

F. H. RICHARDS.  
MECHANICAL MOVEMENT.  
APPLICATION FILED OCT. 24, 1906.

925,383.

Patented June 15, 1909.

2 SHEETS—SHEET 1.

FIG. 1.

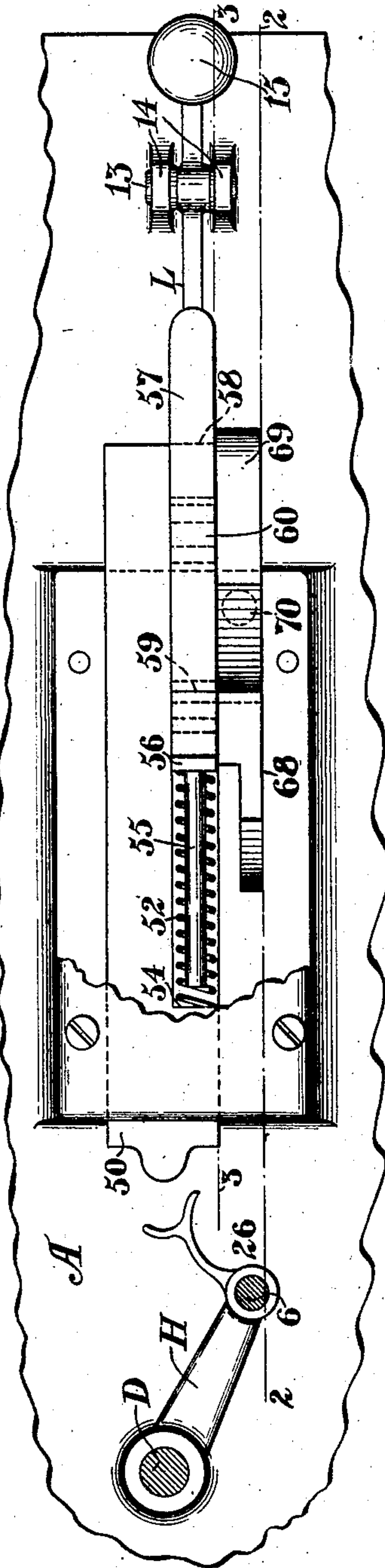


FIG. 2.

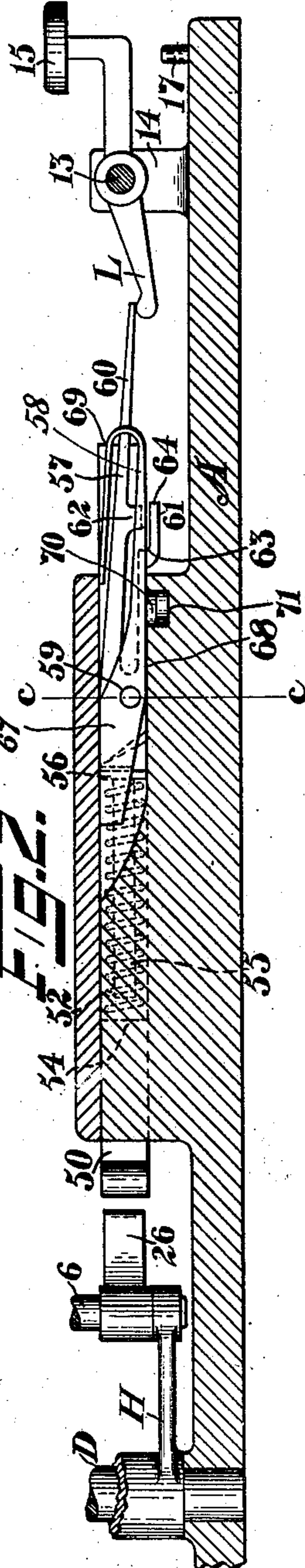
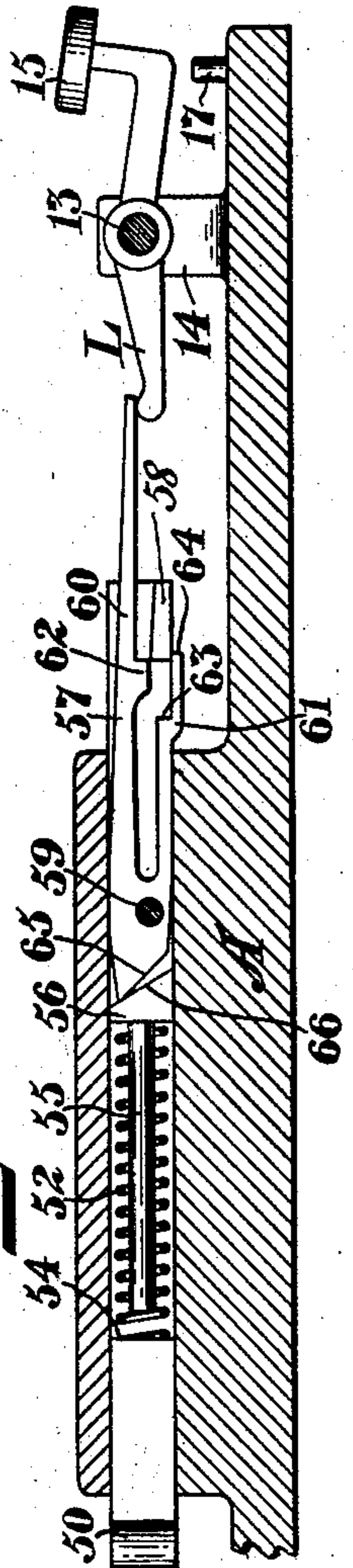


FIG. 3.

