

No. 629,437.

Patented July 25, 1899.

C. N. FAY.

TYPE WRITING MACHINE.

(Application filed Jan. 13, 1897.)

(No Model.)

5 Sheets—Sheet 1.

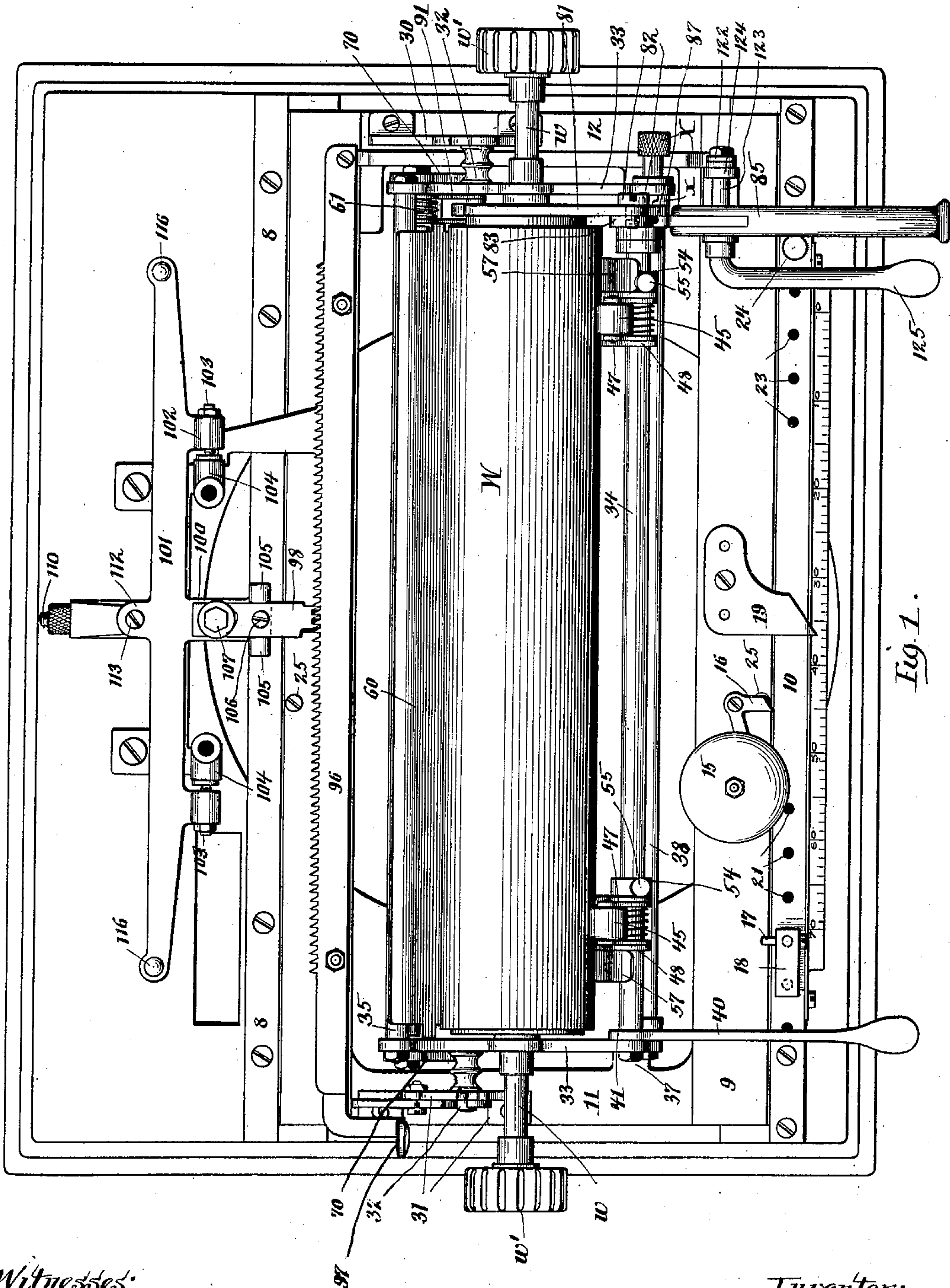


Fig. 1.

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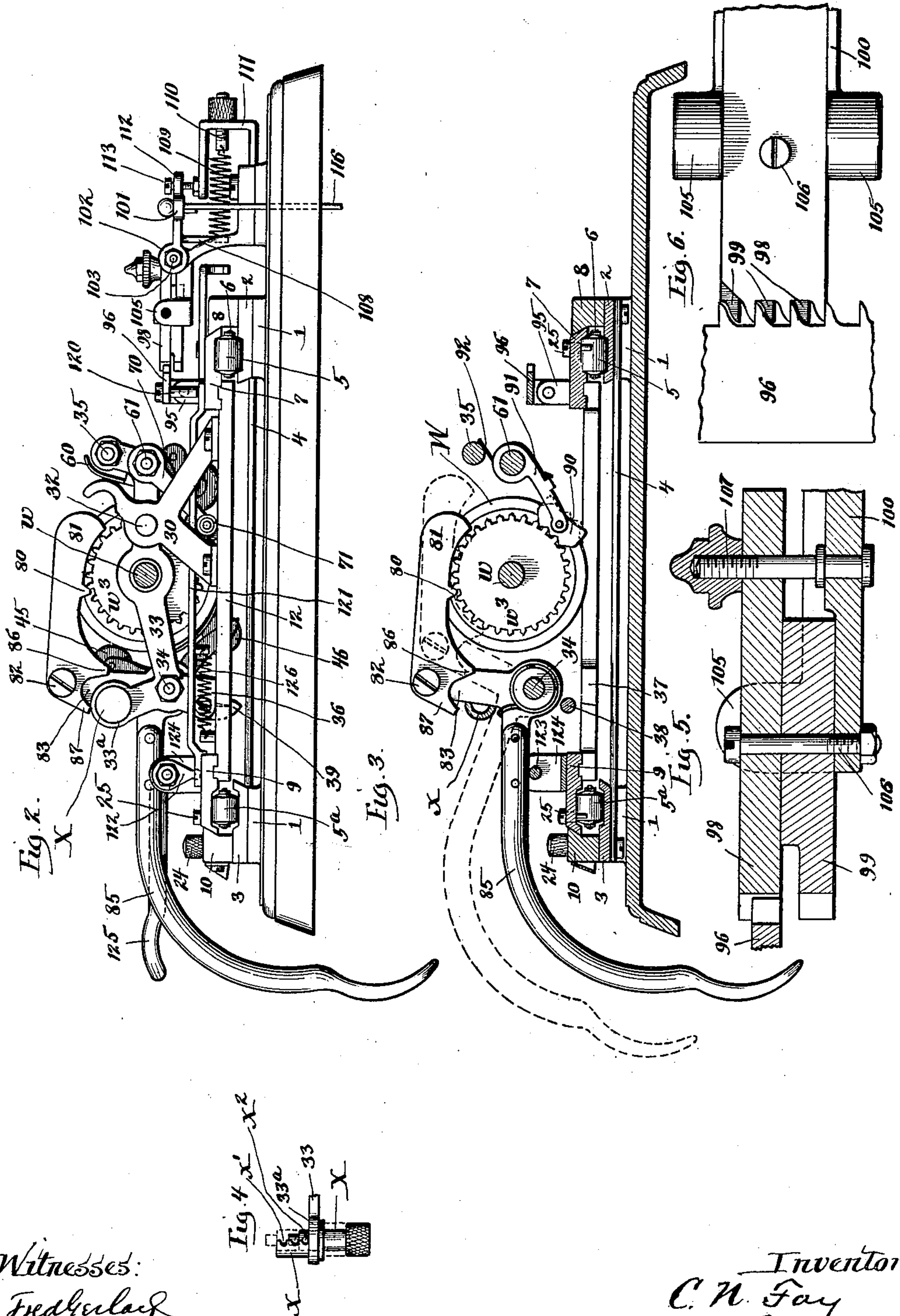
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5 Sheets—Sheet 2.



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Fig. 7.

