the vise-head. Fig. 5 shows the inside of one side of the vise-head. Fig. 6 is an end view of the assembler, showing one manner of raising the matrices. Fig. 7 is a section through the assembler, showing another way of raising the matrices.

The object of my invention is to enable the compositor especially to introduce Italics or other desired characters into the line of type without multiplying the number of matrices which are now in use. In order to do this, the matrices A are formed with two lines of letters or characters upon the edges, as shown at *a a'*. One line may be the ordinary Roman letters, while the other line may be in the form of Italic letters or other suitable or desired characters. The matrices are stored in the usual form of magazine and are delivered therefrom into the assembler or stick B in the manner usual to this class of machines. After the matrix-line has thus been composed and before it is transferred to the front of the mold such letters or words as it is desired to have shown in Italics (which is the additional character I shall describe in this specification) are raised by the action of any suitable mechanism arranged for the purpose. I have shown two devices for effecting this. In Fig. 7 the matrices are raised, after they have passed into the assembler,

by levers C, which are fulcrumed within the assembler B, so that by pressing upon any key the matrix A which is in line with the inner end will be raised above the line of the other keys. In Figs. 1 and 6 a device is shown by which the matrices are raised before they enter the assembler.

In the first-described device the top of the assembler has upon it a horizontal bar D, corresponding with the matrix, and this bar is normally pressed inward above the upper end of the matrix by a spring E. As the head of the matrix is wider than the body, as here shown, it will be seen that when the matrix is forced upward it will by reason of the inclined or beveled end of the bar D push the latter back against the tension of the spring E until it allows the head of the matrix to pass the bar D, and when it has thus passed the bar the spring E will force the bar D back into place again, so that it falls into the space produced by the narrowing of the body A of the matrix below the head. Upon the opposite side of the channel of the assembler in which the matrices are suspended is a bar D', of equal height with the bar D, and the shoulders on one side below the head of the matrix will be supported upon the bar D and will be pressed by the spring E against D', and the matrix will thus be supported above the general surface of the line. If one word or a series of words are thus to be utilized, it is only necessary to depress the keys C corresponding with the letters to be utilized, and the matrices will be raised so as to bring the Italic letter into line with the main line of letters in the matrices.

In the second method I have shown a vertically-movable carrier M, which is raised or depressed by a lever C, similar to those previously described. The carrier M normally remains depressed, so that the matrices pass over it to the stick B, in which they are assembled in the usual manner; but when the Italic or other character is to be used the carrier M is raised with those matrices resting upon it, so that they are also raised into line with the rails or bars D, which extend along the top of the assembler B, and the matrices are transferred to these rails at the required higher level in the same manner that the other matrices are transferred. Stops N prevent

these raised matrices from being accidentally retracted and insure their moving on properly into the assembler. The rails D are hinged at the opposite end, as shown at *d*, and have 5 connected with them arms O, by which the receiving ends can be raised, so that no matrices will be accidentally delivered upon them. These arms are actuated by a lever P, which may be moved by hand and which 10 is held in its raised position by a latch *p*², or it may be arranged to contact with a spring-actuated lug *p*, which will disengage the lever P from its latch when it rises and thus depress the receiving ends of the rails to a position to deliver the raised matrices upon the 15 guideway Q. When the assembler moves down, the lever again strikes the lug *p* and is thus raised, and the bar D is lifted with it. The lever P is at the same time engaged with 20 its retaining-latch *p*². This being done the matrices are then transferred through the intermediate guideway Q (which is formed as shown in Fig. 3 to receive the matrices) and thence into the vise-head or carrier G, which 25 transfers the line of matrices to the front of the mold S and the slot extending through the mold-wheel, and the metal is forced into the matrices, forming the line of type in the usual manner. As soon as this is done the 30 mold is retracted and the head or carrier G, which carries the matrices and holds them while the casting is being done, is raised in the usual manner. Within this head G are the rails or carriers H, upon which the 35 matrices are ordinarily suspended, and above these are the slidable rails I, upon which the raised matrices are suspended. These rails I have rack-teeth J connected with them, and a journaled pinion K engages these teeth. 40 This pinion projects from the side of the vise-head or carrier G, so that it engages a vertical toothed rack-bar L, so fixed that when the carrier G rises the rack L will turn the pinion and through it will slide the rails I, so 45 as to allow the raised matrices to drop into line with those matrices which have not been raised, and the whole line is thus ready for distribution in the usual manner. When returned to this position, they are in condition 50 to be returned to the distributor at the top of the machine, whence they are returned to their places in the matrix-magazine in the manner usual with this class of machines.

