

No. 635,981.

Patented Oct. 31, 1899.

C. H. SHEPARD.  
TYPE WRITING MACHINE.

(Application filed May 18, 1899.)

(No Model.)

2 Sheets—Sheet 1.

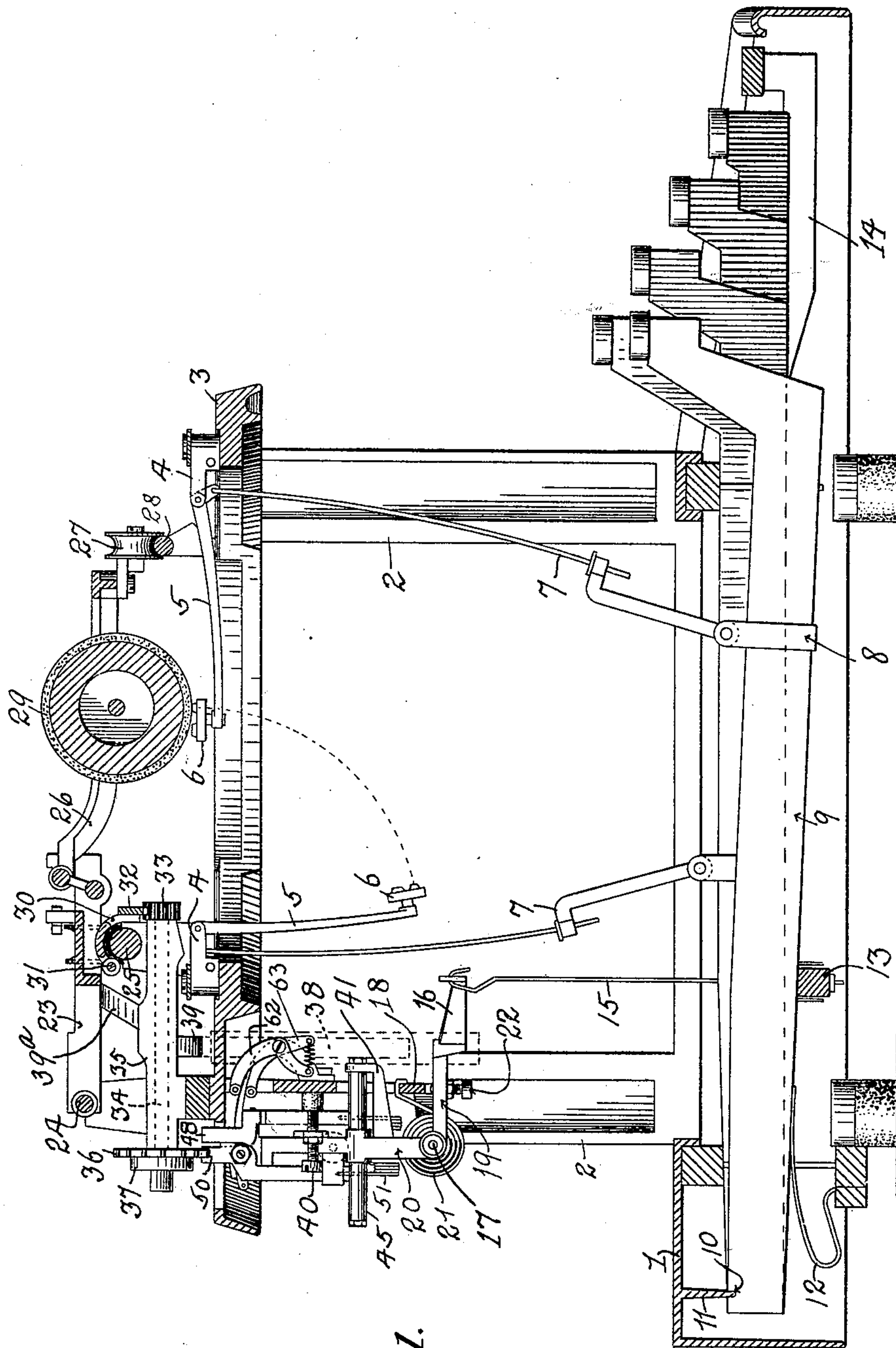


Fig. 1.

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2 Sheets—Sheet 2.

Fig. 2.

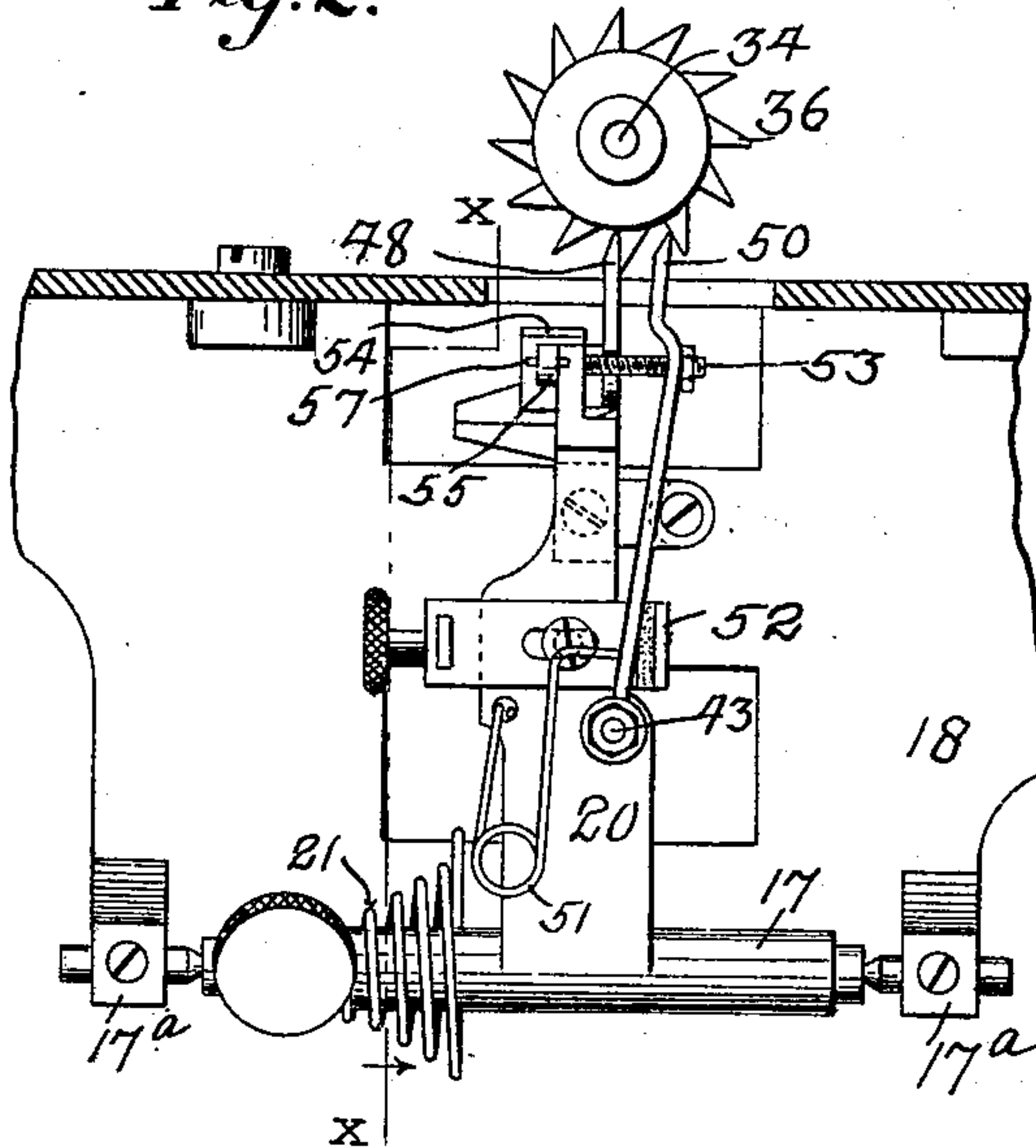


Fig. 3.