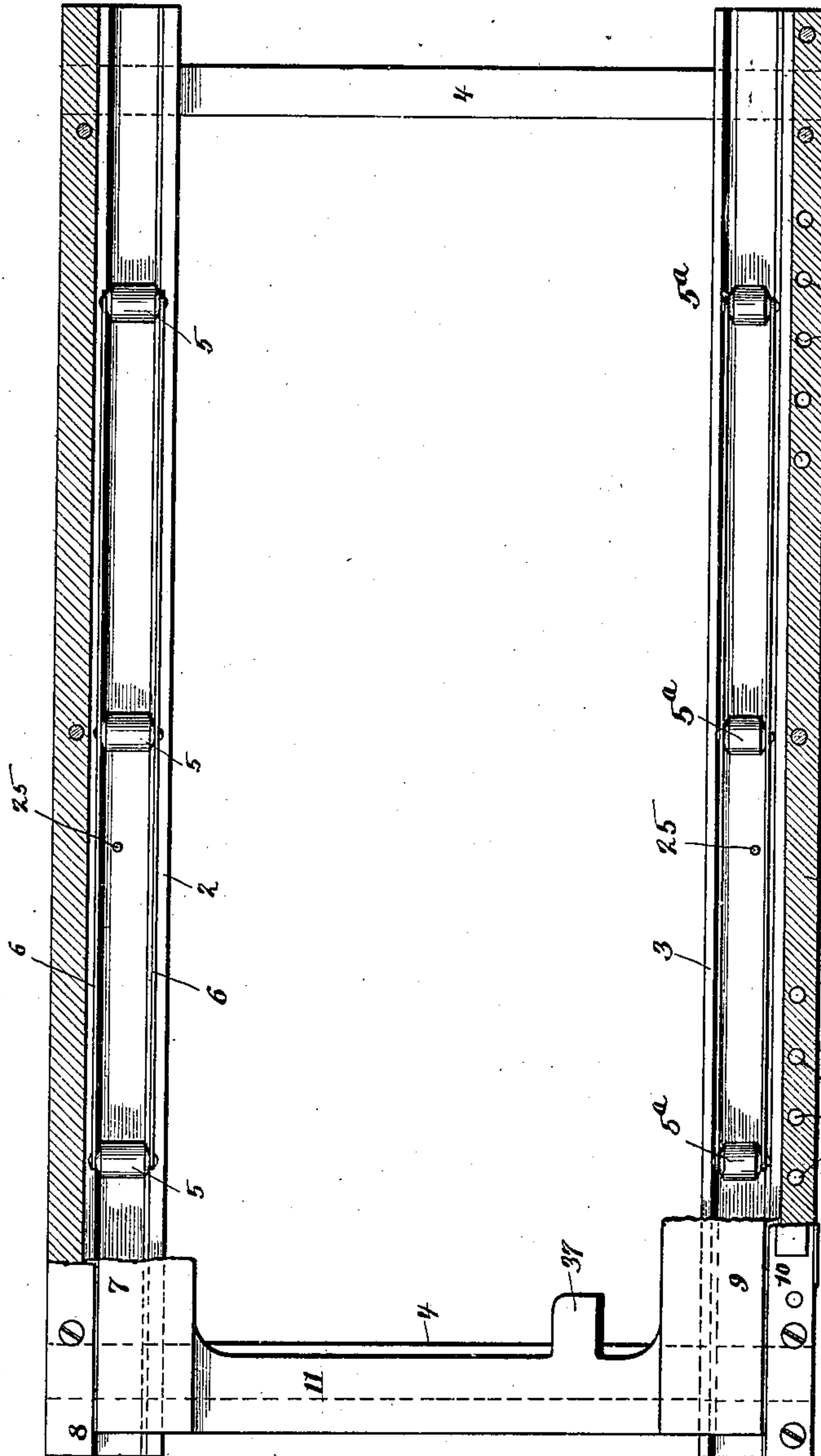


Fig. 8.

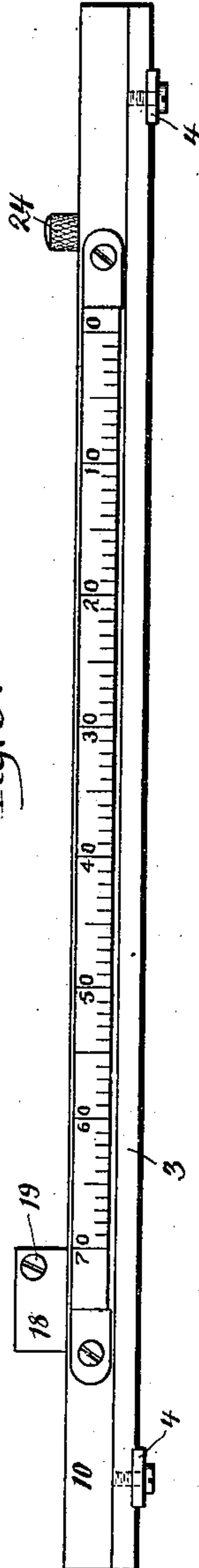


Fig. 9.

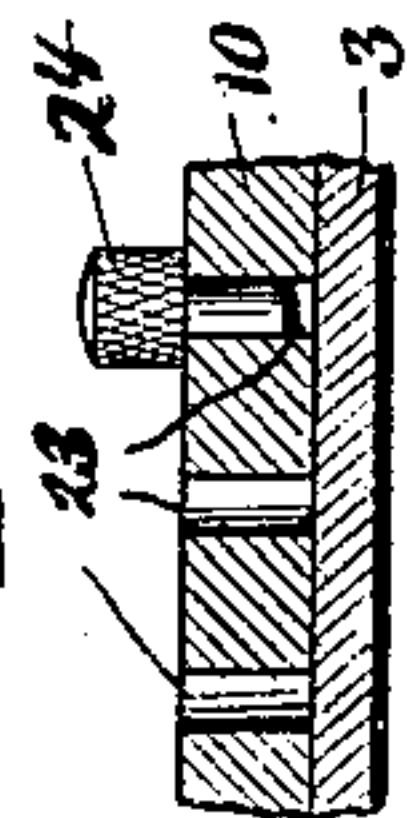


Fig. 10.

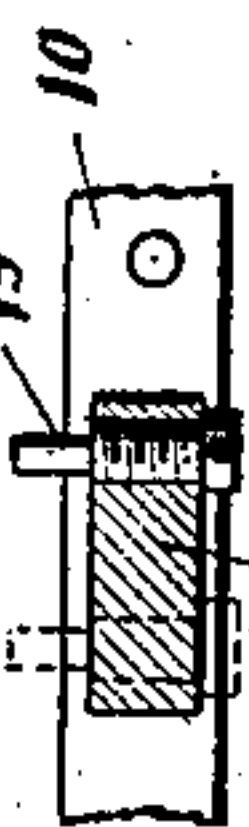


Fig. 11.

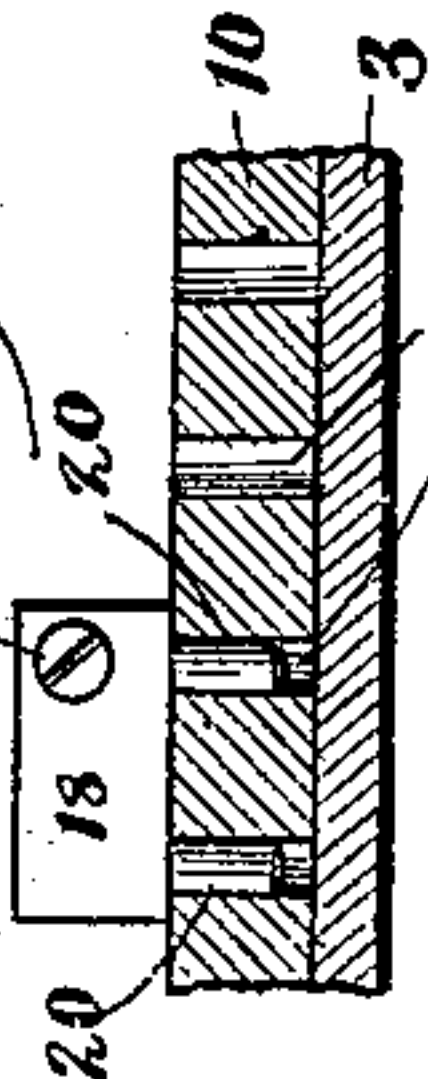
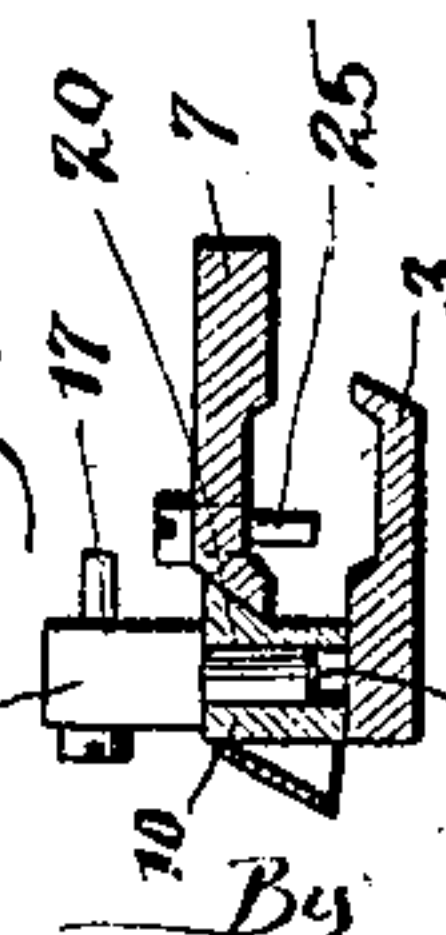


Fig. 12.



