

No. 832,396.

PATENTED OCT. 2, 1906.

C. T. LIBBY.
LINOTYPE MACHINE.
APPLICATION FILED DEC. 8, 1900.

2 SHEETS—SHEET 1.

Fig. 1.

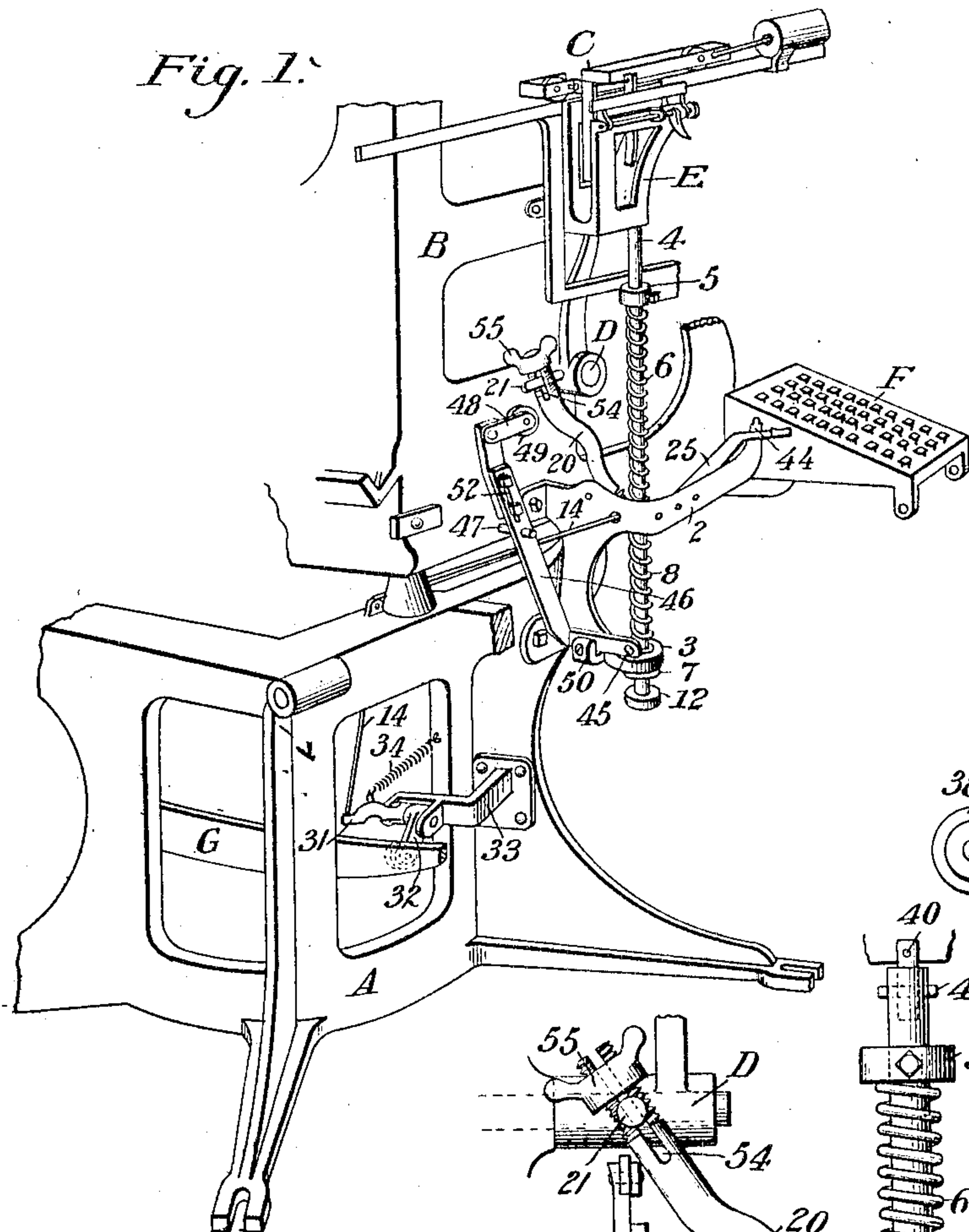


Fig. 3.

