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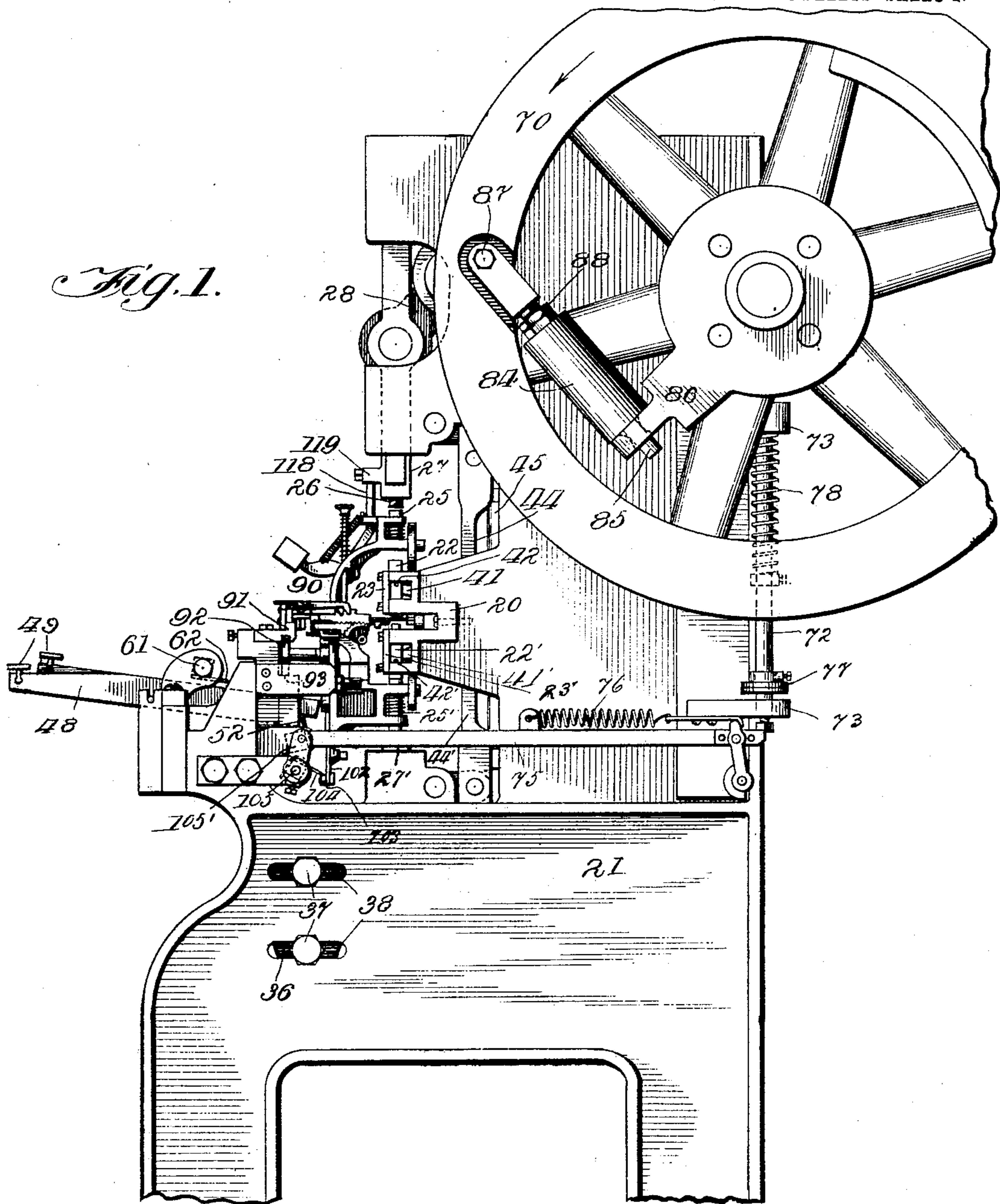
PATENTED FEB. 2, 1904.

J. S. DUNCAN.  
MACHINE FOR MAKING PRINTING PLATES.

APPLICATION FILED DEC. 17, 1902.

NO MODEL.

8 SHEETS—SHEET 1.



Witnesses:

