

No. 680,551.

Patented Aug. 13, 1901.

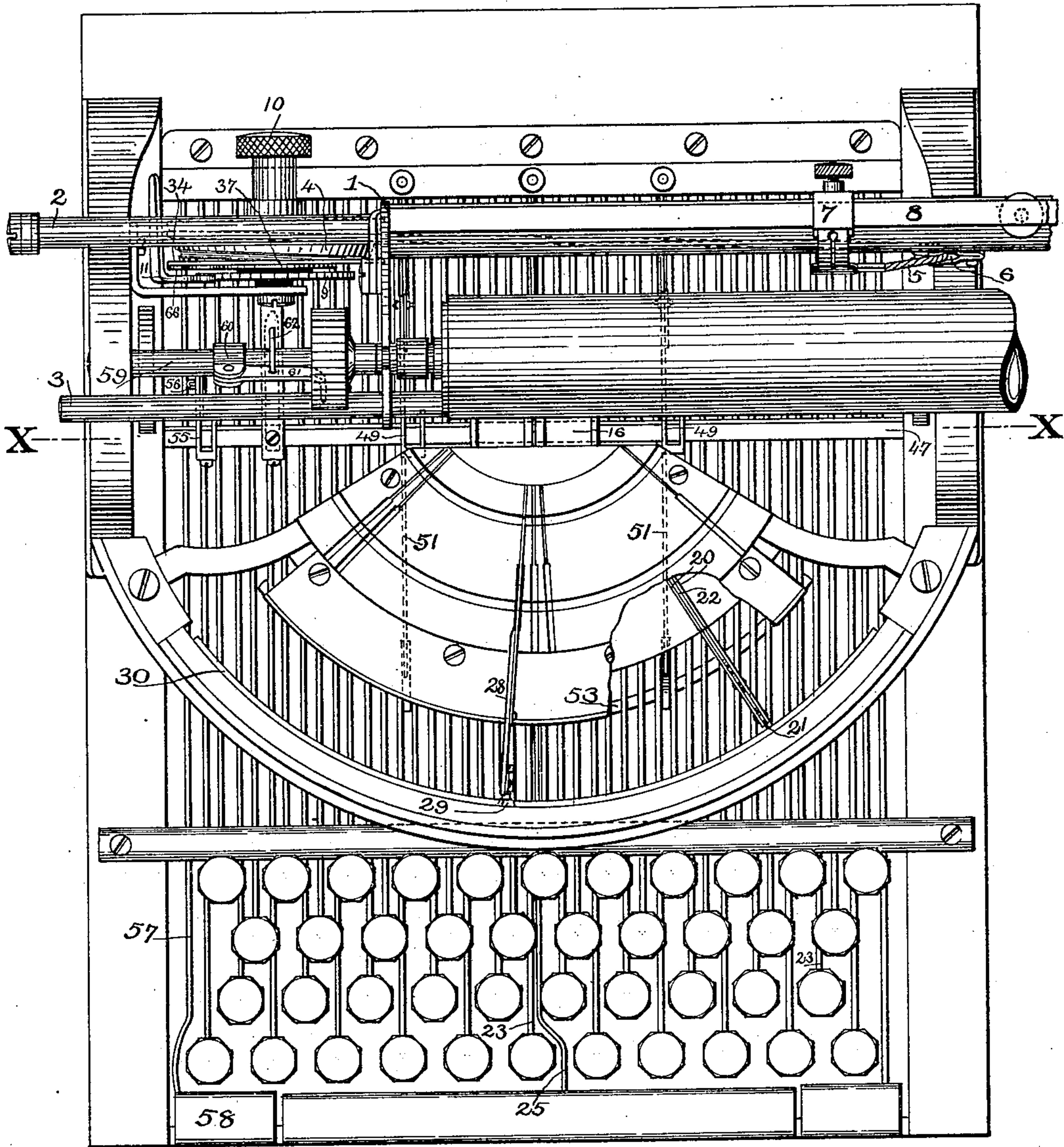
A. W. STEIGER.
TYPE WRITER.

(Application filed Aug. 20, 1900.)

(No Model.)

4 Sheets—Sheet 1.

Fig. 1.



Witnesses.

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4 Sheets—Sheet 2.

Fig. 10.