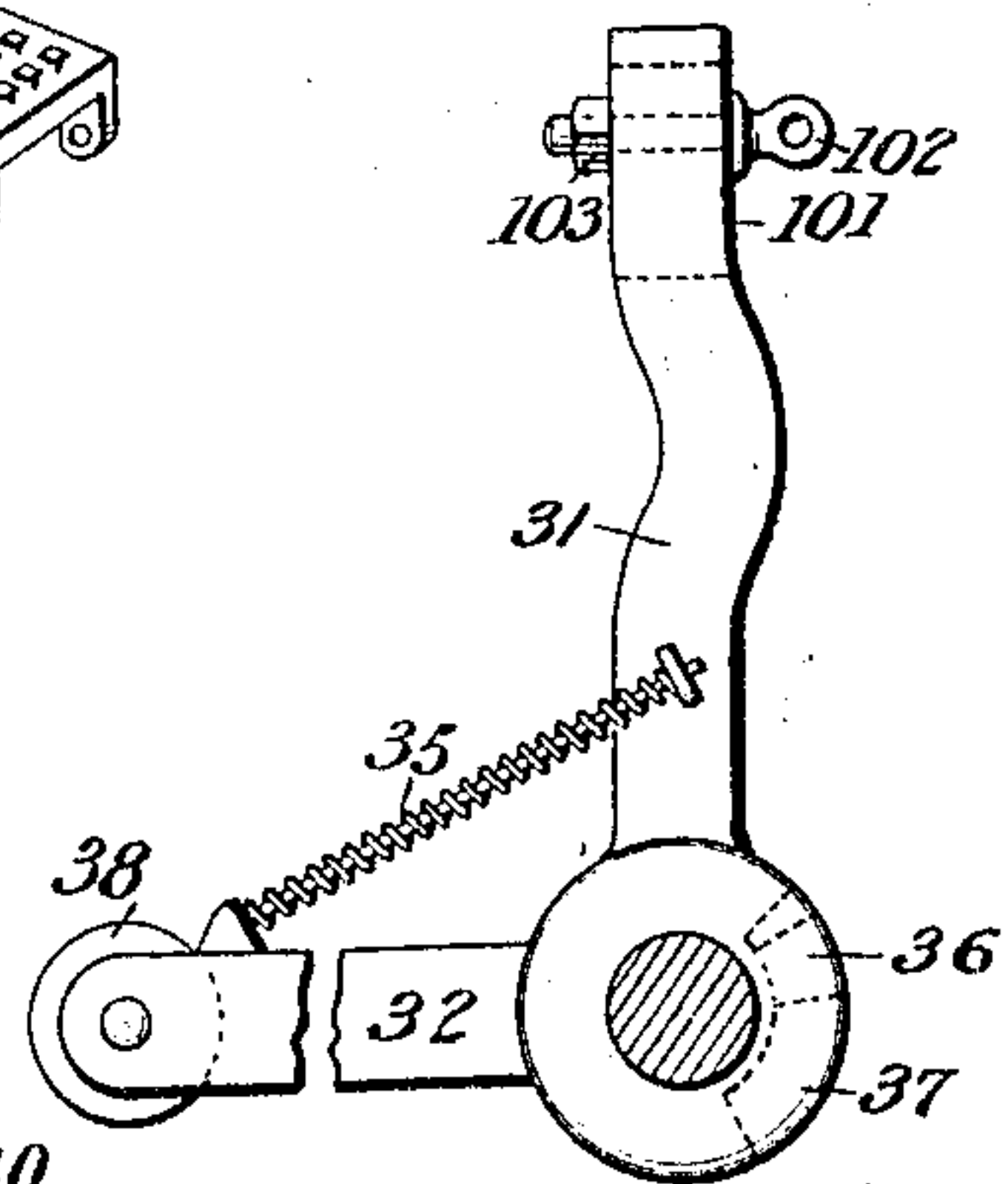


Fig. 4.