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*Helen L. Peck.*

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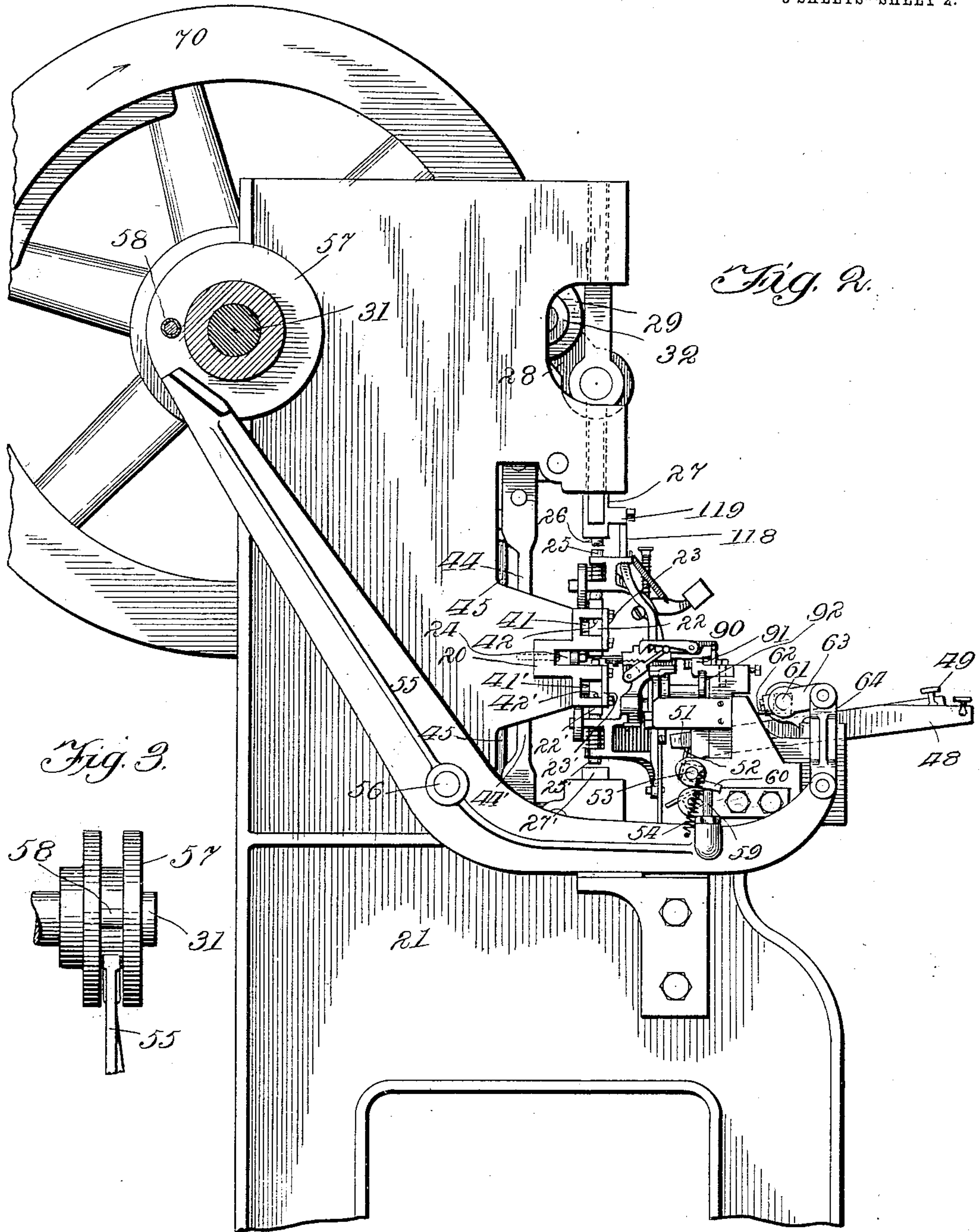
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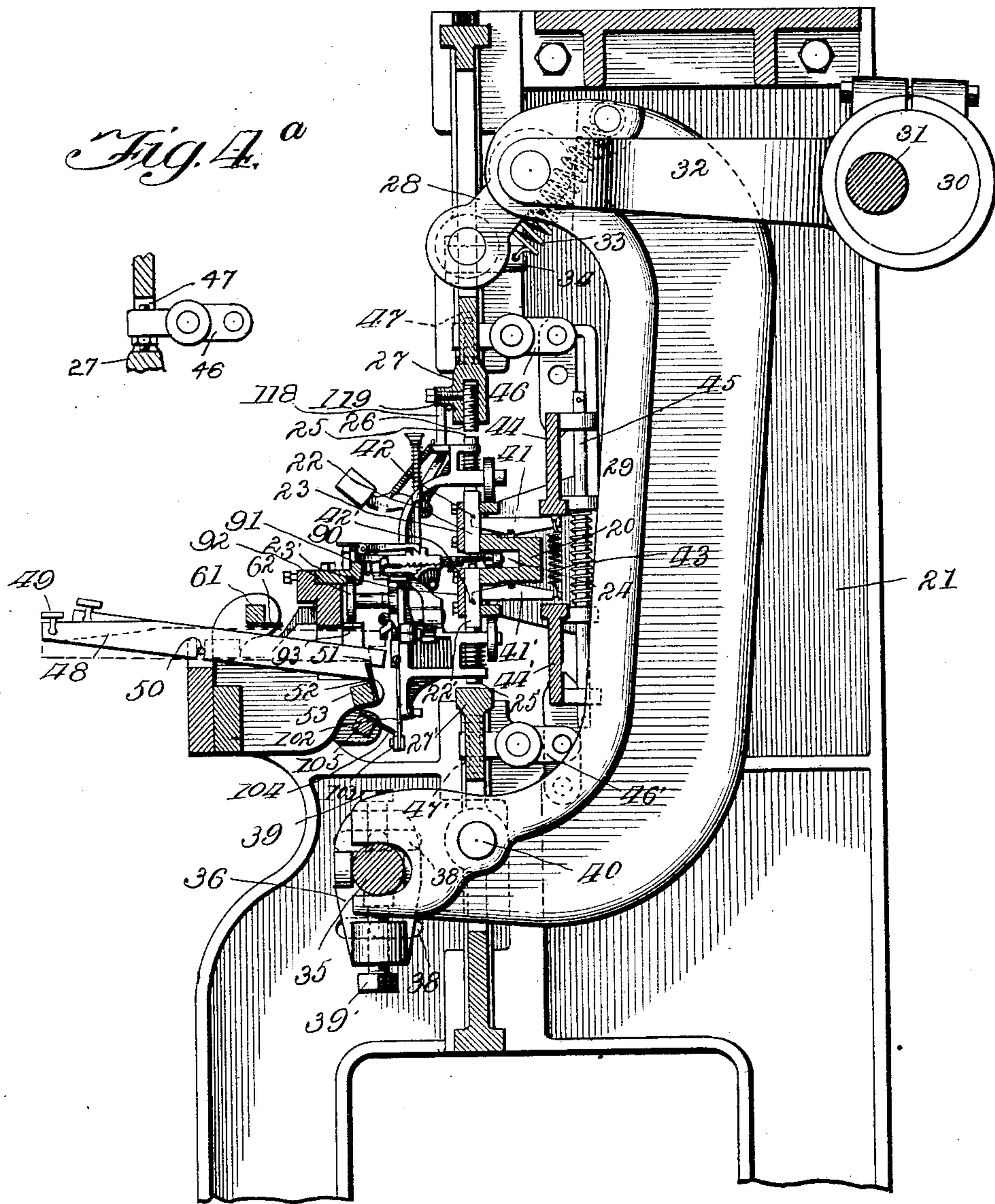
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8 SHEETS—SHEET 3.

*Fig. 4.*



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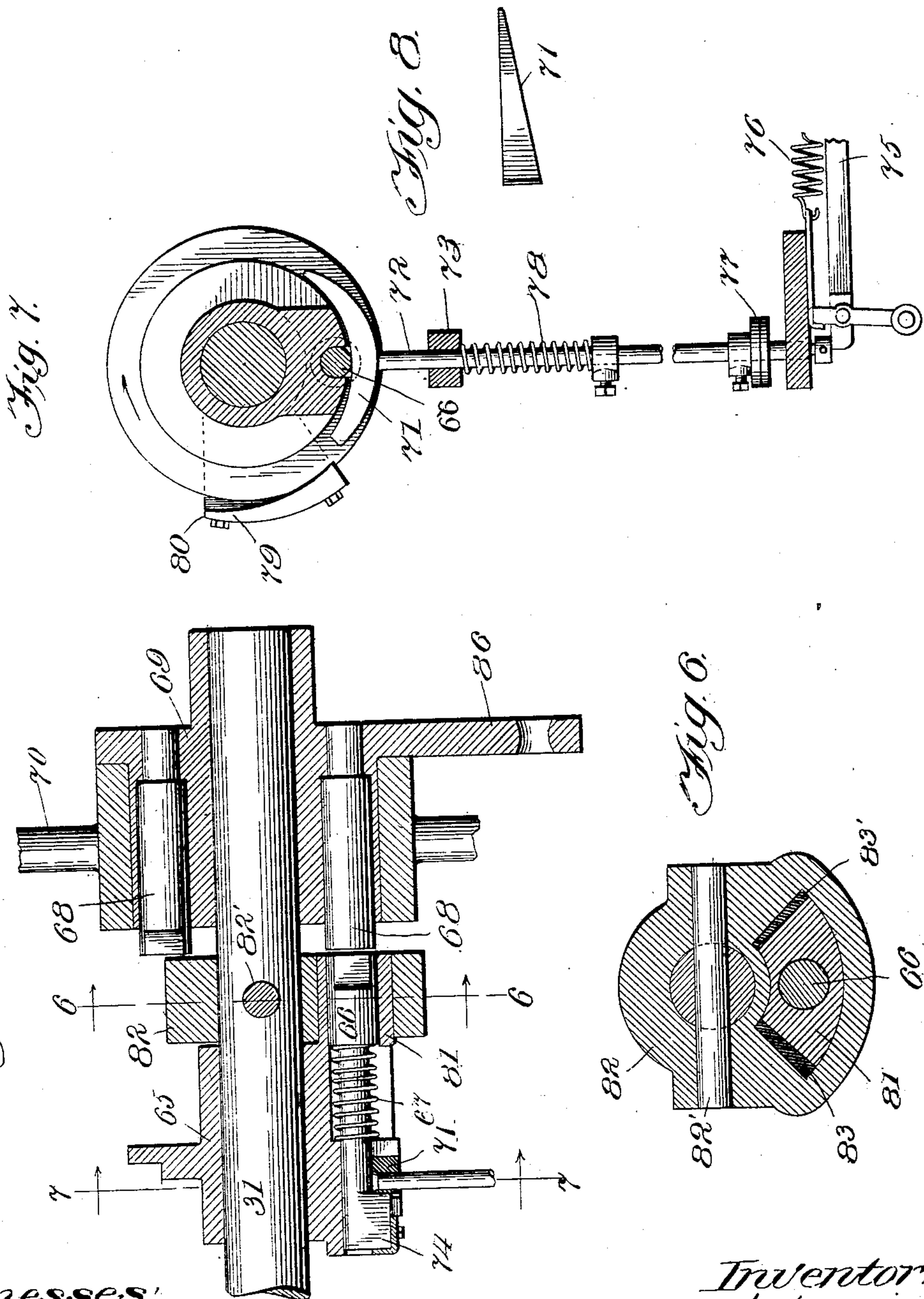
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8 SHEETS—SHEET 4.