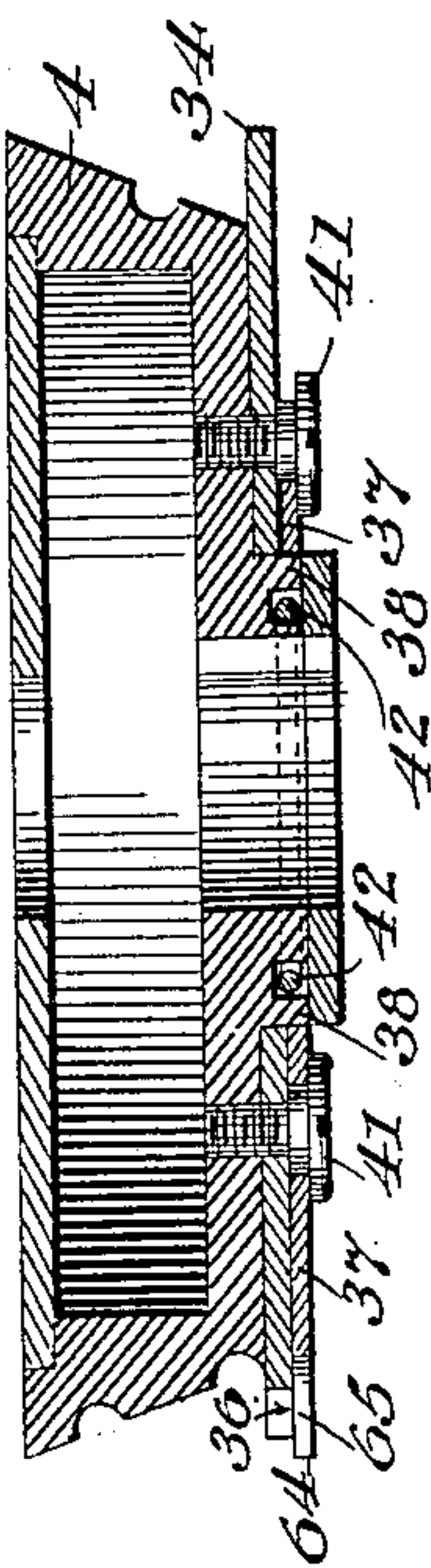


Fig. 2.