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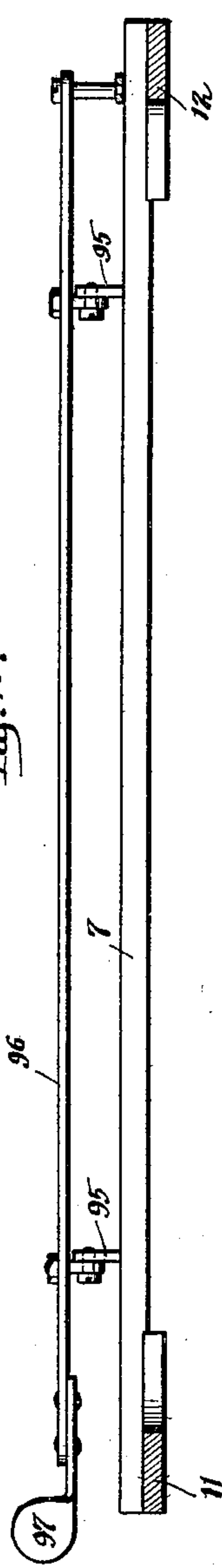
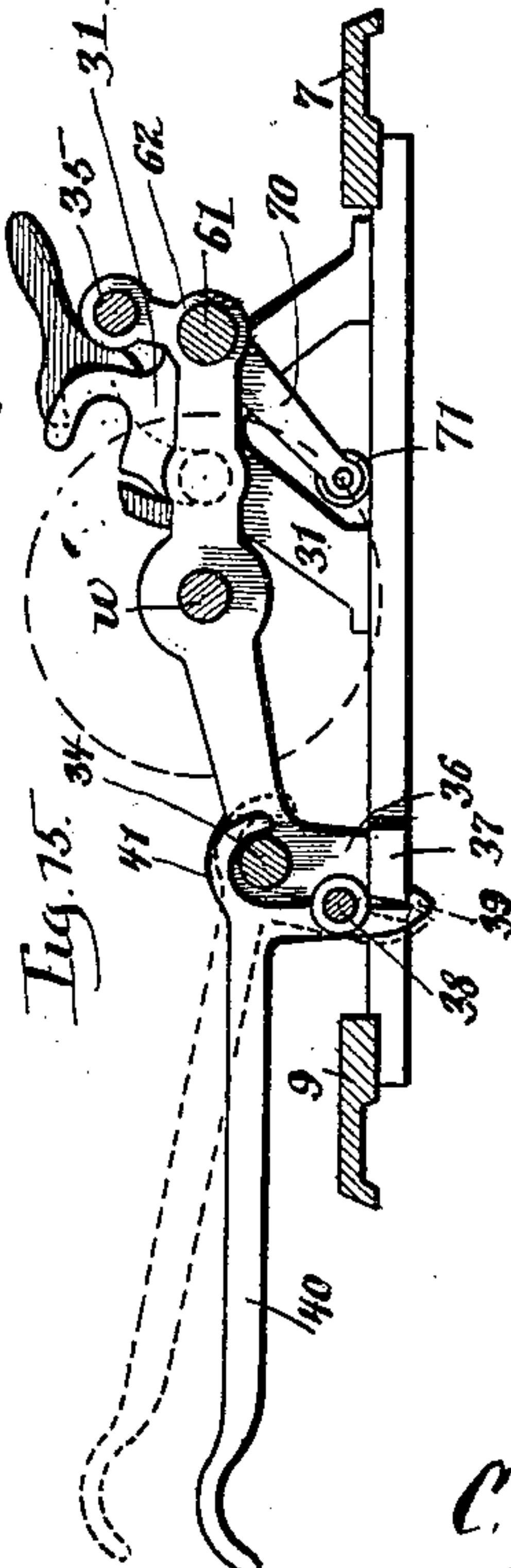
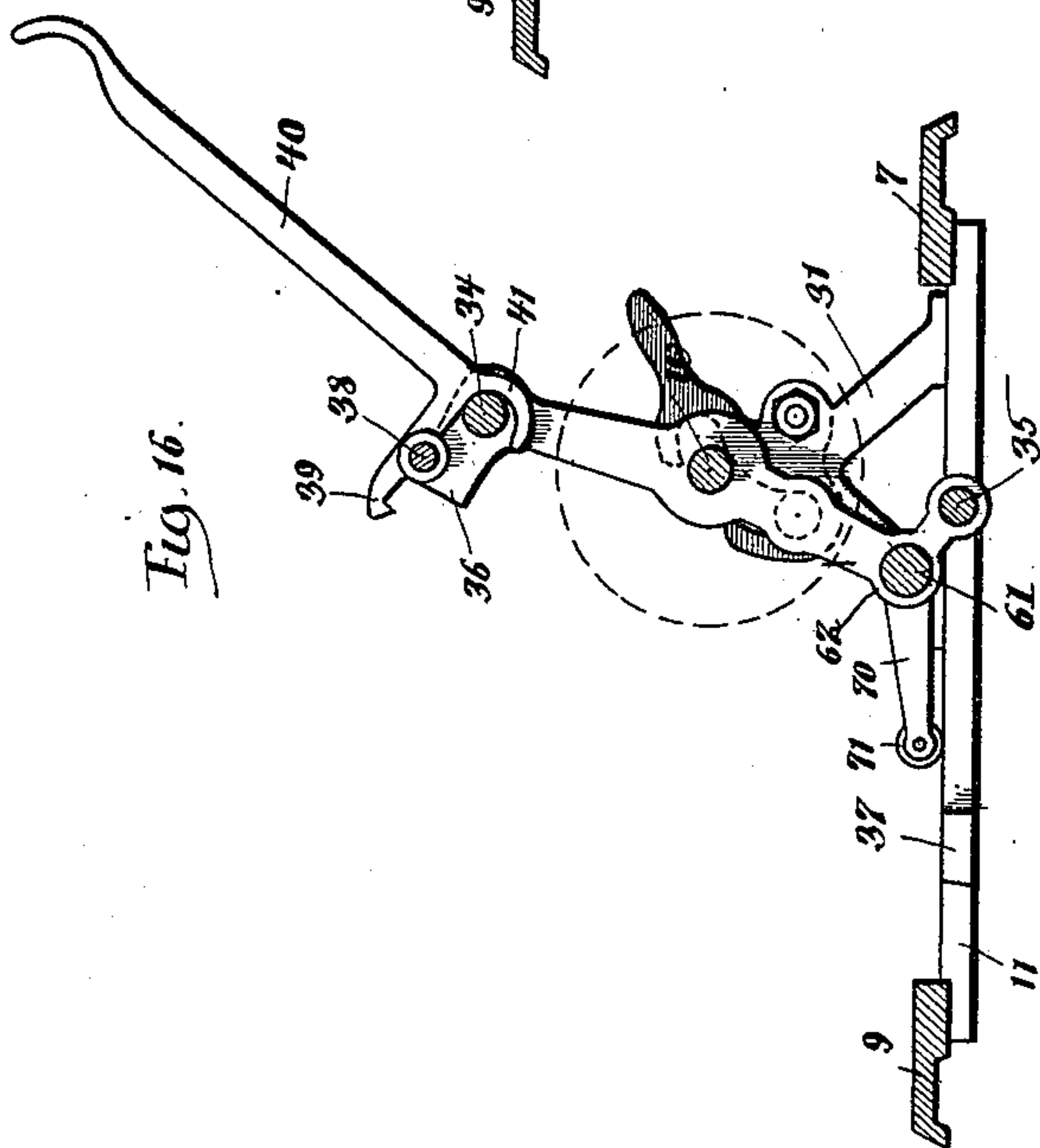