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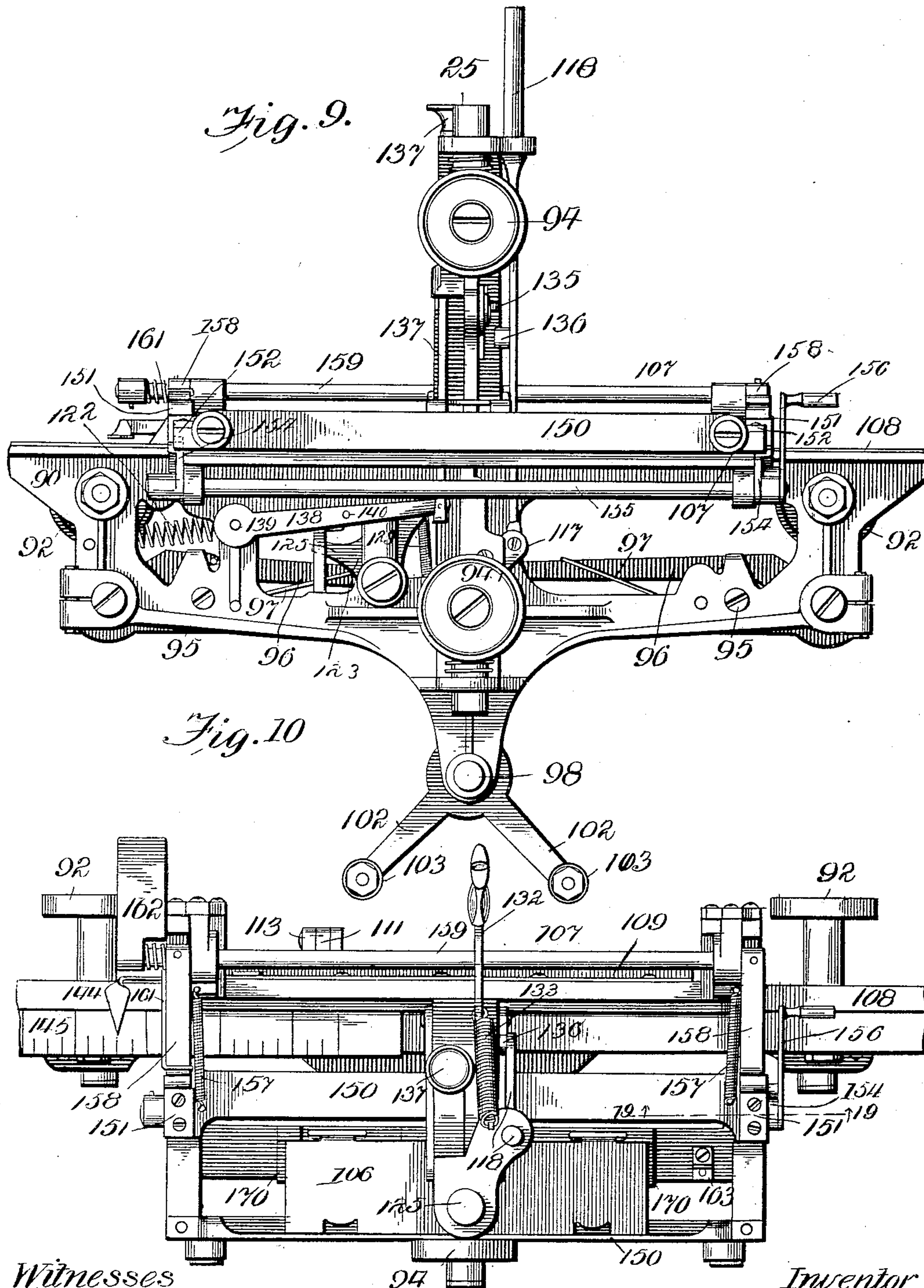


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8 SHEETS—SHEET 5.



