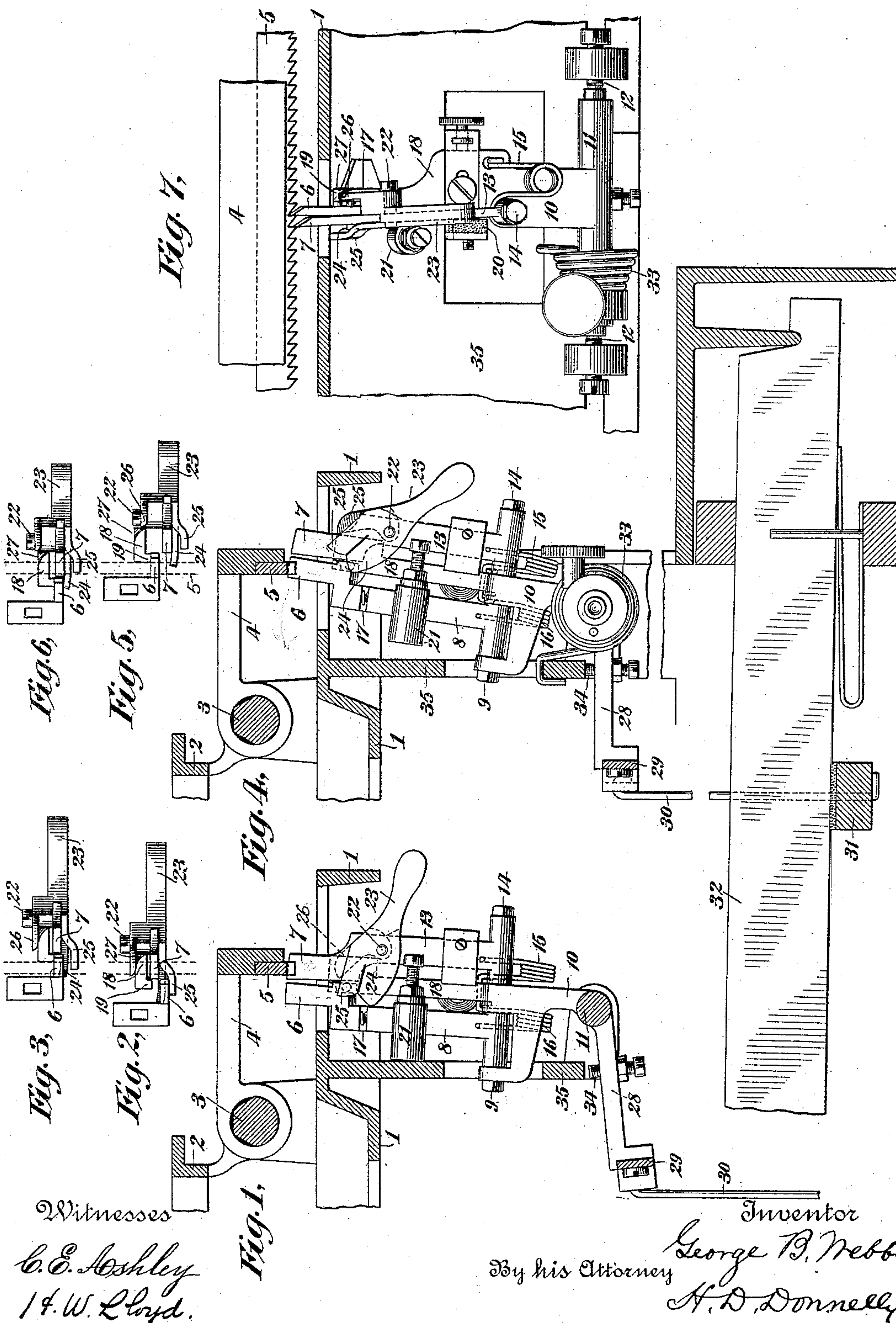


3 Sheets—Sheet 1.

No. 489,701.

Patented Jan. 10, 1893.



G. B. WEBB.
TYPE WRITING MACHINE.

No. 489,701.

Patented Jan. 10, 1893.

Fig. 9.

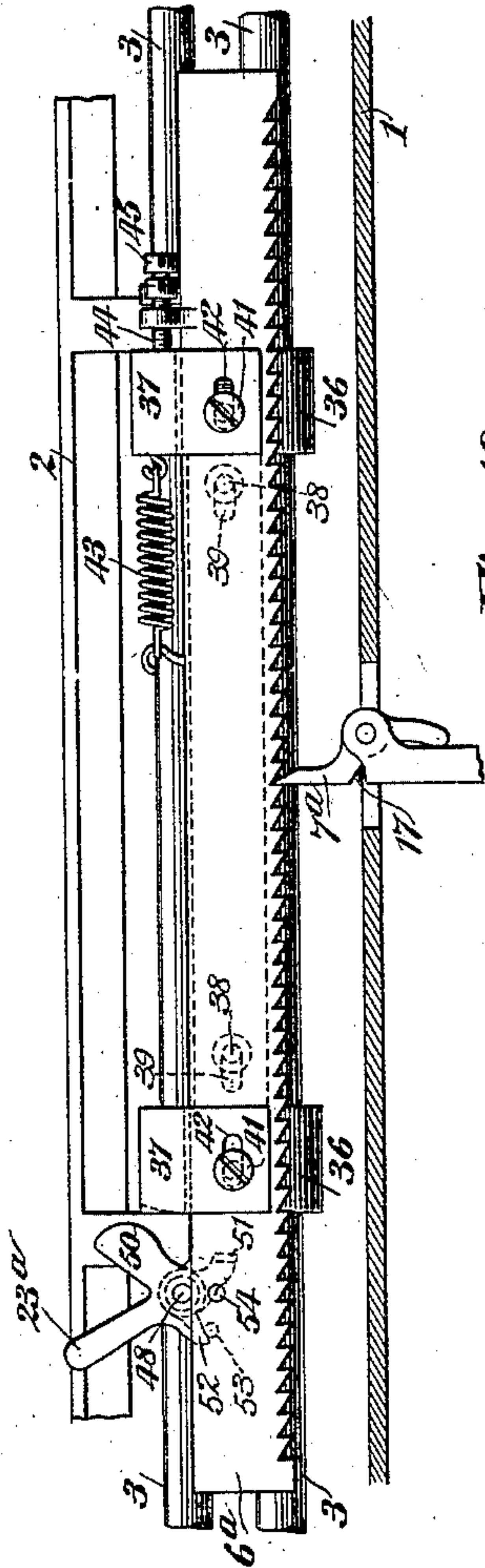


Fig. 10.

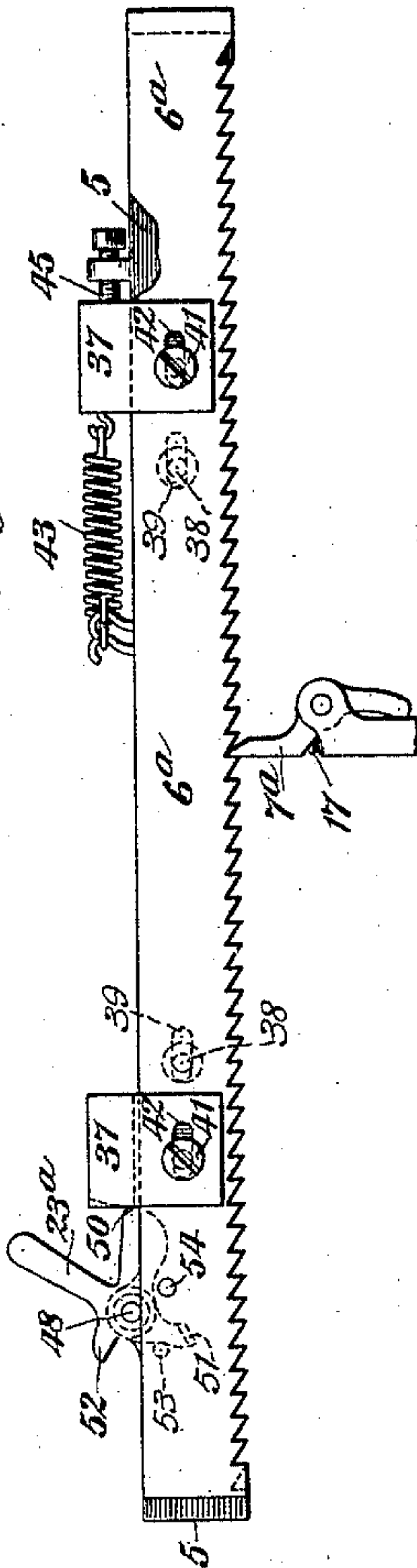


Fig. 11.