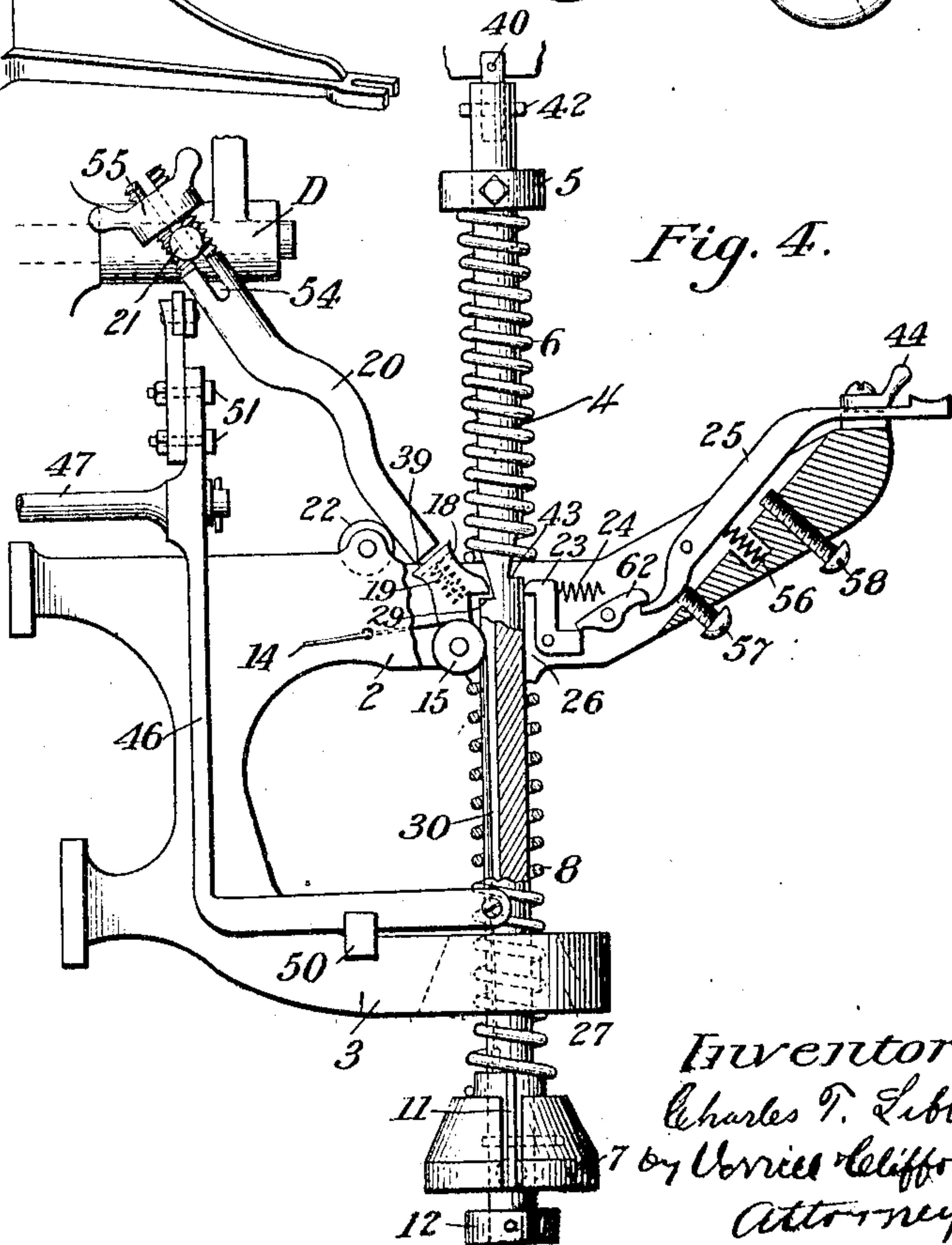
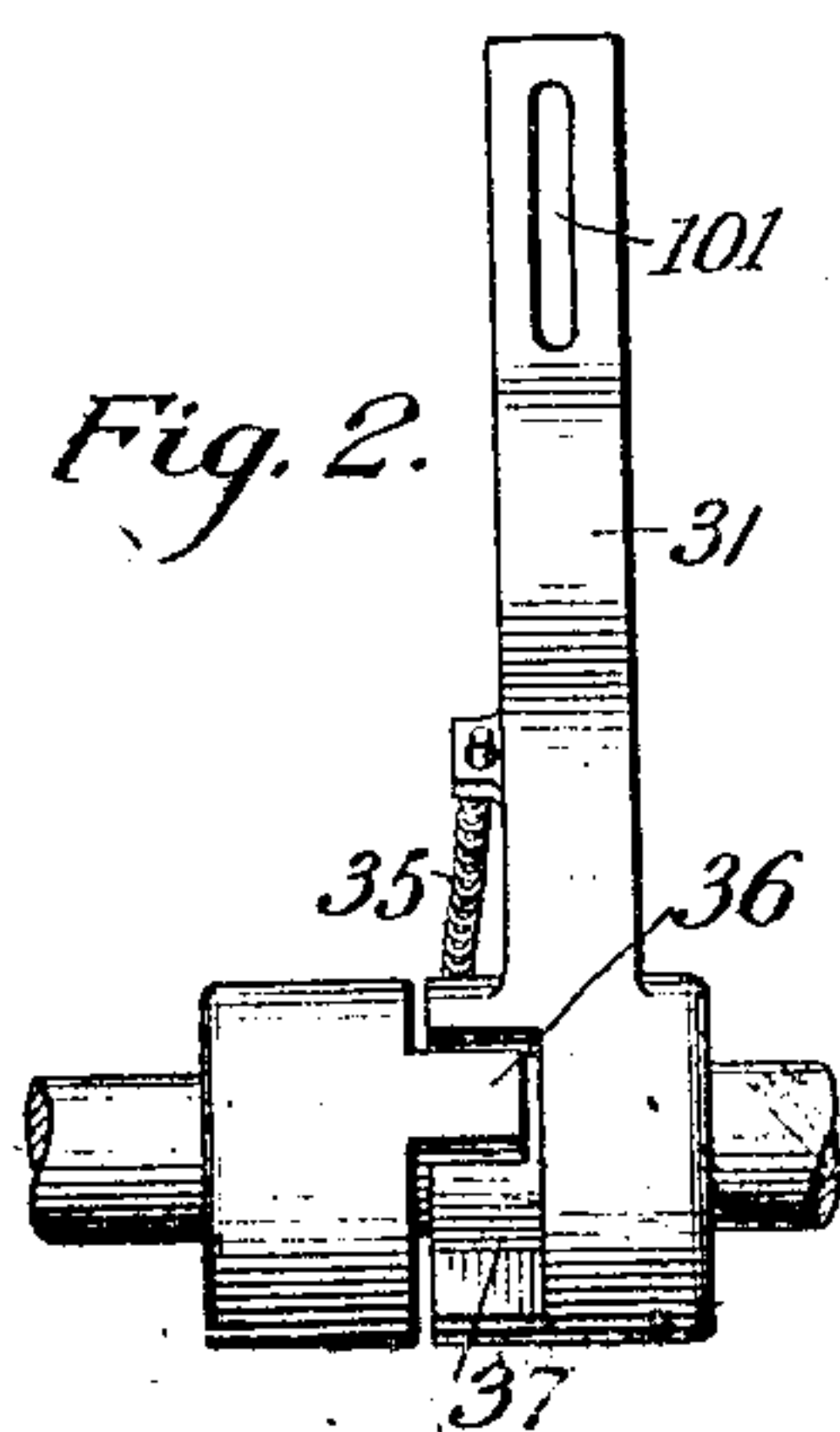