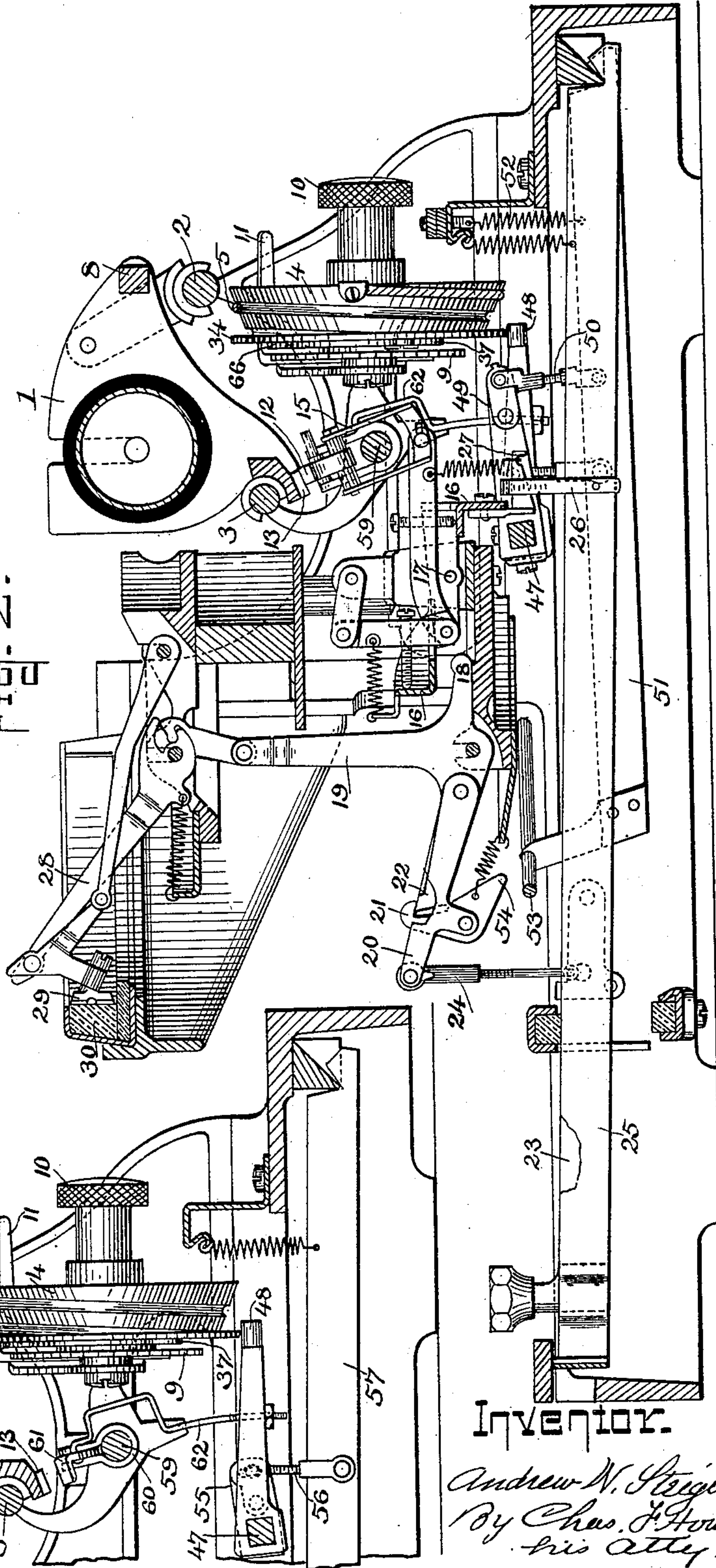
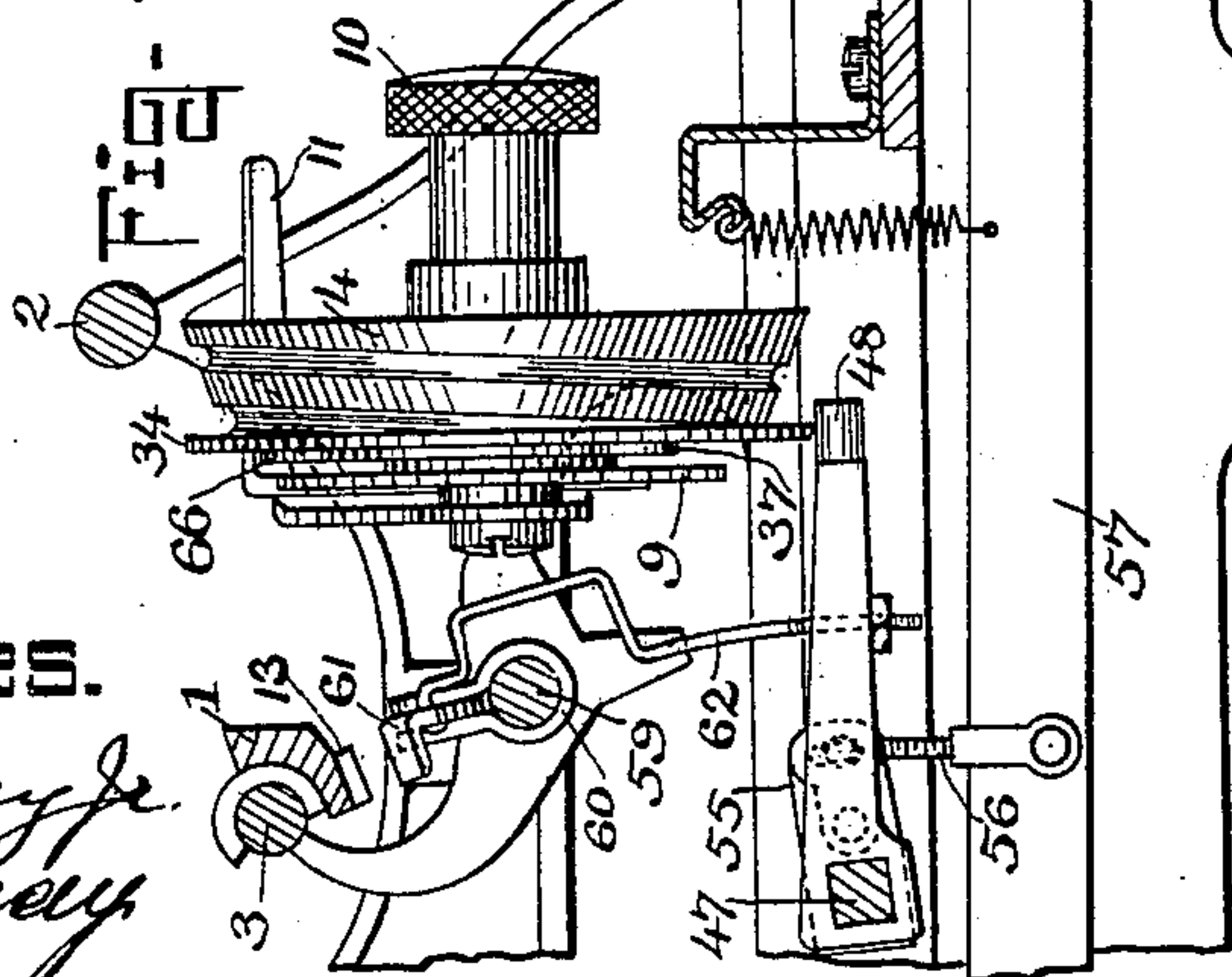