Witnesses

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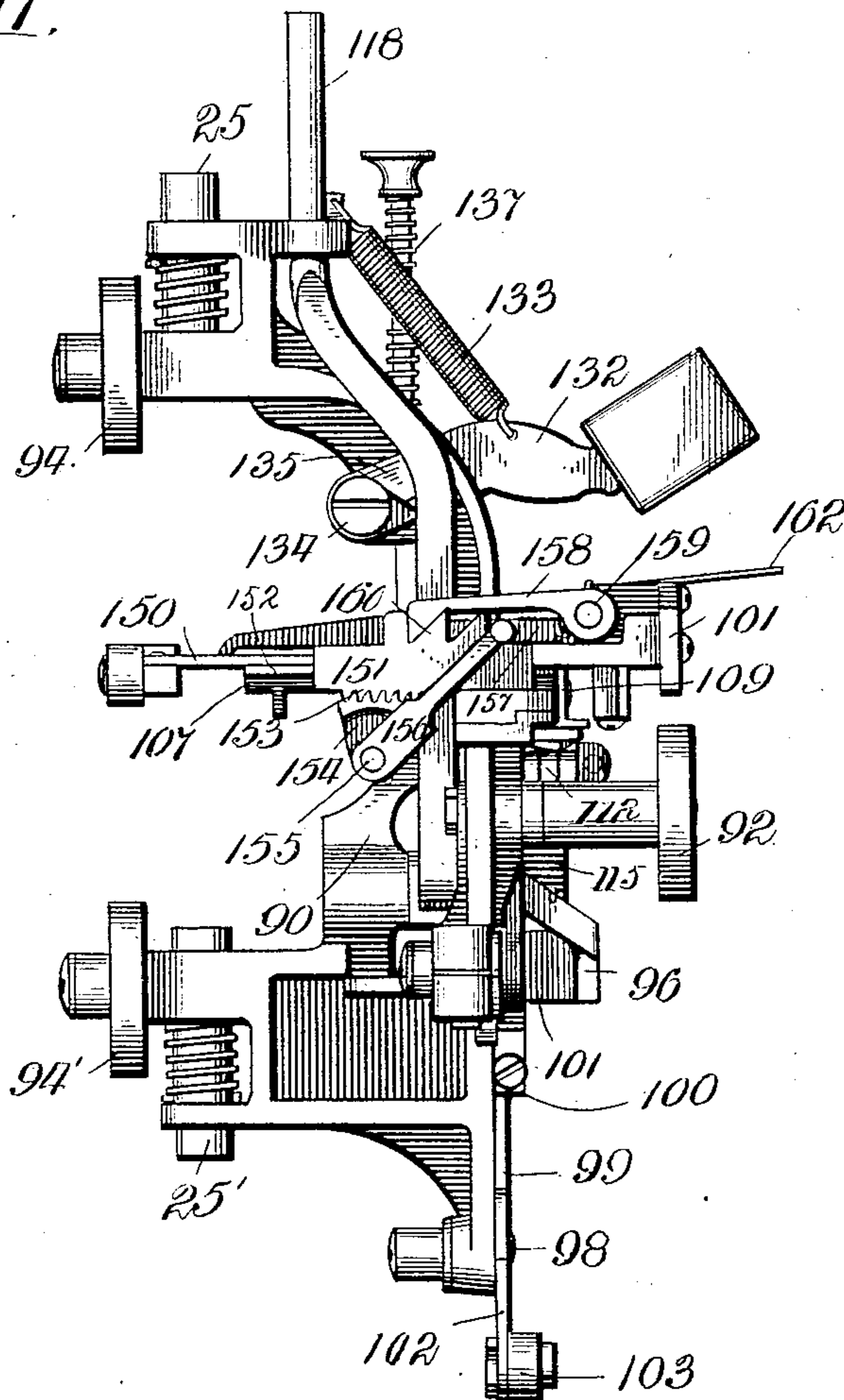
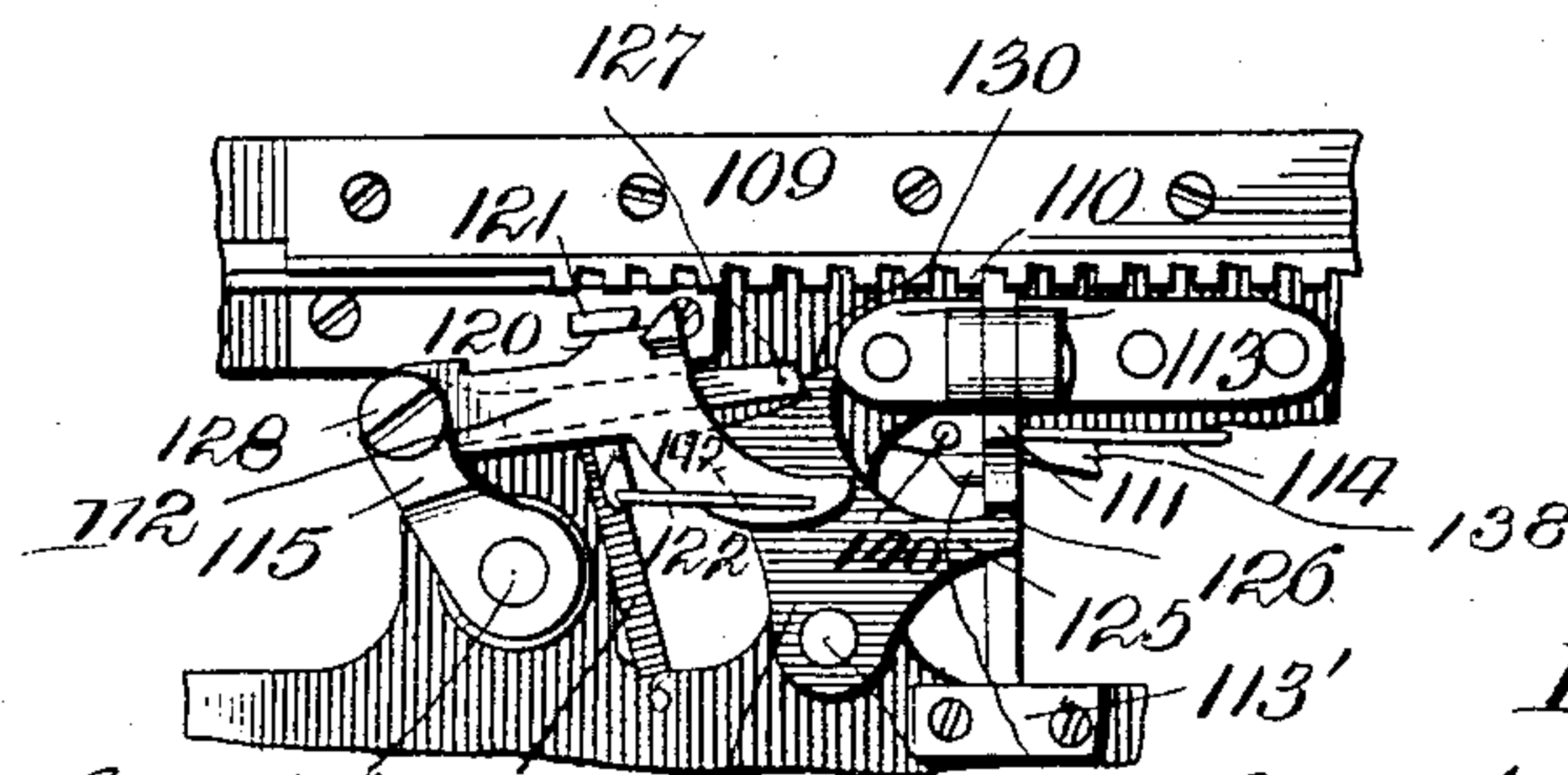
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8 SHEETS—SHEET 6.

*Fig. 11.**Fig. 12.*

Witnesses

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8 SHEETS—SHEET 7.

