

No. 874,056.

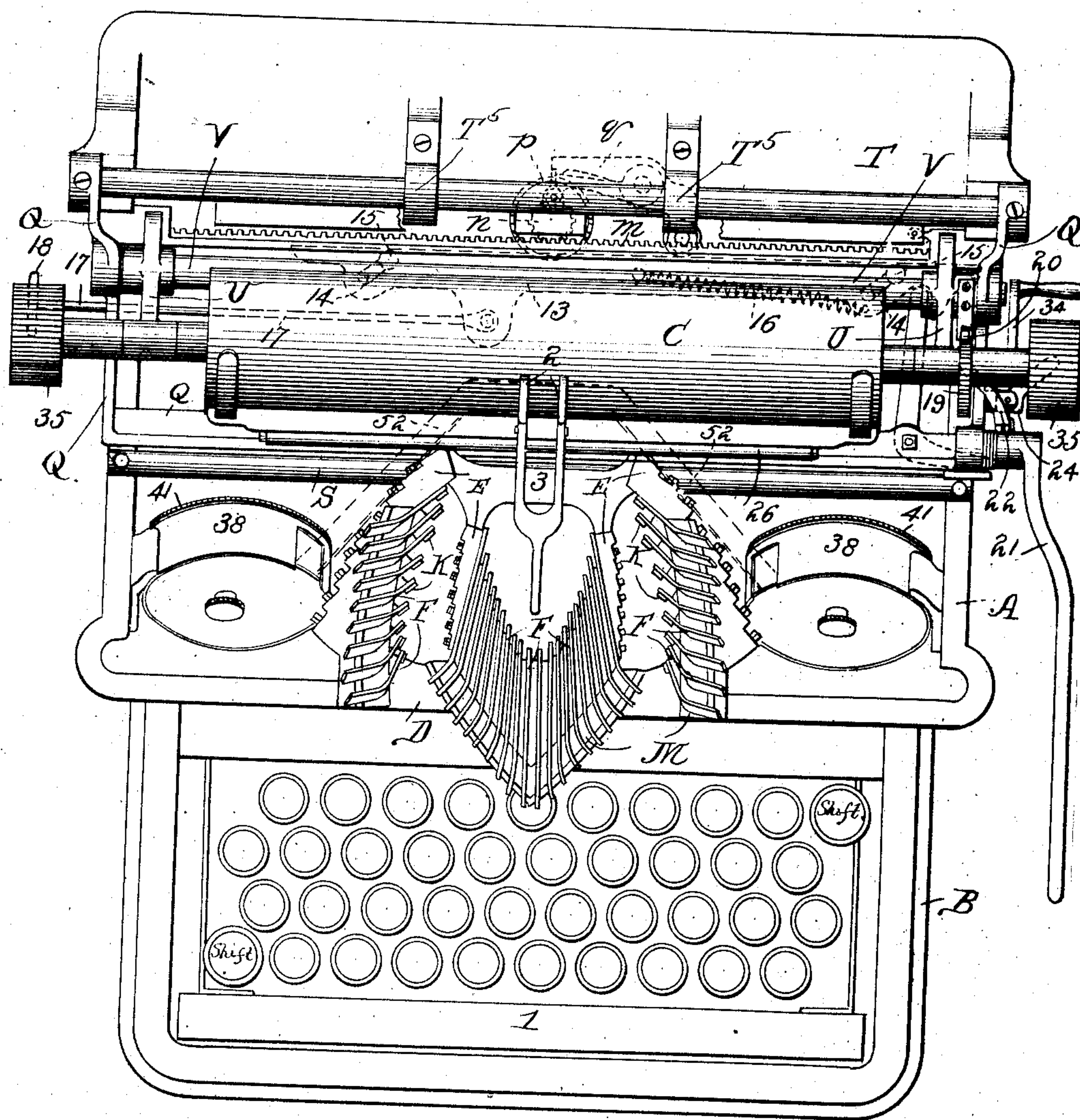
PATENTED DEC. 17, 1907.

H. L. FISHER.  
TYPE WRITER.

APPLICATION FILED OCT. 13, 1898. RENEWED JUNE 17, 1907.

5 SHEETS—SHEET 1.

Fig. 1.