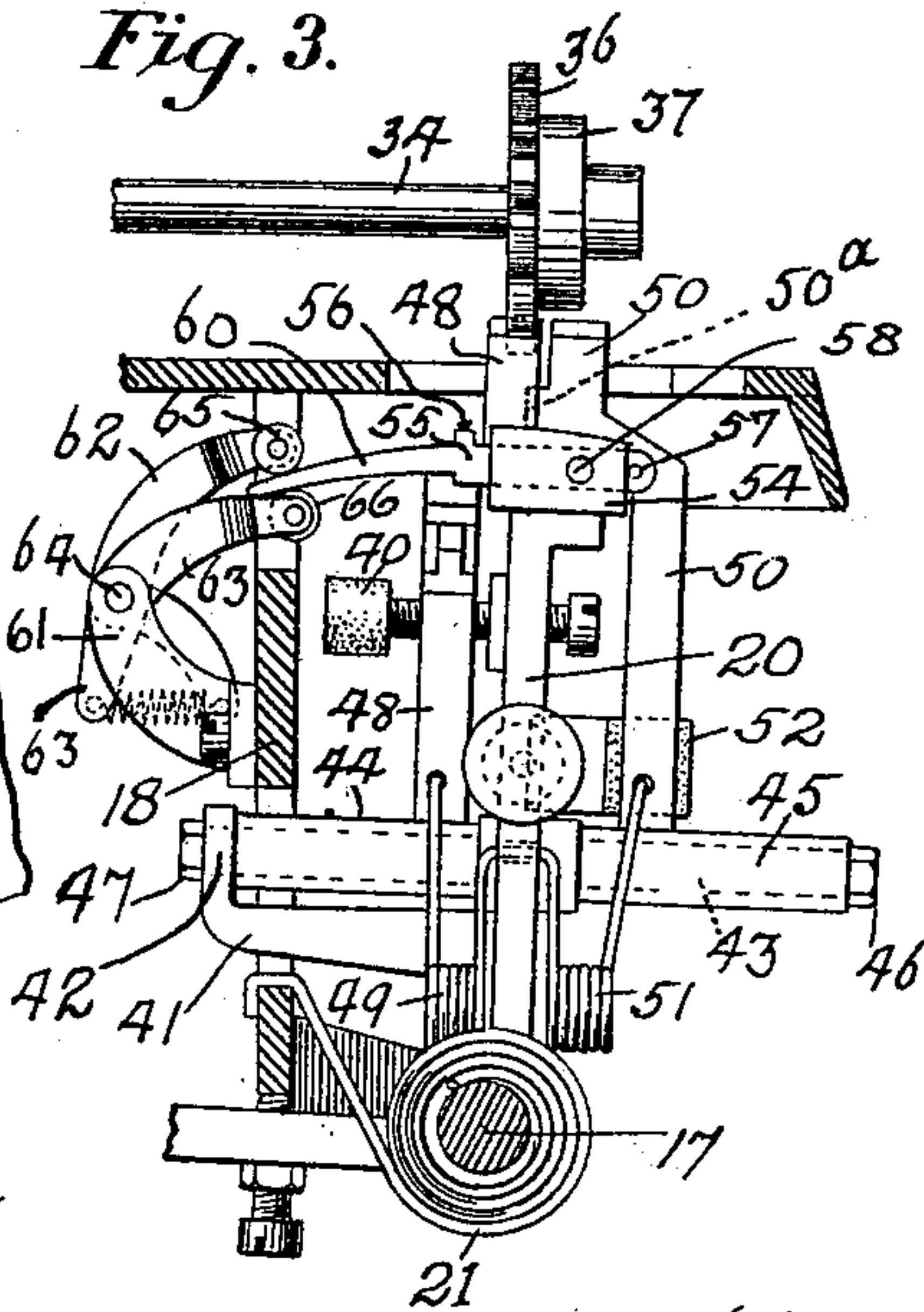


Fig. 4.

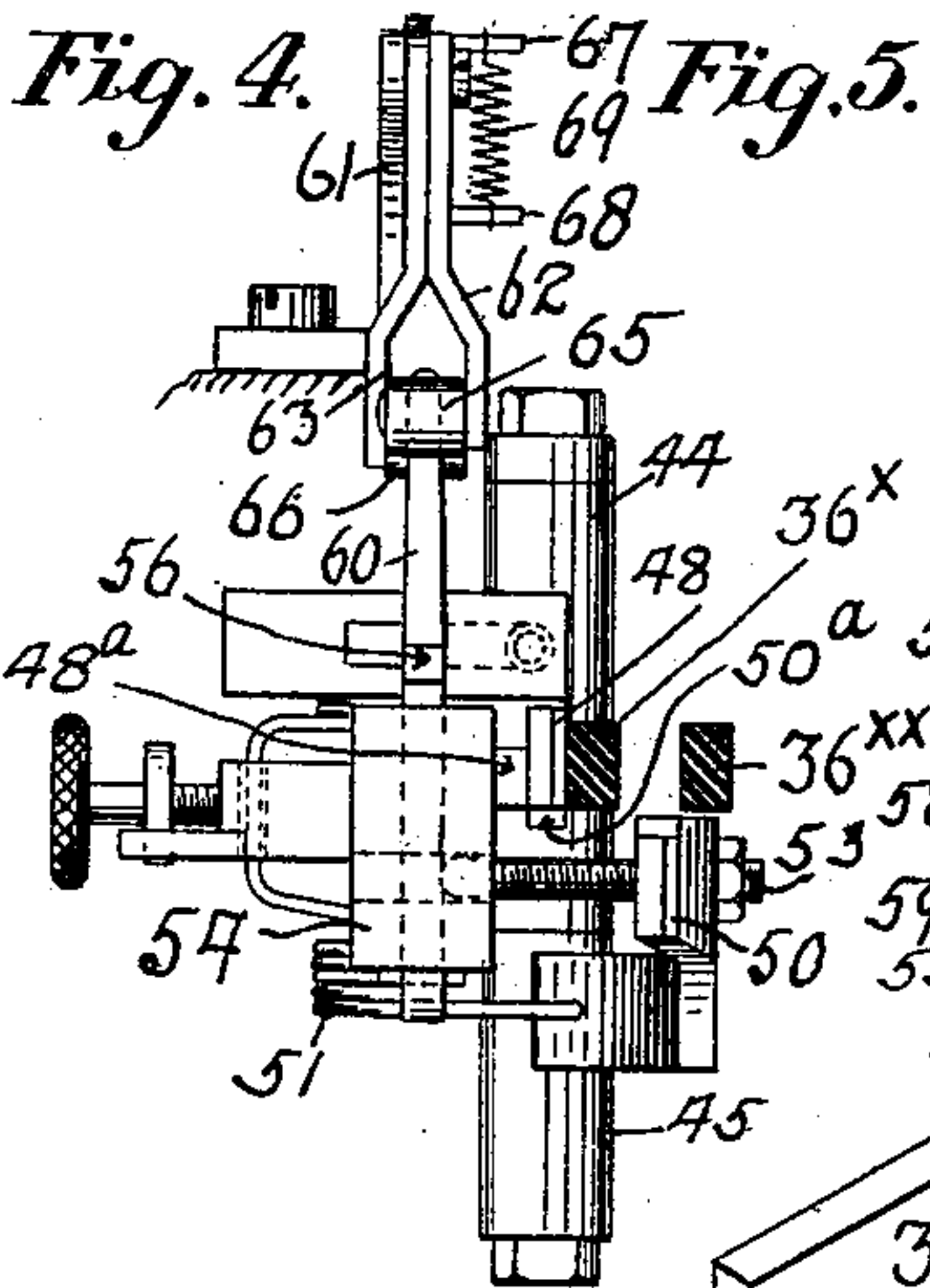


Fig. 5.