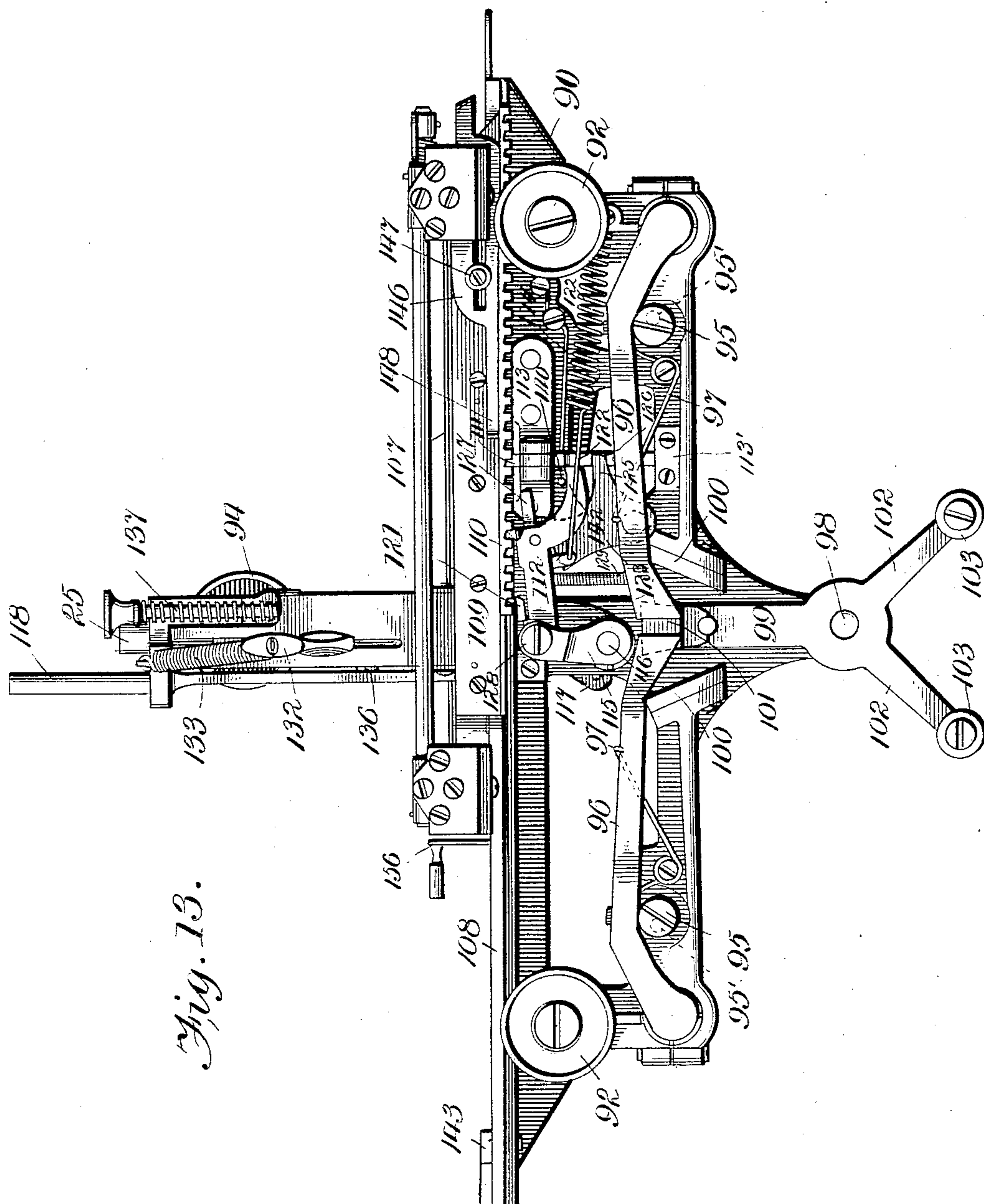


Fig. 13.

Witnesses

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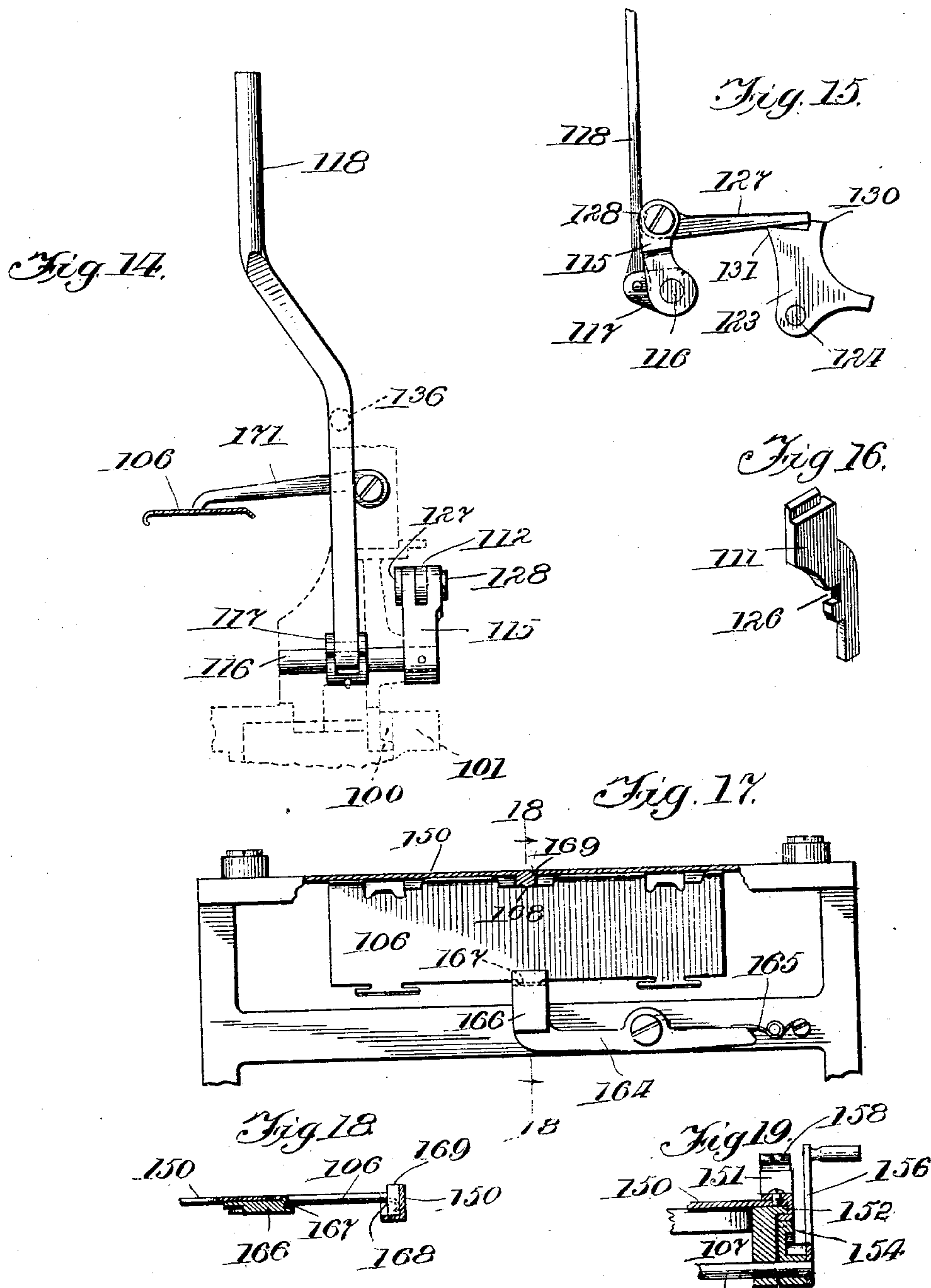
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8 SHEETS—SHEET 8.

NO MODEL.



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# UNITED STATES PATENT OFFICE.

JOSEPH S. DUNCAN, OF CHICAGO, ILLINOIS.

## MACHINE FOR MAKING PRINTING-PLATES.

SPECIFICATION forming part of Letters Patent No. 750,831, dated February 2, 1904.

Application filed December 17, 1902. Serial No. 135,656. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPH S. DUNCAN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have  
 5 invented certain new and useful Improvements in Machines for Making Printing-Plates, of which the following is a specification.

This invention consists of a machine for making printing-plates, and has reference particularly to certain novel improvements on my  
 10 invention covered by Letters Patent No. 624,764, dated May 9, 1899.

The object of this invention is to improve the construction of machines of this character  
 15 for the purpose of lessening the noise, to reduce the wear and tear on the machine, to simplify and improve the operation, and generally to provide a more serviceable and easily-running machine.

The machine in which my present invention is embodied is adapted, like the machine of my prior patent, to make printing-plates by producing printing characters in relief thereon, these plates being subsequently used in  
 20 other machines to give an impression on envelopes or in other ways and for other purposes.

In the accompanying drawings I have illustrated one form of machine in which my invention may be embodied, and referring thereto—

Figures 1 and 2 are end elevations of the machine, the latter being partly in section. Fig. 3 is a detail view of the grooved collar  
 35 on the power-shaft. Fig. 4 is a vertical sectional view. Fig. 4<sup>a</sup> is a detail view. Figs. 5, 6, and 7 are sectional views of the clutch mechanism, the latter figure being taken on the lines 6 6 and 7 7 of Fig. 5. Fig. 8 is a detail plan view of the shoe 71. Fig. 9 is a front view of the carriage. Fig. 10 is a top plan view of the carriage. Fig. 11 is a side view of the carriage. Fig. 12 illustrates the  
 40 pawl mechanism of the carriage with the feeding-pawl retracted. Fig. 13 is a back view of the carriage. Fig. 14 is a detail view showing the plate-holding arm. Fig. 15 is a detail view showing the releasing-plate. Fig. 16 is a detail view of the locking-pawl. Fig. 17 is  
 45 a bottom plan view of a portion of the plate-

frame, partly in section. Fig. 18 is a sectional view on the line 18 18 of Fig. 17. Fig. 19 is a sectional view on the line 19 19 of Fig. 10.