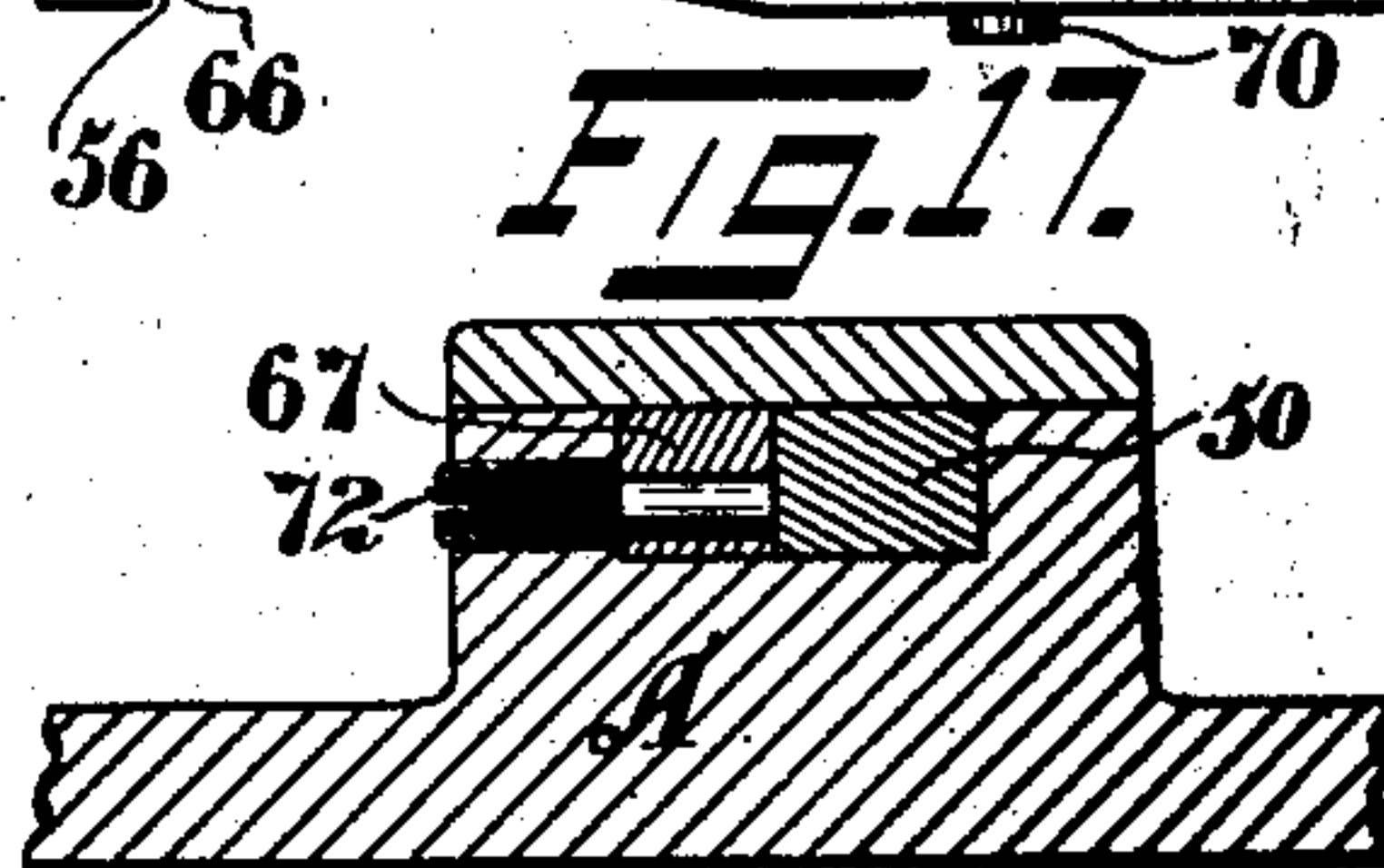
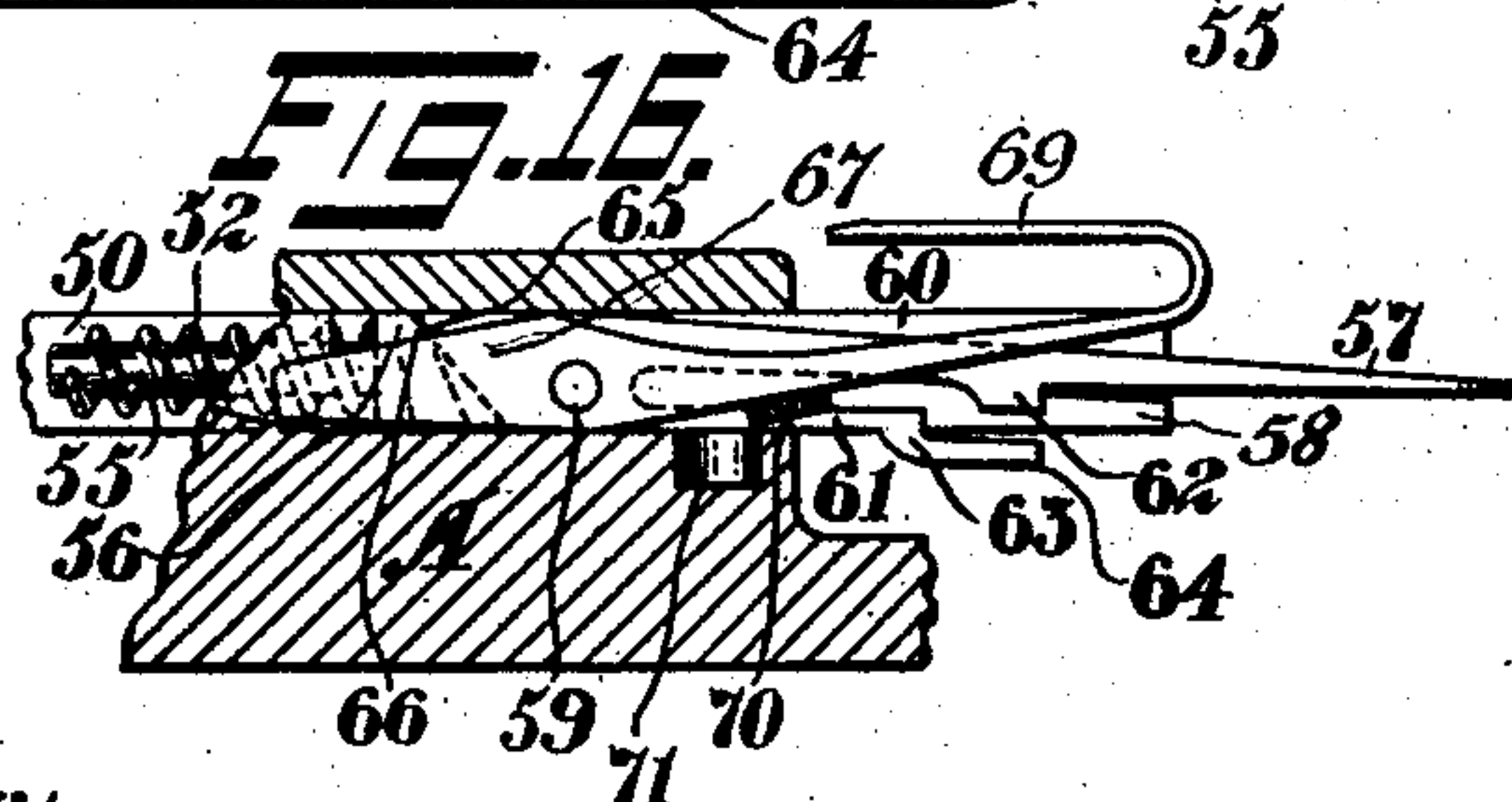