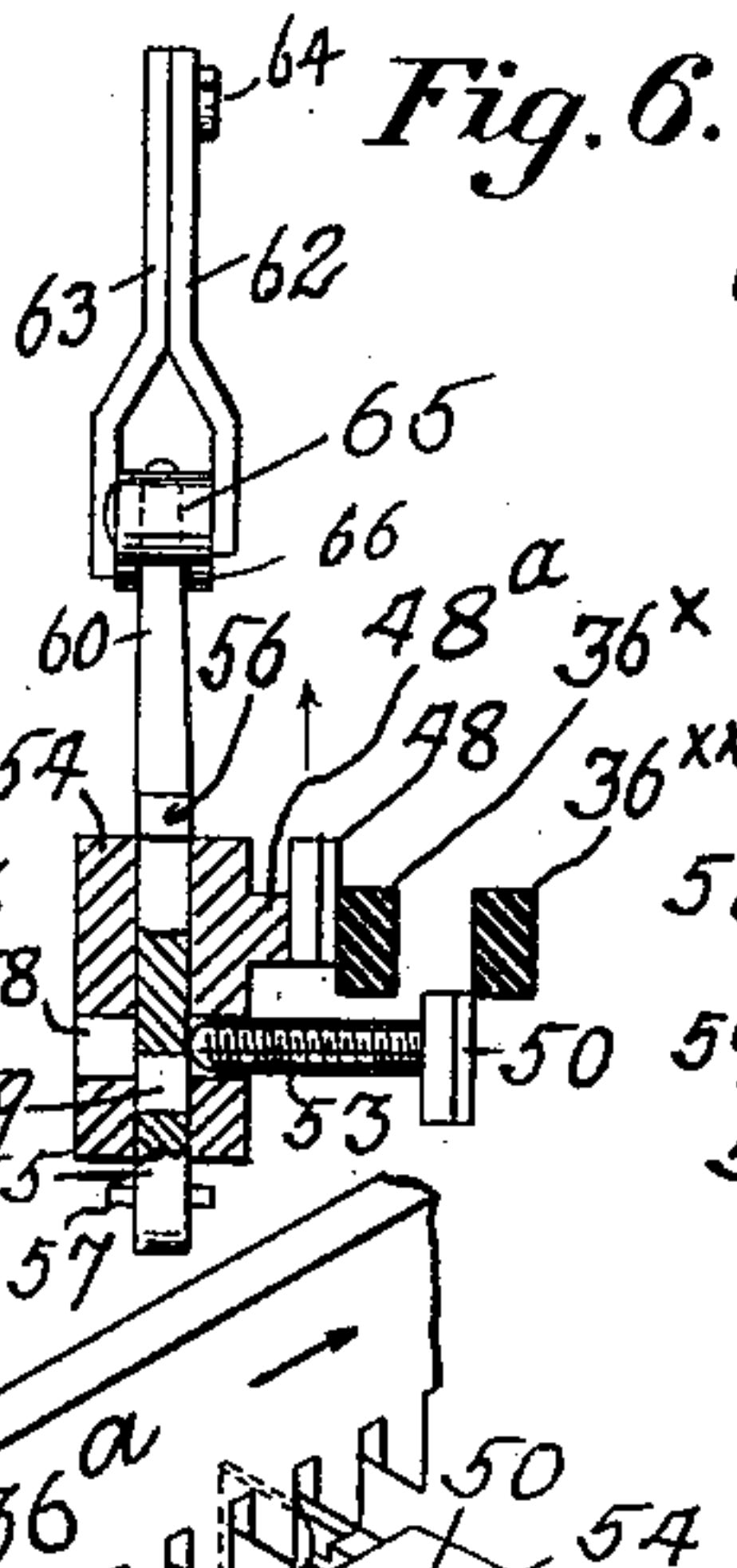


Fig. 6.

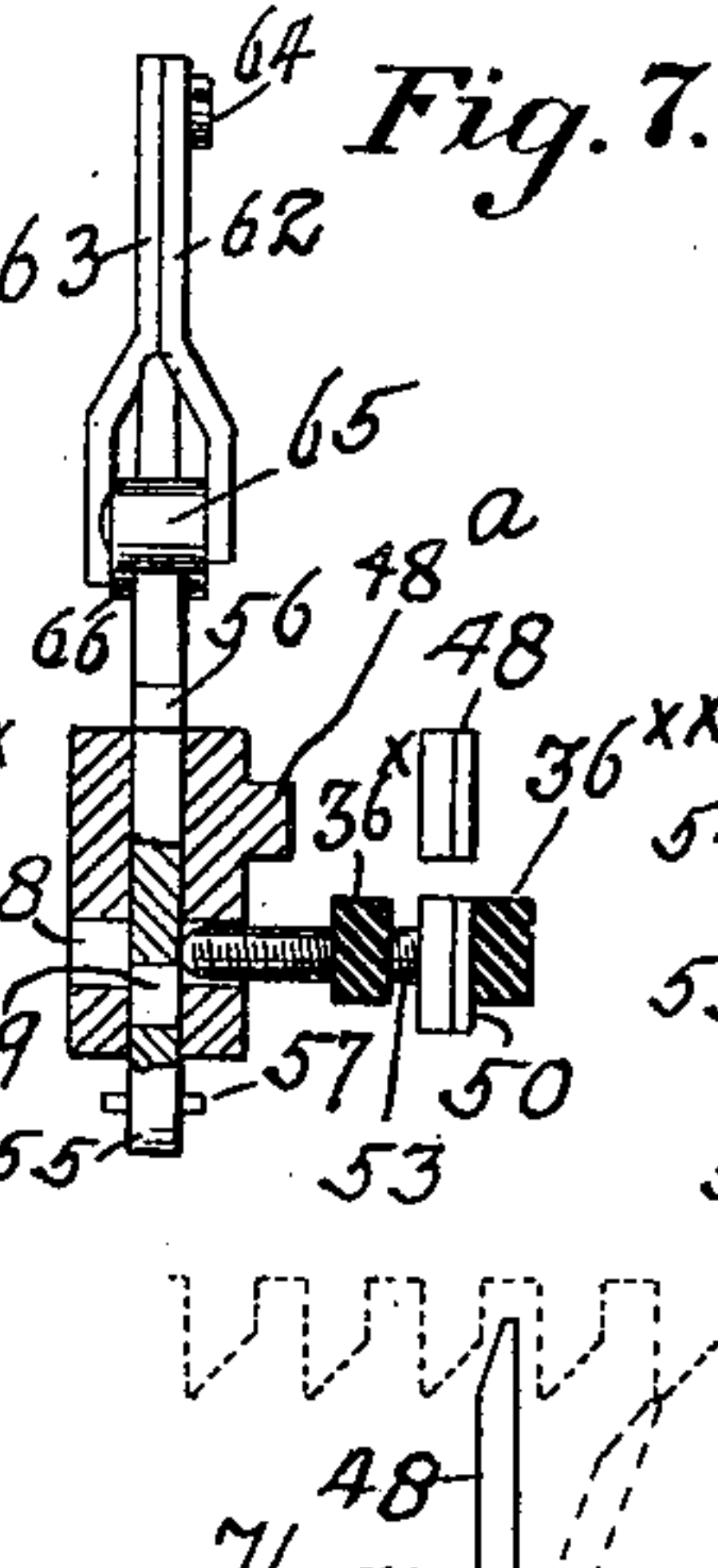


Fig. 7.