The machine in which I have chosen to illustrate the present invention corresponds in  
 55 many of its features to the machine illustrated in my former patent, and comprises a holder 20, Fig. 4, which extends across and is supported by a frame 21 of suitable construction. 60 This holder carries a row of dies 22 and a row of punches 22', the dies and punches being complementary to each other and arranged in pairs one above the other and held in place in the holder by face-plates 23 23'. The holder 65 is provided with a central recess 24 to receive the plate in which the characters are to be produced, and this plate is supported in and carried by a carriage hereinafter described in detail and which includes the vertically-mov- 70 able spring-pressed die-stock 25 and the corresponding punch-stock 25', which are adapted to be alined above and below the punch and die of the character to be impressed and are caused to engage and move them toward 75 each other into operative engagement with the interposed plate by the upper and lower cross-heads 27 27', which are operated by toggle-levers 28 29 and slide in suitable ways in the frame. A cam 30 on the power-shaft 31 80 is arranged to operate a pitman 32, which is pivotally connected to the toggle-levers at their pivot-point and is adapted to actuate said levers to move the cross-heads toward each other and effect the impression in the plate. 85 The upper cross-head may be provided with screw-threaded bolts 26 to engage the die-stock 25, and this provides for regulating the height of the impression in the plate. A spring 33 is fastened at its upper end to the 90 frame and at its lower end to a stud 34 on the upper cross-head, and it operates in connection with the toggle to return the upper cross-head to its normal position at rest. I prefer to employ a pair of these toggles, one adja- 95 cent to each side of the machine, and the toggle member 29 of each is fulcrumed at its lower end on a supporting-rod 35, Fig. 4, carried by plates 36, adjacent to each side of the frame, and fastened thereto by means of bolts 100



37, Fig. 1, operating in slots 38 in the sides of the frame to permit of a lateral adjustment. Set-screws 39 39' are arranged to operate in bosses on the plates and bear, respectively, on the upper and lower sides of the rod to obtain a vertical adjustment of the rod relative to the frame. By means of this construction the toggle can be adjusted to a very fine degree, which is a matter of considerable importance in producing the printing characters without injuring the plate. The lower cross-head 27' is pivotally connected to the toggle member 29 at 40 at one side of its fulcrum, so that as this toggle member returns to its normal position at the conclusion of one operation it will return this cross-head to its initial position.

A series of releasing-levers 41 41', Fig. 4, are pivotally mounted in the holder and have their forward ends arranged to engage the pins 42 42' on the dies and punches, respectively, and their rear ends connected by springs 43 and arranged to be engaged by the actuating-plates 44 44'. These plates are guided on one or more rods 45 and are connected with the levers 46 46', pivoted on the sides of the frame. The forward ends of the levers enter openings 47 47' in the cross-heads 27 27', so that when the cross-heads are withdrawn from engagement with the punch and die the plates 44 44' will be carried into engagement with the rear ends of the levers 41 41' and operate them to disengage the punch and die from the plate. This feature of the invention is important, because it sometimes happens that the punch and die will stick to the plate, and hence it is desirable to automatically disengage them immediately after the impression, so that the operator can shift the plate into position for receiving another impression.

I provide a key-bar 48 and key 49 for each character and corresponding in relative position to the complementary die and punch. These key-bars are pivoted at 50 on the main frame and have their inner ends notched at 51 to receive the flange 52 on the rocking supporting-bar 53, the notch being of angular shape, so that the flange will operate to hold the bar normally in position at rest. When the key is depressed, the inner end of the bar will rise out of engagement with the rocking bar and the latter will be drawn by its spring 54 beneath the key-bar to support the same in position to be engaged by the carriage, as hereinafter described. A lever 55, Fig. 2, is pivotally mounted at 56 on one side of the frame and has its upper end arranged to travel in a grooved collar 57, Fig. 3, on the power-shaft, this collar being provided with a transverse pin 58, which is adapted to engage the end of the lever and swing the same on its pivot. This lever is also provided with a post 59, which is arranged to engage a projection 60 on the end of the rocking bar 53, so that during the impressing operation or at the com-

pletion thereof the bar 53 may be rocked to carry the flange 52 from beneath the key-bar and permit it to return to its normal position. When the post 59 is carried down again with the lever 55, the spring 54 will rock the shaft 53 to cause the flange to enter the notches in the key-bars. To insure the return of the key-bars to their normal position, as just described, I mount a rocking bar 61, having a flange 62 in the frame across the key-bars and connect this rocking bar by a crank-arm 63 and link 64 with the lever 55. At the same time that the support is carried from beneath the elevated key-bar the bar 61 will be rocked to cause its flange 62 to engage and press down the key-bar into its normal position, so that the flange 52 on the supporting-bar may enter the notches in all of the key-bars, as described.

The clutch mechanism, by means of which the machine is thrown in action, is illustrated in Figs. 1 and 5 to 8 of the drawings, and consists of a member 65, mounted on the power-shaft 31 and provided with a locking-bolt 66, which is constantly under the tension of a spring 67, tending to thrust it forward to engage with one of the pins 68, secured in the clutch member 69, loose on the power-shaft. This locking-bolt is held in retracted position by means of a shoe 71, carried on a spring-pressed stem 72, guided in a lug 73 on the frame. The shoe is reduced and pointed at its forward end, as shown in Fig. 8, and is adapted to engage the offset 74 at the rear end of the locking-bolt 66 as the clutch member revolves and withdraw the bolt from engagement with the pin 68. The shoe 71 is normally held up in engagement with the bolt 66 to hold it in retracted position, as shown in Fig. 5, by means of a trip-rod 75, which is operated in a manner hereinafter described and is normally held by a spring 76 in engagement with the lower end of the stem 72 and supporting the same, as shown in Figs. 1, 7. A collar 77 is adjustably arranged on the stem 72 and faced with rubber to limit the downward movement of said stem, which is effected by the spring 78 when the trip-rod 75 is withdrawn.

To stop the machine after each impression is made, I provide a pick-up plate 79, having a cam-face 80 on the clutch member 65 to engage the shoe and raise it into engagement with the offset end of the locking-bolt, so that when the impression is made all the parts of the clutch will be returned to their initial position, the power-shaft will have made one complete revolution, and all the parts of the machine, except the belt-pulley, will be at rest.

In order to lessen the shock which occurs when the clutch is thrown, I provide the clutch member 65 with a lateral extension 81, through which the locking-bolt passes and which is arranged in an opening provided for it in a block 82, fastened to the power-shaft



by a bolt 82' or in some other suitable manner. Between the sides of the extension 81 and the end walls of the opening in the block I provide packing 83 83', so that when the locking-bolt is engaged with a pin on the clutch member 69 the clutch member 65 will be locked on the power-shaft through the medium of the block 82, and the packing 83 will serve to lessen the shock when the parts are engaged, as described.

The pulley or belt-wheel 70 is mounted on the clutch member 69 and a resilient buffer is interposed in the connection between the pulley and the clutch member to also assist in lessening the shock when the two members of the clutch are engaged, Fig. 1. This buffer comprises a block of rubber 84, carried on a spindle 85, which has its lower end loosely guided in an arm 86 on the clutch member 69 and its upper end fastened to the rim of the pulley at 87. A stop 88 of some approved character, which may be a nut and jam-nut, as shown, is provided on the spindle between the rubber block and the end thereof connected with the pulley. The pulley and clutch member 69 are constantly revolving; but when the two clutch members are engaged the rubber block 84 will considerably lessen the shock on the machine.