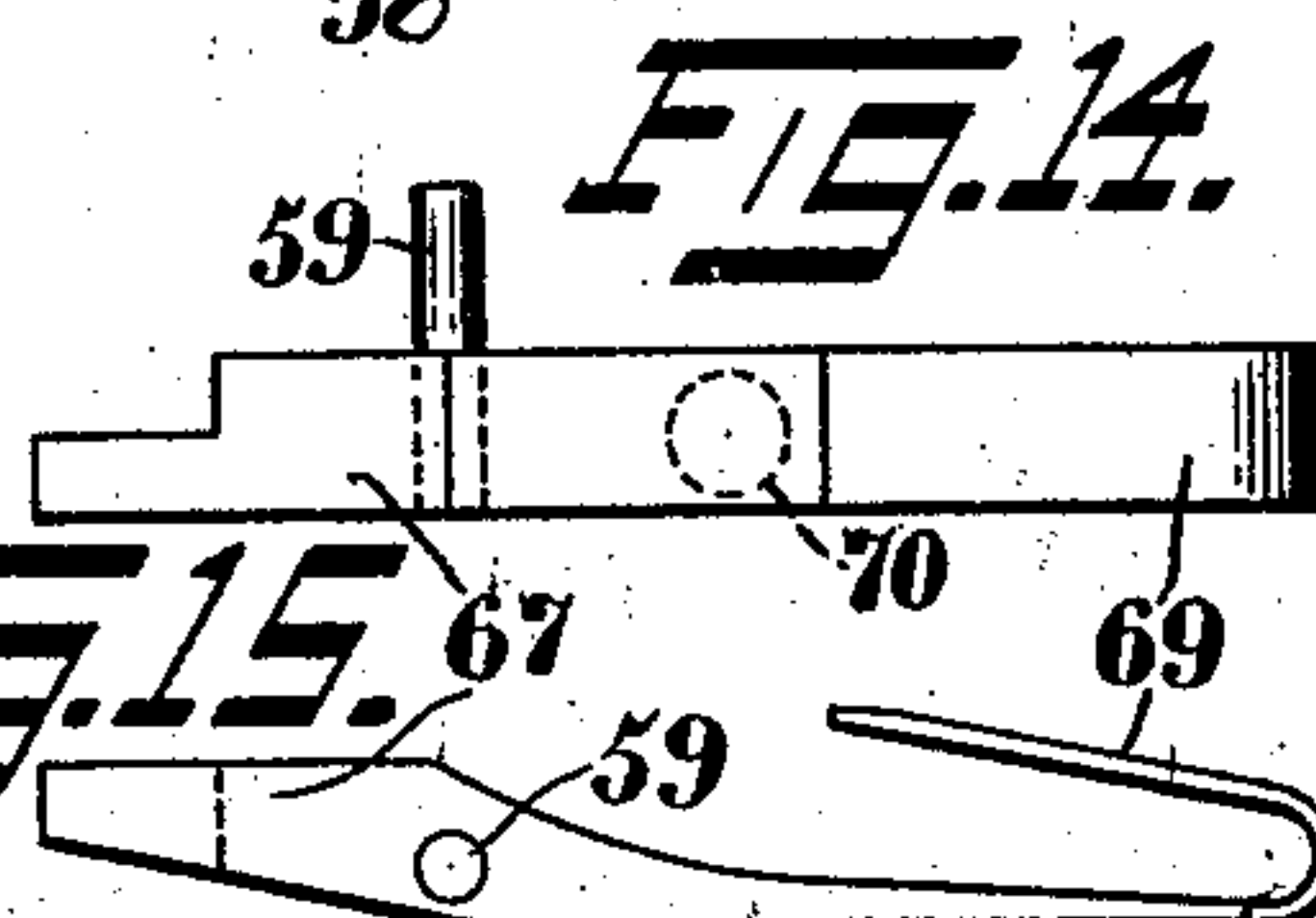
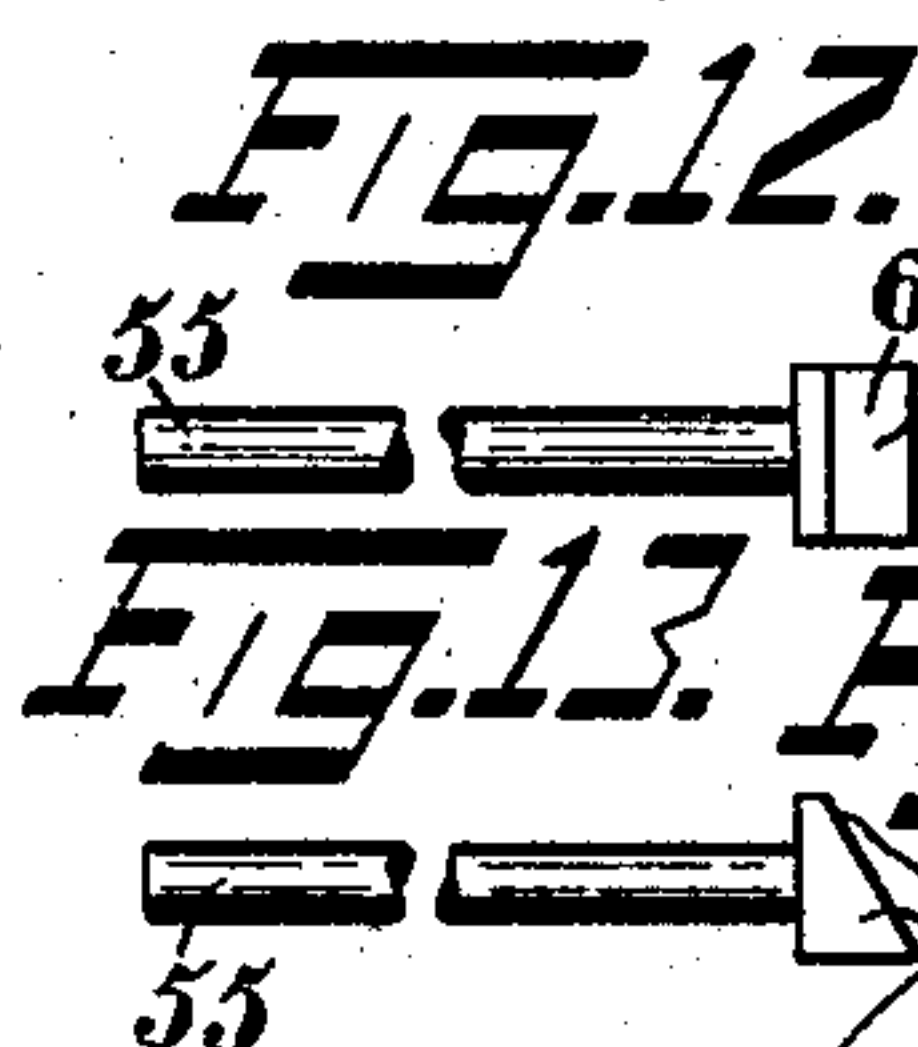
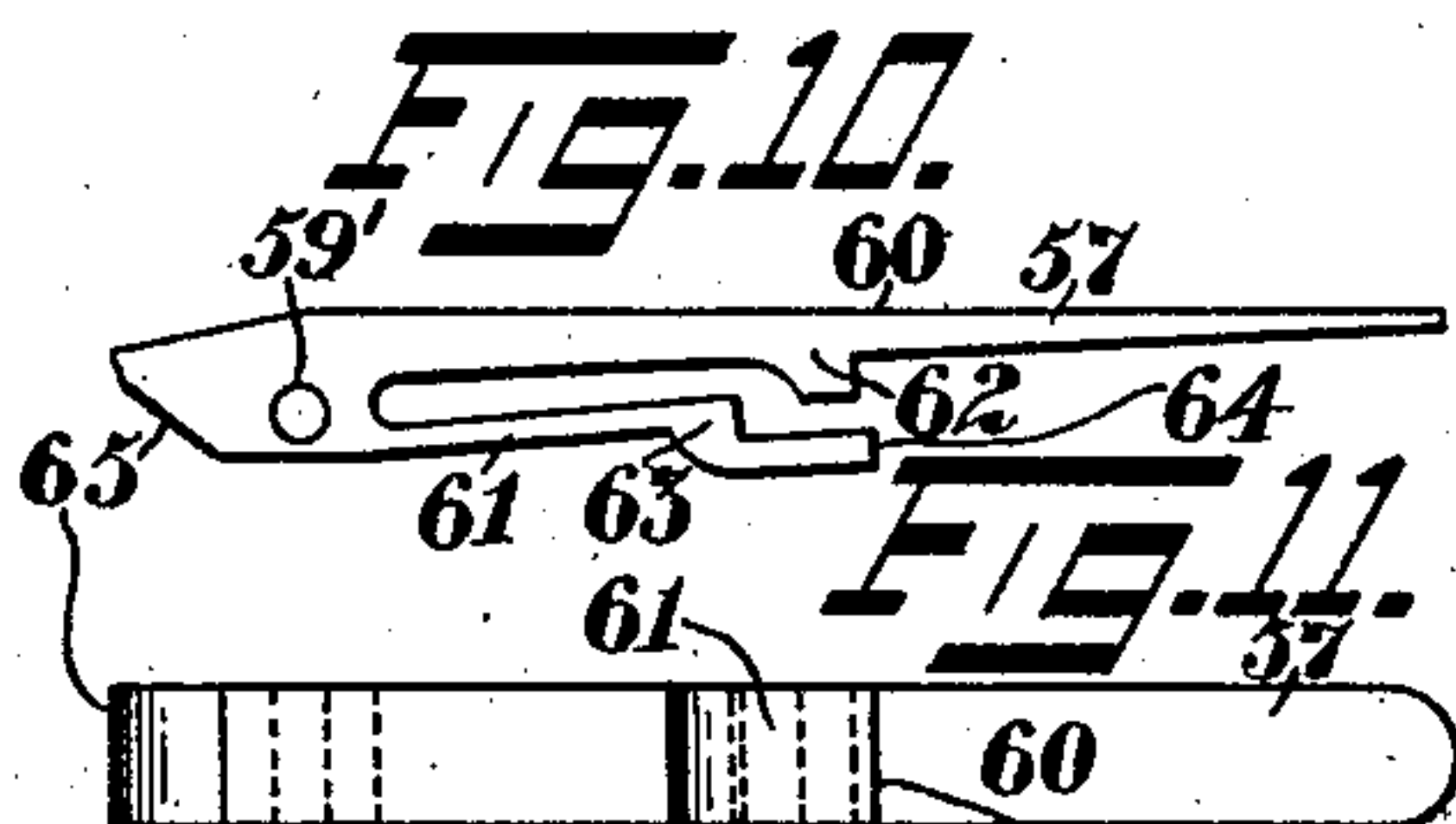