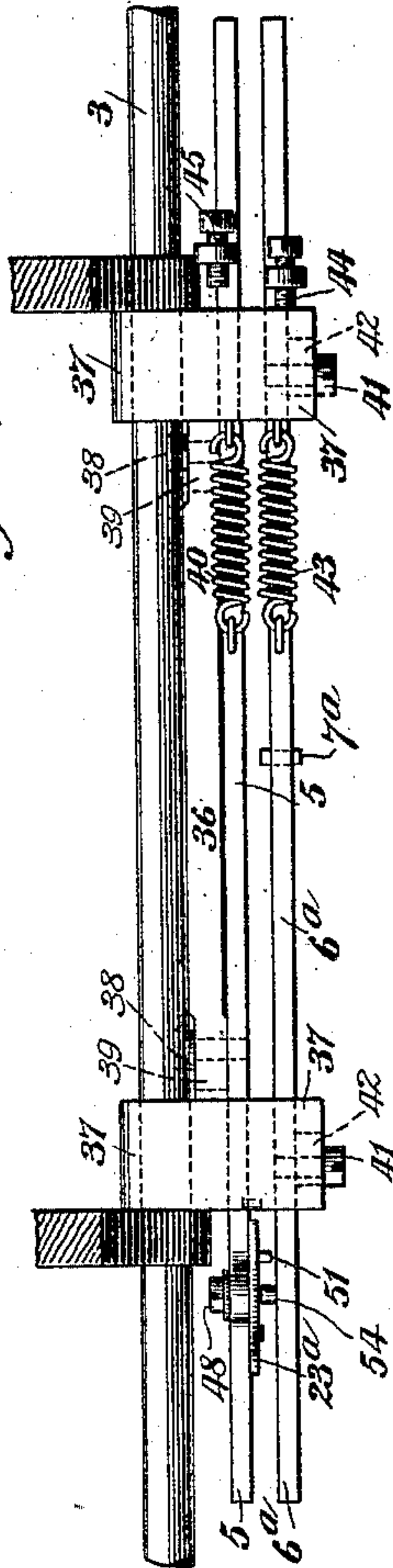
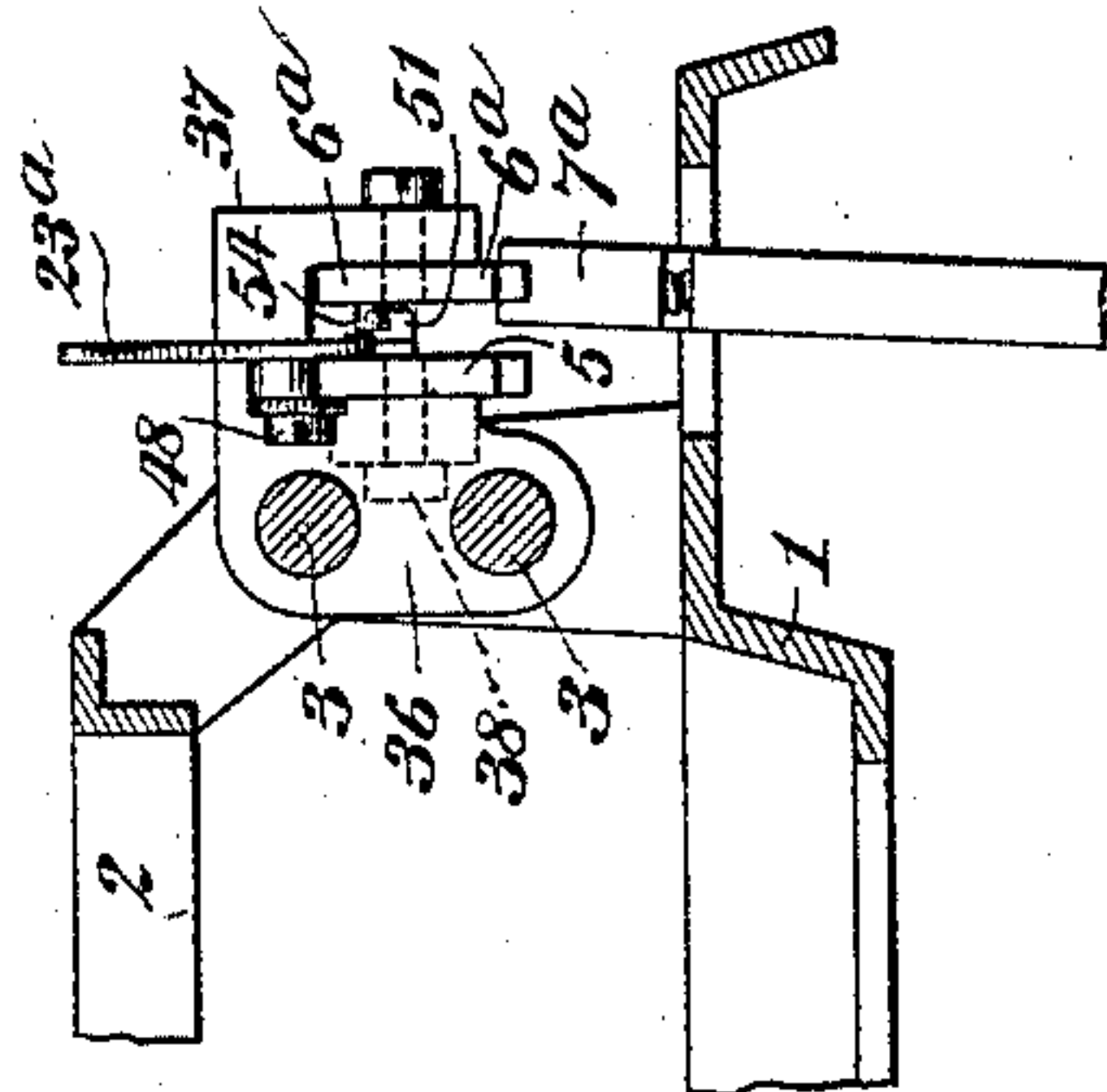


Fig. 8.



Witnesses
C. E. Ashley
H. W. Lloyd.

Inventor
George B. Webb
By his Attorney
H. B. Donnelly

(No Model.)

3 Sheets—Sheet 3.

G. B. WEBB.
TYPE WRITING MACHINE.

No. 489,701.

Patented Jan. 10, 1893.