Fig. 4.



Witnesses.

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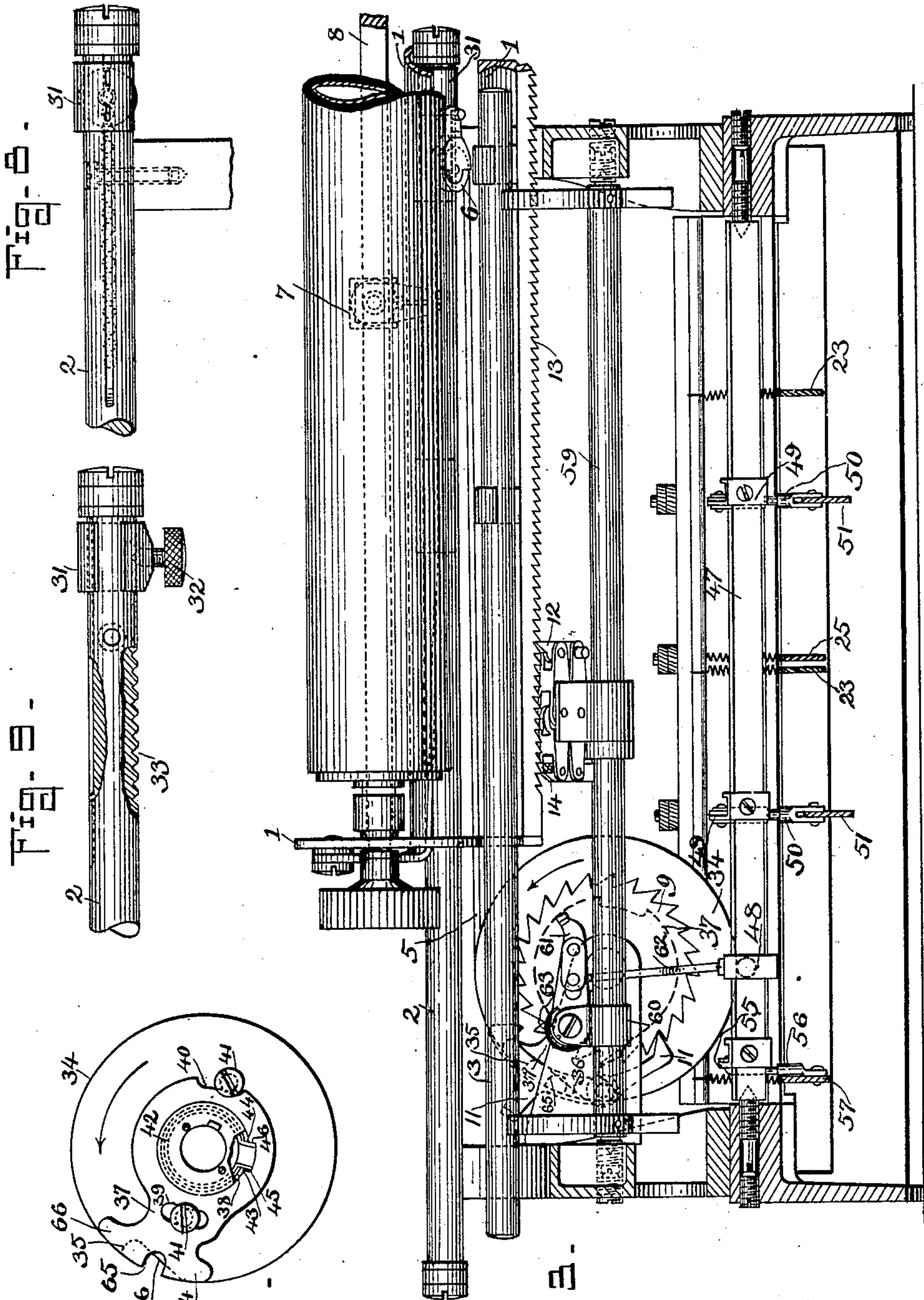
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4 Sheets—Sheet 3.