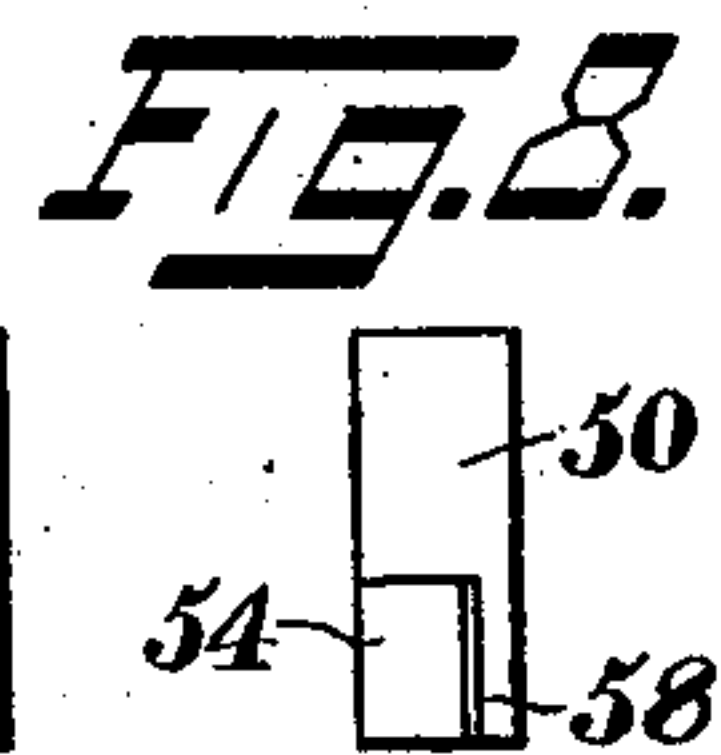
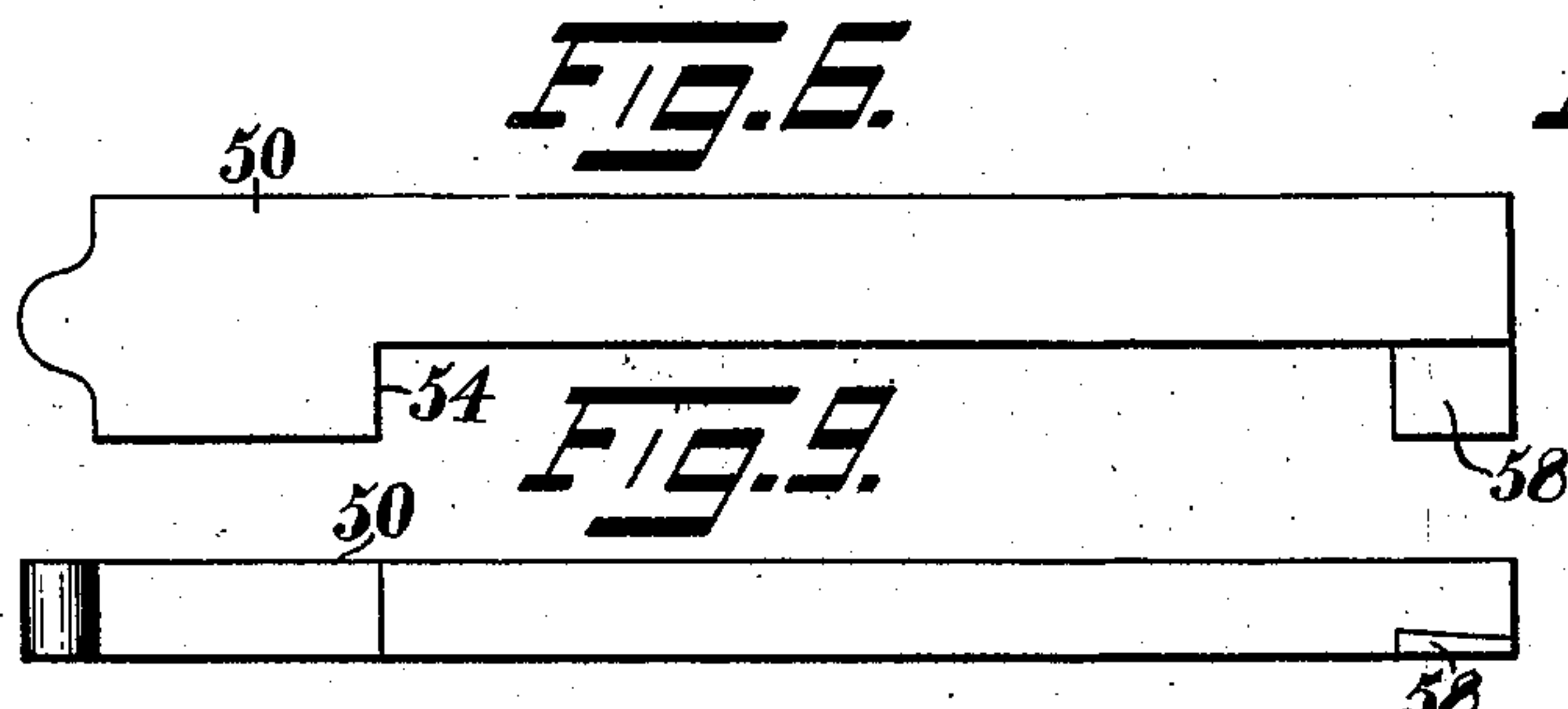