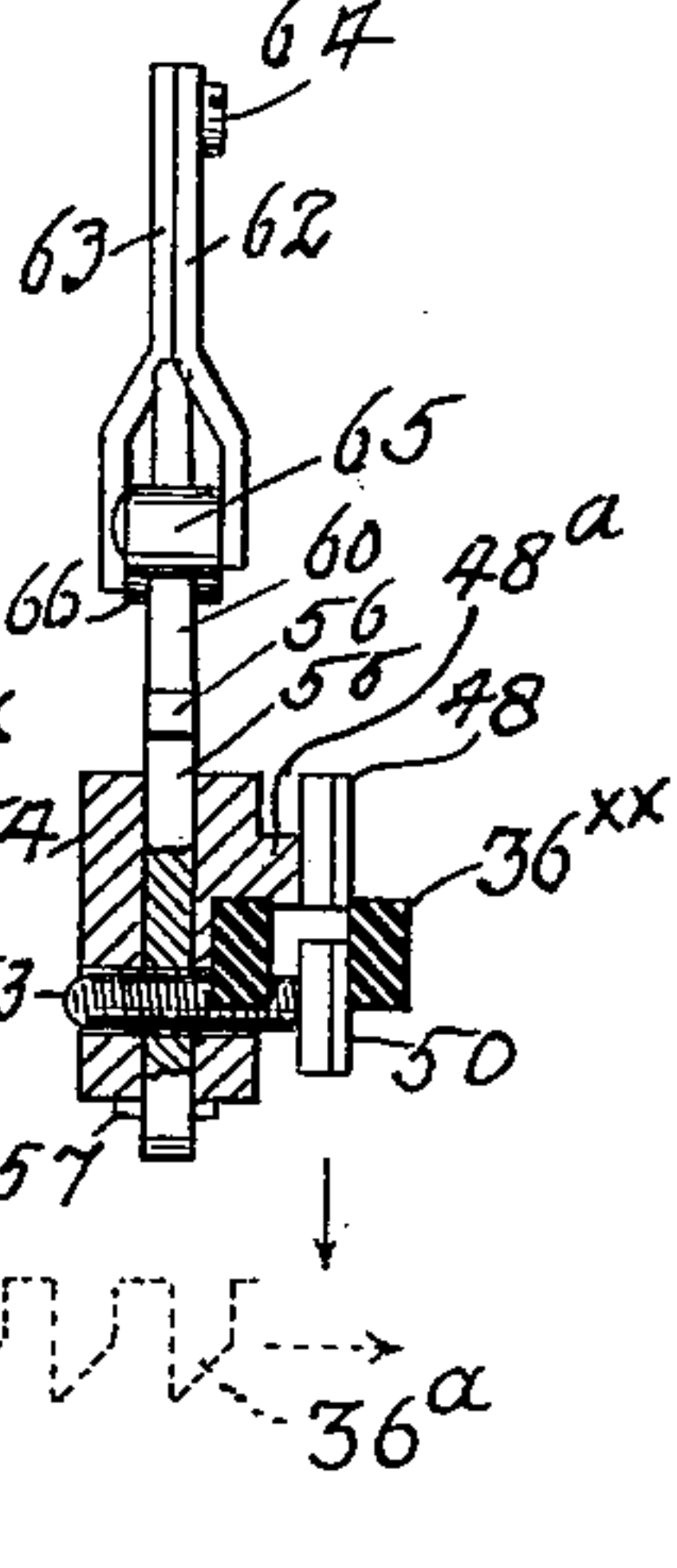


Fig. 8.

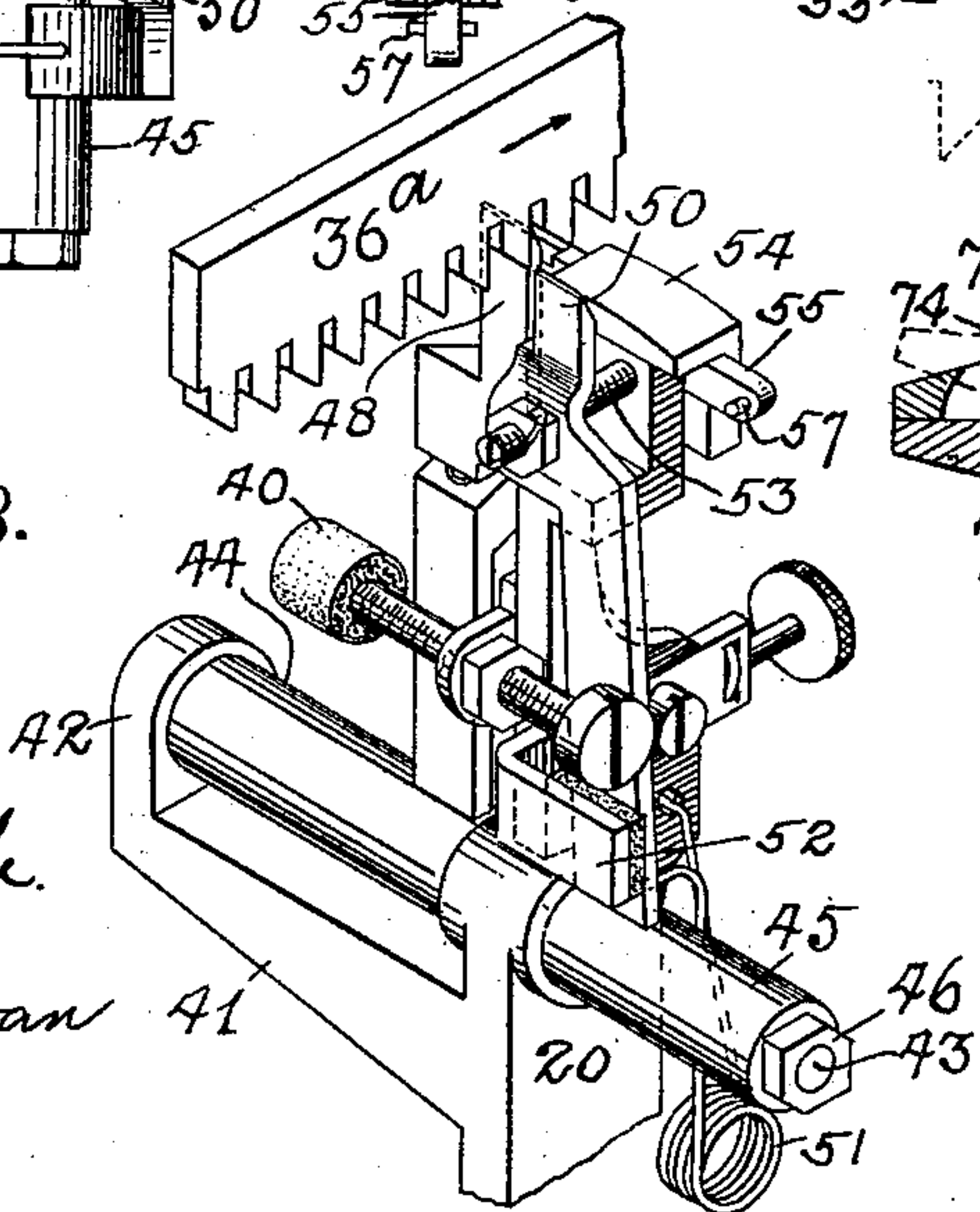
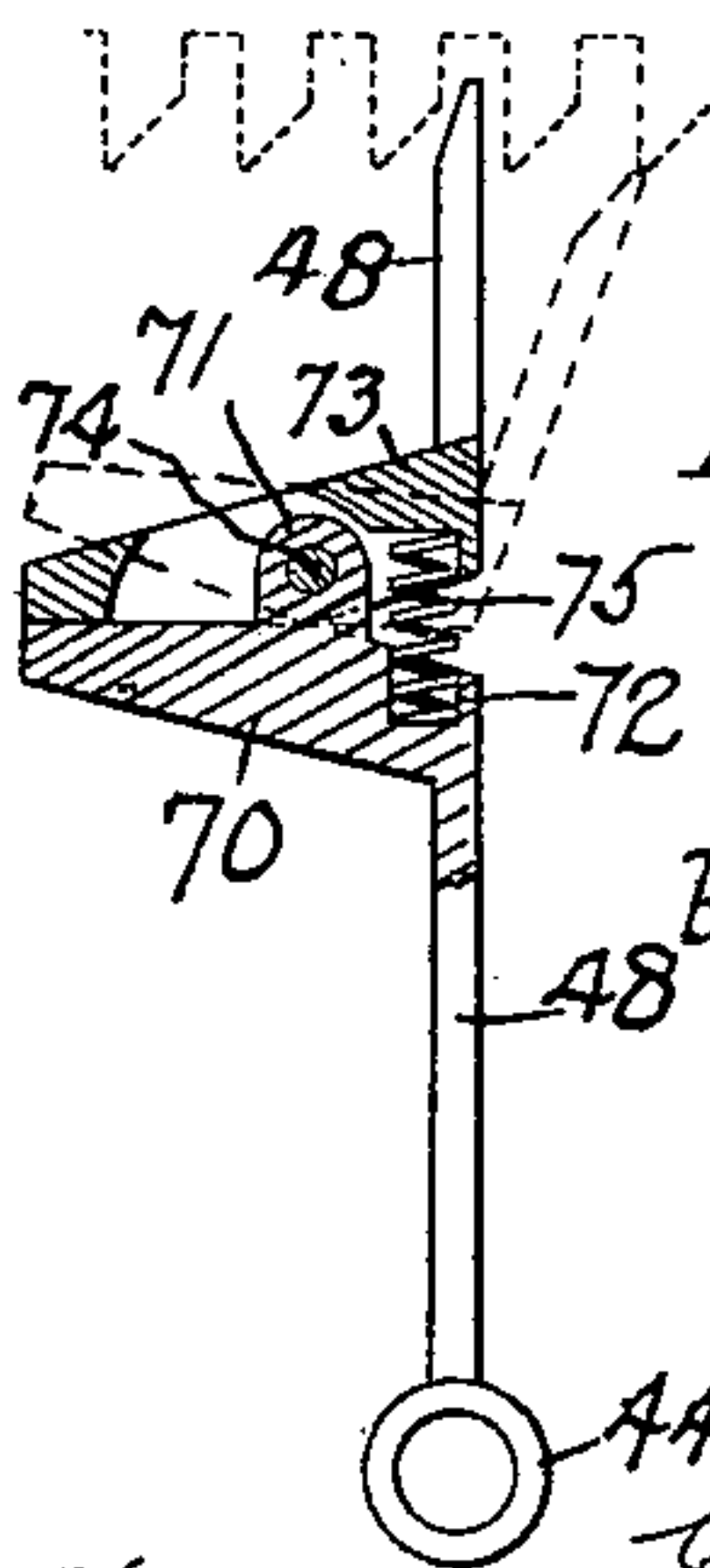