Witnesses.  
Wm. M. Rheem.  
Harold E. Bennett

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Harvey L. Fisher  
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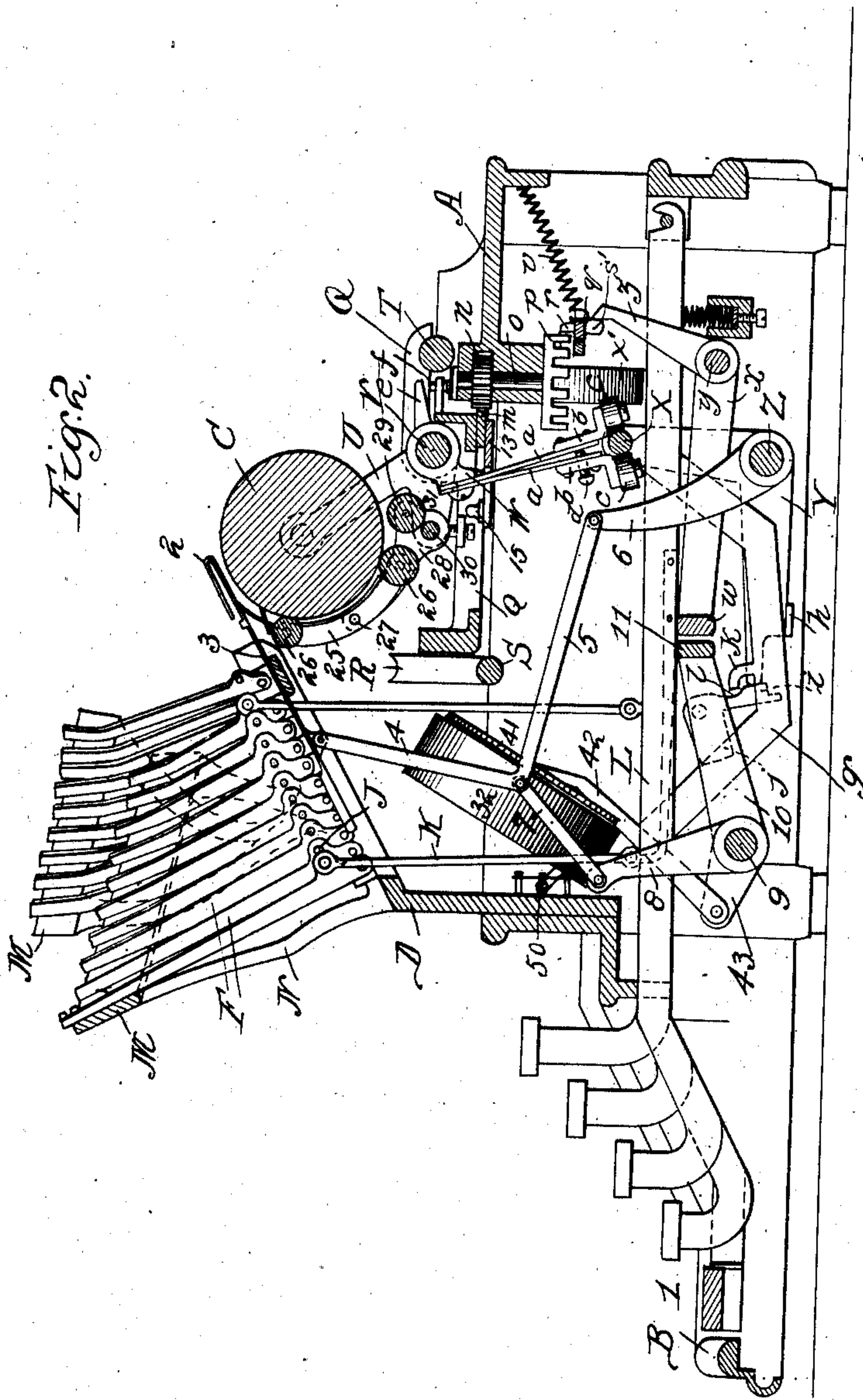
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5 SHEETS—SHEET 2.



Witnesses.