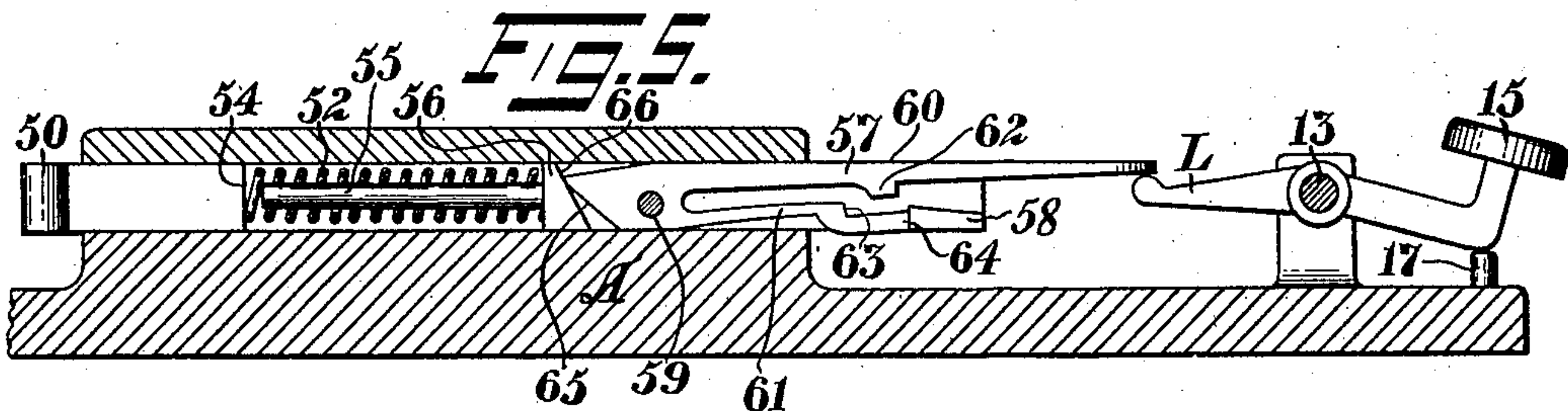
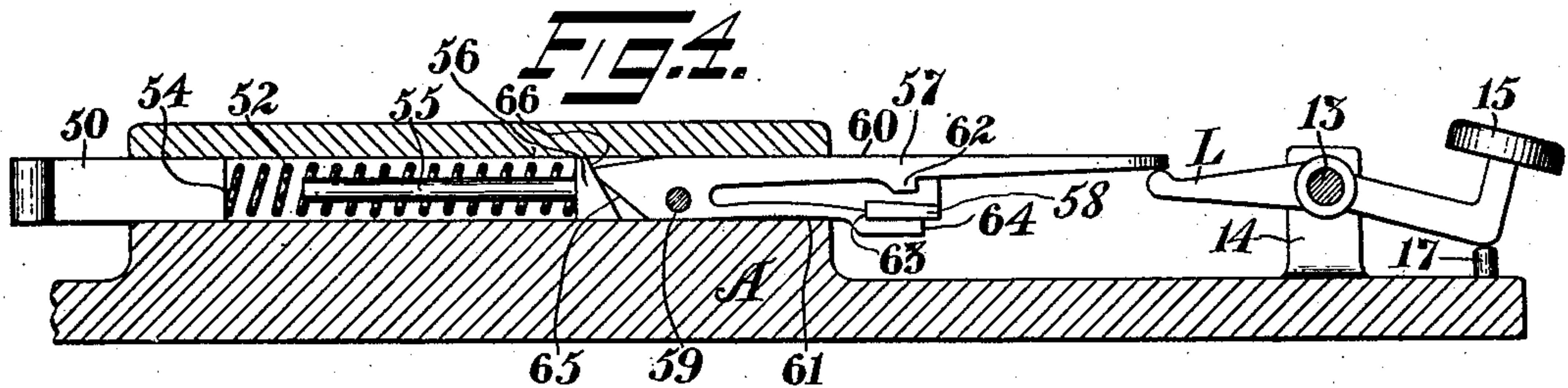