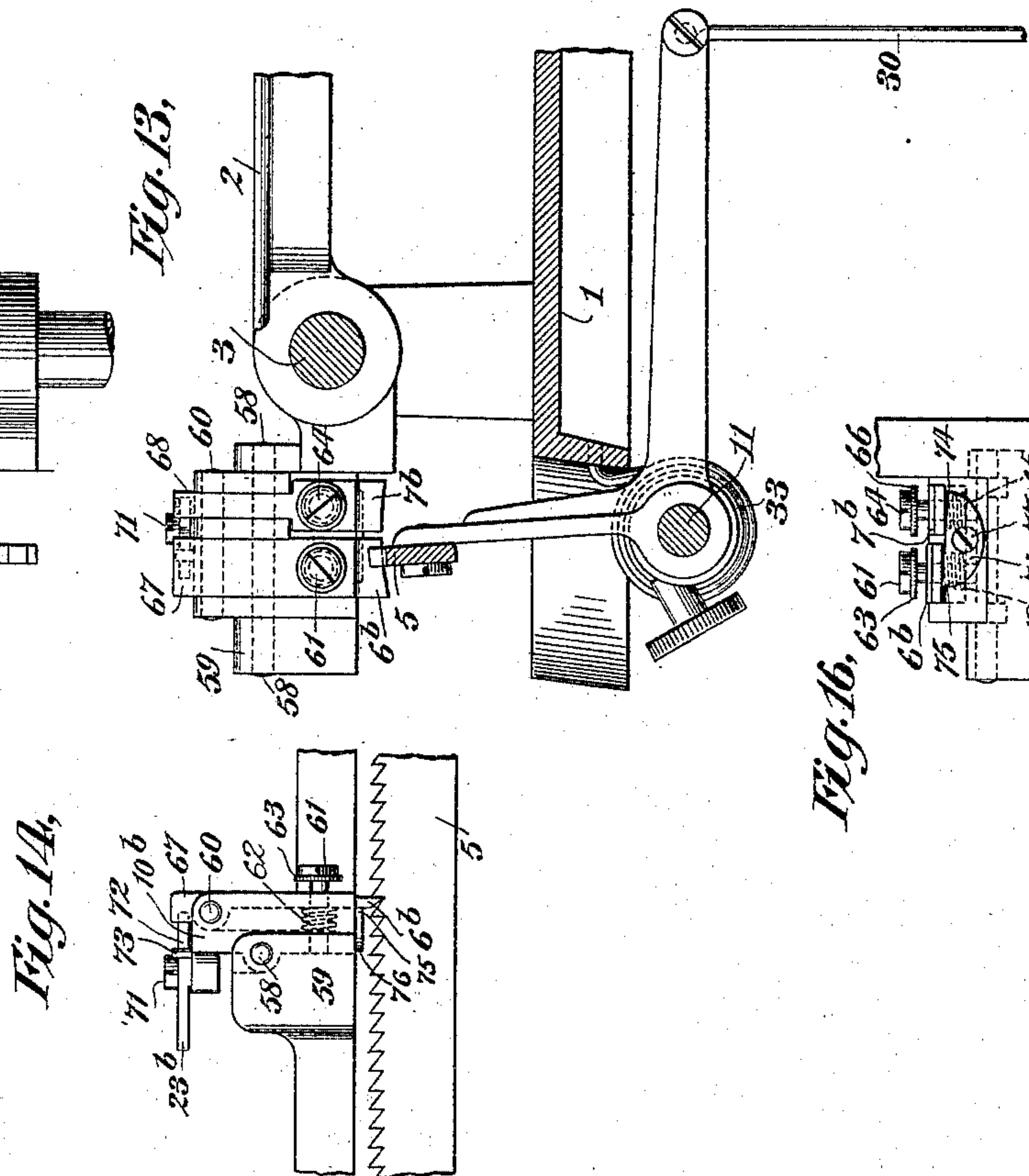
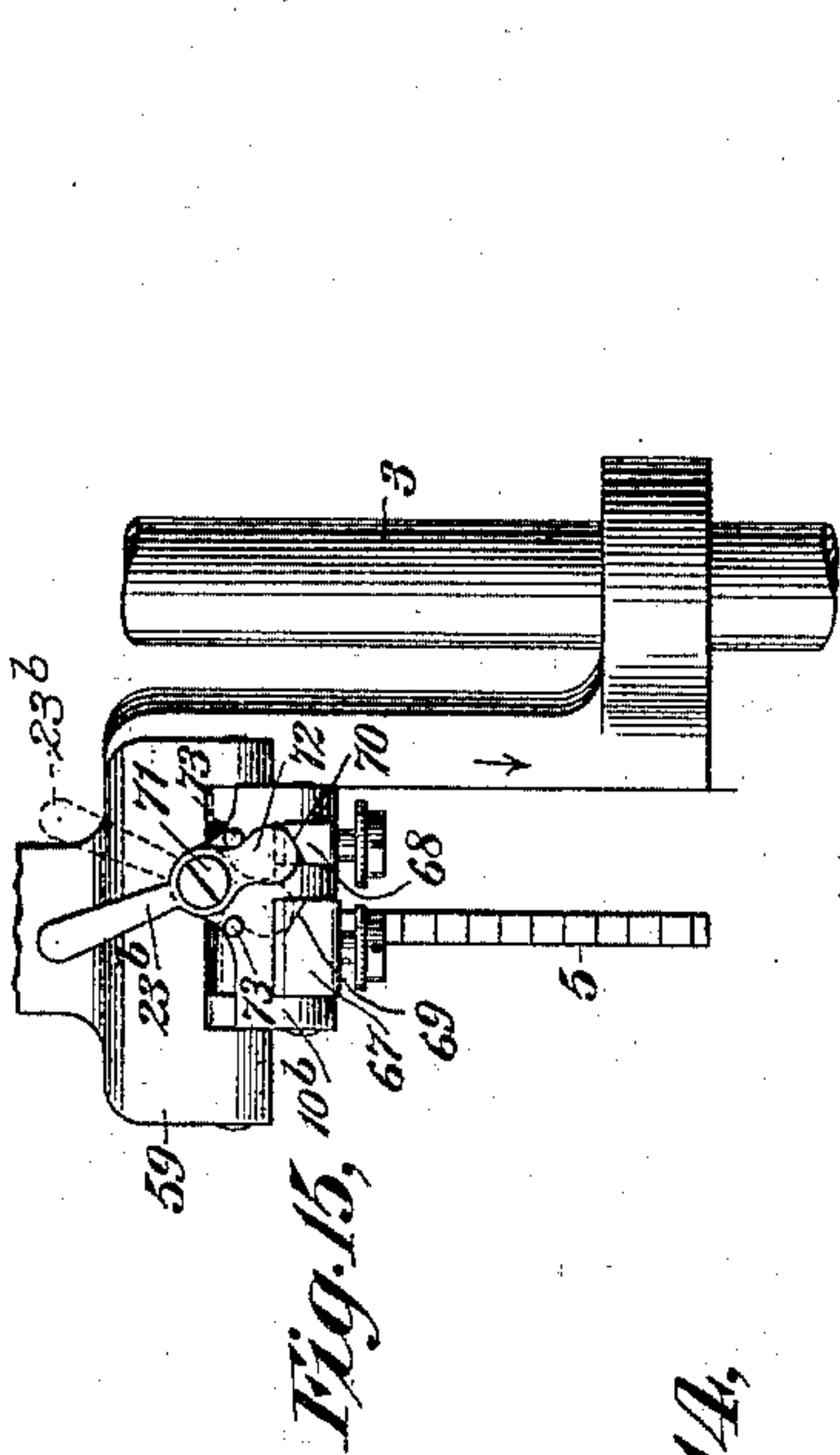