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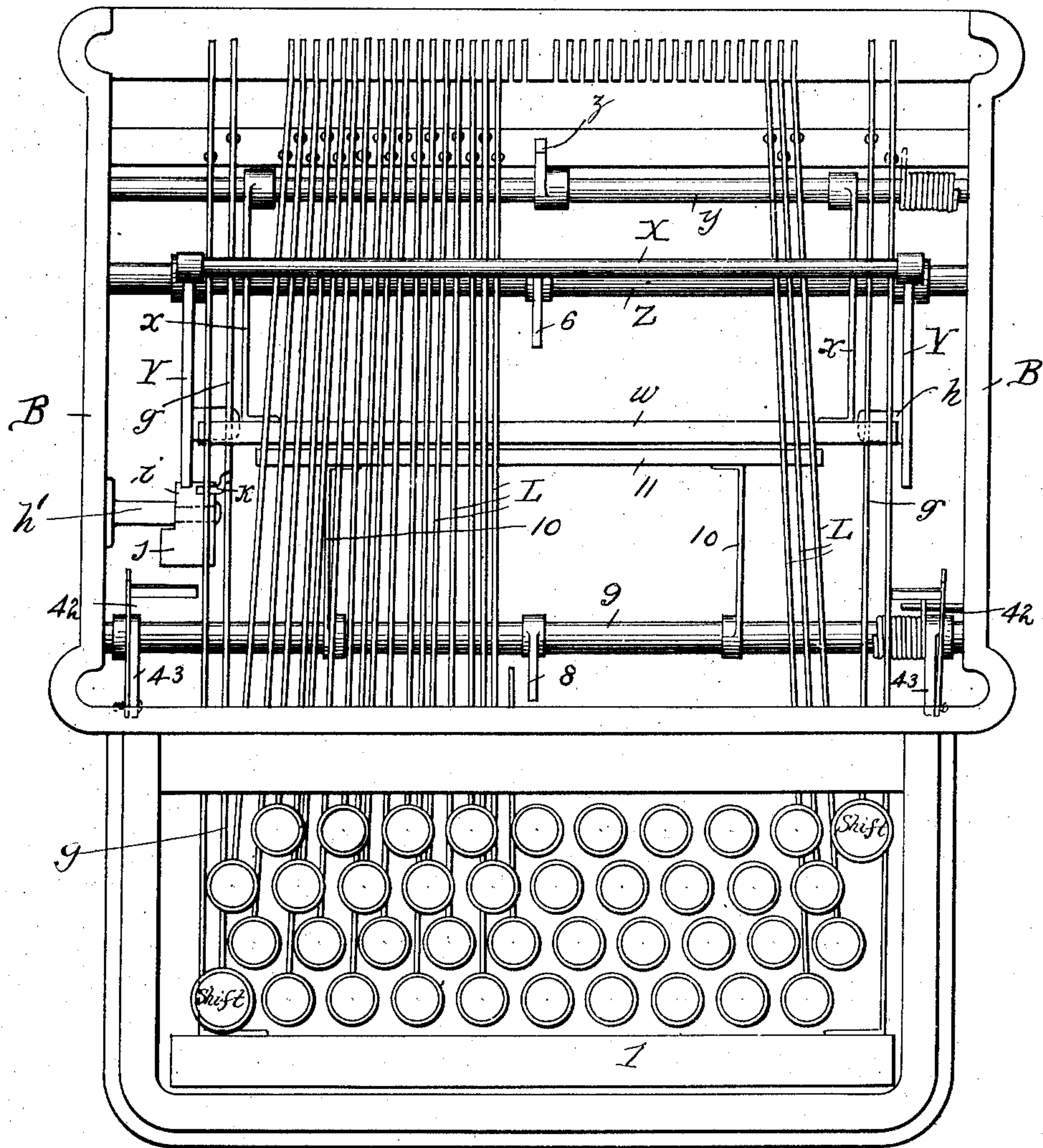
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5 SHEETS—SHEET 3.

Fig. 3.