Fig. 2.



Witnesses

Marion Richards,
Daniel H. Brooker

Inventor:
Charles T. Libby,
by Verrie Cliford,
Attorneys.

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2 SHEETS—SHEET 2.

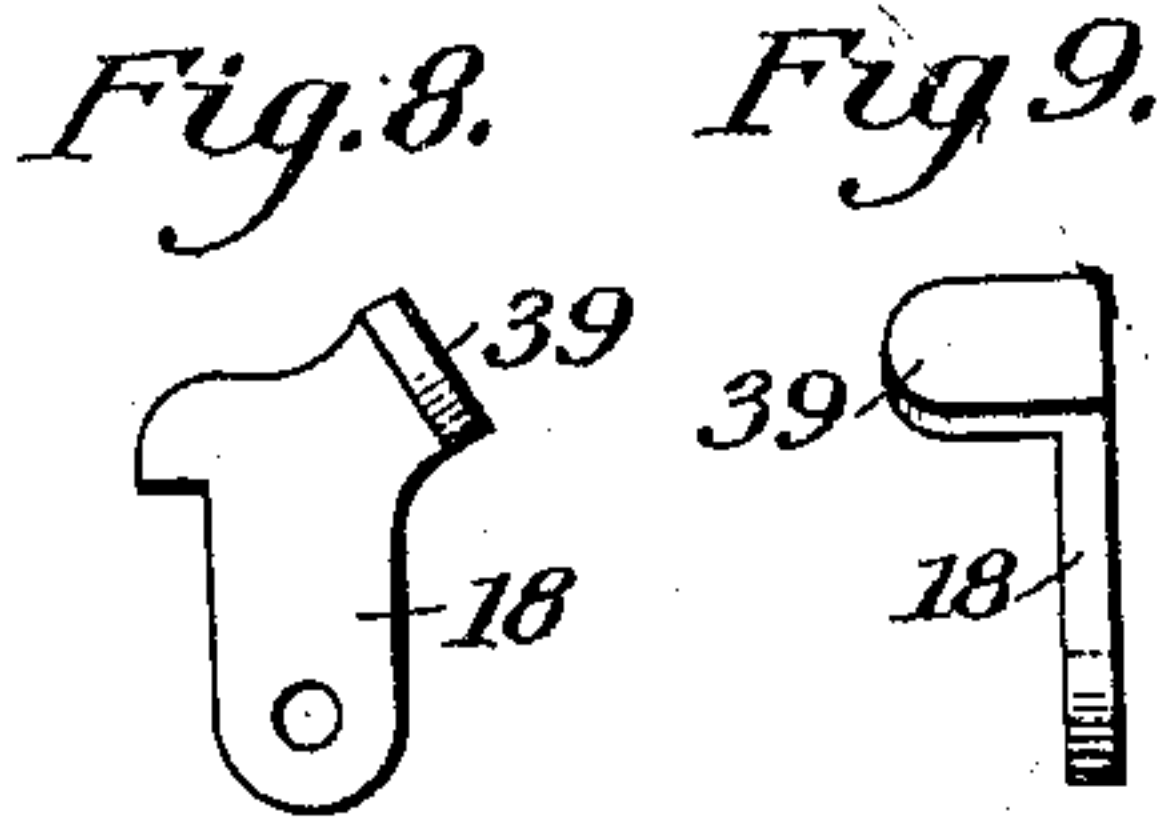
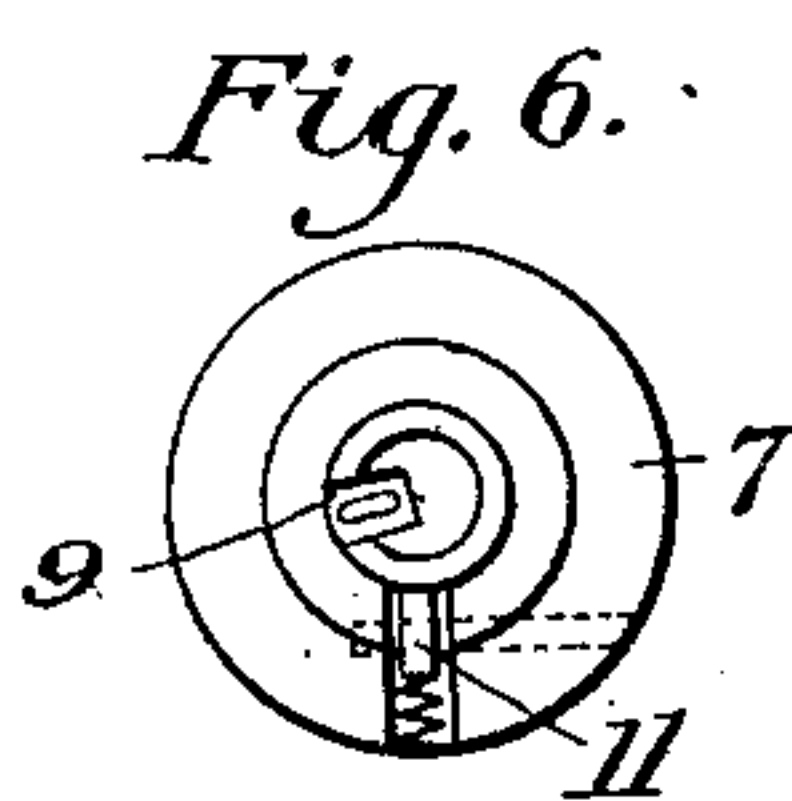
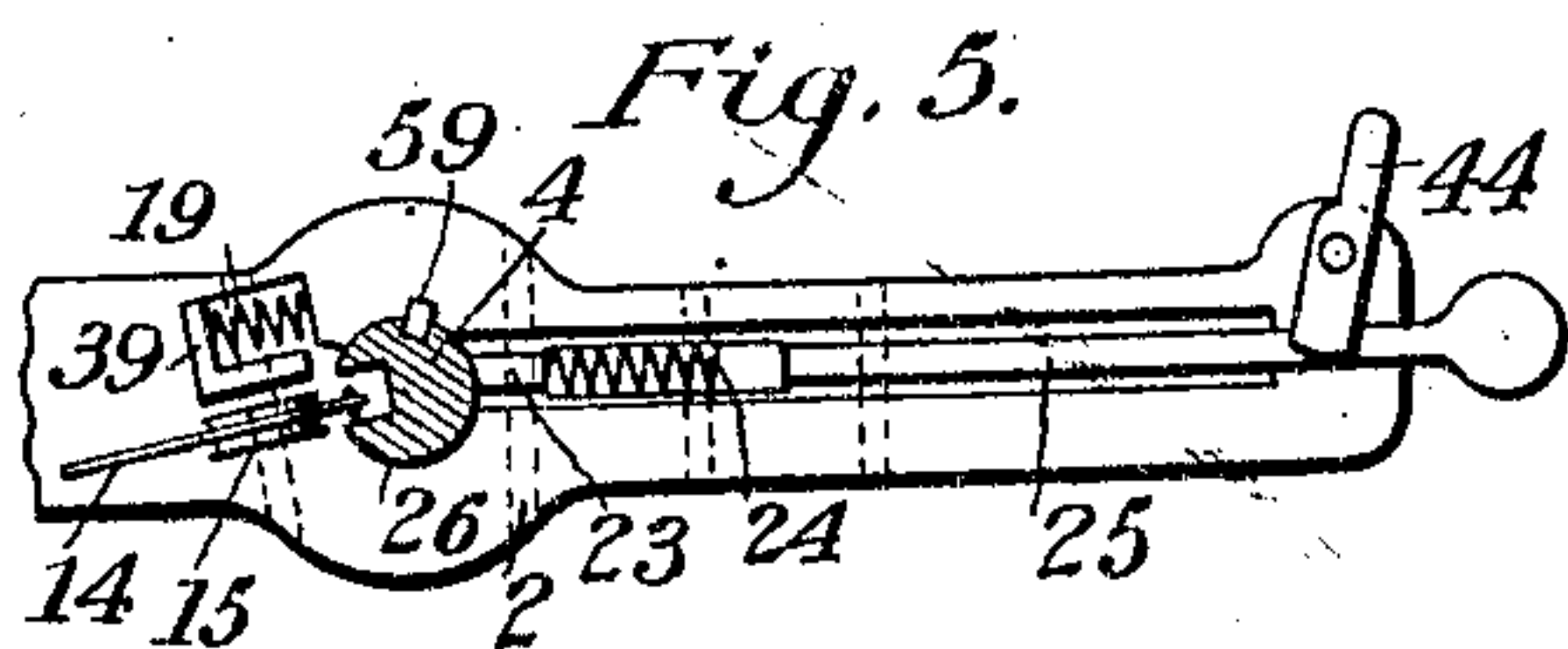


Fig. 7.