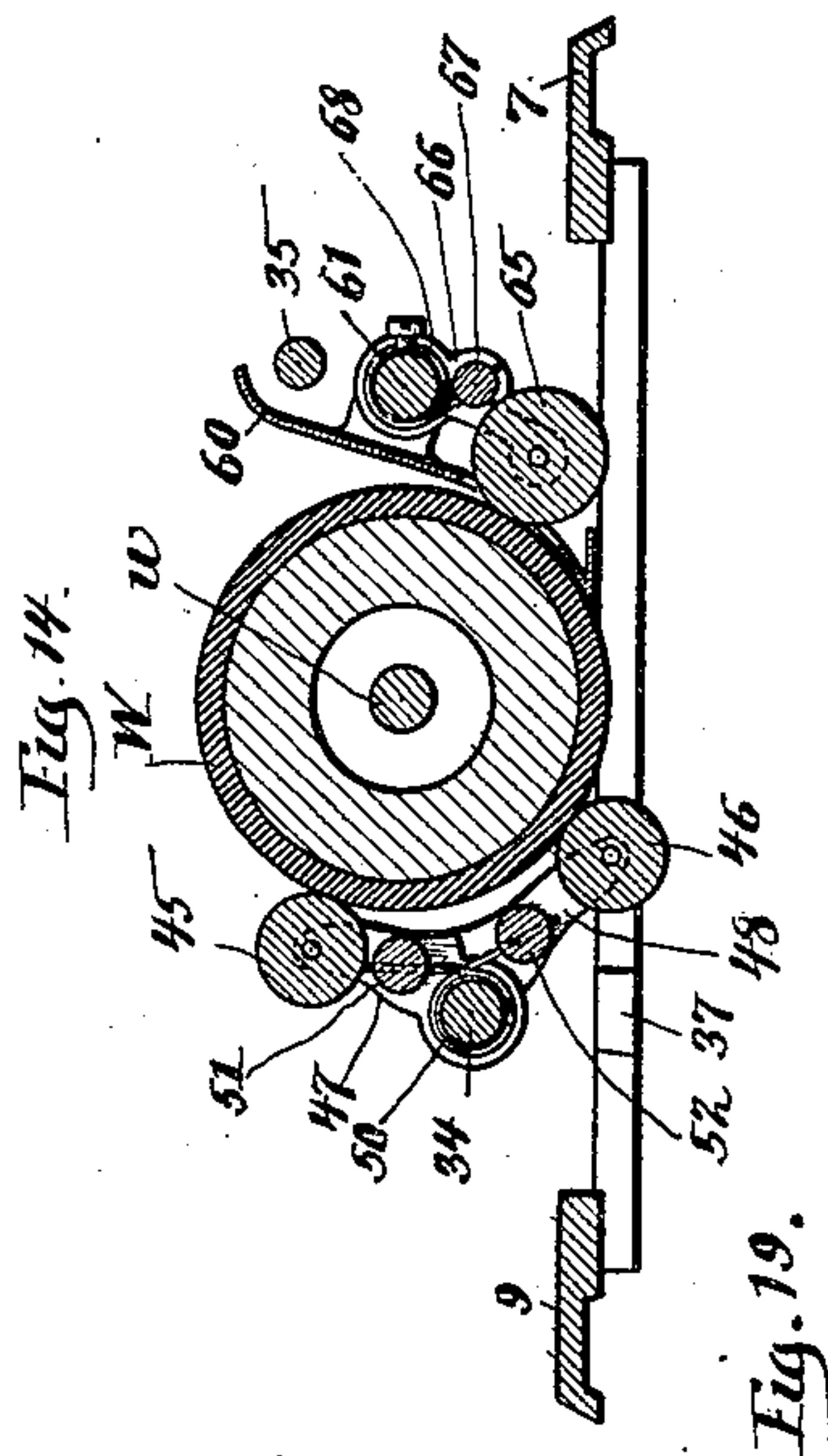
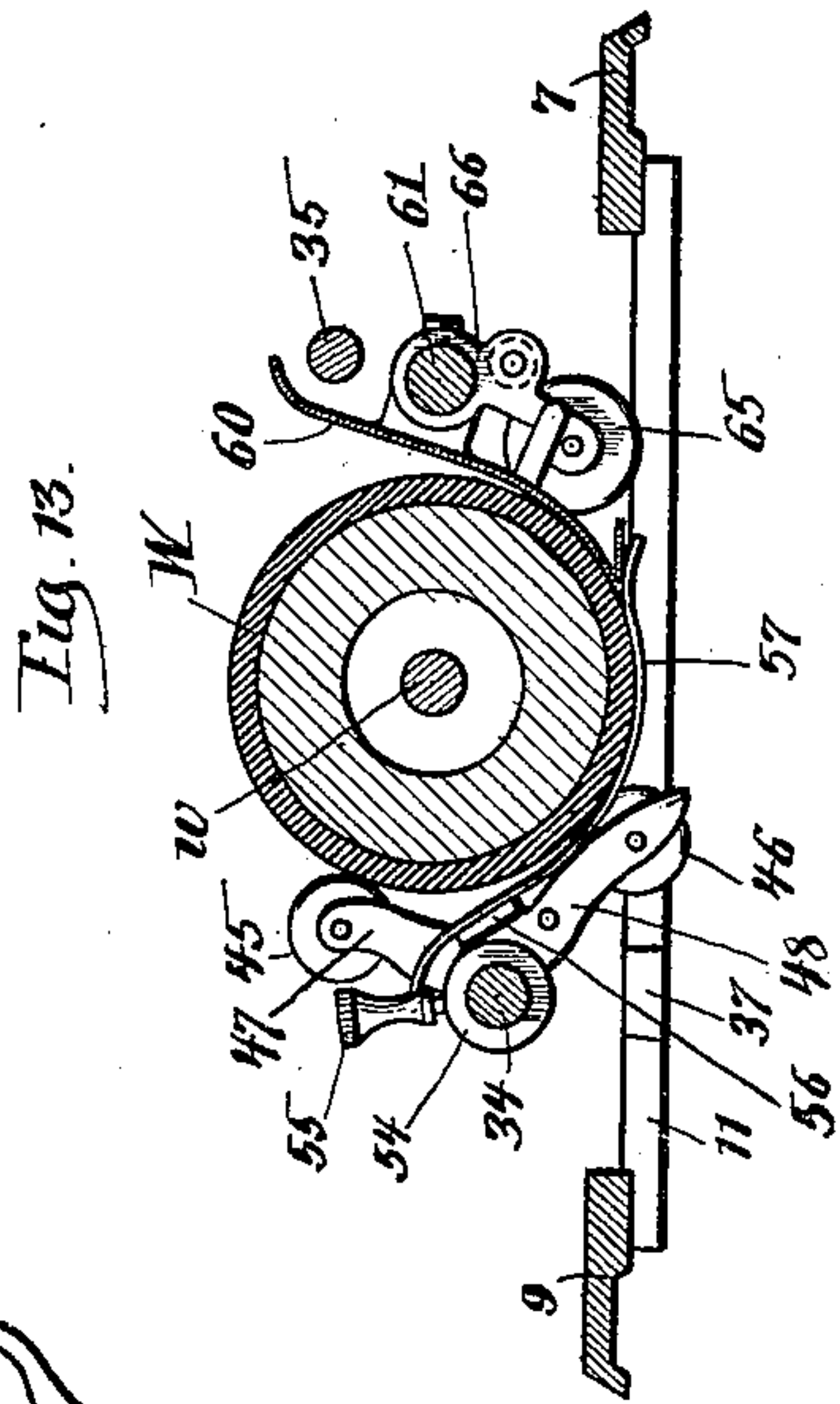
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5 Sheets—Sheet 4.