Fig. 9.



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# UNITED STATES PATENT OFFICE.

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## TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 635,981, dated October 31, 1899.

Application filed May 18, 1899. Serial No. 717,312. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES H. SHEPARD, a citizen of the United States, and a resident of the borough of Brooklyn, in the city of New York, in the county of Kings and State of New York, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

10 In a common form of escapement mechanism for type-writing machines there are provided a stepping feed-dog which is normally in engagement with the rack (straight or segmental or circular) and a holding-dog which  
15 is normally out of engagement with the rack, and when a key is depressed and its associated type-carrier is thrown to the printing-point the stepping feed-dog is moved from the operative tooth of the rack and the holding-dog is engaged with the said tooth. The holding-dog must move across the working face of the tooth sufficiently far to allow the stepping feed-dog to be released and to move into a position relatively to the next succeeding  
20 tooth such that it may engage therewith on the return movement of the dog-carrier. In this construction the carriage is held stationary after the release of the key and the beginning of the reverse or return movement of the dog-carrier during the interval of time required for the holding-dog to move back free from the working face of the tooth. From this it results that if after one key has been depressed and then released a key be depressed and its associated type-carrier thrown  
35 to the printing-point before the holding-dog is freed from the rack-tooth, or at least before the carriage has completed its letter-space movement, one letter is imprinted upon another or overlaps it or overlaps the same letter, according to the key operated at the second depression. In order to avoid such double or overlapping impression, the keys must be operated at intervals of time sufficiently far apart to permit of the proper letter-space movements of the carriage, thus making the machine relatively slow.

45 The primary object of the present invention is to secure a quick release of the carriage after the impact of the type and to provide a machine in which the defects in the

type-written matter due to the peculiarities of the touch of different operators will be reduced to a minimum or even wholly eliminated.

To these ends the invention consists in certain features of construction and combinations of devices hereinafter described, and more particularly pointed out in the appended claims.

One form of the invention is illustrated in the accompanying drawings, forming part of this specification, in which—

Figure 1 is a central vertical longitudinal sectional view of a type-writing machine in which the invention is embodied, certain parts of the type-writing machine being omitted for the sake of clearness. Fig. 2 is a rear elevation of the escapement mechanism shown in Fig. 1, parts of the frame being in section or wholly broken away. Fig. 3 is a sectional side elevation of the escapement mechanism shown and taken at the line X X in Fig. 2. Figs. 4, 5, 6, and 7 are diagrammatic plan views illustrative of the operation of the invention, some parts being in section. Fig. 8 is a perspective view of a modified arrangement wherein a straight rack is employed. Fig. 9 is a view partly in section and illustrative of a construction of a feed-dog adapting it to move to permit the retraction of the rack without lifting.

The same reference-numeral will be used to designate the same part in the various views of the drawings.

1 is a base frame; 2, uprights or standards formed in one with the base; 3, a top plate or type-ring secured to the standards 2; 4, type-bar hangers attached to the type-ring 3; 5, type-bars journaled in the hangers 4 and provided with type-blocks 6; 7, connecting-rods pivotally connected with the type-bars 5 and with straps 8, which are secured to finger key-levers 9; 10, notches in the upper edges of the key-levers 9; 11, a rib under the top of the frame 1 to receive the notches 10; 12, springs attached to the base 1 and pressing the key-levers 9 against the rib 11; 13, a universal bar underlying the key-levers 9 and the space key-levers 14; 15, one of two rods connecting the universal bar 13 with the ends of a transverse bar 16; 17, a shaft journaled



in rearwardly-projecting lugs 17<sup>a</sup> of a bracket 18, depending from the top plate 3; 19, an arm projecting forwardly from the shaft 17 and to which the cross-bar 16 is attached; 20, an upstanding arm or rocker connected with the shaft 17; 21, a spring connected with the shaft 17 and the bracket 18 and tensioned to rock the shaft to lift the arm 19 and connected parts; 22, an adjustable stop carried by the arm 19 and adapted to contact with the under side of the bracket 18 to limit the upward motion of the arm 19; 23, a carriage running upon and guided by bars 24 25, which are connected with the top plate 3; 26, a shifting platen-carrier connected with the carriage 23 in any usual or suitable way and provided at its forward side with a grooved roller 27, adapted to run upon a guide and shift rod 28; 29, a platen journaled in the platen-carrier 26; 30, one of two arms pivotally connected at 31 with the carriage 23 and carrying a rack 32; 33, a toothed wheel with which the rack 32 engages; 34, a shaft to which the gear 33 is fast; 35, a bearing for the shaft 34; 36, a circular rack or ratchet-wheel connected with the shaft 34 in any suitable or usual manner, as by a backing-ratchet within a casing 37; 38, a spring-drum; 39, a strap connecting the drum with the carriage 23 through a downwardly-projecting arm 39<sup>a</sup>. 40 is an adjustable stop on the rocker-arm 20 for coaction with the bracket 18 to limit the forward motion of the rocker.