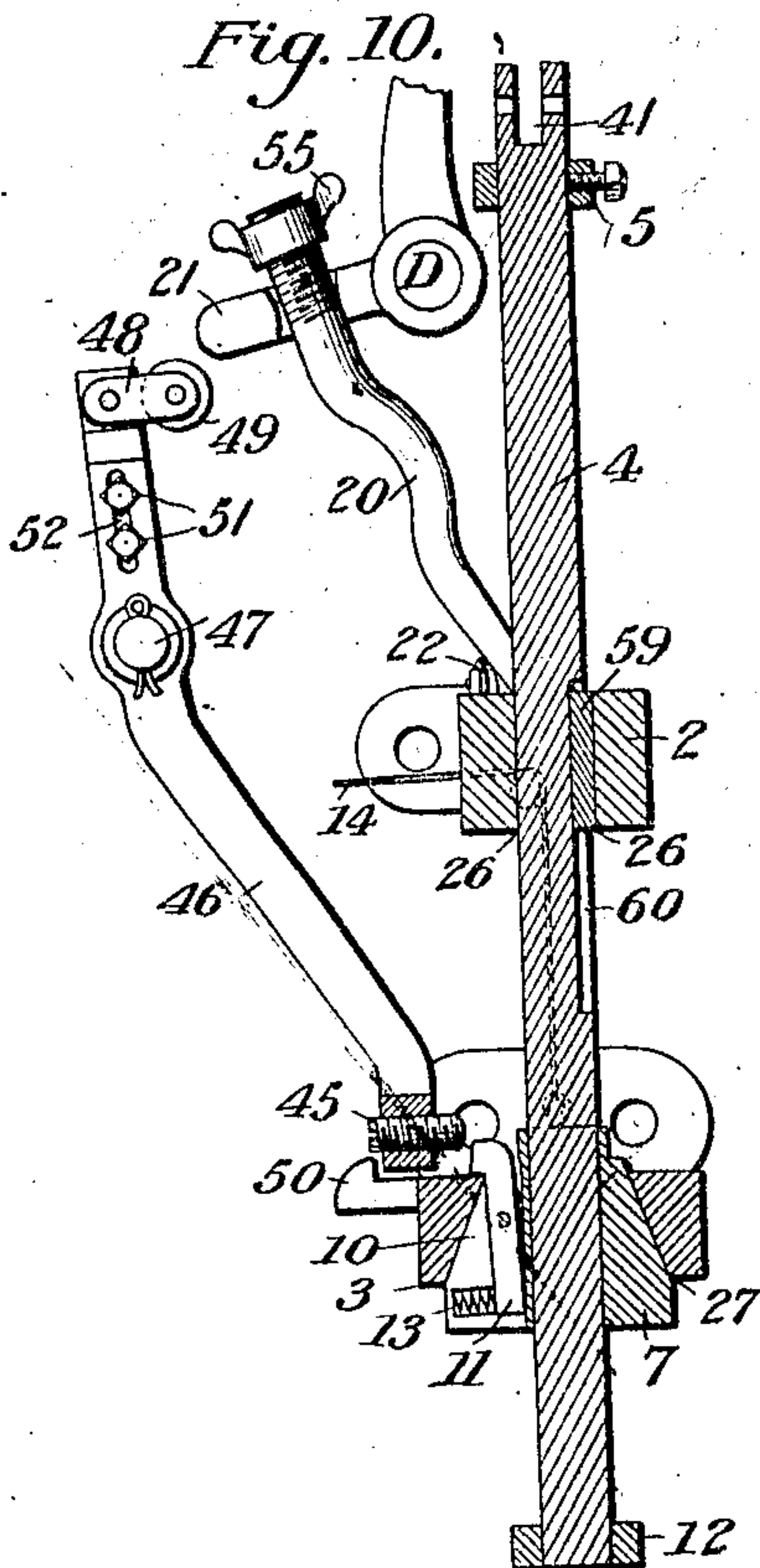
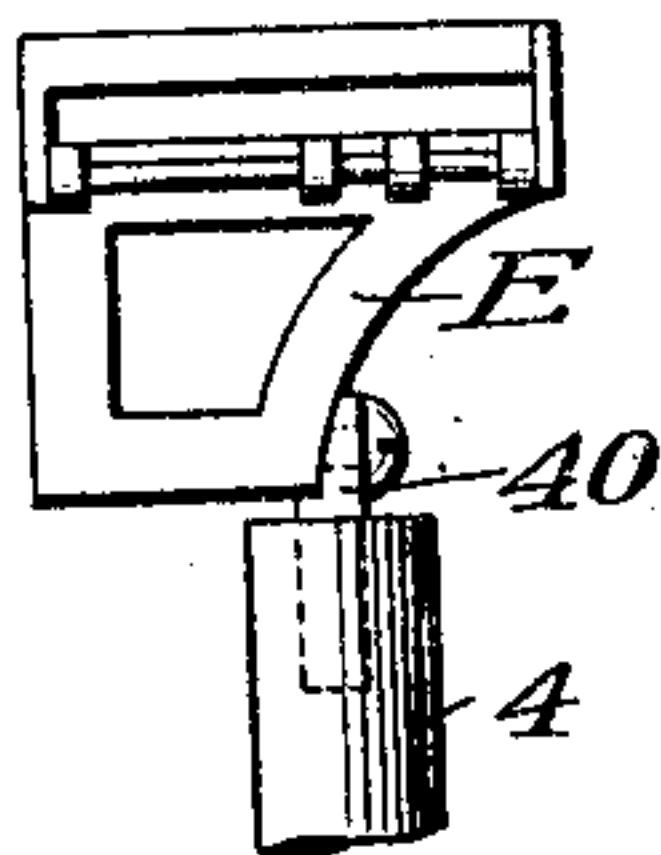
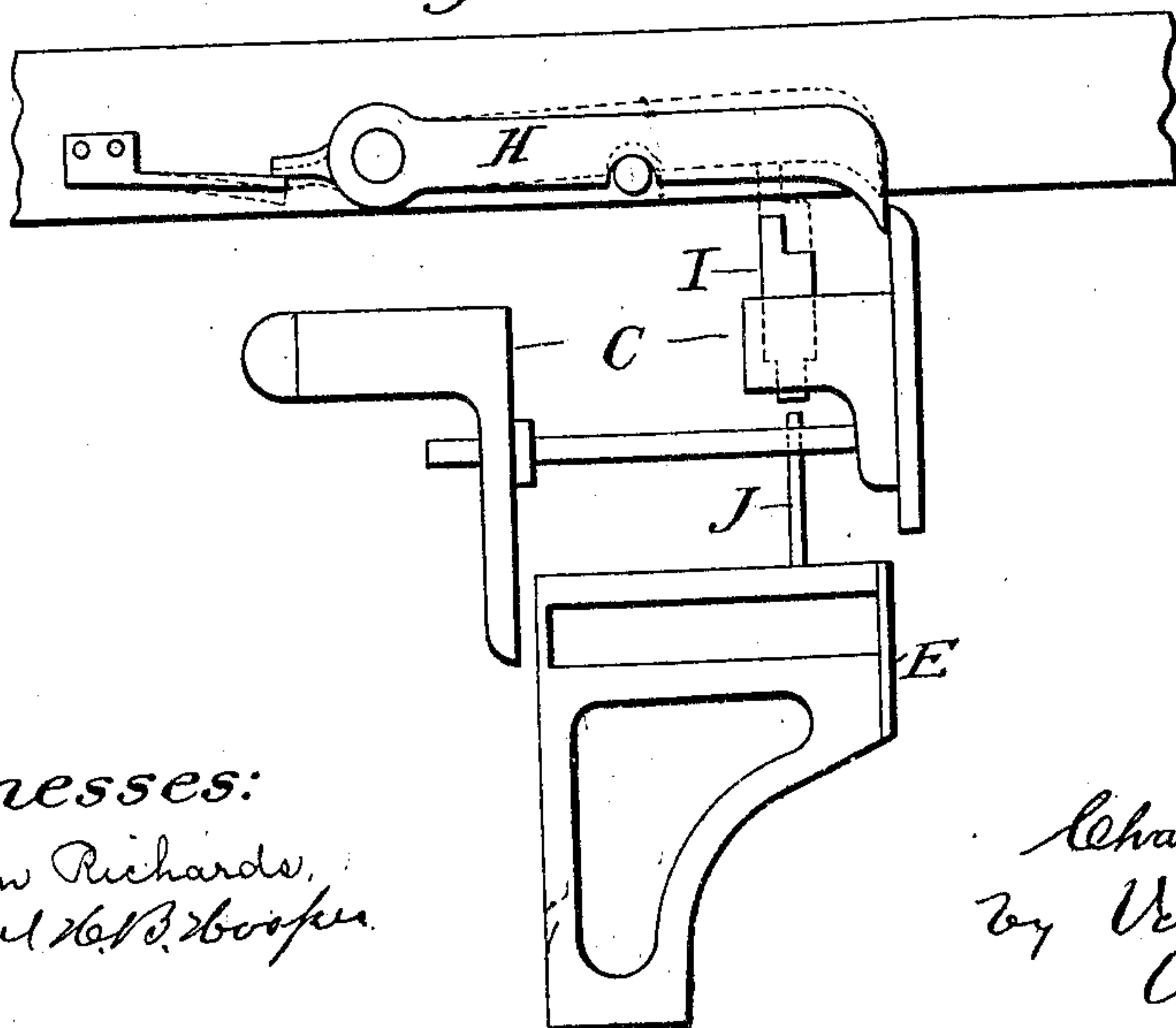