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(Application filed Jan. 13, 1897.)

(No Model.)

5 Sheets—Sheet 5.

Fig. 17.

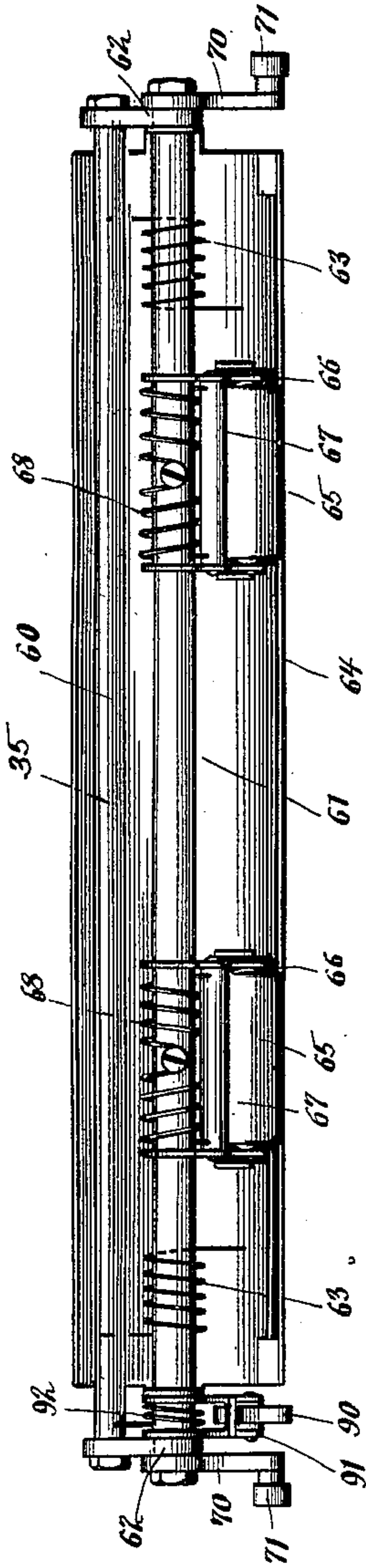
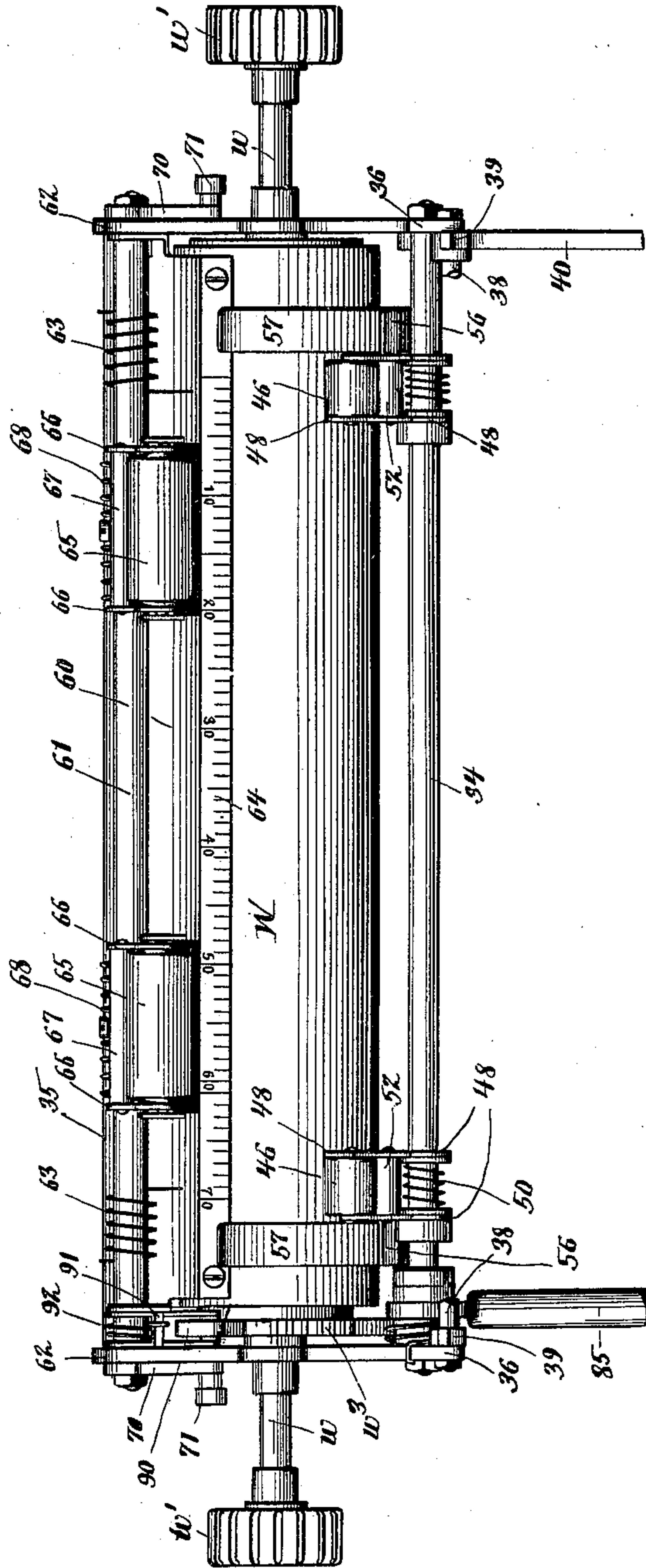


Fig. 18.



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UNITED STATES PATENT OFFICE.

CHARLES N. FAY, OF CHICAGO, ILLINOIS.

TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 629,437, dated July 25, 1899.

Application filed January 13, 1897. Serial No. 619,033. (No model.)

To all whom it may concern:

Be it known that I, CHARLES N. FAY, a resident of the city of Chicago, in the county of Cook, State of Illinois, have invented certain
5 new and useful Improvements in Type-Writing Machines, of which I do declare the following to be a full, clear, and exact description.

The present invention has relation more
10 particularly to that class of type-writing machines in which the paper that receives the impression of the type is carried upon a revoluble platen mounted upon a carriage, suitable escapement mechanism being provided
15 for effecting the step-by-step letter-space movement of the carriage, and suitable line-spacing mechanism being provided whereby partial revolutions are imparted to the platen in order to advance the paper held thereon.

20 The invention contemplates certain improvements in the carriage and its bed, which improvements insure the easier movement of the carriage and the conjoint removability of the carriage and the carriage-bed from the
25 top plate of the machine whenever it is desired to substitute a carriage of a different length.

A further object of the invention is to improve the mechanism whereby the paper to be
30 printed upon is held against the revoluble platen, so that an accurate feed of the paper in line-spacing or the like may be secured, and certain of the devices whereby the paper is held against the platen are of such character that they can be readily adjusted to accommodate paper, cards, or the like of different widths.

Another feature of the invention is the provision of automatic mechanism arranged to
40 relieve the pressure of the paper against the platen when the platen is turned upward to expose the line of print, so that if it be desired to manually shift the paper at such time this can be readily done without danger of
45 tearing the same.

The invention is also directed to the improvement of the mechanism whereby the platen is revolved to effect the spacing between the lines of print and to the escapement mechanism whereby the letter-space
50 feed of the paper-carriage is effected. Other features of improvement will be hereinafter

described, illustrated in the accompanying drawings, and the specific features of my invention will be specifically set forth in the
55 claims at the end of this specification.

Figure 1 is a plan view of a type-writing machine embodying my invention. Fig. 2 is a view in end elevation of the top plate of the machine and the mechanism above the same. 60 Fig. 3 is a view in vertical cross-section on line 3 3 of Fig. 1. Fig. 4 is a detail view of the variable step or line-space regulator. Figs. 5 and 6 are detail views of the double escapement-pawls. Fig. 7 is a plan view, with parts 65 broken away, of the carriage and its subjacent bed-rails and tie-bars. Fig. 8 is a detail face view of the front bed-rail of the carriage, showing the margin-stops in position thereon. Fig. 9 is a detail view, in vertical section, 70 through a portion of the front bed-rail whereon the carriage rests. Fig. 10 is a detail view, in horizontal section, through the left-hand margin-stop, a part of the bed-rail being shown in plan. Fig. 11 is a detail view, in vertical 75 section, through a part of the front bed-rail, the left-hand margin-stop being shown in elevation. Fig. 12 is a detail view, in vertical cross-section, through the front bed-rail and front carriage-bar, the left-hand margin-stop 80 being shown in elevation. Fig. 13 is a view in vertical cross-section through the carriage and platen, the presser-roll mechanism being shown in elevation. Fig. 14 is a view similar to Fig. 13, but with the presser-roll mechanism shown in vertical section. Fig. 15 is a detail view of the carriage, showing in elevation the tilting frame for the platen and the mechanism for locking the same and mechanism for varying the tension of the spring 90 that controls the rear presser-rolls. Fig. 16 is a view similar to Fig. 15, but showing the tilting platen-frame turned upward. Fig. 17 is a detail rear view of the platen and its tilting frame and parts carried thereby. Fig. 18 95 is an inverted plan view of the tilting frame, the platen, and connected parts. Fig. 19 is a detail view, in front elevation, of the rear side of the carriage and the rack-bar above the same. 100

Upon the top plate of the main frame of the machine and preferably upon pedestals or blocks 1, rising from the surface of said top plate, are mounted the front and rear bed-

rails 2 and 3, that are connected together by suitable tie-bars 4, located at their ends. (See Fig. 7.) The upper face of the rear bed-rail 2 is formed throughout its length with a channel adapted to receive friction-rolls 5, that are connected together in series by suitable side bars or rods 6, and above the rear bed-rail 2 extends the rear carriage side 7, the under face of which is provided with a channel corresponding with a channel in the bed-rail 2 and in like manner adapted to receive the friction-rolls 5. The rear carriage side 7 is connected to the rear bed-rail, preferably by means of an upwardly and inwardly extending part 8, with which engages the inclined rearwardly-projecting edge of the rear carriage side 7. (See Fig. 2.) The front bed-rail 3 has its upper face provided with a channel extending lengthwise thereof and adapted to receive friction-rolls 5^a, that are connected in series by side bars, and the under face of the front carriage side 9 is provided with a channel extending above the channel of the bed-rail 3 and serving to receive the friction-rolls 5^a. The front carriage side 9 is interlocked with bed-rail 3, preferably by means of a raised strip 10, the edge of which extends inwardly and engages an inclined forwardly-extending portion of the front carriage side 9. The front and rear carriage sides 7 and 9 are connected together by the cross-bars 11 and 12. The bed-rails 2 and 3 are detachably connected to the top plate of the main frame by means of screws, and it will thus be seen that inasmuch as the carriage and bed-rails are interlocked it is only necessary to loosen the screws in order to remove the carriage and bed-rails jointly when a carriage of different length is to be used upon the machine. By thus jointly removing the carriage and its bed-rails all danger of destroying the adjustment between the same is avoided.