Fig. 14,

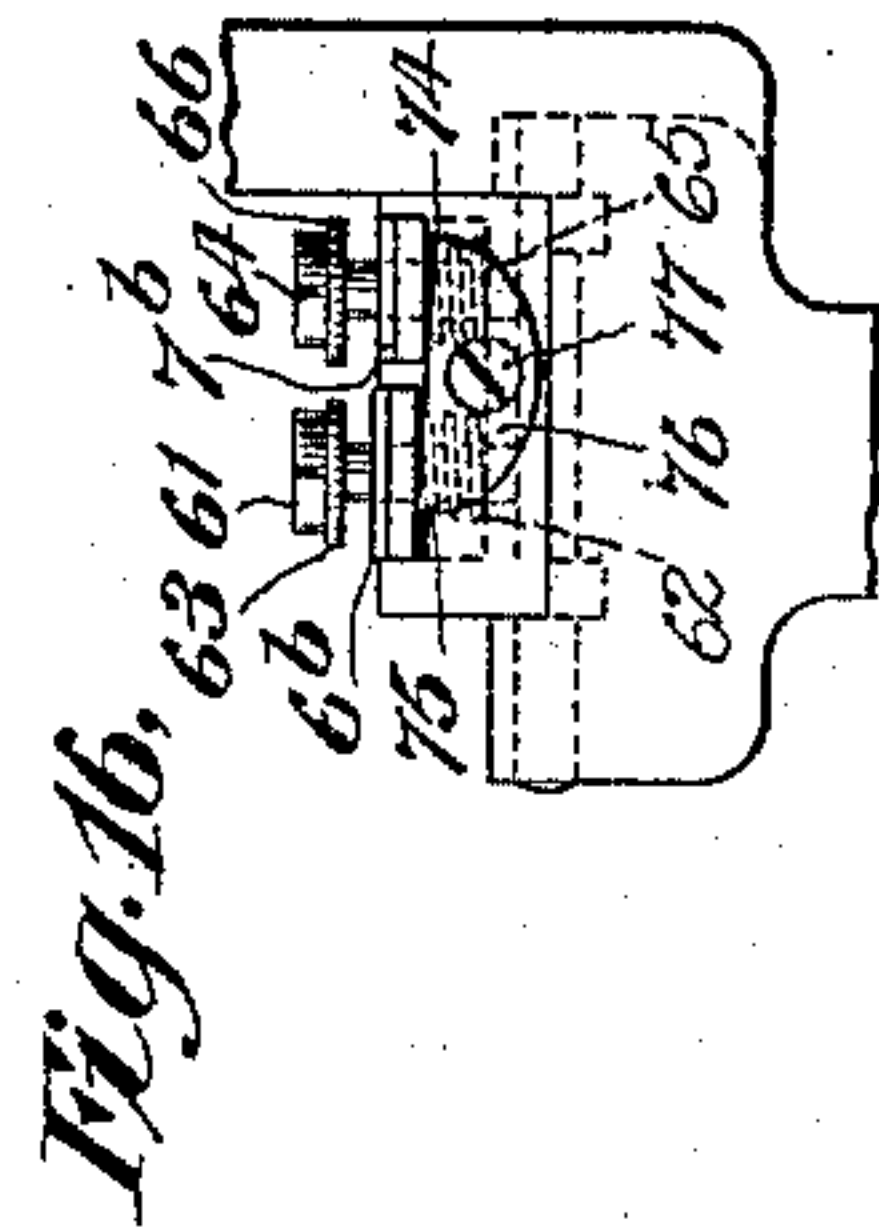
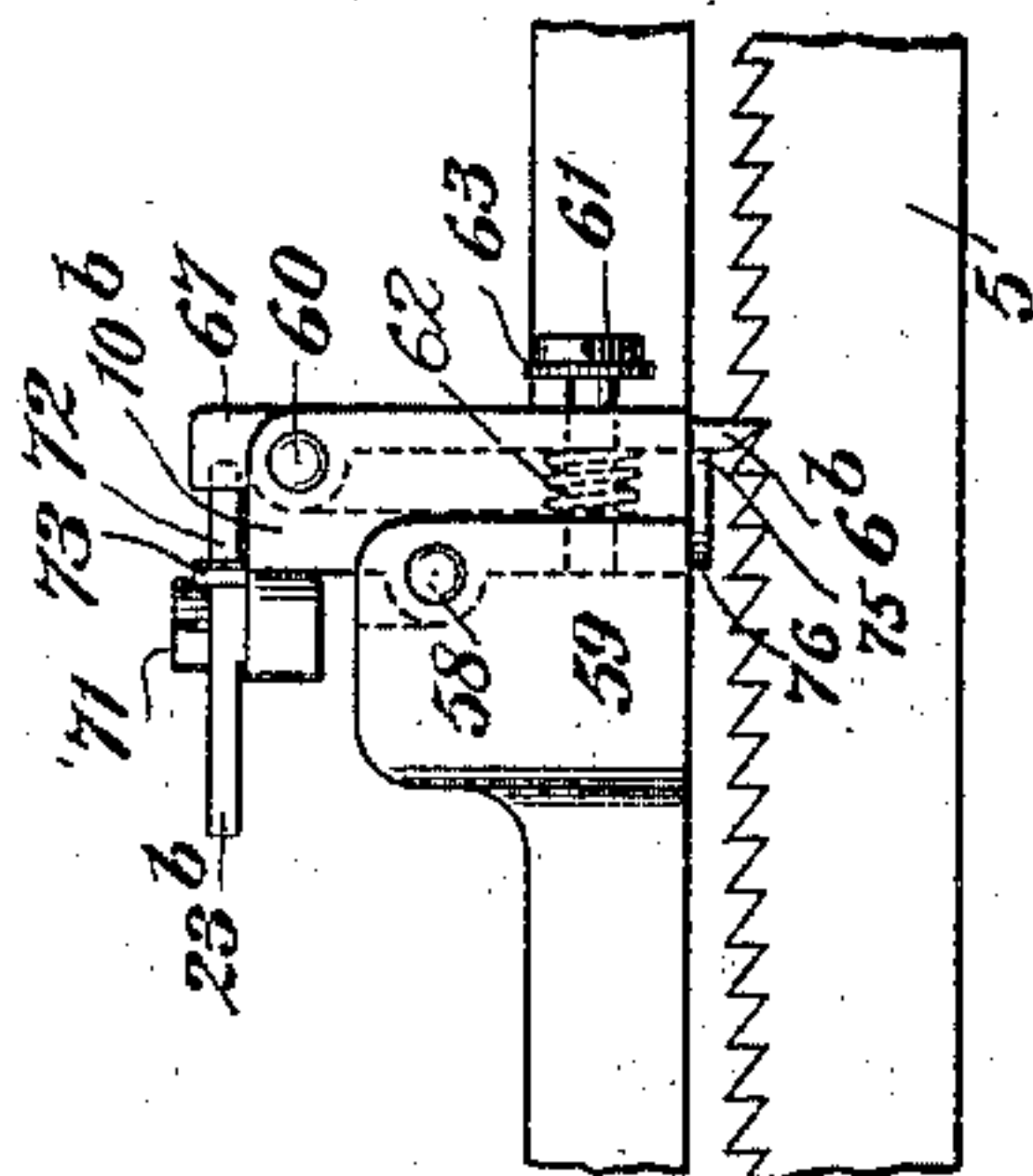
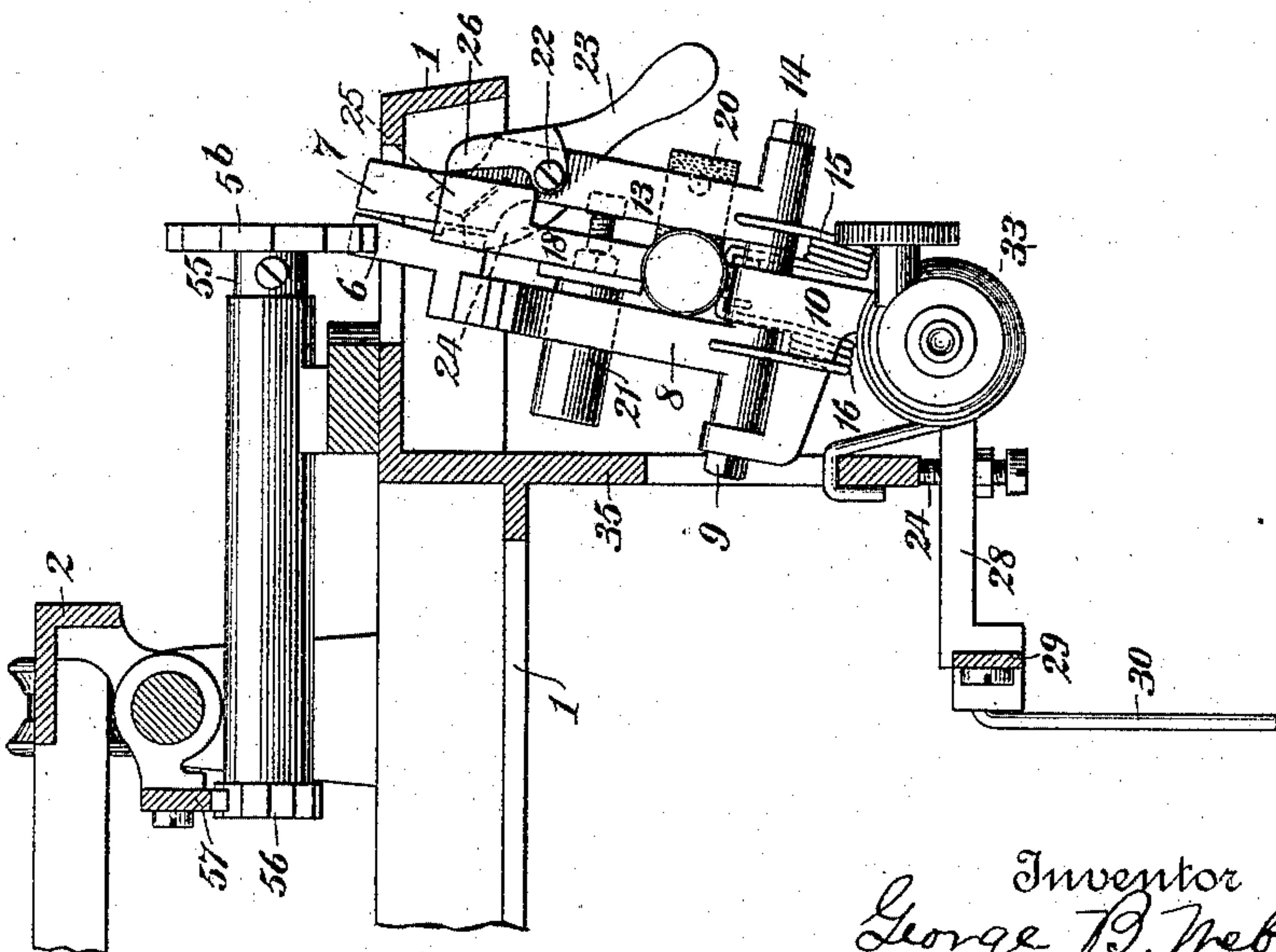