Fig. 11.



Witnesses:

Marion Richards,
 Daniel H. B. Cooper.

Inventor:
 Charles T. Libby,
 by Verrill Clifford,
 Attorney.

UNITED STATES PATENT OFFICE.

CHARLES T. LIBBY, OF PORTLAND, MAINE.

LINOTYPE-MACHINE.

No. 832,396.

Specification of Letters Patent.

Patented Oct. 2, 1906.

Application filed December 8, 1900. Serial No. 39,171.

To all whom it may concern:

Be it known that I, CHARLES T. LIBBY, a citizen of the United States, residing at Portland, in the county of Cumberland and State of Maine, have invented certain new and useful Improvements in Linotype-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in the Mergenthaler linotype-machine of the general character represented in Letters Patent of the United States No. 436,532, dated September 16, 1890.

It relates to means for raising the assembling-elevator by automatic-actuated mechanism to be started by the operator each time it acts.

It also relates to means for reciprocating the assembling-elevator by mechanism that acts repeatedly without anything done by the operator.

It also relates to means for controlling said automatic-actuated mechanism and for bringing it into action at the will of the operator.

It also relates to certain details of construction hereinafter described and specifically claimed.

In the Mergenthaler machine above referred to the line-delivery carriage is released by the upward movement of the assembling-elevator. The assembling-elevator is raised by the operator by hand each time he has assembled a matrix-line, and the machine stops automatically after casting the line thus sent up and waits until the operator sends up another line. By my improvement the assembling-elevator is put up by automatic mechanism, and this automatic mechanism is either set in operation by the operator each time he has assembled a matrix-line or, at his option, each return movement of the shaft by which the line-delivery carriage is actuated is made through intermediate mechanism to start said automatic mechanism. This latter method is valuable to the large number of operators, who are able to set news measure to the full speed of the machine and who are thus saved all labor and nervous strain of putting up the assembling-elevator and watching the movement of the machine for the proper time of doing

so. In fact, having nothing left to do but be sure their line is set before the line goes up and then enjoying an instant's relaxation and opportunity to glance at copy while the assembling-elevator automatically goes up and returns, all operators who are unable to set lines to the full speed of the machine will have their speed increased, because my improved machine will save all interruption of their attention to copy caused by using the hand-lever to put up the assembling-elevator and the time while the elevator is passing up and back will enable them to be all ready to set the next line immediately the elevator is returned.