The foregoing devices are or may be of any suitable or known construction and are substantially such as are to be found in the Remington type-writing machine No. 6.

In that form of the invention illustrated in the drawings the rocker 20 is provided with a forwardly-projecting arm 41, having an upturned end or ear 42, and the rocker 20 and end 42 are provided with bearings arranged in line to receive a shaft or rod 43. The shaft 43 provides bearings for sleeves 44 45, the sleeve 44 being between the ear 42 and the rocker 20, and the sleeve 45 being held between the rocker 20 and a nut or head 46 on the shaft 43, and a head or nut 47 at the other end of the shaft and outside of the bearing 42 prevents the shaft from being displaced accidentally. A feeding-dog 48 is rigidly connected with the sleeve or hub 44, and a spring 49 is connected with the rocker 20 and with the dog 48 to rock the same. A holding-dog 50 is rigidly connected with the sleeve 45, and a spring 51 is connected with the dog 50 and the rocker 20 and is tensioned to throw the dog 50 in the same direction as that in which the spring 49 throws the dog 48. The dog 48 overlaps the dog 50 at 50<sup>a</sup>, the dog 50 thus forming a stop to the motion of the dog 48 in one direction, and the contact of dog 48 with a portion of the carrier 20, as at 48<sup>a</sup>, limits the motion of the dog 48 in the other direction. The rocker 20 is provided with an adjustable stop 52, against which the spring 51 holds the dog 50, as illustrated at Fig. 2. The

construction of the stop 52 and the means shown for adjusting it are similar to means well known in the art for limiting the motion of escape-dogs and need not be described at length herein.

The dog 50 is provided with an adjustable arm, as screw 53, which lies in the plane of motion of the dog about the shaft 43. The upper end of the rocker 20 is provided with a head 54, and this head is perforated or slotted from front to rear to receive a slide 55, which is adapted to have an independent limited motion relatively to the head or rocker, and said slide is provided with a lug 56 at one end of the head and with a fastening-pin 57 at the other end of the head. The head 54 is provided with a transverse perforation 58, which intersects the bearing of the slide 55, and the slide is perforated at 59 in such wise that when the slide is at one limit of its motion the perforations 58 and 59 will be in line with each other, as indicated in Figs. 4 and 7, and will be out of line with each other when the slide is at the other limit of its motion, as indicated in Figs. 5 and 6. The adjustable arm or projection 53 of the dog 50, above referred to, rests in the perforation 58, and is preferably adjusted to a length such that the slide 55 may just pass its rounded or tapered end when the dog 50 is at one limit of its motion, as when arrested by the stop 52. The slide 55 is extended, as at 60, in an arc whose center is the axis of the shaft 17, and the arm 60 is slightly tapered toward its free end. The bracket 18 is provided with a forwardly-projecting arm 61, to which two levers 62 63 are connected by a fulcrum-pin 64. The lever 62 is provided with a roller 65 above and the lever 63 with a roller 66 below the arm 60 aforesaid, and the levers are also respectively provided with pins 67 68. A spring 69, catching over the pins 67 68, draws the upper ends of the levers 62 63 toward each other, thus pressing the rollers 65 66 against the arm 60.

The operation of the devices hereinbefore described is as follows: Upon the depression of a key 9 its associated type-block 6 is thrown to the printing-point, as shown in Fig. 1, the universal bar and arm 19 are drawn downwardly, and the rocker-arm 20 moved forwardly into the position shown in Fig. 1. The dog 48, which is normally in engagement with the rack 36, is thrown forwardly, or to the right in Fig. 2, by its spring 49 as soon as the dog is released from the rack 36 and the dog 50 is brought into engagement with the working face of the next succeeding tooth to that engaged by the dog 48 before the dog 48 is disengaged therefrom, and the dog 50 is held at such time against movement about its pivot, or to the left in Fig. 2, by the contact of the arm 53 with the sliding abutment 55. On the release of the depressed key the rocker-arm and type are restored to normal position by their correspondingsprings, and as the rocker-arm 20 moves reversely (rearwardly of the



machine in this case) the dog 48 is reengaged with the rack 36, and thereafter and while the dog 50 is still engaged with the rack the abutment 55 is withdrawn, whereupon the dogs 48 and 50 are carried backwardly or toward the left in Fig. 2 by the rack until the feeding-dog 48 is arrested by its corresponding stop 48<sup>a</sup>, and thereafter the continued reverse or rearward motion of the rocker 20 carries the dog 50 free of the rack, whereupon its spring 51 restores the dog 50 to its normal position, or that shown in Fig. 2. The backward or spacing movement of dog 50, or to the left in Fig. 2, is arrested by lug 48<sup>a</sup>, that stops dog 48 in consequence of the described overlapping of the dogs.

The foregoing operations are illustrated diagrammatically in Figs. 4, 5, 6, and 7, in which Fig. 4 illustrates the positions of the various parts when in normal position or at rest, in which it will be observed that the dog 48 is in engagement with the rack-tooth 36<sup>x</sup>, while the dog 50 is in position to pass in front of or in contact with the working face of the next succeeding rack-tooth 36<sup>xx</sup>. Upon the depression of a key the rocker or dog-holder and the dogs 48 and 50 are carried over or forward, and at this time the friction or pressure of the rollers 65 66 upon the arm 60 holds the slide 55 substantially stationary relatively to the rocker 20 until the end of the rocker-head 54 contacts with the lug 56, after which the slide moves in unison with the rocker. The head engages the lug 56 at about the time the dog 50 comes in front of the rack-tooth 36<sup>xx</sup>, as illustrated in Fig. 5, at which time the perforation 58 of the head has been moved so far that the arm 53 cannot pass through the perforation 59, but must strike or rest against the side of the slide, and thus prevent any motion of the dog 50 toward the left in Fig. 5. During the continued movement of the rocker under the downward pressure of the key the slide is carried forward therewith and the dog 48 escapes from the rack-tooth 36<sup>x</sup> and the dog 50 engages to a greater extent with the working face of the tooth 36<sup>xx</sup> without disturbing the relationship between the slide and the rocker-head, as shown at Fig. 6. Owing to the escape of the dog 48 from its tooth 36<sup>x</sup> it is shown in alinement with the dog 50, which position it takes under the influence of its spring 49, so that upon the return movement of the rocker the dog 48 may engage the tooth 36<sup>xx</sup> as the dog 50 recedes therefrom, but before the dog 50 has been fully disengaged from said rack-tooth. Upon the release of the depressed key the rocker 20 moves rearwardly and the pressure of the rollers 65 66 upon the arm 60 holds the slide substantially stationary for a moment relatively to the head 54 until the head strikes the projection 57; but during this time the dog 48 is moved from the position shown in Fig. 6 to one in which it is in front of and in contact with the tooth 36<sup>xx</sup> before the dog 50 is released by the slide 55. As soon as the

hole in the rocker-head returns into register with the hole in the slide, the pin 53 is adapted to pass through the coinciding holes under the pressure of the rack-tooth. Upon the release of the dog 50 by the slide 55 the dogs 48 and 50 are carried together by the tooth 36<sup>xx</sup> instantly back to the positions shown in Fig. 7, and this release occurs during the initial part of the movement of the rocker 20 reversely or rearwardly, thus providing that the carriage shall quickly or instantly move a letter-space distance forward before the holding-dog is disengaged from the rack, thus making the machine sufficiently speedy for the most rapid and expert operators and providing a machine in which successive imprints must be properly spaced along the line and one in which double and overlapping im-

pressions are avoided. It will be noted that the movement of the holding-dog 50 from the position shown at Fig. 6 to the position shown at Fig. 7 can occur only upon relief of the key 9 from pressure, as it is only upon the return or backward movement of the rocker 20 that the dog 50 is released by the slide 55.