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Fig. 2

Fig. 1

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4 Sheets—Sheet 4.

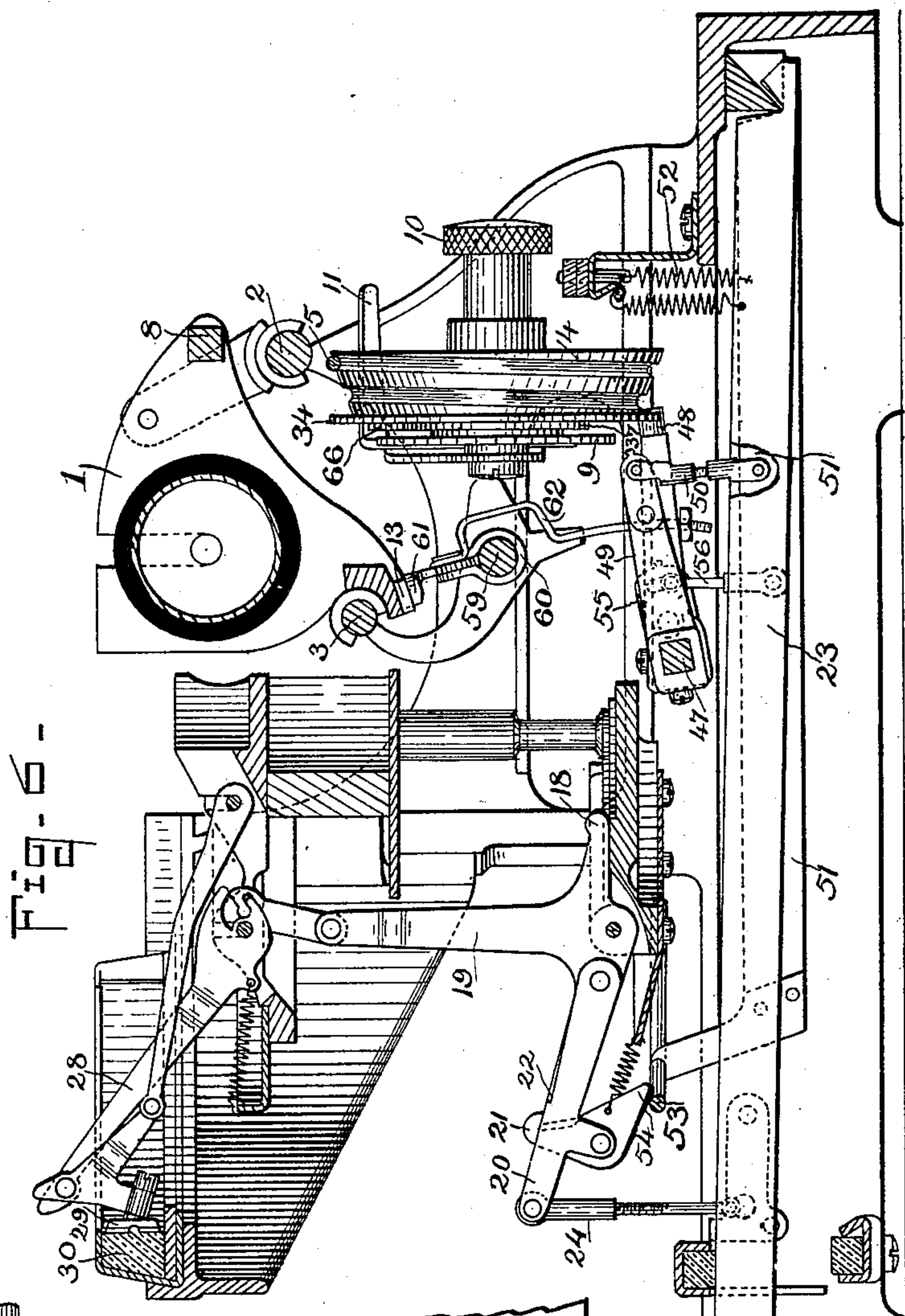
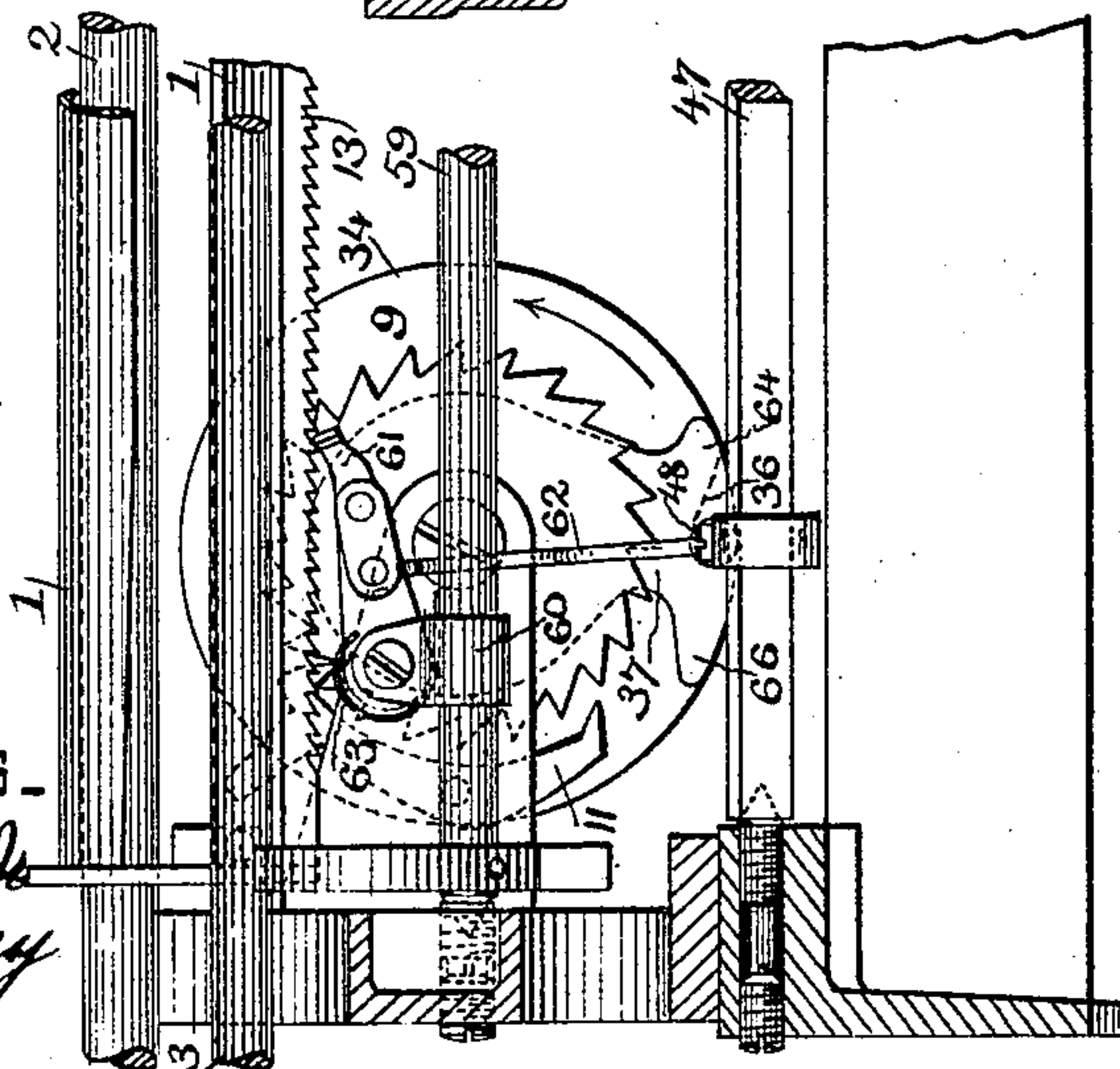


Fig-7-



Witnesses.

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UNITED STATES PATENT OFFICE.

ANDREW W. STEIGER, OF BOSTON, MASSACHUSETTS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO AUGUSTUS L. HOFFMAN, FREDERIC S. CONVERSE, AND FREDERIC J. LEACH, TRUSTEES, OF LYONS, NEW YORK.

TYPE-WRITER.

SPECIFICATION forming part of Letters Patent No. 680,551, dated August 13, 1901.

Application filed August 20, 1900. Serial No. 27,424. (No model.)

To all whom it may concern:

Be it known that I, ANDREW W. STEIGER, a citizen of the United States, residing in Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Type-Writers, of which the following, taken in connection with the accompanying drawings, is a specification.