In the drawings herewith accompanying and making a part of this application I have only shown so much of a Mergenthaler linotype-machine as is necessary to illustrate the manner of attaching my improvements thereto and of operating the same in connection therewith.

In said drawings, Figure 1 is a perspective view of a Mergenthaler machine, showing my improvements attached thereto. Figs. 2 and 3 are end and side views, respectively, of the lever for operating the belt which raises the sliding collar on the operating-rod. Fig. 4 is a side elevation, partly in section, of the supporting-bracket, assembling-elevator, and mechanism for operating the same, parts being broken away. Fig. 5 is a plan view of a portion of the bracket and mechanism for holding and releasing the elevator-raising spring. Fig. 6 is a plan view of the sliding collar. Fig. 7 is a front elevation of the assembling-elevator and a portion of the operating-rod, showing one method by which the operating-rod may carry the assembling-elevator. Figs. 8 and 9 are views of the reverse side and end, respectively, of the back pawl. Fig. 10 is a vertical transverse sectional view, partly in elevation, showing the mechanism for releasing the latch which retains the elevator-returning spring; and Fig. 11 is a detail elevation showing means for releasing the line-delivery carriage.

The same reference characters refer to like parts.

In said drawings, A represents the base; B, the column; C, the line-delivery carriage; D, the shaft which actuates the line-delivery carriage; E, the assembling-elevator; F, the keyboard; G, the first elevator-lever; H, a pivoted latch for retaining the line-delivery

carriage; I, the line-delivery-carriage-releasing pin, and J the needle on the assembling-elevator for operating said releasing-pin. These several parts are substantially the same as in the Mergenthaler machine before referred to and operate in substantially the same way except the means for operating the assembling-elevator.

In carrying out my invention I use the operating-rod 4, on which I mount two coil-springs—to wit, the elevator-raising spring 6 and the elevator-returning spring 8. The operating-rod works through a bearing 26 in the upper arm 2 of a bracket attached to the base A and column B of a Mergenthaler linotype-machine, said bracket extending outwardly from said base and column and positioned below the assembling-elevator. Both springs are fastened to arm 2, spring 6 to the top of said arm and discharging upwardly and spring 8 to the bottom and discharging downwardly. The free end of spring 6 is fastened to the operating-rod by means of collar 5. The free end of spring 8 is fastened to a collar 7, that slides on the rod. The mechanism is in its normal position when both springs are compressed. Spring 6 acts first, carrying the assembling-elevator up. Spring 8 then acts, having sufficient strength to overpower spring 6, returning the elevator.

The load is the assembling-elevator. The assembling-elevator is provided with a downwardly-extending post adapted to set loosely in a hole 41 in the top end of the rod. This arrangement prevents lateral movement of the elevator, but leaves it free to be raised by hand independently of the rod. This is convenient in caring for the adjustments and cleaning the machine and sometimes in shaking the matrices into alignment. The assembling-elevator may, if desired, be secured to the rod by a pin 42 passing through the rod and post, as shown in Fig. 2, or in any other convenient manner. The elevator-returning spring, with the operating-rod inside it, passes through a hole 27 in arm 3 of the bracket, and is retained by a latch 11, pivoted in a socket 10 in collar 7, the latch engaging the top edge of the bracket and being held normally in engagement therewith by spring 13, as seen in Fig. 10. The bottom end of the rod has a fixed collar 12, by which the sliding collar pushes it down when the elevator-returning spring is discharged.

Spring 6 is retained under compression by two pawls 23 and 18, pivoted in arm 2, engaging two shoulders 43 and 29, respectively, in the operating-rod, the front shoulder 43 a trifle higher up than the back one, so that when the front pawl 23 is thrown out the rod will pass upward a trifle before being held by the back pawl, thus preventing the front pawl from reengaging after it has once been thrown out, this position being shown in Fig. 4. The front pawl is operated by a key-le-

ver 25, to be touched by the operator each time he has assembled a matrix-line; the back pawl automatically to keep my attachment in time with the main machine. After the front pawl is thrown out by the operator spring 6 is then held by the back pawl until automatically released, which is done by mechanism which I now proceed to describe.

The back pawl is held in action by a weight-bar 20, resting on a flange 39 of the pawl, and overpowering a spring 19 under the flange, which throws the pawl out whenever the weight-bar is lifted. The weight-bar is lifted at the proper time by any suitable mechanism placed on the shaft that actuates the line-delivery carriage in the main machine, as an arm 21.

The upper end of the weight-bar may have a recess 54 therein, in which recess the end of arm 21 is adapted to slide. A threaded nut 55 on the end of the bar may be employed to adjust the point of connection between the bar and the arm 21 to regulate the point in the reciprocation of arm 21, at which it will raise the weight-bar from the back pawl 18, thus releasing spring 6 and bringing up the assembling-elevator upon each return movement of the shaft actuating the line-delivery carriage. This automatic going up of the assembling-elevator, inasmuch as the putting up of the assembling-elevator is what releases the line-delivery carriage and starts the machine on its repeated cycle of action, has the effect to suspend the start-and-stop nature of the machine, leaving it to run repeatedly through its cycles of movement until stopped by the operator instead of stopping automatically at the end of each cycle, this result being accomplished by bringing the assembling-elevator into the automatic cycle of movement.

The device by which the operator can suspend the start-and-stop nature of the linotype-machine is clasp 44, by which the key-lever is clasped down, holding the front pawl out of action, thus leaving the elevating-spring controlled only by the automatic action of the back pawl 18. As this clasp can be thrown on or off instantly the operator has the instant option to have the machine a start-and-stop machine or not.