In the modification illustrated at Fig. 8 the circular rack 36 is replaced by a straight rack 36<sup>a</sup>, and the remaining parts are substantially the same as in the case illustrated at Figs. 1, 2, and 3 and are marked with the same reference-numerals. The mode of operation of the modification shown in Fig. 8 is substantially the same as that hereinbefore described.

In Fig. 9 is illustrated a construction of the feeding-dog which permits of the retraction of the rack 36<sup>a</sup> without lifting the same and of the retraction of the carriage when the ratchet-wheel 36 is fast upon its shaft 34 instead of being connected thereto by means of a backing-ratchet, as described. In this case the dog 48 is made in two parts. The lower part is provided with a head 70, having a flat top, from which rises a perforated lug 71, and in the head in front of the lug 71 is a socket 72. The upper part is provided with a foot 73, which is slotted to embrace the lug 71 and perforated to receive a pin 74, which fastens the two parts together in a pivotal manner, and the metal of the foot 73 is cut away to form a bearing for a spring 75, which is also inserted in the socket 72 and is tensioned to press the foot 73 down upon the head 70, as illustrated in Fig. 9 in full lines. Upon the retraction of the carriage or rack 36<sup>a</sup> the dog 48 is moved over by the backs of the teeth into the position shown in dotted lines in Fig. 9 and snaps from one tooth back to another as the rack is moved in the direction of the arrow in dotted lines. Obviously the same action occurs when the circular rack 36 is rotated reversely.

Inasmuch as the principle of my invention may be embodied in many forms of mechanism I do not limit myself to the precise form of my invention shown in the drawings and hereinbefore described, but include all forms



operating upon the same principle within some of my claims.

What I claim as new, and desire to secure by Letters Patent, is—

5 1. In a type-writing machine and in an escapement mechanism, the combination of a rack, two spring-pressed dogs independently movable parallel with the rack and adapted each to be in engagement with the rack be-  
10 fore the engagement of the other with the rack ceases, and means for holding one dog against its said parallel motion while engaged with the rack until after the other dog be-  
15 comes engaged with the rack and then releasing said dog for such parallel motion.

2. In a type-writing machine and in an escapement mechanism, the combination of a rack, two dogs independently movable parallel with the rack and one being normally  
20 engaged therewith and the other normally disengaged therefrom, means for vibrating one of said rack and dog elements transversely of the rack, and means for holding the nor-  
25 mally-disengaged dog against said independent motion while it is engaged with the rack during the forward transverse motion and re-  
30 leasing said dog after the normally-engaged dog is reengaged with the rack on the reverse transverse motion, whereby the carriage  
35 moves forward while both dogs are engaged with the rack.

3. In a type-writing machine and in an escapement mechanism, the combination of a  
35 rack, two dogs independently movable parallel with the rack and spring-pressed in the same direction and one of said dogs being  
40 normally in engagement with and the other of said dogs being normally disengaged from the rack, and a stop movable into position  
45 before the normally-disengaged dog becomes engaged with the rack for preventing said normally-disengaged dog from moving when  
50 engaged with the rack until after the normally-engaged dog becomes reengaged with  
55 the rack and releasing said normally-disengaged dog before it is disengaged from the rack.

4. In a type-writing machine and in an escapement mechanism, the combination of a  
50 rack, stepping-dogs for coaction therewith, means for causing engagement between the rack and the dogs in alternation, and means  
55 for holding one of said dogs against motion until the other of said dogs becomes reengaged with the rack and then releasing said  
60 dog, whereby the letter-space feed movement of the carriage takes place while both dogs are in engagement with the rack.

5. In a type-writing machine and in an escapement mechanism, the combination of a  
60 rack, two stepping-dogs for coaction with the rack, one of said dogs being normally in and the other being normally out of engagement  
65 with said rack, and a movable abutment for preventing motion of the normally-disengaged dog until after the normally-engaged  
dog is again in engagement with the rack

and then releasing the same, whereby the letter-space feed movement of the carriage occurs while both dogs are in engagement with  
70 the rack.

6. In a type-writing machine and in an escapement mechanism, the combination of a  
75 rack, stepping-dogs for coaction therewith and one being normally in and the other being normally out of engagement with said  
80 rack, a movable abutment for preventing motion of the normally-disengaged dog when in engagement with the rack until after the nor-  
85 mally-disengaged dog is again in engagement with the rack and then releasing the same, and friction devices for cooperating with said  
abutment.

7. In a type-writing machine and in an escapement mechanism, the combination of a  
85 rack, a rocker, stepping-dogs carried by said rocker and coacting with the rack and one of  
90 said dogs being normally engaged with and the other being normally disengaged from the rack, and a mechanism including an abut-  
95 ment on and movable independently of the rocker for holding the normally-disengaged dog against stepping motion when engaged  
with the rack until and releasing the same after the normally-engaged dog reengages  
100 with the rack, whereby the letter-space feed movement of the carriage occurs while both  
dogs are in engagement with the rack.

8. In a type-writing machine and in an escapement mechanism, the combination of a  
100 rack, a stepping holding-dog normally out of engagement with the rack, and means for preventing said dog from stepping during the  
105 relative motion of the dog and rack which causes engagement between the same and for releasing the dog during the first part of the  
110 return or disengaging relative motion of the rack and dog, whereby the letter-space feed movement of the carriage takes place before  
the holding-dog and the rack are disengaged.

9. In a type-writing machine and in an escapement mechanism, the combination of a  
115 rack, a stepping holding-dog normally out of engagement with the rack, and an abutment or stop movable into position during the forward  
120 relative motion of the dog and rack for preventing stepping movement of the dog and releasing the dog during the first part of the  
125 return relative motion of the dog and rack.

10. In a type-writing machine and in an escapement mechanism, the combination of a  
120 rack, a stepping holding-dog normally out of engagement with the rack, a movable stop adapted to hold said dog against stepping mo-  
125 tion, and friction devices for holding the said stop in position during the forward relative  
130 motion of the rack and dog for preventing and for holding the stop to release the dog during the first part of the return relative  
135 motion of said parts, whereby the letter-space feed movement of the carriage takes place before the dog and rack are disengaged from  
each other.

11. In a type-writing machine and in an es-



capement mechanism, the combination of a rack, a stepping holding-dog normally disengaged from the rack and spring-held at one limit of its motion, and a stop automatically movable into and out of position for holding said dog at said limit of its motion and holding said dog at said limit during the engaging relative motion of the rack and dog, and releasing the same during the first part of the disengaging relative motion of the rack and dog.

12. In a type-writing machine and in an escapement mechanism, the combination of a rack, a stepping holding-dog spring-held at one limit of its motion and normally disengaged from the rack and automatic mechanism for locking said dog at said limit before engagement between the dog and the rack occurs during forward relative motion of the rack and dog and releasing the dog during the first part of return relative motion of the rack and dog and before the dog and rack are free from each other, whereby the letter-space feed movement of the carriage takes place while the rack and dog are still engaged with each other.