Fig. 12,



Witnesses
C. E. Ashley
H. W. Lloyd.

Inventor
George B. Webb
By his Attorney
H. D. Donnelly

UNITED STATES PATENT OFFICE.

GEORGE B. WEBB, OF NEW YORK, N. Y., ASSIGNOR, BY MESNE ASSIGNMENTS,
TO THE WYCKOFF, SEAMANS & BENEDICT, OF NEW YORK.

TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 489,701, dated January 10, 1893.

Application filed March 29, 1892. Serial No. 426,880. (No model.)

To all whom it may concern:

Be it known that I, GEORGE B. WEBB, a citizen of the United States, and a resident of New York city, in the county of New York and State of New York, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

My invention has for its main object to provide a carriage escapement mechanism capable of adjustment to release the carriage either before or after the impression of the type, as may be desired.

An escapement mechanism arranged to release the carriage after the type has made its impression is now known as the "old" or "natural" feed, and an escapement mechanism arranged to release the carriage just before the type makes its impression is now known as the "new" or "reverse" feed. The old or natural feed is not quick enough for expert or very rapid writers, while the new or reverse feed is too quick for inexpert or slow writers. The natural feed does not afford sufficient time for the carriage to start, travel, and stop if the type be actuated rapidly, and for this reason experts are unable to produce a high quality of work. In such a case the spacing between words and letters will be uneven and irregular and frequently two characters will be printed either coincidentally or with one overlapping the other. The reverse feed cannot be employed by a slow writer for the reason that if the finger be pressing upon the actuating key at the moment the type strikes, which is nearly always the case with a slow writer, the impression will be blurred or smutted since at this time the carriage is making its letter-space movement. It is therefore desirable to provide an escapement mechanism which may be adjusted to give either the natural or the reverse feed in accordance with the desires or ability of the operator; and in this lies the gist of the main feature of my invention.

My invention consists further in certain combinations and arrangements of devices and in certain details of construction, all of which will be hereinafter more fully described and particularly pointed out in the appended claims.

In the accompanying drawings, Figure 1 is a central vertical section of so much of a Remington type writing machine as is necessary to illustrate my improvements, the feeding mechanism being arranged to give the old or natural feed to the carriage, and the spacing-dogs being shown in their abnormal positions. Fig. 2 is a plan view of the feeding devices with the parts in the positions represented at Fig. 1, the feed-rack being shown in dotted lines. Fig. 3 is a view similar to Fig. 2 with the parts in their normal positions. Fig. 4 is a view similar to Fig. 1 with the feeding devices arranged to give the reverse feed, the parts being shown in their normal positions. Fig. 5 is a top view of the feeding mechanism shown at Fig. 4 with the parts in their normal positions. Fig. 6 is a view similar to Fig. 5 with the parts shown in their normal positions. Fig. 7 is a rear elevation of the mechanism shown at Fig. 4 and with the parts arranged in the positions shown at Fig. 4. Fig. 8 is a central vertical section of a portion of a type writing machine showing my improvements applied to a construction of feeding mechanism consisting of two racks and one spacing-dog. Fig. 9 is a rear elevation of the construction and arrangement shown at Fig. 8, the devices in both said views being arranged to afford the reverse feed. Fig. 10 is a view similar to Fig. 9 with the parts arranged to give the natural feed. Fig. 11 is a plan view of the construction illustrated at Figs. 8, 9 and 10. Fig. 12 is a central vertical section of a type writing machine, the feed mechanism of which is made in accordance with the plan shown and described in my Letters Patent granted December 29, 1891, No. 465,905, and having applied thereto my present improvements, the spacing-dogs being arranged to produce the reverse feed. Fig. 13 is a central vertical section of a Remington No. 5 machine with my improvements applied thereto, the feed-rack being arranged to give the natural feed. Fig. 14 is a rear elevation of the same. Fig. 15 is a top plan view of the same, and Fig. 16 is a bottom plan view of the dog and dog-holder.

Referring to Figs. 1 to 7 inclusive, 1 designates the type-ring or top-plate, 2 the paper-carriage which is provided as usual with a

spring-drum or other power driving mechanism (not shown), 3 a hinge-and-guide-rail for said paper-carriage, 4 a hinged rack-bar-frame connected to said rail 3, and 5 a feed-rack, with which co-operate two dogs 6 and 7. The shank 8 of the dog 6 is pivoted at 9 in a dog-holder 10 formed integral with a spacing-rocker 11, which is supported at its ends by pivots or journals 12. The shank 13 of the dog 7 is pivoted at 14 in the dog-holder and is provided with a spring 15, there being also a spring 16 for the shank of the dog 6. The dog 6 is preferably jointed to the shank 8 as indicated at 17 to enable the carriage to be returned noiselessly as heretofore.

Formed integral with the dog-holder and spacing-rocker is an arm or upright 18, at the upper end of which is formed or provided a stop 19 for the spacing-dogs in their movements toward the left. On said arm or upright is mounted, as usual, an adjustable cushioned stop 20 for the dog 7 in its movement toward the right, and on said arm or upright is also mounted an adjustable stop 21 to limit the forward vibration of the dog-holder and the dogs carried thereby.