Upon the front bar of the carriage is mounted a bell 15, provided with a suitable trip 16, adapted to contact with a pin 17, that projects from a margin-stop 18, located adjacent the left-hand end of the front bed-rail. To the front bar of the carriage is also fixed a stop 19, which will serve to arrest the movement of the carriage toward the left when said stop contacts with the margin-stop 18. The margin-stop 18 is provided, preferably, with a screw-threaded hole to receive the trip-pin 17, the body of which pin is screw-threaded to retain it in place within the hole of the stop 18, and the hole is formed in the body of the stop adjacent one end. The lower part of the stop 18 is provided with pins 20, adapted to enter holes 21, formed in the top portion of the front bed-rail 3. (See Fig. 10.) When the stop is in the position seen in Figs. 1 and 11 of the drawings, the stop-pin 17 will contact with the bell-trip 16 when the carriage has come within about five letters from the end of the line, thus giving to the operator a signal that five more letters may be

printed. Inasmuch, however, as some operators prefer that the bell shall not ring until approximately the end of the line, it is obvious that if the pin 17 be withdrawn and the margin-stop 18 be turned, so as to bring the hole for the pin 17 nearer the left-hand side of the machine, then the pin 17 can be reversely inserted in the horizontal hole of the margin-stop and will occupy the position seen by dotted lines in Fig. 10. Consequently the pin 17 will not effect the ringing of the bell until the stop 19 has nearly reached the margin-stop 18 and until the line of print is almost finished. The upwardly-extending portion 10 of the front bed-rail is provided not only with a series of perforations 21 for adjustment of the margin-stop 18, but is formed also with a series of similar perforations 23 for the right-hand margin-stop 24.

In order to better retain the series of friction-rolls 5 and 5^a in proper position within their respective channels, I prefer to project into said channels suitable pins 25, (see Figs. 2 and 7,) which, while allowing the free back-and-forth play of the friction-rolls, insures that they do not escape from the channels or lodge adjacent the ends thereof. By reference more particularly to Figs. 2 and 7 of the drawings it will be seen that the friction-rolls 5 are approximately as long as the width of the channels of the rear bed-rail 2 and the rear carriage side 7, while on the other hand the channels of the front bed-rail 3 and of the front carriage side 9 are considerably wider than the friction-rolls 5^a contained therein. By this means the friction-rolls 5, fitting snugly, as they do, within their channels, not only relieve the parts of friction, but also aid in insuring the accurate straight-line movement of the carriage from side to side of the machine, while the friction-rolls 5^a support the front of the carriage, and yet in no wise endanger the binding of the same, which would be apt to occur if attempt were made to accurately fit both sets of friction-rolls within their retaining-channels.

From the ends of the cross-bars 11 and 12 of the carriage rise the brackets 30 and 31, that are perforated to receive trunnions 32, that project from the end bars 33 of the tilting frame, whereby the platen W is carried. The end bars 33 of the tilting frame are connected together by front and rear bars 34 and 35, and through suitable bearings in the end bars 33 extends the platen-shaft *w*, the ends of this shaft being furnished with hand-wheels *w'*, whereby the revolution of the platen can be manually effected. It will be observed that the journal-studs 32 of the tilting frame are arranged at the rear of the platen-shaft *w'*, and consequently when the tilting frame is turned about the journal-studs in forward direction the under side of the platen W will be exposed to view, as shown in Fig. 16, thus permitting the line of print to be inspected. The end bars 33 of the tilting frame are formed at their fronts with feet

36, that rest upon lugs 37, projecting inwardly from the end bars 11 and 12 of the carriage, (see Figs. 1 and 7,) thus limiting the downward movement of the tilting frame and the platen. In the feet 36 at the front of the end bars 33 are journaled the ends of a rock-shaft 38, that extends across the front of the platen, and adjacent each end of this rock-shaft 38 is fixed a latch 39, the lower hooked end of which will engage with a corresponding projection 37 in order to lock the tilting platen-frame in its normal position. The latch 39 at the left-hand end of the rod 38 has attached thereto or formed in piece therewith the forwardly-extending arm or bar 40, that reaches out at the front of the machine and in convenient position to be engaged by the hand of the operator, who may thus by one movement release the latch 39 and turn the tilting frame and platen from the normal or printing position seen in Fig. 15 to the position seen in Fig. 16. The upper end of the latch 39 is formed with a hook 41 to engage the rod 34 in order to limit the movement of the latch 39 and bar 40.

From the front rod 34 of the tilting frame (or upon any other suitable support) are sustained the upper and lower presser-rolls 45 and 46. Preferably there will be at least two pairs of these presser-rolls; but a description of one will serve for both. The upper presser-roll 45 is journaled between arms 47, that are hung upon the front rod 34, while the lower presser-roll 46 is journaled between the arms 48, also swinging upon the rod 34 and arranged, preferably, outside of the arms 47. The arms 47 and 48 constitute suitable carriers for the presser-rolls, (although other forms of carriers might be employed,) and the arrangement of the arms insures the unison movement of the carriers and the presser-rolls along the rod 34, upon which the arms are mounted in manner free to slide. About the rod 34 and preferably between the arms 48 is coiled a spring 50, one end of which bears against a stay-block 51, extending between the arms 47, while the other end of this spring bears against a similar stay-block 52, that extends between the lower arms 48. It will thus be seen that the single spring 50, which I prefer to employ, serves to force both the upper and the lower presser-rolls toward the platen W. The mounting of the coil-spring 50 upon the rod 34 also creates a frictional bearing of the spring upon the rod, and while this is not sufficient to interfere with the longitudinal adjustability of the presser-rolls along the rod it still serves the function of guarding the presser-rolls against accidental slipping. Inasmuch, however, as there is a tendency of the presser-rolls to be thrown toward the right by the jarring of the carriage when it is returned to the beginning of a line, I prefer to mount upon the rod 34, at the right-hand side of the presser-rolls, the rings or collars 54, that will be fixed to the rod 34 by set-screws 55, these collars and set-screws serv-

ing to prevent any creeping of the presser-rolls along the rod under the jarring of the carriage as it is returned to the right of the machine. From one of the arms 48 of each pair of lower presser-rolls 46 is preferably projected a lateral lug 56, (see Fig. 13,) to which will be connected a plate-spring 57, that extends downwardly and rearwardly beneath the platen W. The purpose of these plate-springs 57 is to receive and guide the paper as it passes from engagement with the lower edge of the paper table or plate 60, and the plate-springs 57 bear against the platen with a pressure somewhat less than the pressure exerted by the coil-spring 50, that holds the lower presser-rolls 46 against the platen. The paper-table 60 has lugs or flanges bent rearwardly from its end, and through these passes the shaft 61, that is journaled in manner free to turn within bearings 62, formed in the end bars 33 of the tilting platen-frame. (See Fig. 2.) The lower edge of the table 60 is pressed normally toward the platen W by means of coil-springs 63, that encircle the rock-shaft 61, the upper ends of these coil-springs bearing against the rod 35, while the lower ends of the springs bear against the lower part of the paper table or plate 60. (See Fig. 17.) The lower edge of the table or plate 60 is preferably provided in usual manner with a scale-bar 64 to enable the position of any letter along the line of print to be readily determined. In the paper-table 60 are formed openings, through which project presser-rolls 65, that bear against the platen W or the paper thereon. These presser-rolls 65 (see Figs. 13, 14, and 17) are carried by hanger-arms 66, that swing from the rock-shaft 61, and between the hanger-arms for each presser-roll extends a space-rod 67. Each of the presser-rolls 65 is forced normally toward the platen by a coil-spring 68, that encircles the rod 61, one part of the spring being fixed to the rod, as by a screw, while the opposite part of the spring bears against the space-rod 67 or other part of the support for the presser-roll 65. Preferably the spring 68 is reversely coiled, as seen in Fig. 17, and is attached to the rod 61 by a screw, as there shown, although this is not essential. It will thus be seen that the springs 68 serve to hold the presser-roll 65 normally against the platen or the paper thereon.

Inasmuch as it is frequently desirable when the platen is turned upward, as seen in Fig. 16, to shift the paper in order to more accurately position the paper with respect to the printing-point, I have provided the mechanism next to be described, whereby the force with which the presser-rolls 65 bear against the paper can be relieved and varied. To one or both ends of the rock-shaft 61 is attached an arm 70, the lower end of which is preferably furnished with a friction-roll 71, that bears against the subjacent cross-bar of the carriage. When the tilting frame is in the normal or printing position, (see Fig. 15,)

the arm 70 is in the position there shown, and at such time the rock-shaft 61 is held so that the coil-springs 68 shall exert their greatest force in holding the presser-rolls 65 toward the platen W. When, however, the tilting frame and platen are turned upward to inspect the line of print, as shown in Fig. 16, the arm 70 rides forward along the cross-bar of the carriage, and consequently permits a partial revolution of the rock-shaft 61, to which this arm is fixed, this partial revolution of the rock-shaft with respect to its bearings being in the direction to correspondingly uncoil the springs 68, carried thereby. This partial uncoiling of the springs 68 lessens or relieves the pressure of the rolls 65 against the paper on the platen W, and consequently the manual shifting of the paper upon the platen can be effected without danger of tearing the paper. When, however, the tilting frame is returned to its normal position, the presser-rolls 65 again firmly press the paper against the platen. So far as I am aware my invention presents the first instance of a spring-actuated presser roll or device that is provided with means arranged to automatically relieve or to lessen the spring-pressure of said device or roll against the paper on the platen when the platen is so turned as to expose the line of print, and I do not therefore wish the invention to be understood as restricted to the precise construction herein set out. I have found in practice that the mechanism hereinbefore described for retaining the paper upon the platen is most efficient and will enable many carbon copies to be accurately fed through the machine without danger of slipping or of the sheets "creeping" with respect to each other, as they are apt to do with other types of mechanism employed for holding the paper against the platen. The presser-rolls 45 and 46 being actuated by a common spring press the paper uniformly against the platen.