The carriage is illustrated in Figs. 9 to 13 and comprises a frame 90, which is arranged to slide back and forth across the front of the machine on a track 91 and is provided with rollers 92, which travel on a track 93. The carriage is also provided with antifriction-rollers 94 94', which travel against the top and bottom, respectively, of the holder. The carriage is provided with a pair of locking-levers 96, Fig. 13, which are pivotally secured at their outer ends in the frame and have their inner ends turned and held by the springs 97. These levers rest on the cam-heads of screws 95', whereby they can be adjusted as required. A three-arm spider is pivoted at 98 to the carriage-frame, and one arm 99 thereof is arranged to swing between the stops 100 and has an enlarged head 101, which operates close to the adjacent ends of the locking-levers 96. The depending arms 102 of the spider carry antifriction-rollers 103, which are arranged normally below the flange 104 on the rocking bar 105, Fig. 4. This bar is connected by a link 105' with the trip-rod 75, Fig. 1.

When the key of the character desired to be impressed has been depressed and the inner end of its key-bar raised and supported in position, the carriage is moved up into engagement therewith, and the elevated end of the key-bar will slide beneath one of the spring-pressed locking-bars, depending upon which side of the key-bar the carriage happens to be, and finally be held in the space between the two locking-bars. At the same time the enlarged head 101 of the spider is engaged by

the key-bar and shifted against one of the stops 100. This will raise one of the depending spider-arms into engagement with the flange 104 and rock the bar 105, thereby withdrawing the trip-rod 75 from beneath the stem 72 and allowing the clutch members to become engaged. This operation is accomplished rapidly, and the operator simply depresses the keys one at a time with one hand and reciprocates the carriage back and forth into engagement with the elevated key-bar as each key is depressed, and when the carriage engages the key-bar the clutch is automatically thrown and the impressing mechanism actuated. After the impression has been made on the plate the rear end of the key-bar is released and permitted to drop down from between the locking-levers in the manner heretofore described, and the carriage can then be moved in either direction against the key-bar of the next character to be impressed.

The printing-plate 106 is carried in an end-wise movable feeding-frame 107, which travels on a rack 108, Fig. 13, and is held in place thereon by means of a T-plate 109, fastened to the feeding-frame and projecting beneath the track 108. This plate is provided with a series of teeth 110 in the form of a rack, which is engaged by a locking-pawl 111 and a feed-pawl 112. The locking-pawl is vertically arranged and guided in the brackets 113 113' on the carriage-frame, and it is normally held up in engagement with the rack by a spring 114. The feeding-pawl 112 is arranged horizontally and pivoted to a crank-arm 115, which is carried by a rock-shaft 116. The other end of this rock-shaft is provided with a crank-arm 117, to which a post 118 is fastened. This post projects upward and is adapted to be engaged by a projection 119 on the upper cross-head 27, so that when the upper cross-head is depressed it will rock the feed-shaft 116 and move the feed-pawl back to its rearward position. This feed-pawl is provided with an inclined upper face 120, which rides under a lug 121, so that when the feed-shaft is rocked the pawl is carried downward out of engagement with the rack by reason of the inclined upper edge thereof sliding beneath said lugs, Figs. 12, 13. When the pressure on post 118 is removed, the feed-pawl is carried forward again by a spring 122, fastened to said pawl and the frame. To release the locking-pawl from engagement with the rack, so that the feeding-pawl may feed the carriage along a step, I provide a locking-plate 123, which is pivoted to the carriage-frame at 124 and has an arm 125 arranged in a recess 126 in the locking-lever. A detent 127 is carried by the pivot 128 of the feed-pawl and it extends forward and rests upon the top of the locking-plate 123, Fig. 15. When the feed-shaft is rocked to withdraw the feed-pawl, the detent is carried back with the pawl and is pulled by a spring 129 into engagement



with a toe 130 on the locking-plate, and on the forward movement of the feed-pawl and detent the latter will swing the locking-plate on its pivot sufficiently to carry down the locking-pawl out of engagement with the rack. As the detent continues to move forward with the feeding-pawl and as it swings the locking-plate on its pivot the heel 131 of the locking-plate will ride up under the detent and disengage it from the toe of the locking-plate, so that the spring 114 may raise the locking-pawl into engagement with the rack.

Whenever it is desired to feed the plate-frame without producing an impression, this can be accomplished by depressing the handle-lever 132, which is normally held in elevated position by a spring 133 and is pivoted to the carriage-frame at 134. When the handle-lever is depressed, a lug 135 thereon engages a lug 136 on the post 118 and the feed-shaft is rocked in precisely the same manner as when this post is depressed by the upper cross-head.

The feed and locking pawls may both be disengaged from the rack, so that the plate-frame can be freely adjusted relative to the carriage by depressing a spring-pressed push-bar 137, which is connected at its lower end to one end of a lever 138, pivoted at 139 to the carriage-frame and provided with a pin 140, which projects forwardly above a pin 141 on the locking-lever and a toe 142 on the feed-pawl. When the push-bar is depressed, it will carry the lever 138 down, and the pin 140 will engage the pin 141 on the locking-pawl and the toe 142 on the feed-pawl and carry these pawls down and out of engagement of the rack, so that the plate-frame can be freely adjusted on the carriage. A stop 143 is provided at one end of the track 108 to limit the movement of the plate-frame in one direction, so that the first impression in the plate will be made adjacent to one end thereof. I provide a pointer 144 on the plate-frame, which travels above the scale-plate 145, and this pointer is carried by a slotted plate 146, which is fastened to the feeding-frame by a screw-stud 147 and provided with a handle 148.

The printing-plate is held in a plate-frame 150, Fig. 10, which is carried by the feeding-frame and is adapted to be adjusted to provide for different lines of character impressions on the plate. Blocks 151 are fastened on the ends of the plate-frame, and they are provided with grooves to receive the flanges 152 on the ends of the feeding-frame, so that the plate-frame will be guided in its adjustment on the feeding-frame. The blocks are also provided on their under side with a series of teeth 153, forming racks, and with which engage the segments 154, which are mounted on the rock-shaft 155, Fig. 11. A crank-handle 156 is fastened to this shaft, and by operating it the segments are caused to move the plate-frame forward against the tension of the springs 157. I also provide locking-pawls 158,

which are secured on a rock-shaft 159, mounted in suitable bearings on the feeding-frame and which have their free ends arranged to engage a series of teeth 160 on the guide-blocks 151. A spring 161 on the rock-shaft 159 holds the pawls in engagement with one of the teeth 160 and locks the plate-frame in its adjusted position; but when it is desired to return the plate-frame into position for a plate to receive its first line of impression the handle on the rock-shaft 159 is depressed to withdraw the pawls from engagement with the teeth 160, and the springs 157 will at once pull the plate-frame back to its initial position. I provide a stop 163 on the feeding-frame to prevent the plate-frame from being carried too far forward in the feeding-frame.

To fasten the plate in the plate-frame, I provide an arm 164, Fig. 17, which is pivoted to the plate-frame and held under tension of a spring 165. This arm has an angularly-disposed end 166, which is notched to receive one edge of the plate. These plates are constructed to be linked together, and the plate illustrated in the drawings is provided with a tongue 167 on one edge and a recess 168 on the other edge, the tongue of one plate being adapted to enter the recess of an adjoining plate to form a lock to hold the plates together. The tongue of the plate is shown fitting in the recess of the spring-pressed locking-arm 164, and a guide-lug 169 on the front of the plate-frame fits in the recess 168. It will of course be apparent that the locking-arm will hold the plate securely in the frame, even if the guide-lug is omitted, and that plates without the tongue and recess and of other constructions will be held in the same manner. The plates are arranged to rest on supports 170 on the feeding-frame, Fig. 10.