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H. D. Penney

Inventor:  
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**925,383.**

2 SHEETS—SHEET 2.



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# UNITED STATES PATENT OFFICE.

FRANCIS H. RICHARDS, OF HARTFORD, CONNECTICUT, ASSIGNOR, BY MESNE ASSIGNMENTS,  
TO AMERICAN TYPOGRAPHIC CORPORATION, A CORPORATION OF NEW JERSEY.

## MECHANICAL MOVEMENT.

No. 925,383.

Specification of Letters Patent.

Patented June 15, 1909.

Original application filed July 24, 1896, Serial No. 600,377. Divided and this application filed October 24, 1906.  
Serial No. 340,257.

*To all whom it may concern:*

Be it known that I, FRANCIS H. RICHARDS, a citizen of the United States, residing at Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Mechanical Movements, of which the following is a specification.

This invention relates to mechanical movements, and is especially intended as an improvement upon the mechanical movement described and claimed in U. S. Patent No. 401,904, granted to me on April 23, 1889, to which reference may be made, and the present invention consists of certain improvements in latch mechanism and in the special combination and arrangement of the several parts of the device as a whole, as will be hereinafter fully described and subsequently set forth in claims.

Referring to the drawings which accompany the present specification, Figure 1 is a plan view of so much of a mechanical movement of the particular class to which it appertains, as embodies my present invention, certain parts being broken away. Fig. 2 is a sectional elevation thereof taken upon the plane of the dotted line 2—2 in Fig. 1. Fig. 3 is a similar sectional elevation of the parts at the right hand of Fig. 1, the plane of the section being that of the dotted line 3—3 in Fig. 1. Fig. 4 is a view similar to Fig. 3, representing, however, the parts in a position in which the latch has been projected forward. Fig. 5 is a view similar to Fig. 4, representing the parts in a position in which the latch has been reset, although the key for tripping the latch remains in a depressed condition. Figs. 6, 7, 8 and 9 are various detail views of the latch embodied in the present mechanical movement. Figs. 10 and 11 are detail views of the escapement. Figs. 12 and 13 are detail views of a certain plunger. Figs. 14 and 15 are detail views of a fulcrum support utilized in the present mechanical movement for supporting the escapement in place. Fig. 16 is a sectional view illustrative of the manner in which the fulcrum support is inserted in place. Fig. 17 is a cross-sectional view on the plane of the dotted line c—c in Fig. 2, representing a modified construction for pivoting the escapement in place.

Similar characters designate corresponding parts in all figures.

The framework A of some suitable or preferred construction adapted to support the mechanism, is shown as having a stud D on which turns a rotatable frame or turret H that carries a rotatable shaft 6, to which is secured a starting-arm 26. The said frame has also formed therein a suitable recess constituting a bearing for a reciprocating latch 50, which when released is thrown forward (toward the left-hand, as shown in the drawing) by a spring 52, seated in said recess in the frame and bearing against a projection or shoulder 54 formed on the latch. This spring will preferably be arranged as shown in the drawings surrounding the stem 55 of a suitable plunger, the head 56 of which abuts against the end of an escapement 57, the construction, arrangement, and operation of which will be hereinafter described.

In the patent referred to the latch has two oppositely-disposed catches formed thereon, which, in the construction therein set forth, are adapted to successively engage with spring catches secured to a tripping-bar pivoted to uprights upon the frame, a spring being also provided to contact with the tripping-bar for the purpose of insuring its return movement after depression. In the present illustration the latch 50 has at its rear lower edge a lateral projection, which forms a catch 58, as will be hereinafter fully set forth.

Escapement 57 is, in the drawings accompanying the present specification, shown in the form of a bar or plate preferably constructed of spring steel and the escapement is fulcrumed at its inner or forward end (see 59) considerably in advance of the catch 58 upon the latch 50, and has two rearwardly-projecting arms 60 and 61 more or less remote one from the other. The arm 60 has a downwardly-projecting catch 62, and the arm 61 an upwardly-projecting catch 63 located in advance of the catch 62, said catches extending into the space between said arms. The rear end of the arm 61 of the escapement terminates slightly in the rear of the bearing face of the catch 62 and forms a supplemental catch 64, the purpose of which will be hereinafter set forth.



The upper arm 60 of the escapement extends backwardly considerably beyond the rear end of the latch and is adapted to be acted upon by a tripping bar or lever L fulcrumed at 13 to uprights 14 upon the frame A. This tripping-lever L is provided with a finger-key 15, and the operation of the lever is similar to the one described in the patent referred to. A stop 17 is provided to properly limit the downward movement of the key and lever.