The mechanism whereby the line-spacing and letter-space movement of the platen is effected will next be described.

Upon the shaft w of the platen W is fixed a toothed wheel w^3 , (see Figs. 2, 3, and 18,) with which engages the point or projection 80 of the pawl 81, that is pivoted, as at 82, to the top of an arm 83, that is carried by a shaft 84, this arm 83 being connected to or formed in piece with the operating or spacing lever 85, that extends forwardly and downwardly toward the keyboard of the machine in convenient position to be grasped and lifted by the hand of the operator. By reference to Figs. 1, 2, and 3 it will be seen that the arm 83 is formed as an elbow-lever, the front portion of this lever extending between the bifurcated upper end of the operating-lever 85. For convenience the operating-lever will be understood as comprising both the part 85 and the part 83. The pawl 81 is formed with a downwardly-extending heel 86 and, preferably, also with an extension 87, the

purpose of the heel 86 being to bear against the toothed wheel 83 in order to limit the revolution or overthrow of the platen and the purpose of the extension 87 being to permit the operator by pressing thereon with his thumb or finger to readily disengage the pawl 81 from the toothed wheel w^3 . The pawl 81 is of sufficient weight to securely retain its point or tooth in engagement with the wheel w^3 , and when the platen-frame and platen are turned upward beyond the vertical to permit the line of print to be inspected the pawl 81 will swing away from engagement with the toothed wheel w^3 , and hence will allow the platen W to be turned in either direction by the operator. By reference more particularly to Figs. 2 and 3 of the drawings it will be seen that when a partial revolution of the platen is to be effected the operator will lift the lever 85 from the position shown in full lines to that shown by dotted lines in Fig. 3, and will thereby cause the pawl 81 to partially revolve the platen W. As soon, however, as the platen has completed the required extent of revolution the heel 86 of the pawl 81 will bear firmly against the toothed wheel w^3 and will instantly guard against the further revolution of the platen. It will be observed that the heel 86 is interposed between the center of revolution of the platen W and the pivot-point 82 of the pawl, and consequently a more effective action of the heel 86 upon the toothed wheel w^3 will be had. When the operator desires to revolve the platen in reverse direction, the pawl 81 can be readily lifted by pressing upon the extension 87, so as to cause the tooth 80 to pass from engagement with the wheel w^3 . In order to limit or regulate the extent of movement of the operating or spacing lever 85, and consequently of the pawl 81, I prefer to provide the construction of line-space regulator or variable stop shown in detail in Fig. 4 of the drawings, and shown in position in Figs. 1 and 2. The right-hand end bar 33 of the tilting platen-frame is provided with an upwardly-extending arm 33^a, at one side of an opening of which is attached a segmental sleeve x , having notches x' in its edge. Through the opening in the arm 33^a extends a bar X, the outer end of which is furnished with a head whereby it may be conveniently turned and moved back and forth, and the inner end of this bar X is reduced or stepped, as shown in Fig. 4. A pin x^2 projects from the bar to engage the notches x' , and thus hold the bar X against longitudinal movement. The segmental sleeve x lies immediately in front of the upright arm 83 of the operating-lever 85, (see Figs. 2 and 3,) and if the bar X be in the position shown by dotted lines in Fig. 4 then when the operating-lever 85 is released and restored to its normal position by the coil-spring 89 the arm 83 will contact against the thick portion of the bar X, which will limit its movement, and consequently will permit

the tooth 80 of the pawl 81 to move toward the front of the machine only the distance between two teeth. When in this position, the movable stop-bar X will allow only the narrowest spaces between lines to be made. If, however, the bar X be withdrawn, so that the pin x^2 is within the middle notch of the sleeve x , the reduced end of the bar X will be in the path of the arm 83 of the operating-lever, and the pawl-tooth 80 will then be permitted to move forward over the toothed wheel 83 to the extent of two interdental spaces, or if the bar X be withdrawn to the position seen in Fig. 4 then the arm 83 will contact with the end portion of the sleeve x and the pawl-tooth 80 can be retracted to the extent of three interdental spaces, thus allowing the widest line-spacing to be effected, Figs. 3 and 4.

The toothed wheel w^3 of the platen w has engaging therewith a brake or check 90, that is pivoted, preferably, in arms 91, hung from the rod 61 of the platen-frame. (See Figs. 3, 17, and 18.) The arms 91 are connected together by a suitable cross-bar, against which bears one end of a coil-spring 92, that is mounted upon the rod 61, this spring serving to force the brake or check 90 into firm engagement with the toothed wheel w^3 . The brake or check 90 is provided with plural faces, as clearly seen in Fig. 3, either the front or rear of which faces may be brought into engagement with the toothed wheel w^3 . One of these faces of the brake 90 is formed with teeth, as shown, to enter the interdental spaces of the wheel w^3 , while the rear face of the brake or check 90 is curved and adapted to bear against the points of the teeth of the wheel w^3 . When the toothed face of the brake 90 is in engagement with the wheel w^3 , then as the platen is turned, either by hand or by the operating-lever 85, the brake-teeth will insure the stopping of the platen at exact positions for the line to be written; but if the brake 90 be reversed, so as to cause its curved face to bear upon the points of the teeth of the wheel w^3 , then the platen W can be turned, manually or otherwise, more or less than the space between lines. This feature is of advantage particularly in filling in the blank spaces of printed forms, such as insurance policies or the like, since the operator can shift the platen to any desired extent and the curved face of the brake or check 90 will accurately retain it in the desired position.

The mechanism whereby the letter-space movement of the platen is effected will next be described, reference being had more particularly to Figs. 1, 2, 5, 6, and 19 of the drawings.

From the rear bar 7 of the carriage rise the uprights 95, (see Figs. 2 and 19,) to which are pivoted lugs projecting from the under side of the rack-bar 96. To the left-hand end of this rack-bar is preferably connected a forwardly-extending releasing-finger 97, by the depression of which the teeth of the rack-bar may

be thrown upward. (See Fig. 1.) With the teeth of the rack-bar 96 engage the multiple-pointed dogs or pawls 98 and 99, that are mounted upon an arm 100, projecting from a bar 101, that has lugs 102, through which pass pivot-pins 103, whereby the bar 101 is pivotally connected to brackets 104, that rise from the top of the main frame. (See Fig. 1.) The pawls 98 and 99 are arranged one above the other and are fixed together and upon the arm 100, between its lugs 105, by means of screws 106 and 107. (See Figs. 5 and 6.) The points of the upper and lower pawls 98 and 99 are arranged out of alinement and the distance between the vertical planes of the points of said pawls is less than the distance between the contact-faces of the rack-teeth. Hence it will be seen that when the pawls are in the normal or idle position (seen in Figs. 2 and 5) the upper pawl 98 will be in engagement with the rack-bar, but the teeth of the lower pawl 99 will be about opposite the middle of the cut-away space between the points of the rack-bar teeth. It is therefore manifest that as the pawls 98 and 99 are vibrated vertically the lower pawl 99 will engage with the rack-bar as the upper pawl 98 is freed therefrom, the rack-bar, and consequently the paper-carriage, being allowed to move a distance equal to one-half the width of the interdental spaces at each upward-and-downward movement of the pawls 98 and 99. The outer ends of the bar 101 have connected thereto rods 116, the lower ends of which will be attached to the spacing mechanism, (not shown,) and from the under side of the bar 101 depends an arm 108, (see Fig. 2,) to which will be connected one end of a coil-spring 109, the opposite end of this spring being connected to an adjacent screw 110, passing through a bracket 111. From the bar 101 also projects a short arm 112, through which passes a set-screw 113, adapted to contact with the top of the bracket 111. When any of the key-levers or space mechanism of the machine are depressed, it will be understood that the rods 106 will be drawn downward, thus causing the pawl 98 to leave the rack-bar 96 and throwing the pawl 99 into engagement with said bar, and when the pressure upon the key-lever or spacing-lever is released the pawl 99 will be turned from engagement with the rack-bar and the pawl 98 will be caused to engage with said bar; but at each upward-and-downward movement of the pawls 98 and 99 the rack-bar and the carriage will be permitted to move to the extent of one-half a space. Hence it will be seen that if the quick or "staccato" touch be given to the keys by the operator the carriage will be advanced the proper letter-space distance after the type are thrown against the paper on the platen. It will be understood that, if desired, the pawls 98 and 99 may be removed and other suitable construction of pawls (such as fixed and limber pawls or dogs) may be substituted therefor.