My invention in type-writers relates to devices for stopping the carriage at a predetermined point of its travel and at the same time interrupting the action of the printing mechanism, often referred to as a "right-hand margin" or "line-locking" mechanism, but the device may also be used for a left-hand margin for tabulating, and is particularly useful for this latter purpose, if the machine be of the old-fashioned type with the printing-point invisible. It often happens that a word or syllable will be begun near the end of a line and there is not sufficient distance to finish. The operator may not become aware of the matter till the letters are piled on each other in the last space, or at least some letter of the syllable printed that will require erasure and perhaps ruin the sheet. Devices of this nature are intended to prevent any printing or carriage movement beyond the limit set by the operator, unless the operator by doing something special enables the mechanism to respond in the usual manner. There are a number of machines having mechanism of measurable success adapted to the particular machine for locking the carriage, and in some instances devices of somewhat more doubtful utility for blocking the keys, so as to prevent printing. Of course if the keys or type-bars are locked they must take the full force of the operator's perhaps rather vigorous stroke, and, depending on the place of the obstruction, which may be anywhere from the key to the type, the mechanism from the said obstruction back to the key must sustain the stress of the stroke with consequent injury to the parts affected. The devices for locking the carriage are in several cases a distinct feature, for the application of which an additional charge is made. Others may require the use of some tool for adjustment to the particular use required, and a fair share

lack applicability to many machines. I have designed devices which are generally applicable to most machines, and in preventing damage to the sheet while the carriage is locked are specially adapted to the Jackson type mechanism; and the invention consists in attaching to the feed-drum a controlling-surface adjustable with relation to the carriage for stopping the same at the desired point of travel and at the same time interrupting the action of the keys on the type mechanism, the device having connections with the manual so the operator may restore the parts to normal condition. In an instance in which I have carried the invention into effect I have attached to the feed-drum a disk having a notch with a sloping side and an abrupt side. The notch is normally covered by a spring-positioned guard, whose edge is substantially coincident with the edge of the disk and having a notch as deep as the notch in the disk, that is normally positioned just over the sloping part of the notch in the said disk. The abrupt side of the disk's notch in connection with a stop is intended to prevent the further motion of the feed-drum, and thereby releases the tension of the feed-spring inclosed in the feed-drum on the carriage. The feed-drum is adjustably connected with the sliding carriage by a cord, so that the notch on the disk may be located with relation to the carriage travel—as, for example, so that the notch shall be under the feed-drum pivot when the carriage has reached the point beyond which no more characters are desired. I arrange across the machine a rock-shaft and project from this shaft an arm having at its end a roll which is maintained in contact with the edge of the disk by devices to be described. Two rockers, also projecting from the shaft, are each connected with spring-sustained levers pivoted at one end on a fixed part of the machine and carrying at the other end a type-controlling bar. These parts are arranged so that normally the controlling-bar is depressed by the concentric surface of the disk forcing the arm downward, thus causing the rockers to hold the levers carrying the controlling-bar down against the stress of their springs. The type are operated through a system of bell-

cranks pivoted to a fixed part of the machine, and the key-levers move the bell-cranks by means of spring-pawls carried by levers pivoted to the bell-cranks and connected with the levers by links. The spring-pawls normally latch over projecting arms of the bell-cranks; but as the carriage advances the roll of the arm attached to the rock-shaft comes in contact with a slightly-projecting portion of the spring-guard for the disk positioned just beyond the beginning of the sloping part of the notch in the disk and moves the guard on the disk till the notch in the guard registers with the deep portion of the notch in the disk and then snaps into the registering notches because of the tension of the springs attached to the levers of the type-controller bar, thus locating the type-controller bar just in contact with the spring-pawls, so that any further motion of the pawls or controller-bar may turn either a single pawl or all of the pawls on their pivots. Now if the operator should strike a character-key the pawl connected with that key would turn on its pivot and unlatching the bell-crank allow the key-lever to make its usual motion but have no effect on the type which is connected beyond the bell-crank. As the carriage has been moving only single spaces the carriage is located, as usual, by the feed-dog of the spacing mechanism, but is not locked thereby in the direction of the feed and might be moved by either the space-bar or carriage-release key. To further insure the location of the carriage, I pivot to the trunnion-rail a stop that tends, owing to an attached spring, to move toward the carriage-rack and connect it with the arm extending from the rock-shaft that is positioned by the edge of the disk. Ordinarily the disk holds the stop down out of contact with the rack; but when the roll snaps into the notches the stop is put in contact with the rack to thereby lock the carriage. To permit the operator to feed the carriage farther, there is secured to the rock-shaft a short crank connected with a restoring-lever having a key in the manual which when depressed removes the roll from the notches in the disk and guard, when the guard at once snaps back, covering the notch in the disk, at the same time depressing the type-controller bar, so the type may again operate. While the roll is in the notches, the operator may pull the carriage back toward the beginning of a line and restore the parts to normal condition, as the feed-drum and its attached disk in revolving on their pivot will force the roll out of the notch in the disk up the sloping side of the notch to the edge of the disk, the further motion of the drum and disk permitting the spring-guard to again cover the notch in the disk.

It should be understood that the invention comprehends a mechanism in which the controlling-bar when placed in active position unlatches all the connections between the type bars and keys or distinct controlling de-

vices unlatch a particular type-bar, as well as a structure in which the controlling-bar takes a position such that an attempt to operate any type-bar shall act to unlatch that particular key.

The invention comprises, further, devices and their combinations, which I shall endeavor to more fully and specifically set forth.

In the drawings, Figure 1 is a plan of a type-writer. Fig. 2 is a central section of a type-writer; Fig. 3, a cross-section of a type-writer at line X X, Fig. 1, showing parts connected with this invention. Fig. 4 is a detached view similar to Fig. 2 to more clearly depict certain connections. Fig. 5 is a detail. Fig. 6 is a view similar to Fig. 2, but with some parts in changed relation. Fig. 7 is a partial view similar to Fig. 3, having the parts as in Fig. 6. Figs. 8 and 9 are enlarged details of the ordinary left-hand-margin stops. Fig. 10 is an enlarged section of Fig. 5.