By referring to Fig. 2 of the drawings, which shows the normal position of the escapement, it will be seen that the rear end of the arm 60 is depressed or inclined with relation to the horizontal plane, and that its outer end is in contact with the forward end of the lever L, the key end of said lever being retained in an elevated position. In this position it will be seen that the catch 58 upon the latch is in engagement with the catch 62 upon the arm 60 of the escapement 57 and that the extreme lower edge of the catch 62 is approximately on a horizontal line with the upper edge of the catch 63 upon the lower arm 61 of the escapement, and the rear face of the arm 61, forming the supplemental catch 64, is slightly to the rear of the front edge of the face of the catch 58 upon the latch 50. In this position the escapement is adapted to be operated by lever L through the depression of the key attached thereto and thereby allow the latch to be thrown forward, the operation being substantially as follows: When the key 15 is depressed it first assumes the position in Fig. 3 with the rear end of the lever L slightly elevated, which throws the resilient arm 60 of the escapement slightly upward and the catch 62 upon said arm nearly out of engagement with the catch 58 upon the latch. Upon the further depression of the key to its lowest position the forward end of the tripping-lever acting against the arm 60 presses the same upward, moving the catch 62 out of engagement with the catch 58 upon the latch. The spring 52 then acts to throw the latch forward and bring its catch 58 into engagement with catch 63 upon arm 61, as shown in Fig. 4. Further forward movement of the latch is thus arrested by catch 63, which acts as a stop, the forward end of the latch being then in a position to be engaged by the starting-arm 26, which causes the latch, by the toggling action of that arm as it swings around, to be pushed backward. Should the key, however, be retained in a depressed position holding the rear portion of the escapement 57 in its elevated position until the starting-arm 26 has acted upon and pushed the latch to its extreme rearward position, supplemental catch 64 at the end of the lower arm 61 of the escapement engages with the catch 58 of the latch and holds the latter against return

movement, as clearly shown in Fig. 5 of the drawings, until the key returns to its normal position.

The forward end of the escapement is preferably V-shaped to form a cam-face 65 which contacts with the cam-face 66 upon the head 56 of the plunger. The two cam-faces under the action of spring 52 operate to depress the rear end of the escapement and, moving the same downward, to bring the catch 62 in line with catch 58 upon the latch, with which former the latter engages when free to do so by the release of the key on the lever L.

It is obvious that the escapement might be constructed with rigid arms instead of being yielding as described, preferably, however, I construct the said escapement with its arms of spring steel, as by so doing wear is not only obviated in great measure, but is taken up or compensated for by the movement of the spring arms 60 and 61 toward each other.

The escapement 57 is shown provided with a fulcrum bearing 59' and is fulcrumed upon a pin 59 secured to or formed upon a supporting bar or fulcrum support 67, removably secured in a recess 68 in the frame A adjacent to the latch recess. This fulcrum support is beveled at its lower side in front of its connection with the escapement to permit of its tipping and it has its rear end bent U-shaped, as shown at 69. Rearward of its connection with the escapement is a projection 70 which enters, when the parts are assembled and secured in place, in a recess or depression 71 in the frame A, as clearly shown in Fig. 2. The projection 70, may, however, be fixed in the framework A, and engage a recess or perforation in the fulcrum-support 67, if such construction be preferred. The projection 70, serves to retain the support in position longitudinally of the cavity or recess 68. The free end of the fulcrum-pivot 59, contacts with a wall of the cavity 68, thus holding the angular arms of the fulcrum-support 67, against the opposite wall of said cavity, thus serving to fix the horizontally transverse position of said support 67, and to maintain the alignment of the latter in said recess 68. Vertical movement of the fulcrum-support 67, when in place in the recess 68, is prevented by contact of the edges thereof with the upper and lower walls of the recess 68. The fulcrum support, together with the escapement, may be secured in the recess substantially in the following manner—The escapement is first mounted upon the fulcrum pin 59 of the support 67; the parts of the rear end of the fulcrum support are then pressed together sufficiently to permit the support and escapement to be inserted into the recess in the frame, after which the projection 70 of the support, seating itself in the recess 71, pre-



vents longitudinal movement of the parts and the end 69 in contact with the inner wall of the bearing in the frame holds the part from unseating and securely retains them in place. From this description the operation of removing the parts will be obviously apparent.

It is not desired to limit the invention to the particular construction and arrangement of the escapement and fulcrum support, as set forth, since, if desired, the fulcrum support, for instance, shown in Figs. 1, 2, 4 and 5 and the detail views might be dispensed with and the escapement be fulcrumed upon a pin secured to the frame A. In Fig. 17 I have shown such a modified construction in which the fulcrum for the escapement is shown in the form of a screw 72 extending through a screw-threaded opening in the frame and reduced at its inner end to form a journal which projects through a bearing formed in the escapement, such construction providing a convenient means for supporting the escapement in place.

This application is in some respects in the nature of a division of my copending application, Serial No. 600,377, filed July 24, 1896, for machine for making impressions.

Having described my invention I claim:

1. The combination with a latch having an escapement-engaging stop face, of an escapement having a set of three stop faces respectively coöperative with the said stop face on the latch at different relative positions of the said parts.

2. The combination with a latch having an escapement-engaging stop face, of an escapement having a set of stop faces coöperative with the stop face on the latch, and a removable fulcrum piece to which the escapement is pivoted.

3. The combination with a latch having an escapement-engaging stop face, of an escapement having a primary stop face with which the stop face on the latch normally engages when the latch is in its retracted position, said escapement also having a limit stop face forward of the primary stop face, and a secondary stop face at the rear thereof.

4. The combination with a latch having an escapement-engaging stop face, of an escapement having a primary stop face with which the stop face on the latch normally engages when the latch is in its withdrawn position, said escapement also having a limit stop face forward of the primary stop face and a secondary stop face at the rear thereof, and a removable fulcrum piece to which the escapement is pivoted.

5. The combination with a latch having an escapement-engaging stop face, of an escapement having resilient arms, one of which is provided with a primary stop face, and the other of which arms is provided with a limit stop face and a secondary stop face.

6. The combination with a latch having an escapement-engaging stop face, of an escapement having resilient arms integrally connected with each other, one of which arms is provided with a primary stop face and the other of which arms is provided with a limit stop face and a secondary stop face.

7. The combination with a latch having an escapement-engaging stop face, of an escapement having resilient arms, and each of said arms being provided with a latch engaging face, and an actuator engaging with one of the arms for flexing said arms for rendering said engaging faces effective.