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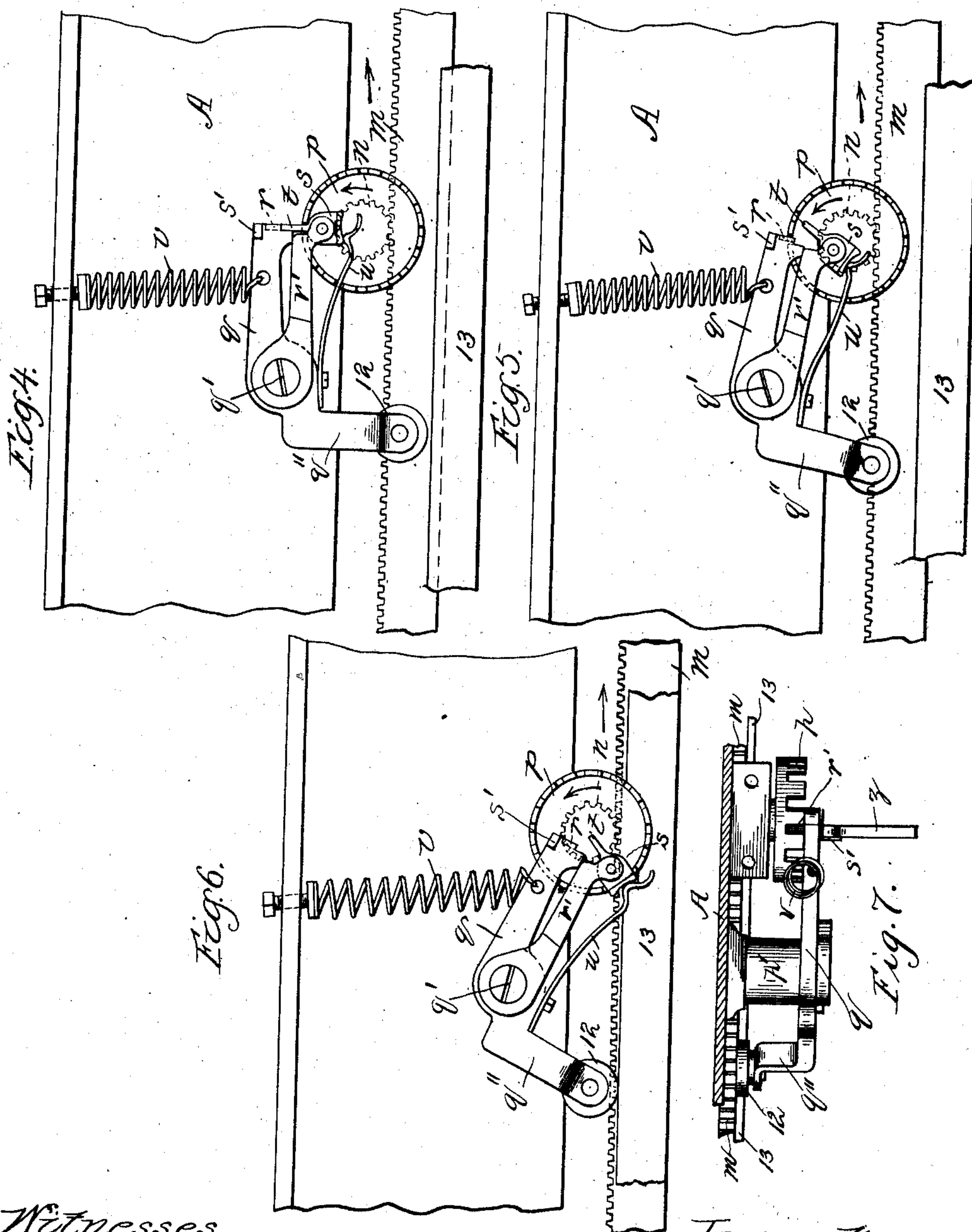
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5 SHEETS—SHEET 4.



Witnesses

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6 SHEETS—SHEET 5.