13. In a type-writing machine and in an escapement mechanism, the combination of a rack, a movable dog-carrier, a stepping holding-dog on said carrier and normally disengaged from the rack, a slide on and having a limited motion relatively to the carrier and movable into and out of position for locking said dog against motion and provided with an arm, and friction devices coacting with said arm for causing relative motion of the slide and carrier.

14. In a type-writing machine and in an escapement mechanism, the combination of a rack, a rocker, a dog mounted on the rocker to move independently thereof in a direction parallel with and normally disengaged from the rack, a spring for holding said dog at one limit of its motion, a stop on and having a limited motion relatively to said rocker, and friction devices for causing relative motion of the stop and rocker.

15. In a type-writing machine and in an escapement mechanism, the combination of a rack, a rocker having a head provided with intersecting perforations, a dog mounted on the rocker to move independently thereof in a direction parallel with and normally disengaged from the rack, a spring for holding said dog at one limit of its motion, an arm on said dog extending to one of said perforations, a slide in the other of said perforations and having a limited motion on the head and provided with a perforation adapted when the slide is in one position to register with the perforation into which said arm extends, a stepping feed-dog on said rocker, and means for operating said slide to move its perforation out of line with the transverse perforation, whereby the holding-dog arm and dog are prevented from moving when in engagement with the rack until said slide is moved

relatively to the rocker during a return motion of the rocker and after the feeding-dog is reengaged with the rack, whereby the carriage letter-space feed movement occurs while both dogs are in engagement with the rack.

16. In a type-writing machine and in an escapement mechanism, the combination of a rack, a stepping feed-dog, a holding-dog normally disengaged from and having a limited motion parallel with said rack, and said rack and dog having relative motion transversely of said rack and a releasing stop device adapted to hold said dog against said parallel motion while engaged with the rack until after the stepping feed-dog becomes engaged with the rack, whereby the letter-space feed movement takes place while both dogs are engaged with the rack.

17. In a type-writing machine and in an escapement mechanism, the combination of a rack, a pivoted dog, an abutment for preventing motion of said dog and movable relatively to release the same, a bearing for said abutment, and stops on said abutment adapted to coact with the bearing to limit the relative motion of the abutment and bearing.

18. In a type-writing machine and in an escapement mechanism, the combination of a rack, a rocker, a dog pivoted to said rocker, an abutment sliding in a bearing on said rocker and having stop-lugs for coaction with the rocker to limit the motion of the abutment, and said abutment in one position being adapted to prevent pivotal motion of the dog while in engagement with the rack and releasing the same for such movement when in another position, and means for operating said abutment.

19. In a type-writing machine and in an escapement mechanism, the combination of a rack, a dog-carrier, a dog pivotally connected with the carrier, an abutment movable independently of the carrier into and out of position for preventing motion of said dog when engaged with the rack and provided with an extension, and two fulcrumed levers provided with rollers and spring-pressed to cause said rollers to engage opposite sides of said extension.

20. In a type-writing machine and in an escapement mechanism, the combination of a rack, a dog-carrier, a dog pivotally connected therewith, an abutment sliding on said carrier and adapted when in one position to hold said dog against motion when engaged with the rack and to release the dog in another position of the abutment, stop-lugs on said abutment coacting with the carrier to limit the motion of the abutment, a curved extension on said abutment, two levers, rollers on said levers, and a spring connecting said levers and operating to press said rollers against the curved sides or edges of said extension.

21. In a type-writing machine and in an escapement mechanism, the combination of a rack, a dog-carrier, pivoted spring-pressed



dogs thereon adapted both to be in engagement with the rack in certain positions of the dogs during reverse motion of the carrier, means for locking said dogs against motion during the initial part of said double engagement, and devices for causing said locking means to release the dogs while both are still in engagement with the rack.

22. In a type-writing machine and in an escapement mechanism, the combination of a rack, pivoted spring-pressed dogs adapted simultaneously to be in engagement with the rack during a part of their reverse motion transversely of the rack, a movable abutment for preventing spacing movement of the dogs during a part of the time both are in said engagement with the rack, and means for operating said abutment to release the dogs while both are still in said engagement with the rack.

23. In a type-writing machine and in an escapement mechanism, the combination of a finger-key, a rack, a holding-dog, and means operating only upon the relief of the finger-key from pressure for causing the dog to move parallel with the rack and in engagement therewith, during the escape action.

24. In a type-writing machine and in an escapement mechanism, the combination of a rack, feeding and holding dogs movable transversely of and parallel with the rack, and means for holding said dogs against said parallel movement until both are engaged with the rack during the reverse motion of the dogs.

25. In a type-writing machine and in an escapement mechanism, the combination of a finger-key, a rack, a dog-carrier movable transversely of the rack, and a holding-dog normally disengaged from the rack and mounted upon said carrier to move parallel with the rack simultaneously with its motion transversely thereof, and only upon the relief of the finger-key from pressure, and while still in engagement with the rack.

26. In a type-writing machine and in an escapement mechanism, the combination of a rack, a dog-carrier movable transversely of the rack, and feeding and holding dogs mounted upon the carrier to move parallel with the rack during the escape action while both are in engagement with the rack.

27. In a type-writing machine and in an escapement mechanism, the combination of a rack, and a feeding and a holding dog mounted to move transversely of and parallel with the rack during the escape action, with mechanism for holding the dogs against said parallel motion during the reverse motion of the dogs until both are in engagement with the rack.

28. In a type-writing machine and in an escapement mechanism, the combination of a rack, a feeding and a holding dog mounted to move transversely of and parallel with the rack, and stop mechanism for the holding-dog for retaining the same against said parallel

motion until both dogs are in engagement with the rack during the return motion of the dogs transversely of the rack.

29. In a type-writing machine and in an escapement mechanism, the combination of a finger-key, a rack, a holding-dog normally disengaged therefrom and movable parallel therewith, and means for preventing such parallel movement of the dog on engagement with the rack and for releasing the dog and hence the rack at or about the beginning of the return movement of the dog, and only upon the relief of the finger-key from pressure.

30. In a type-writing machine and in an escapement mechanism, the combination of a rack, a movable dog-carrier, a dog movable on said carrier parallel with the rack, a movable stop on said carrier for preventing said parallel motion of the dog during the forward motion of the dog-carrier, and means for causing relative motion of the stop and carrier and releasing the dog during the reverse motion of the carrier.

31. In a type-writing machine and in an escapement mechanism, the combination of a rack, a feeding-dog normally in engagement with the rack, a spring-pressed pivoted holding-dog normally disengaged from the rack and engaging the tooth succeeding that which the feeding-dog is disengaged from on a forward movement of the dogs, and means for preventing the holding-dog from moving on its pivot under the pressure of the rack while the feeding-dog is out of engagement with the rack, said means operating automatically to release the pivoted holding-dog on backward movement of the dog-carrier and allowing the dog to move with the rack against the tension of the dog-spring, and said dog finally escaping from the rack-tooth at the end of the backward movement of the dog-carrier and the dog-spring vibrating said dog laterally parallel with the rack into position for engagement with another tooth when the dog-carrier is moved forward again.

32. In a type-writing machine and in an escapement mechanism, the combination of a rack, a rocker, a feeding-dog 48 and a holding-dog 50 pivoted to said rocker, a lug on dog 50 overlapping feeding-dog 48, a stop 48<sup>a</sup> for dog 48, a stop in front of dog 50, springs for said dogs, an arm 53 on dog 50, a sliding abutment 55 having a perforation 59, stops 56 and 57 and an extension 60, and friction devices coacting with extension 60 to hold said abutment 55 until stops 56 and 57 engage the rocker.

Signed at the borough of Manhattan, in the city of New York, in the county of New York and State of New York, this 17th day of May, A. D. 1899.

CHARLES H. SHEPARD.

Witnesses:

K. V. DONOVAN,  
O. F. WARNECKE.