Sometimes the die may stick to the plate, and to prevent the plate from becoming dislodged when the punch and die are carried away from the plate in the manner heretofore described I provide a stripper 171, Fig. 14, which is pivoted to the carriage-frame and projects forward to rest upon the plate and ride between the face-plates 42 42' on the front of the punches and dies. The arrangement is such that the stripper will prevent the printing-plate from being carried up by the die, and thus the plate is always held in proper position for receiving successive impressions.

My improved machine is adapted for rapid operation, and the various parts can be readily manipulated by the operator without incurring danger of injury and with absolute regularity. The machine operates automatically, and the moving parts are only in operation during a complete revolution of the power-shaft at each impression. The devices for operating the clutch and throwing the machine into and out of operation work rapidly and with certainty to accomplish the desired results, and thus very little time elapses between



the depression of a key and adjustment of the carriage and the completion of the impressing operation. The devices employed for lessening the noise are of considerable importance, 5 as they not only accomplish this result, but also relieve the machine from a great deal of wear and tear due to the successive shocks of impressing operations, which are more or less destructive of a machine of this character 10 operating on metal and under considerable power, while at the same time having a great number of delicate parts.

I do not claim in this application the clutch herein shown and described, as the same forms 15 the subject-matter of a divisional application filed April 27, 1903, Serial No. 154,518.

Without limiting myself to the exact construction and arrangement of parts herein shown and described, what I claim, and desire 20 to secure by Letters Patent in this application, is—

1. In a machine of the character described, the combination of a series of dies and punches, means for actuating said dies and punches to 25 produce an impression in an interposed plate and comprising an upper cross-head, a carriage for supporting the plate in position to receive said impressions, feeding mechanism for the carriage, and a device connected with said 30 feeding mechanism and adapted to be operated by said upper cross-head to actuate the feeding devices.

2. In a machine of the character described, the combination of a series of dies and punches, 35 means for actuating said dies and punches to produce an impression in an interposed plate and comprising an upper cross-head, a carriage for supporting the plate in position to receive said impressions, feeding mechanism 40 for the carriage, and a post connected with said feeding mechanism and adapted to be engaged and operated by said upper cross-head to actuate the feeding devices.

3. In a machine of the character described, 45 the combination of a series of dies and punches, a carriage for supporting a plate in position to receive impressions from said dies and punches, and means for operating the dies and punches in pairs to produce impressions in the 50 plate and comprising a cross-head arranged above the dies and a cross-head arranged below the punches, and a toggle for operating said cross-heads and having a short arm and a long arm pivotally connected together, the 55 short arm being connected with the upper cross-head and the long arm being fulcrumed at its end and connected back of its fulcrum with the lower cross-head.

4. In a machine of the character described, 60 the combination of a series of dies and punches, a carriage for supporting a plate in position to receive impressions from said dies and punches, a cross-head above the dies and a cross-head below the punches to operate said 65 dies and punches, and means for actuating said

cross-heads comprising a toggle having a short member and a long member pivotally connected together, the short member being connected at its end with one cross-head, a fulcrum-bar and means for adjusting the same, and the long 70 toggle member being fulcrumed at its end on said bar and connected back of its fulcrum to the lower cross-head.

5. In a machine of the character described, the combination of a series of dies and punches, 75 a carriage for supporting a plate in position to receive impressions from said dies and punches, means for operating the dies and punches comprising a toggle having a short member and a long member connected to- 80 gether, and an adjustable fulcrum for the lower end of said long member.

6. In a machine of the character described, the combination of a series of dies and punches, a carriage for supporting a plate in position 85 to receive impressions from said dies and punches, means for operating the dies and punches comprising a toggle having a short member and a long member, and an adjustable fulcrum for the lower end of said long mem- 90 ber comprising a laterally-adjustable cross-bar supported in the frame of the machine.

7. In a machine of the character described, the combination of a series of dies and punches, a carriage for supporting a plate in position 95 to receive impressions from said dies and punches, means for operating the dies and punches comprising a toggle having a short member and a long member, and an adjustable fulcrum for the lower end of said long mem- 100 ber comprising a laterally and vertically adjustable cross-bar supported in the frame of the machine.

8. In a machine of the character described, the combination of a series of dies and punches, 105 a carriage for supporting a plate in position to receive impressions from said dies and punches, means for operating the dies and punches comprising a toggle having a short member and a long member, and an adjust- 110 able fulcrum for the lower end of said long member comprising a cross-bar, plates supporting said cross-bar and adjustable laterally on the frame of the machine, and set-screws operating through said plates on the cross-bar 115 to adjust the same vertically.

9. In a machine of the character described, the combination of a series of dies and punches and a series of key-bars corresponding there- 120 to, notches in said key-bars, means for supporting a key-bar after the keys have been struck, a power-shaft, a grooved collar on said shaft, a lever pivoted on the side of the machine and having one end thereof arranged 125 in said collar, a pin carried by the collar to engage and operate the lever, and means operated by the lever for returning the key-bar to its normal position.

10. In a machine of the class described, the combination of character-impressing devices 130



and corresponding key-bars, a carriage for holding the plate in position to receive successive impressions, lever devices on the carriage for engaging a key-bar to lock the carriage thereon, and cam-headed screws for adjusting said locking-levers.

11. In a machine of the character described, the combination of character-impressing devices and means for operating the same, a frame for holding the plate in position to receive successive impressions and means for feeding said frame comprising a rack, a locking-pawl and a feeding-pawl engaging said rack, means for operating said feeding-pawl, a releasing-plate to operate the locking-pawl, and a detent carried with the feeding-pawl to operate said releasing-plate.

12. In a machine of the character described, the combination of character-impressing devices and means for operating the same, a frame for holding the plate in position to receive successive impressions and means for feeding said frame comprising a rack, a locking-pawl and a feeding-pawl engaging said rack, a rock-shaft, a crank on said rock-shaft carrying the feeding-pawl, means for rocking said shaft to operate the feeding-pawl, a releasing-plate connected with the locking-pawl and provided with a toe and heel, and a detent carried with the feeding-pawl and arranged to engage said toe and be disengaged therefrom by said heel when the releasing-plate swings on its pivot.

13. In a machine of the character described, the combination of character-impressing devices and means for operating the same, a frame for holding the plate in position to receive successive impressions and means for feeding said frame comprising a rack, a locking-pawl and a feeding-pawl engaging said rack, lugs on said pawls, a lever pivoted at one end, a pin on said lever arranged to engage said lugs, and a spring-pressed post connected with the free end of the lever to operate the same and simultaneously disengage the pawls from the rack.

14. In a machine of the character described, the combination of character-impressing devices and means for operating the same, a frame for holding the plate in position to receive successive impressions and means for feeding said frame comprising a rack, a locking-pawl and a feeding-pawl engaging said rack, a rock-shaft, a crank on said rock-shaft carrying the feeding-pawl, a post connected with said shaft for rocking the same and arranged to be operated by the character-impressing operating means, a lug on said post, and a handle-lever provided with a lug arranged to engage the lug on said post to operate the feeding means.

JOSEPH S. DUNCAN.

Witnesses:

WM. O. BELT,  
HELEN L. PECK.