Fig. 8,

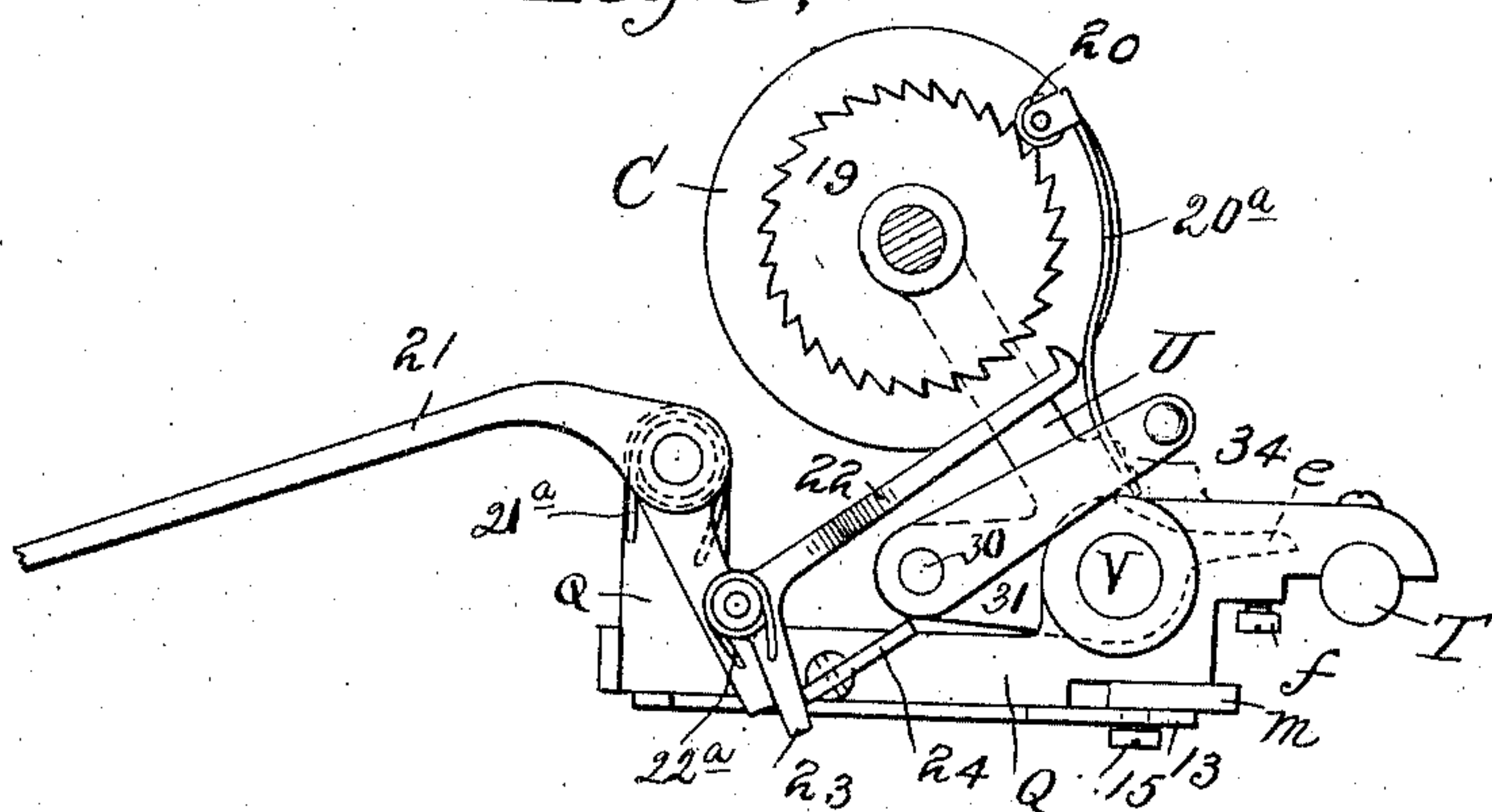


Fig. 9