In order to release the escapement mechanism of the carriage, so as to permit the carriage to be drawn backward to the right-hand side of the machine, I prefer to provide the mechanism next to be described. To the rack-bar 96 (see Figs. 2 and 19) is connected a pin or screw 120, that extends downwardly and is engaged by the rear end of the release-bar 121, said release-bar being provided with a hole or socket to receive the lower end of said pin 120. The forward end of this release-bar is formed with a seat or socket to receive the lower end of an arm 122, (see Fig. 2,) that is fixed to the short shaft 123, (see Fig. 1,) that is journaled in the bracket 124 upon the front side 9 of the carriage. To the end of the shaft 123 is connected (or formed in piece therewith) a release-arm 125, that extends forwardly and in proximity to the operating-levers 85, as clearly seen in Figs. 1 and 2 of the drawings. From the foregoing description it will be seen that when the operator depresses the release-arm 125 the release bar or rod 121 will be thrust rearwardly, pushing with it the pin or screw 120 and causing the rack-bar 96 to rock about its pivots and rise from engagement with the pawl 98. When the rack-bar is thus disengaged, the carriage can be moved freely in either direction. Inasmuch as the release-arm 124 is in proximity to the operating-lever 85, the operator can with one hand simultaneously disengage the escapement mechanism and shift the carriage in either direction and at the same time can effect the line-space movement of the platen W, or either of these operations may be effected independently of the other. It will be observed (see Fig. 2) that the under side of the release bar or rod 121 is provided with a short projecting stud, to which is attached a coil-spring 126, the forward end of this spring being attached to a similar stud on the cross-bar 12 of the carriage. This coil-spring 126 serves to draw the release rod or bar 121 normally forward and hold the rack-bar 96 and the release-arm 124 in the position shown. The under side of the release-rod 121 is preferably formed with a depending lug adjacent its front end, which limits the extent of movement of the rod 121 by contact with the front side of the carriage and with the lug to which the front end of the coil-spring 126 is attached.

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

1. In a type-writing machine, the combination with the main frame, of a carriage-bed having front and rear rails the tops whereof are provided with broad, flat channels to receive friction-rolls, a carriage having front and rear sides comprising horizontal bars the undersides of which are provided with broad, flat channels extending opposite the channels of the bed-rails, said bed-rails and carriage being interlocked to prevent the lifting of the carriage, and friction-rolls connected to-

gether and longitudinally movable within the channels of the front and rear bed-rails and carriage.

2. In a type-writing machine, the combination with the main frame, of a carriage-bed having front and rear rails provided with channels to receive friction-rolls, a carriage having front and rear sides provided with channels extending opposite the channels of the bed-rails, said bed-rails and carriage sides being interlocked to prevent the lifting of the carriage, and friction-rolls located within the channels of the front and rear bed-rails and carriage sides, one set of said rolls being fitted accurately to the width of the channels wherein they are contained and the other set of rolls being capable of lateral play within the channels wherein they are held.

3. In a type-writing machine, the combination with the main frame, of a carriage-bed having front and rear rails, the upper faces whereof are provided with channels and above said channels with inwardly-projecting portions, a carriage having front and rear sides the lower faces whereof are provided with channels and with parts extending beneath the inwardly-projecting portions of the bed-rails and rolls located within the channels of the front and rear bed-rails and carriage-bars, and tie-bars extending transversely between and connecting together the bed-rails, said bed-rails and tie-bars being removably attached to the main frame of the machine.

4. In a type-writing machine, the combination with the carriage having a suitable part to engage a latch, of a tilting platen-frame mounted upon said carriage and a pivoted latch carried by said tilting frame, said latch having its lower end adapted to engage the carriage and having a rearwardly-extending arm arranged to engage a part of the tilting frame to limit the movements of the latch, and an arm extending forwardly from said latch and whereby said latch may be released and the tilting frame lifted.

5. In a type-writing machine, the combination with the platen and a supporting-frame having a part extending lengthwise in front of the platen, of a pair of presser-rolls shiftable toward and from the platen, suitable means for carrying said rolls and whereby they are connected together and longitudinally adjustable upon said rod, and spring mechanism for forcing said rolls toward the platen.

6. In a type-writing machine, the combination with the platen and a supporting-frame having a part extending lengthwise in front of the platen, of upper and lower presser-rolls and pivoted carriers for said rolls, each of said carriers comprising two journal-arms mounted in manner free to turn about said rod and adjustable lengthwise thereof and spring mechanism for forcing said rolls toward the platen.

7. In a type-writing machine, the combina-

tion with the platen and a supporting-frame having a part extending lengthwise in front of the platen, of a pair of presser-rolls and swinging carriers for said rolls adjustable lengthwise upon said rod, and a common spring for forcing both of said rolls toward the platen.

8. In a type-writing machine, the combination with the platen and a supporting-frame having a rod extending lengthwise in front of the platen, of a pair of presser-rolls and swinging carriers for said rolls, each of said carriers comprising two journal-arms mounted in manner free to turn about said rod and adjustable lengthwise thereof, and a spring coiled about the rod between said journal-arms and serving to force both of said rolls toward the platen.

9. In a type-writing machine, the combination with the platen and a supporting-frame having a rod extending lengthwise in front of the platen, of a pair of presser-rolls and swinging carriers for said rolls adjustable lengthwise of said rod and spring mechanism engaging said rod and aiding to frictionally retain the carriers in place thereon and serving to force the rolls toward the platen.

10. In a type-writing machine, the combination with the platen and a supporting-frame having a rod extending lengthwise in front of the platen, of upper and lower presser-rolls and swinging carriers for said rolls longitudinally adjustable upon said rod, and longitudinally-adjustable sleeves upon said rod provided with set-screws to guard said holders against slipping.

11. In a type-writing machine, the combination with the platen and with means for sustaining the same in manner permitting it to be turned to inspect the line of print, of a spring-actuated pressure device or roll, and automatic mechanism arranged to relieve the spring-pressure of said device or roll against the paper on the platen when the platen is so turned as to expose the line of print.

12. In a type-writing machine, the combination with the platen and with means for sustaining the same in manner permitting it to be turned to expose the line of print, of a presser-roll, a swinging carrier for said roll, a spring for forcing said roll against the platen and means for automatically decreasing the force of said spring when the platen is turned to expose the line of print.

13. In a type-writing machine, the combination with the platen and with means for sustaining the same in manner permitting it to be turned to expose the line of print, of a presser-roll, a swinging carrier for said roll, a pivoted rod whereon said carrier is mounted, a spring upon said rod for forcing the presser-roll toward the platen and an arm connected to said pivoted rod and serving to vary the force of said spring as the platen is turned to expose the line of print.

14. In a type-writing machine, the combina-

tion with the platen, a tilting frame wherein said platen is sustained and a carriage whereon said tilting frame is mounted, of a pivoted rod extending lengthwise of the platen at the rear of said tilting frame, a presser-roll at the rear of the platen for forcing the paper against the platen, a carrier swinging upon said rod and carrying said presser-roll, a spring mounted upon and connected to said rod and serving to force the presser-roll toward the platen, and an arm connected to said pivoted rod and having its free end bearing against the carriage, said arm serving to vary the tension of the spring as the platen is turned upward to expose the line of print.

15. In a type-writing machine, the combination with the platen and with a toothed wheel for revolving said platen, of a spring-actuated brake having plural faces either of which may be caused to engage said wheel.

16. In a type-writing machine, the combination with the platen and with a toothed wheel for revolving said platen, of a swinging spring-actuated brake one face of which is toothed to engage the spaces between the teeth of said wheel and the other face of which is adapted to bear against the points of said teeth, and a swinging hanger for carrying said brake.

17. In a type-writing machine, the combination with the platen and with a toothed wheel for revolving said platen, of a pawl engaging said toothed wheel and having a heel to bear upon the toothed wheel and thus limit the movements of the pawl and check the revolution of the wheel, and a pivoted operating-lever arranged to swing in a vertical plane and provided with a part extending in front of the machine and with a rigid arm rising above the pivot of the lever and to which said pawl is pivotally connected.

18. In a type-writing machine, the combination with the platen and with a toothed wheel for revolving said platen and with a tilting frame whereby said platen is carried, of a pawl engaging said toothed wheel and having its lower portion adapted to bear upon said wheel to check its revolution and a pivoted operating-lever having an upwardly-projecting arm to which said dog is pivoted, whereby when said tilting frame is turned upward to expose the line of print the dog will pass from engagement with said toothed wheel.

19. In a type-writing machine, the combination with the platen and with a toothed wheel for revolving said platen and with an operating-lever and pawl for turning said toothed wheel, of a variable stop for limiting the movement of said pawl and operating-lever, comprising a longitudinally-adjustable bar provided at its inner end with steps either of which may be interposed in the path of said operating-lever to limit its movement, the outer end of said bar being provided with a button whereby the bar may be shifted.

20. In a type-writing machine, the combination with the platen and with a toothed wheel

for revolving said platen and with a pawl and operating-lever for actuating said toothed wheel, of a stop for limiting the movement of said operating-lever and pawl, said stop comprising a longitudinally-adjustable and revolvable bar adapted to be moved across the path of the operating-lever, a support for said bar and a pin upon said bar arranged to engage said support and hold the bar against accidental displacement.

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