The bar L is only toothed on the upper portion of its length because the vise-head G, upon which the pinion K is mounted, must first move down to carry the matrices to the mold without disturbing their relative positions, and as there are no teeth on the lower 60 part of the bar L it will not act upon the pinion.

When the vise-head is raised from the mold, it goes up beyond the position where it received the matrices, and as it passes above 65 that point the pinion engages the toothed portion of the bar L, and is thus actuated to move the rails I to drop the previously-raised

matrices, as before described. When the vise-head again returns to the position to receive a new line of matrices, the pinion and 70 toothed bar again act to return the rails I to their normal position.

The bar L is pivoted, as shown, at L', and its upper end is maintained in position to engage the pinion K by a spring-pressed catch 75 L². When it is desired to throw these parts out of action, it is only necessary to disengage the catch and swing the bar L out of the line of travel of the pinion. This may be done when the machine is to be used in the ordinary 80 manner.

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

1. In a line-casting machine, the combination with matrices having a plurality of characters arranged one above the other, of a vertically-movable carrier for said matrices, a fulcrumed lever connected with and operating the carrier, whereby any number of said 90 matrices may be raised to present different characters in the common line with the remaining matrices, and a means for suspending the raised matrices including hinged guide rails or bars extending along the top of 95 the assembler, and having stops at their receiving ends and means whereby the said receiving ends may be raised and lowered.

2. In a line-casting machine, matrices having a plurality of characters formed one above 100 the other, a mechanism whereby any number of said matrices may be raised, means for suspending said matrices with the different characters in line with the ordinary ones of the other matrices, so that a line of type may be 105 cast with said characters within the line, and means including a vise-head or carrier having slidable rails upon which the raised matrices are suspended and a device carried by the vise-head or carrier and adapted to move 110 said rails whereby the matrices are returned to their normal position for distribution after casting.

3. In a line-casting machine, matrices having a plurality of characters formed one above 115 the other, supplemental rails superposed above the main supporters of the matrices within the assembling-elevator, means whereby any number of the matrices may be elevated and suspended from said rails so that different 120 characters in the secondary line are brought into line with those normally introduced into the assembler, a latch and stop whereby the elevated matrices are prevented from receding after having been thus deposited, and a 125 means including a vise-head or carrier having movable rails upon which the raised matrices are deposited whereby the said matrices are allowed to drop into the line with those which have not been raised, in readiness for 130 subsequent distribution.

4. In a line-casting machine, an assembler having supplemental rails superposed above the ordinary supports for the matrices, mat-

rices having a plurality of characters formed one above the other, an elevator by which any of said matrices may be raised and deposited upon the guide-rails, so as to bring the secondary characters into line with those normally collected in the assembler, a vise-head or carrier into which the matrices are removed for distribution after the line of type has been cast therefrom, said carrier having the supplemental slidable rails upon which the raised matrices are deposited, and means for moving said rails so as to allow the matrices to drop into the line with those which have not been raised, in readiness for subsequent distribution.

5. In a line-casting machine, matrices having a plurality of characters formed thereon, means for raising any of said matrices to bring

the secondary characters into line with those ordinarily used and retain them in position while the line of type is being cast therefrom, an intermediate guideway and a vise-head into which the matrices are delivered prior to their distribution, said vise-head having secondary rails upon which the raised matrices are received, mechanism consisting of toothed racks and a pinion whereby said rails are moved so as to disengage the raised matrices and allow them to drop into the common line preparatory to distribution.

In witness whereof I have hereunto set my hand.

JOHN D. HARVEY.

Witnesses:

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