Pivoted at 22 to the shank of the dog 7 is a lever 23 which is split at its upper end to form two stops 24 and 25 on the right hand side of the dogs, the stop 25 being bent laterally to extend out beyond the plane of the stop 24. The inner left hand end of the lever is provided with a cam 26 which is adapted to co-act with the beveled edge or corner 27 of the upper end of the arm or upright 18 contiguous to the stop 19. The stops 24 and 25 are both adapted to co-operate with the dog 6 but at different times, as will be presently explained.

The spacing-rocker is provided, as usual, with a forwardly-extending arm 28 to which is connected a cross-bar 29 provided at each end with a link 30 which connects at its lower end with one end of a universal-bar 31 that underlies all of the key-levers 32 of the machine. The spacing-rocker is provided with a returning spring 33, and with a stop 34 to limit the return of the spacing-rocker and its appendages, said stop being arranged to abut against the underside of a portion of the frame-work 35 depending from the top-plate, said frame-work serving as an abutment for the stop 21 carried by the arm 18.

When the stop 25 is moved down, by vibrating the lever 23, back of the base of the dog 6, it serves as a check to the vibration of said dog toward the right under the influence of its spring 16 when freed from engagement with the rack. When the stop 24 is turned up to the position shown at Fig. 4 of the drawings, it serves to restrain the movement of the dog 6 toward the right, and also serves as a carrier for said dog during the movement of the dog 7 toward the left under the influence of the carriage driving spring.

The cam or arm 26 on the adjusting lever 23, serves to wedge or draw the dog 7 over

against the stop 19, when the outer end of the lever is pulled up, and lock said dog rigidly relatively to the dog 6 and prevent any vibration of said dog about its pivot 14.

Referring to Figs. 1, 2 and 3, it will be observed that the adjusting lever has been thrown into a position such as to cause the cam to draw or lock the dog 7 firmly against its stop 19, and that the stop 25 has been swung down to co-operate with the dog 6, while the stop 24 has been lowered to a position where it cannot at this time co-act with said dog 6. In this position of the parts the arrangement is such that the old or natural feed takes place and the dog 6, in the normal position of the feed mechanism stands in engagement with the feed-rack.

The operation will be understood to be as follows: When a key-lever is depressed, the dog 6 is rocked out of engagement with the rack and the dog 7 carried over into engagement therewith as shown at Figs. 1 and 2. Immediately the dog 6 leaves the rack, it is vibrated toward the right by its spring 16 until it strikes against the bent stop 25 and is arrested thereby. At this time there is no feed of the carriage because the relatively rigid dog stands in engagement with the feed-rack, and while the carriage is thus held the type makes its impression. As soon as the finger-key is released the spacing-rocker returns the dog-holder and dogs to their normal positions, the rigid dog 7 leaving the rack, and the vibratory dog 6 engaging the same one notch to the right of that which it previously occupied. Immediately the dog 6 is carried over into the said notch, the driving spring of the carriage is free to operate and by reason of its superior power carries the dog 6 and the paper-carriage toward the left until said dog strikes against and is arrested by the fixed stop 19. This mode of feeding the carriage will be recognized as that heretofore employed in the Remington machine. The mechanism however is somewhat different.

Referring to Figs. 4, 5, 6 and 7, it will be observed that the adjusting lever has been moved to release or unlock the dog 7 and to bring the stop 24 into a position where it may co-operate with the dog 6. In this arrangement of the parts, the feed mechanism is adapted to release the carriage just before the striking of the type and hence afford the reverse feed. Normally the dog 6 stands in engagement with the rack and against the stop 19, due to the pull of the carriage driving power. At this time the dog 7 stands out of the rack and in line with the next succeeding notch of the rack on the right of the one occupied by the dog 6. On depressing the key-lever the dog 6 is thrown forward out of engagement with the rack, and the dog 7 into engagement therewith, the dog 6 on leaving the rack vibrating to the right and striking against the stop 24. Immediately the dog 7 engages the rack, the carriage driving power is free to act, and the dog 7 is vibrated to-

ward the left, and through the stop 24 carries with it the dog 6 until the same moves over into contact with the stop 19, thus arresting the paper-carriage. The movements of the parts are so timed that the dog 7 is carried into engagement with the feed-rack and the carriage starts to move just before the type makes its impression. On releasing the finger-key the spacing-rocker starts to return and the dog 7 is carried out of the rack, and the dog 6 into the same and into the notch just occupied by the dog 7. As at this time both said dogs are at the limit of their throw to the left, there will be no further feed of the carriage. The dog 6 is enabled to enter the notch which the dog 7 leaves by reason of the fact that the stop 25 operates to carry the dog 6 toward the left with and in line with the dog 7 after the dog 6 has been rocked forward to escape the rack. When the dog 7 leaves the rack on its return movement, its spring operates to throw it toward the right and against the stop 20.

Referring to Figs. 8, 9, 10 and 11, it will be observed that there are two feed-racks 5 and 6^a, and one spacing-dog 7^a. In this construction the carriage is provided with two guide-rails, which are embraced by a yoke-piece 36, which at its ends is provided with rearwardly and downwardly extending arms or supports 37. Both racks are loosely mounted and capable of endwise movements. The rack 5 is provided with two screws 38, the shanks or bodies of which play in longitudinal slots 39 formed in the yoke-piece, the threaded ends of the screws being inserted into threaded holes in the rack 5, and the heads of the screws being arranged in front of the yoke-piece. By this means the rack is supported by the yoke-piece and is capable of moving in a longitudinal direction.

40 designates a spring, one end of which is attached to a hook or eye on the rack 5, and the other end of which is attached to a similar device on the left hand arm 37, the tension of said spring acting to normally pull the rack toward the left and the bodies of the screws 38 to the left hand ends of the slots 39. The rack 6^a is also provided with limiting screws or pins 41, the bodies of which play in longitudinal slots 42 formed in the depending portions of the arms 37, and by this construction the said rack is connected to the yoke-piece and is adapted to move endwise in the manner of the rack 5. A spring 43 is connected at one end to the rack 6^a, and at its other end to the left hand arm or support 37, and its tension is such as to pull said rack toward the left. This rack is provided with a stop 44 and the rack 5 is provided with a similar stop 45, the said stop 44 being adjustable and adapted to limit the spacing movements of the carriage by the contact therewith of the left hand arm or support 37, while the adjustable stop 45 limits the shifting movement of the rack toward the left.

Pivoted at 48 on the rack 5 is a lever 23^a

provided with a cam or wedge 50, a lug 51 and a stop or projection 52, the lug being arranged to contact at certain times with a pin 53 on said rack to limit the vibration of said lever as indicated at Fig. 9. The cam or arm 50 is provided to engage with the arm or support 37 when the lever is turned toward the left to enable the rack 5 to be forced or drawn toward the right, against the tension of its spring, a letter space distance, as indicated at Fig. 10, the end of the cam or arm 50 being preferably curved, and the side of the support 37 being preferably slightly depressed, as indicated. The lug 51 is adapted at certain times to serve the purpose of a stop for the rack 6^a, which is provided with a forwardly-projecting pin 54. By loosely mounting both racks and providing both with driving springs, and by the use of the lever 23^a constructed as described, in connection with the pins on both said racks, either the natural or reverse feed may be obtained at pleasure.