Other details of construction follow. To discharge-spring 8, I employ a releasing-screw 45, carried in the releasing-lever 46, operated in time by suitable mechanism, as by arm 21. The releasing-lever is pivoted on a stud 47, placed on column B. The top end 48 is pivotally joined to the body of the lever, so that it yields upward, but not downward, and at the end carries an antifriction roll 49. The proper position of this roll laterally is determined by stop 50 on arm 3 of the bracket, and it is adjustable vertically by sliding connection with lever 46, being held in any desired position by screw-bolts 51, working in slot

52. The roll should be in position to be struck by arm 21 just when the line-delivery carriage has taken the matrix-line clear of the assembling-elevator, and the lever is thus displaced the proper distance to strike latch 11 and disengage it. To set up and latch spring 8, there is attached to the sliding collar belt 14, which extends upwardly and passes over a pulley 15, mounted in arm 2 of the bracket. The other end of the belt is connected with some part of the machine which reciprocates periodically, as first elevator-lever G, either directly or, if this cannot be conveniently done, indirectly through an intermediate adjusting-lever, as shown in Fig. 1, which at each reciprocation draws the sliding collar up until the locking-lever engages the bracket, and while so engaged spring 8 is inoperative. This belt may for convenience pass up inside of the spring, traveling in groove 30 in rod 4. As shown in Figs. 2 and 3, the intermediate adjusting-lever has two pivotally-mounted arms 31 and 32, set in bracket 33. Arm 31 is connected with some part of the machine-frame by spring 34, which tends to raise the end of the lever which has a slot 101 for the reception of a movable eye 102, fixable at any point of the slot by nut 103 on the screw end of movable eye 102, thus affording means to increase or decrease the radial distance from the center of pivot-point, and thus increasing or decreasing the length of pull on belt attached to movable eye 102. The two arms of the lever are held apart by a spring 35, and the two arms of the lever being each pivotally mounted are capable of a certain amount of movement independent of each other, limited, however, by interlocking shoulders 36 and 37, as seen in Figs. 2 and 3. The two arms are pivotally mounted on the bracket, arm 31 being free to fold up on arm 32 to permit the return of the passing body. The spread of the two arms is limited by the interlocking shoulders, which hold them in position while arm 32 is being propelled by the passing body and arm 31 is being pulled by the belt. In the end of arm 32 is an antifriction-roll 38, which extends out into the path of first elevator-lever G and by which it is operated.

The bearing 26 in arm 2 is fitted with a key 59, which works freely in a keyway 60, cut in the operating-rod in order to keep the rod from rotating, as shown in Fig. 5.

The sliding collar 7 has a tongue 9, which projects into groove 30 in the operating-rod and prevents the collar from rotating on the rod. The collar is adapted to extend up and fit into hole 27 in arm 3 to prevent lateral motion of the rod, and said hole may be conical to promote entrance.

The key-lever 25 is attached to arm 2 of the bracket and adapted through an intermediate reversing-lever 62 to operate the

front pawl 23 and disengage it from the rod. Said front pawl is held in engagement with the operating-rod by means of a spring 24. Arm 2 also carries a spring 56, adapted to return the key-lever after being depressed, and adjusting-screws 57 and 58 to adjust its movement, and may carry an antifriction-roll 22 for the weight-bar to pass over.

Manifestly I have not described all the ways by which my invention can be carried out nor all the uses to which it can be put, and I do not intend hereby to limit myself to the specific mechanism herein described, as the same may be greatly modified and still be within the scope of my invention.

Among other things I claim broadly to have improved the Mergenthaler machine referred to in that I have provided means by which the operator can suspend the start-and-stop nature of the machine at pleasure, have provided for the holding up of the assembling-elevator, due to the force that originally carried it up, until the matrix-line has passed out and thereupon the immediate and automatic return, provided a double holding device for the elevator-raising mechanism, and provided spring-actuated mechanism for raising and returning the assembling-elevator.

Having thus described my invention and its use, I claim—

1. In a linotype-machine, in combination, a rod having two shoulders, one higher than the other, two opposite-acting springs, the efficiency of one when both are operative greater than the other, the assembling-elevator, mechanism for compressing, latching and releasing the overpowering-spring, mechanism for latching and arbitrarily releasing the other spring by means of the upper of said shoulders, a hand-operated clasp adapted to lock the last-mentioned mechanism out of action, a latch to hold and release the latter spring by means of the lower of said shoulders, the line-delivery carriage and its shaft, mechanism actuated by the latter to operate said latch, whereby either the assembling-elevator when arbitrarily released remains down until it is, or unless it already has been, released automatically by the movement of the line-delivery shaft and then is automatically actuated up and down, or by the use of the clasp at the pleasure of the operator reciprocates periodically in proper time with the main machine without ceasing its periodic movements until stopped by the operator.

2. In a linotype-machine, in combination, the line-delivery-carriage shaft, a weight-bar, means by which said shaft operates said weight-bar, a spring, a latch operated by the spring and weight-bar adversely, whereby the latch is operated in time to the movements of the line-delivery shaft.

3. In a linotype-machine, in combination,

an assembling-elevator, a rod adapted to carry said elevator, means for raising and lowering said elevator, a latch adapted to hold said rod down a spring under the latch, 5 a weight resting on the latch to hold it in engagement with the rod and means for lifting the weight, whereby the latch is disengaged from the rod by said spring.

4. In a linotype-machine, in combination, 10 the assembling-elevator, two springs, one adapted to raise and the other to return the elevator, the efficiency of the returning-spring, when both are operative, being the greater, and means for periodically retaining 15 the returning-spring under compression while the raising-spring acts and means for regulating the action of both springs.

5. In a linotype-machine, in combination, the assembling-elevator, a spring tending to 20 raise said elevator, a second spring having sufficient power, when operative, to return the elevator against the opposing force of the raising-spring, a latch for retaining said second spring temporarily, means for auto-

matically throwing out said latch and means 25 for regulating said raising-spring.

6. In a linotype-machine, an assembling-elevator, two springs, one adapted to raise and the other to return the elevator, the efficiency of the returning-spring, when both 30 are operative, being the greater, means for compressing the overpowering-spring, means for holding it temporarily compressed, whereby the other spring is free to act and means for releasing the overpowering-spring, 35 means for holding the other spring compressed, while, and releasing it after, the overpowering-spring is compressed, whereby the assembling-elevator is alternately raised 40 and lowered.

In testimony whereof I affix my signature, in presence of two witnesses, this 6th day of December, 1900.

CHARLES T. LIBBY.

Witnesses:

ELGIN C. VENILL,
NATHAN CLIFFORD