The carriage 1 is mounted to slide along a fixed rod 2 and the shifting guide-rail 3 and carries the platen past the common printing-point of the type by reason of the tension of a coiled spring inclosed in the feed-drum 4, which is connected by a cord 5, running over a fair leader 6, attached to some portion of the carriage, and thence adjustably secured by a clip 7 to the back rail 8 of the carriage. This adjustment is not intended to regulate the feed tension but is peculiar to the purposes of this invention. The feed-tension adjustment is of any usual construction, as the ratchet 9, secured to the adjusting knurled stud 10, which is pivoted in a bracket attached to the frame of the machine, the position of the ratchet being determined by a pallet 11, pivoted to a fixed part of the machine. Now as the stud 10 and ratchet 9 are connected to one end of the coiled feed-spring and the feed-drum 4 to the other end of said spring the tension of the carriage is due to the pull of this spring, which may be increased by turning the knurled stud 10 or decreased by vibrating the pallet 11, which permits the teeth to escape one at a time. The carriage is advanced step by step by alternately inserting and withdrawing the normally spring-inserted feed-dog 12 from the rack 13 of the carriage, the carriage being held while the feed-dog is withdrawn by the normally-withdrawn check-dog 14—as, for example, through the yoke 15, attached to the support of the dogs and spring-connected to the universal plate 16, which may be tilted about its pivot 17 by the arm 18 of the bell-crank 19, which is pivoted to a fixed portion of the machine. Levers 20, pivoted on the bell-crank, support a pivoted pawl 21, which latches over an arm 22 of the bell-crank and may be actuated by a key-lever 23, connected by link 24 with the levers 20 to tilt the universal plate 16 and through the above-described connections actuate the dogs, or the space-bar lever 25, connected by the strap 26 with the hook 27, attached to the

universal plate 16, may also actuate the feed-dogs to advance or locate the carriage. Connected with the bell-crank 19 is a spring-controlled driving-lever 28 to operate the type 5 29, which normally rests against an ink-pad 30. The carriage is limited for the usual left-hand margin by a segmental sleeve 31, splined to the fixed rod 2 and positioned thereon by a set-screw 32, threaded in the 10 sleeve, and the indentations 33 in the rod 2.

For determining the right-hand margin or line-lock and to at the same time interrupt the printing devices I secure a disk 34 to the feed-drum 4, having a notch with an abrupt 15 side 35 and a sloping side 36, which notch is normally covered by a spring-controlled guard 37, pivoted on an outturned ring 38 from the spring-drum against the face of the disk 34. The guard is limited in its move- 20 ment to cover or expose the notch 35 by the ends of the slot 39 or notch 40 coming in contact with the screws 41 threaded in the drum, and the guard is normally positioned by a spring-loop 42, the extremities of which rest 25 against the ends 43 or 44 of the ring 38 and extending beyond touch the ends 45 or 46 of a notch in the guard-bearing. Near the disk 34 I pivot a rock-shaft 47 across the machine and extend therefrom an arm having a roll 30 48 into contact with the edge of the disk, about under the center thereof. I also locate on the rock-shaft rockers 49, connected by links 50 with levers 51, supported by springs 52 on knife-edges at their extremities, the le- 35 vers carrying a type-controlling bar 53, shaped to conform to the style of mechanism to be governed, in this case forming the segment of a circle. The type-controlling bar swings in a path which includes the toes 54 of the 40 pawls 21; but ordinarily it is held down out of contact therewith by the edge of the disk 34. There is also attached to the rock-shaft a short crank 55, connected by a link 56 with the restoring key-lever 57, provided with a 45 key 58 in the manual. On the trunnion-rail 59 is fastened a bracket 60, in which is pivoted a stop 61, connected by a link 62 with the arm from the rock-shaft carrying the roll 48. The stop 61 is furnished with a spring 50 63, that tends to move the end of the stop into the path of the carriage-rack 13; but the stop is normally depressed by the edge of the disk 34. The drawings show the clip 7 clamped to the back rail 8, so as to permit the carriage 55 to travel but a portion of the line before it will be stopped and the printing interrupted. The position of the clip 7 from the left end of the carriage determines the distance that the notch 35 in the disk can revolve before it 60 comes beneath the feed-drum pivot, when the roll 48, snapping into the notch, disables the machine. From the beginning of a line till this occurs if the operator touches a symbol-key the lever 23 is depressed and through the 65 link 24 pulls down the levers 20, which carry the pawl 21. The pawl 21 is normally in contact with the arm 22 of the bell-crank 19, and