Referring to Figs. 8 and 9, the parts are arranged to afford the reverse feed. In this arrangement when the spacing-dog is vibrated forward into the front rack 5, the carriage is moved toward the left a letter space distance, and simultaneously the rear rack is moved a like distance in the same direction by its spring. This movement of the carriage takes place owing to the fact that in this adjustment of the parts the screws 38 stand normally at the left hand ends of the slots 39. Hence as soon as the spacing-dog entirely leaves the rear rack, which is normally the restraining rack of the carriage, and passes into engagement with the front rack, the carriage must move under the power of the carriage driving spring a letter space distance afforded by the slots 39, the rack 5 of course remaining at rest during the movement of the carriage. The instant the dog leaves the back rack, its spring 43 propels it toward the left until the pin 54 strikes against the lug 51 on the switch-lever, and as said lug is stationary at this time owing to the detention of the rack 5 on which it is mounted, at the completion of the feed of the carriage, the screws or pins 41 will stand at the right hand ends of the slots 42. The spring 43 first causes the pins or screws 41 to travel toward the left hand ends of the slots until the lug 51 is met by the pin 54, and then the driving power of the carriage causes the yoke-piece to move while the screws 41 are stationary, and hence the right hand ends of the slots will move toward the screws, so that after the feed of the carriage, the spacing-dog stands in engagement with the front rack, and the back rack having moved a letter space distance stands restrained by the lug 51 and with its screws 41 at the right hand ends of the slots 42. As in the case first referred to, the movements of the type are so timed that the carriage is released for its feeding movement just before the type strike the platen. When the finger-key is released and the spacing-dog per-

mitted to rock back into the rear rack and into a notch adjacent to the one it first occupied, the spring 40, of the rack 5, which has been slightly elongated by the feed of the carriage during the detention of said rack, operates to propel said rack toward the left a letter-space distance, and the screws 38 travel from the right hand ends of the slots 39 to the left hand ends thereof. During said movement of said rack there is of course no feed of the carriage owing to the engagement of the back rack by the spacing-dog, which engagement operates to restrain the movement of the yoke piece and the carriage to which it is connected on account of the stop 44, on said rack standing at this time as an obstruction to the arm 37.

When it may be desired to have the carriage space in accordance with the old style or natural feed, the lever 23^a may be turned toward the left until its cam or arm 50 engages with the support 37 and causes the front rack to be wedged and locked against any movement relatively to the yoke-piece or to the back rack by its spring 40. This movement of the shifting lever to transform the rack 5 into a rigid or immovable rack is limited by the pin 53 which the arm carrying the lug 51 contacts with. The said pin 53 operates to limit the movement of the lever in the opposite direction through the projection 52 on said lever and serves also as a means for determining the proper position of the lug 51 relatively to the pin 54 when the parts are to be set for the reverse feed. The rack 5 having been locked as described and as indicated at Fig. 10, when the spacing-dog is vibrated over into said rack, the rear rack is propelled forward by its spring a letter space distance, and at this time, during which the type makes its impression, there is no feed of the carriage. When the finger-key is released and the spacing-dog permitted to return into engagement with the rear rack, the carriage is enabled to move a letter space distance. It will be observed that in adjusting the lever for the natural feed, the lug 51 is turned down into a position such that there is no co-operation with it of the pin 54 on the rear rack. It will be seen from the foregoing that the machine shown at Figs. 8, 9, 10 and 11 is likewise constructed to afford either the natural or the reverse feed, as may be desired.

Referring to Fig. 12 of the drawings, it will be observed that the spacing-dogs and their actuating mechanism are constructed in accordance with the device shown at Figs. 1 to 7 inclusive, while the paper-carriage and the devices intermediate the same and the spacing-dogs are made in accordance with the plan shown and described in my aforesaid Letters Patent granted December 29, 1891. In this machine the spacing-dogs co-operate directly with a circular rack or ratchet-wheel instead of a straight rack or ratchet-bar. Said circular rack or ratchet-wheel, 5^b is mounted upon a shaft or arbor 55, at the

inner end of which is a pinion 56 which meshes with a tooth-bar 57 connected to the power-driven paper-carriage. In this machine, the operation of the spacing-dogs being substantially the same as that hereinbefore described with reference to Figs. 1 to 7 inclusive, need not be further set forth in detail. It will be apparent that by shifting the lever 23^a, either the reverse or natural feed may be obtained.

Referring now to Figs. 13 to 16 inclusive, those skilled in the art will recognize the machine illustrated as that commonly designated as the "Remington No. 5," in which the rack is carried by the spacing-rocker in the framework of the machine and the spacing-dogs are carried by a hinged frame connected to the power driven paper-carriage. The dog-holder 10^b is preferably pivoted at 58 in an arm or support 59 connected to the paper-carriage, and in grooves in said dog-holder are mounted the spacing-dogs 6^b and 7^b, preferably having a common pivot 60 at the upper end of the dog-holder. The dog 6^b is perforated for the passage of a screw 61 whose threaded end enters a threaded hole in the dog-holder, and surrounding said screw between the dog-holder and the back of the dog is a small spiral spring 62 whose tendency is to throw the lower end of the dog outwardly toward a leather or similar stop 63 arranged against the head of the screw 61. The dog 7^b is similarly perforated for the passage of a like screw 64 whose threaded end is also inserted into a tapped hole in the dog-holder and whose shank or body is provided with a similar spring 65 adapted to vibrate the dog outwardly against a cushioned stop 66 lying against the head of the screw 64. The rear dog 6^b is formed with an extension 67 above its pivot 60, and the front dog 7^b is likewise formed with an extension 68 formed above its pivot 60, the former being beveled or chamfered at one corner as shown at 69, and the latter being beveled or chamfered at one side or corner as shown at 70. Pivoted at 71 is a lever 23^b, the rounded end 72 of which is adapted to co-act with either the beveled or cam face 69 or that 70, to lock or hold either the rear dog or the front dog rigid or immovable against its respective spring. The movements of said lever are limited by pins 73 projecting up from the dog-holder, to which device the lever is pivoted.

As shown in the several views, the lever is turned to a position to effect the locking of the front dog, and at this time the mechanism is adjusted to produce the natural feed. When the key-lever is operated, the feed-rack is vibrated from the rear dog forward to be engaged by the front dog, which being rigid at this time prevents any feed of the carriage taking place. As the rack leaves the rear dog, said dog, by its spring, is thrown toward the left against its stop the distance of one letter space. The type being struck and the finger-key having been released, the feed-rack returns into engagement with the rear dog,

and the driving power of the carriage, pulling in the direction of the arrow, moves the same a letter space distance to the left until the dog has been straightened up and has compressed its spring and come into contact with its back stop, which will be hereinafter referred to.

When it is desired to obtain the reverse feed, the switch-lever 23^b is swung over to the dotted position shown at Fig. 15 so that its operating end may act upon the cam 69 and wedge or force back and lock the rear dog against the resiliency of its spring. By thus shifting the lever the front dog is unlocked and is free to be acted upon by its spring. Now, when the key-lever is depressed and the rack is moved forward to engage the front dog, the carriage starts to move at once under the influence of the driving power and continues to move until the front dog is straightened up, or in other words, until the dog-holder with its stop has moved up parallel with the dog, the dog of course being prevented from movement at its beveled operating end by reason of its engagement with the relatively fixed feed-rack. As before, the type is arranged to strike the paper immediately after the carriage has been released for a letter space movement. Immediately the finger-key is released, the rack is vibrated rearwardly into engagement with the now fixed or locked rear dog, and the carriage is held arrested. As soon as the rack is rocked back into the rear dog, the spring of the front vibratory dog operates to throw its beveled, working face to the left a distance of one notch or letter space against its front cushioned stop, the dog-holder at this time of course remaining stationary, owing to the engagement of the rear dog with the rack.

74 designates a back stop for the front dog, and 75 a back stop for the rear dog. These stops are preferably formed integral with a segmental plate 76 arranged to swing on a pivot 77 on the underside of the dog-holder and on the right hand side of the dogs. These stops may however be made stationary or as fixtures, or formed integral with the dog-holder; but I prefer this form of stop for the reason that by the use of the same I am enabled to readily adjust the "lead" of either dog so as to insure its ready entrance into the notches of the feed-rack. As is known, if the dogs be set or wear so that their working faces stand in the same plane transversely of the rack, there is liability of the detaining dog catching against the side of a tooth on the rack when the rack is moved over to engage with the detaining dog. Thus it is desirable to set that dog which is to act as the spacing-dog, slightly in advance of the detaining dog so that the latter cannot fail to properly enter the notch of the feed-rack when the latter is moved from the spacing-dog over to the detaining dog.