8. The combination with a latch having an escapement engaging stop face, of an escapement having resilient arms, and an actuator engaging with one of the arms for actuating the escapement and releasing the latch, one of said arms being provided with a primary stop face and the other of said arms being provided with a limit stop face and a secondary stop face.

9. The combination with a latch having an escapement-engaging stop face, of an escapement having resilient arms, one of which arms is provided with a primary stop face and the other of which arms is provided with a limit stop face and a secondary stop face, and a removable fulcrum piece to which the escapement is pivoted.

10. The combination with a latch having an escapement-engaging stop face, of an escapement having resilient arms, one of which arms is provided with a primary stop face and the other of which arms is provided with a limit stop face and a secondary stop face, an actuator engaging with one of the arms and operating to simultaneously disengage the latch and shift the secondary stop face into position to engage with the retracted latch, a spring for projecting the disengaged latch, and a cam interposed between the spring and the escapement for urging the escapement to a position in which the stop face on the latch engages with the primary stop face on the escapement.

11. The combination of a latch having a detent, of an escapement oscillatable transversely of said latch and engageable by said detent on said latch, and spring means for urging said latch in one direction and oscillating said escapement in one direction.

12. The combination of a latch having a detent, of an escapement oscillatable transversely of said latch and engageable by said detent on said latch, spring means for urging said latch in one direction and oscillating said escapement in one direction, a fixed pivot upon which said escapement is mounted, said escapement having an arm resilient relative to the detent engaging portion and engageable by a key-lever for oscillating it in the other direction.



13. The combination with a latch having a detent, of an escapement oscillatable transversely of said latch and engageable by said detent on said latch, spring means for urging the said latch in one direction and oscillating said escapement in one direction, a fixed pivot upon which said escapement is mounted, said escapement having an arm, resilient relative to the detent engaging portion, engageable by a key lever for oscillating it in the other direction.
14. The combination with a latch having a detent, of an escapement oscillatable transversely of said latch, engageable by said detent on said latch and having a cam face, a spring pressed part for engaging said latch and urging the same in one direction and for engaging said cam and oscillating said escapement in one direction, a fixed pivot upon which said escapement is mounted, said escapement having an arm, resilient relative to the detent engaging portion, engageable by a key lever for oscillating it in the other direction.
15. The combination with a latch having an escapement-engaging stop face, of an escapement having a pair of resilient arms, a primary stop face on one of said arms with which the stop face on the latch normally engages when the latch is in its withdrawn position, a limit stop face forward of the primary stop face and a secondary stop face at the rear thereof on the other of said arms, and a removable fulcrum piece to which the escapement is pivoted.
16. The combination with a latch having an escapement-engaging stop face, of an escapement having a pair of arms extending in the same direction spaced apart and resilient one relative to the other, a primary stop face on one of said arms and extending into said space with which the stop face on the latch normally engages when the latch is in its withdrawn position, a limit stop face forward of the primary stop face and a secondary stop face at the rear thereof on the other of said arms and extending into said space for engaging said latch stop face.
17. The combination of a key-lever having a toe, which contacts a resilient arm of an integral bifurcated escapement, which has an engaging catch, on said arm, and two engaging catches on its other arm and is oscillatably pivoted to a fixed fulcrum support, and is oscillatable in one direction by reason of contacting an angular end thereof with a reversed angular end of a member, which is resiliently urged against said escapement-end, by a spring coiled about a stem on said member, said spring, at its other end, contacting a shoulder formed transversely of a latch, which is reciprocatably mounted contiguous to and parallel with the escapement, and is furnished with a detent projecting transversely from said latch into the bifurcation of said escapement, the several catches of said escapement being engageable in turn by said detent.
18. The combination with a latch having a catch, of a one-piece escapement provided with two resilient arms, one of said arms having a plurality of catches and the other of said arms having a catch upon its inner face at a point intermediate the catches upon the former arm, said catches being so arranged relatively to one another and to the catch upon the latch that they will be successively engaged with and disengaged from said latter catch.
19. In a mechanism of the class specified, the combination with a spring-actuated latch having a projecting catch, of a fulcrumed escapement provided with catches as described, successively arranged, and having its forward end beveled or cam-faced, and a spring-actuated plunger having a beveled face adapted to bear against the end of the escapement.
20. In a mechanism of the class specified, in combination with a frame having a recess therein, a latch provided with a catch and having a shoulder or projection, a fulcrumed escapement located in the frame between said catch and said shoulder or projection on the latch and having catches to be engaged with and disengaged from the catch upon the latch, and rendered effective upon the turning of the escapement upon its fulcrum, said escapement having its forward end reduced or beveled to form a cam-face, a cam-faced plunger adapted to bear against the end of the escapement for turning the same on its fulcrum, and a spring interposed between the shoulder or projection of the latch and the plunger.
21. The combination with a latch having a detent and guides upon which the latch is mounted for reciprocation, of an escapement oscillatable laterally of the path of reciprocation of said latch and having at its rear end a pair of resilient arms spaced apart in the line of the path of movement of said detent, means for urging the latch forward on said guiding means, means for depressing the rear portion of said escapement, the upper of said escapement arms being extended beyond the lower for the engagement of an actuator in its upward movement and having a stop face slightly forward of the end of the lower of said arms, which said end constitutes a stop face, and a stop face on said lower arm forward of the said stop face on the upper arm, the normal space between the arms at the region of said stop faces being less than the length of the said detent on the latch.
22. The combination with a latch having a detent and means for guiding the latch in a straight line path of reciprocation, of an escapement oscillatable laterally of said



path of reciprocation and having at its rear  
end a pair of resilient arms spaced apart in  
the line of the path of movement of said  
detent and having a cam face at its front  
5. end, a spring pressed plunger for engaging  
said latch and urging the same forward on  
said guiding means and having a cam face  
for engaging said cam face on said escape-  
ment for depressing the rear portion thereof,  
10 the upper of said arms being extended be-  
yond the lower for the engagement of an  
actuator in its upward movement and hav-  
ing a stop face slightly forward of the end

of the lower of said arms, which said end  
constitutes a stop face, and a stop face on 15  
said lower arm forward of the said stop  
face on the upper arm, the normal space  
between the arms at the region of said stop  
faces being less than the length of the said  
detent on the latch. 20

Signed at Nos. 9-15 Murray street, New  
York, N. Y., this 17th day of October, 1906.

FRANCIS H. RICHARDS.

Witnesses:

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FRED J. DOLE.