hence as the latter is rocked turns the driving-lever 28 to lift the type 29 from the pad 30 to make an impression. As the bell-crank 70 rocks the arm 18 comes in contact with the universal plate 16 and tilts it on its pivot 17 and through the spring connection with the yoke 15 pulls the feed-dog 12 from the rack 13, which is momentarily held by the check- 75 dog 14, and as the parts connected with the universal plate 16 resume their normal position the feed-dog enters the next tooth of the rack to hold the carriage in its new position. These usual motions of the machine continue, 80 and at each stroke the feed-drum moves in the direction of the arrow, in time fetching the portion 64 of the guard 37 in contact with the roll 48, the friction of which will drag the guard over the face of the disk 34 till the 85 notch 65 registers with the abrupt side of the notch in the disk 34, so that the roll 48 may snap into the notches and stop the motion of the feed-drum 4. During this motion of the guard, which is rendered more certain 90 by having the part 64 of the guard overlap the sloping part 36 of the disk, the end 46 of the notch in the guard 37 strains the spring 42 against the end 43 of the ring 38. When the roll snaps into the notches, the springs 95 52 pull the levers 51 upward, lifting the type-controlling bar 53 into contact with the toe 54 of the pawls 21. Of course as the parts connected with the universal plate 16 resume normal position after the stroke which effects 100 the changes just described the feed-dog 12 holds the carriage in position, as usual. Now if a symbol-key is touched the link 24, pulling on the levers 20, turns the pawl 21 on its pivot, as the toe 54 rests on the controlling- 105 bar 53 and disconnects the pawl 21 from the arm 22 of the bell-crank, and no effect is produced either on the type 29 or the feed-dog 12, thus retaining the carriage in position with the paper unblemished. However, if 110 the operator should unintentionally touch the space-bar as its lever 25 connects directly with the universal plate by the strap 26 and hook 27 the carriage might be advanced a space, as there may be some elasticity in the 115 cord connecting the drum and carriage, and to guard against this, so as to insure the line-lock, when the roll 48 enters the notches it permits the spring 63 to throw the stop 61 into the rack 13, and thereby positively locks 120 the carriage. If the operator wishes to make more characters on this line, the key 58 is depressed, and through the lever 57, link 56, and crank 55 turns the rock-shaft and withdraws the roll 48 from the notch 35, when the 125 guard 37, under tension of the spring 42, at once covers the notch 35 with the portion 66, which is concentric with the disk 34, thus allowing the feed-drum to resume its motion in response to the keys. As the rock-shaft 130 is returned to its normal position the rockers 49 depress the levers 51 by the links 50 and remove the controlling-bar 53 from the toe 54 of the pawl 21 to allow the type to be

put in motion, and the link 62 pulls the stop 61 from the rack 13, releasing the carriage. If the operator instead of going ahead returns the carriage to the starting-point, the roll 48 will ride up the slope 36, allow the guard 37 to cover the notch 35, and restore the other parts of the machine to normal condition. As the guard in this case moves beyond its normal position in a reverse sense to that previously described, the end 45 of the notch in the bearing of the guard presses the spring-loop 42 against the end 44 of the ring 38; but as soon as the slope 36 relieves the notch 65 of the guard of the roll 48 the stress of the spring-loop 42 restores the guard to its position, covering the notch in the disk 34. If the device were to be used for a left-hand margin, the operator would, after writing the matter for the first column, feed the carriage till it should be locked by the device, release it with the restoring-key, and proceed with the matter for the next column.

Having described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. In a type-writer, a notched disk connected with the spring-drum, combined with a spring-positioned guard having portions adapted to cover shallow or deep parts of the notch in the disk in certain positions of the guard and a notch in the guard that may register with the deep part of the notch in the disk, substantially as described.

2. In a type-writer, the combination with a feed-drum having a disk with a notched edge, of a movable arm positioned by the edge of the disk, a pivoted controller-bar normally depressed by connections with the arm and springs attached to the bar to force the arm into the notch to remove the tension of the drum on its carriage and at the same time to lift the bar into position to unlatch pawls connecting the keys to the type-levers, substantially as described.

3. In a type-writer, a carriage adjustably connected with a feed-drum, a rack on the carriage registering with a stop, and means controlled by a surface on the feed-drum for interlocking the stop with the said rack, substantially as described.

4. In a type-writer, a carriage adjustably connected with a feed-drum, a rack on the carriage and stops controlled by a surface on

the feed-drum to stop the carriage, combined with means controlled by the operator to restore the parts to normal condition, substantially as described.

5. In a type-writer, a rock-shaft, an arm attached thereto extending into contact with the edge of a notched disk on the tension device for the carriage, a connection from the arm to a stop pivoted on some part of the machine fixed as to the feeding motion of the carriage, a rack on the carriage in the path of the stop, springs having connections with the rock-shaft to hold the arm to the disk so that when the arm enters the notch to arrest the drum the stop will contact with the rack to position the carriage and a releasing-lever connected with the rock-shaft to restore the parts, substantially as described.

6. In a type-writer, the combination with a feed-drum, a disk on the drum having a notch in its edge and a spring-positioned guard for the notch, of a rock-shaft, an arm fast with the shaft in contact with the edge of the disk, resilient connections to position the arm to stop the drum and a key in the manual having connections adapted to pull the arm out of the notch so the guard may resume its normal position permitting rotation of the drum, substantially as described.

7. In a movable member for unlatching the keys of type-writers, levers having pivot-bearings, combined with a controller-bar shaped to contact with the key-pawls, substantially as described.

8. In a type-writer, devices for locking the carriage at a determinate point of its travel, combined with means for preventing the keys from operating the type-bars without interfering with the usual motion of the said keys, substantially as described.

9. In a type-writer, the combination with means for stopping the carriage at some definite point, of a suitably-operated controller-bar, to disconnect the keys from the type-operating mechanism, substantially as described.

In testimony whereof I have hereunto subscribed my name this 27th day of December, A. D. 1899.

ANDREW W. STEIGER.

Witnesses:

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A. O. ORNE.