Of course this improvement is applicable to machines in which the rack is upon the

carriage and the dogs are in the frame-work. The segmental plate bearing the stops 74 and 75 may, after adjustment, be set by a screw, and for this reason the pivot or center, on which it may turn to effect the change of lead of either dog, may be made as a screw. But in the extension of this idea as carried out by me, the segmental plate is locked in its shifted position by the shifting lever 23^b, through the detaining dog. An inspection of Fig. 16 will show that the working face of the rear dog is set to give the lead, this dog at this time being the spacing-dog and the front dog the detaining dog, which as will be observed by Fig. 15, is held in a locked or rigid position by the adjusting lever.

It will be further observed that the arrangement is such that when one dog is locked or fixed by said lever, the other dog is automatically given the lead. This is effected by the lower end of the dog which is being locked, vibrating the segmental plate as a lever, causing its opposite side or arm to throw forward slightly that dog which is to operate as the spacing-dog. Thus it will be seen by examining Figs. 15 and 16 that the adjusting lever having been switched to lock the front dog, the latter has slightly rocked the segmental plate and caused it to slightly project and give the lead to the back dog. I do not, however, wish to be limited to the shifting of the lead through the movements of the dogs, as it will be apparent that this may be effected by the plate alone or by equivalent stops or bases for the dogs. Nor do I wish to be limited to adjusting the dogs alone, since in machines of the character illustrated at Fig. 8, the racks may be adjusted to give the lead.

Of course numerous changes in detail construction and arrangement may be made without departing from the gist of my improvement relating to the reversibility of the feed. Having been the first to construct a type writing machine in which the carriage feed mechanism is adapted to be positively adjusted to afford either the reverse or the natural feed at will, I desire to cover broadly this feature of improvement. It will be observed that when the parts are set for one kind of feed the other cannot take place until an adjustment has been made therefor.

The feed mechanism of the paper-carriage may be said to consist essentially of three members, viz., either two dogs and one rack, or two racks and one dog, one arrangement being the well-known equivalent of the other. Where two dogs are associated together to co-operate with a rack, they each have an independent to and fro movement, and means are provided to restrain the movement of one of said dogs when it may be desired to produce the natural feed, and when two racks are associated together to co-operate with a dog, they each have an independent to and fro movement, and means are provided to restrain the movement of one of said racks, when it may be desired to produce the natural feed.

Thus we have in either case three members, two of which are associated and independently reciprocatory to co-operate with the third, and one of which two may be locked to change the feed from reverse to natural. Either member of the associated two may, by the adjustment provided, be made either the carriage spacing member or the detaining member, according to the kind of feed desired. At Figs. 1, 2 and 3, the dog 6 is the spacing member, and the dog 7 the detaining member. At Figs. 4, 5, 6 and 7, the dog 6 is the detaining member, and the dog 7 the spacing member. At Figs. 8, 9 and 11, the rack 5 is the spacing member, and the rack 6^a the detaining member. At Fig. 10, the rack 5 is the detaining member, and the rack 6^a the spacing member. Fig. 12 corresponds with Fig. 4. At Figs. 13, 14, 15 and 16, the dog 6^b is the detaining member, and the dog 7^b the spacing member. When the lever 23^b is shifted as indicated by the dotted lines at Fig. 15, the functions of the dogs are reversed.

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

1. In a type writing machine, the combination with a paper-carriage, of a single feed mechanism whose parts are constructed and arranged for adjustment to afford either the natural or the reverse feed.

2. In a type writing machine, the combination with a power driven paper-carriage, of a single feed mechanism whose parts are adjustable to release the carriage either before or after the impression, at the will of the operator.

3. In a type writing machine, the combination with a power driven paper-carriage, of a feed mechanism having two reciprocatory members, either one of which may be locked or held rigidly relatively to the other to co-operate with a third member of the feed mechanism substantially in the manner and for the purposes set forth.

4. In a type writing machine, the combination with a power driven paper-carriage, of a feed mechanism consisting essentially of three members, two of which are associated together and independently movable to alternately co-operate with the third, and means substantially as described for locking or holding either one of the said two associated members.

5. In a type writing machine, the combination with a power driven paper-carriage, of a feed mechanism consisting essentially of three members, two of which are of a reciprocatory character independently movable and adapted to co-operate with the third member, and an adjustable device for locking or restraining one of said two reciprocatory associated members for the purpose of obtaining either the natural or the reverse feed.

6. In a type writing machine, the combination of a power driven paper-carriage, of a feed mechanism consisting essentially of three members, two of which are associated and in-

dependently reciprocatory, and means substantially such as set forth for locking or holding either one of said associated reciprocatory members.

7. In a type writing machine, the combination with a power driven paper-carriage, of a feed mechanism consisting essentially of three members, two of which are associated and independently reciprocatory, and a switch-lever constructed to lock or hold one of said associated independently reciprocatory members against movement relatively to the other.

8. In a type writing machine, the combination with a power driven paper-carriage, of a feed mechanism substantially such as described, comprising two associated and independently reciprocatory members, and means for adjusting said members so that either one may be made the spacing member and the other the detaining member, according to the kind of feed desired.

9. In a type writing machine, the combination with a power driven paper-carriage, of a feed-rack, a dog-holder, a pair of pivotally-mounted spring-actuated dogs, and a device for locking one of said dogs against movement about its pivot.

10. In a type writing machine, the combination with a power driven paper-carriage, of a feed-rack, a dog-holder, a pair of pivotally-mounted spring-actuated dogs, and a lever mounted upon one of said dogs and constructed to engage with the dog-holder to lock said dog against movement about its pivot.

11. In a type writing machine, the combination with a power driven paper-carriage, of a feed-rack, a dog-holder, a pair of pivotally-mounted spring-actuated dogs, and a lever mounted upon one of said dogs and constructed to engage with the dog-holder to lock said dog against movement about its pivot and provided with a stop to limit the vibratory movement of the remaining dog about its pivot.

12. In a type writing machine, the combination with a power driven paper-carriage, of a feed-rack, a dog-holder, a pair of pivotally-mounted spring-actuated dogs, and a lever mounted upon one of said dogs and adapted to lock the same against movement about its pivot and provided with two stops on the right of the remaining dog.

13. In a type writing machine, the combination with a paper-carriage, of a feed mechanism comprising essentially three members, two of which are associated together and independently reciprocatory to act upon the third, and means whereby the lead or precedence of either of said associated members may be transferred to the other.

14. In a type writing machine, the combination with a power driven paper-carriage, of a feed mechanism constructed and arranged to afford either the natural or the reverse feed and comprising a rack and a pair of dogs, arranged side by side and means for adjusting

the lead or precedence of either of said dogs, according to the character of the feed to which the mechanism is adjusted.

15. In a type writing machine, the combination with a power driven paper-carriage, of a feed-rack, a pair of pivotally-mounted spring-actuated dogs arranged side by side and a stop or base for each of said dogs, said stops or bases being made integral with each other and simultaneously movable.

16. In a type writing machine, the combination with a power driven paper-carriage, of a feed-rack, a pair of pivotally-mounted spring-actuated dogs, and a pivotally-mounted plate adapted to form a stop or base for each of said dogs and to adjust the lead of either of the same.

17. In a type writing machine, the combination of a power driven paper-carriage, a feed-rack, a dog-holder, a pair of pivotally-mounted spring-actuated dogs, a movable plate adapted to afford a stop for each of said dogs, and means for locking either of said dogs against movement about its pivot and simultaneously through said plate give the lead or precedence to the other, free dog.

Signed at New York city, in the county of New York and State of New York, this 22d day of March, A. D. 1892.

GEORGE B. WEBB.

Witnesses:

JACOB FELBEL,
IDA C. MACDONALD.