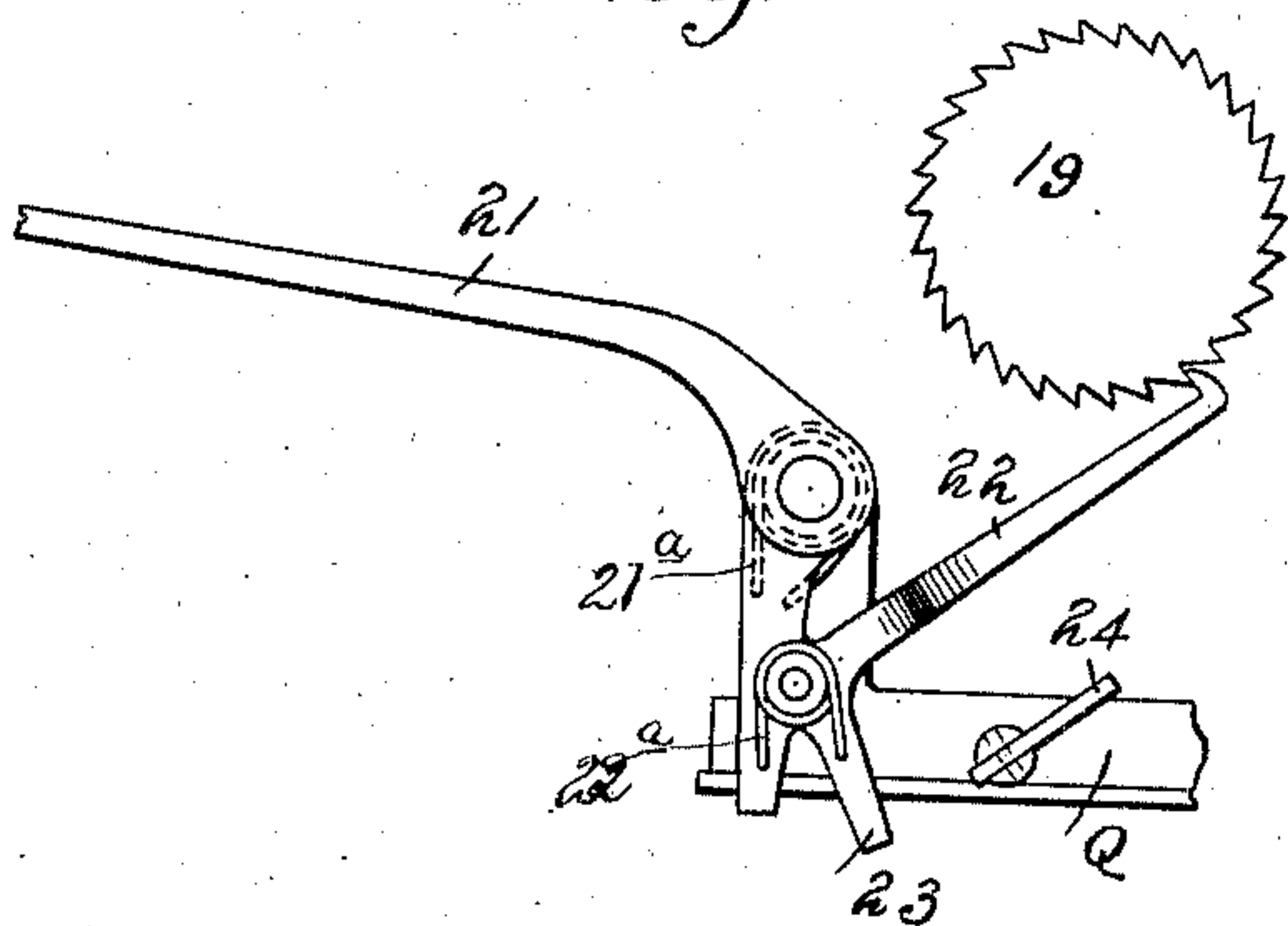


Fig. 10.

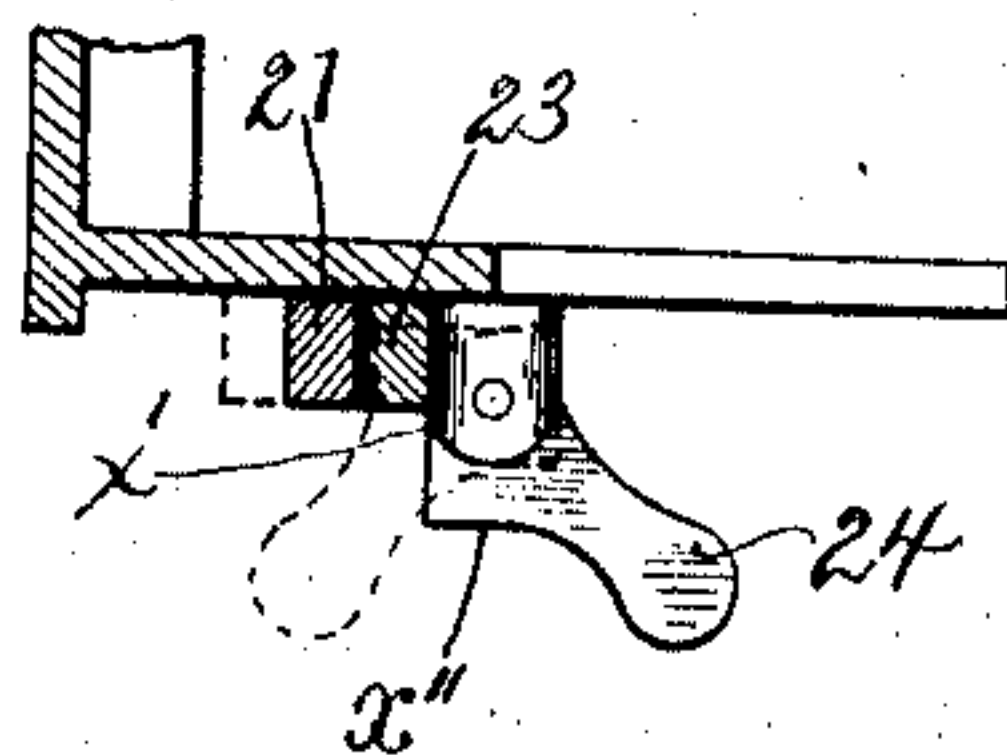
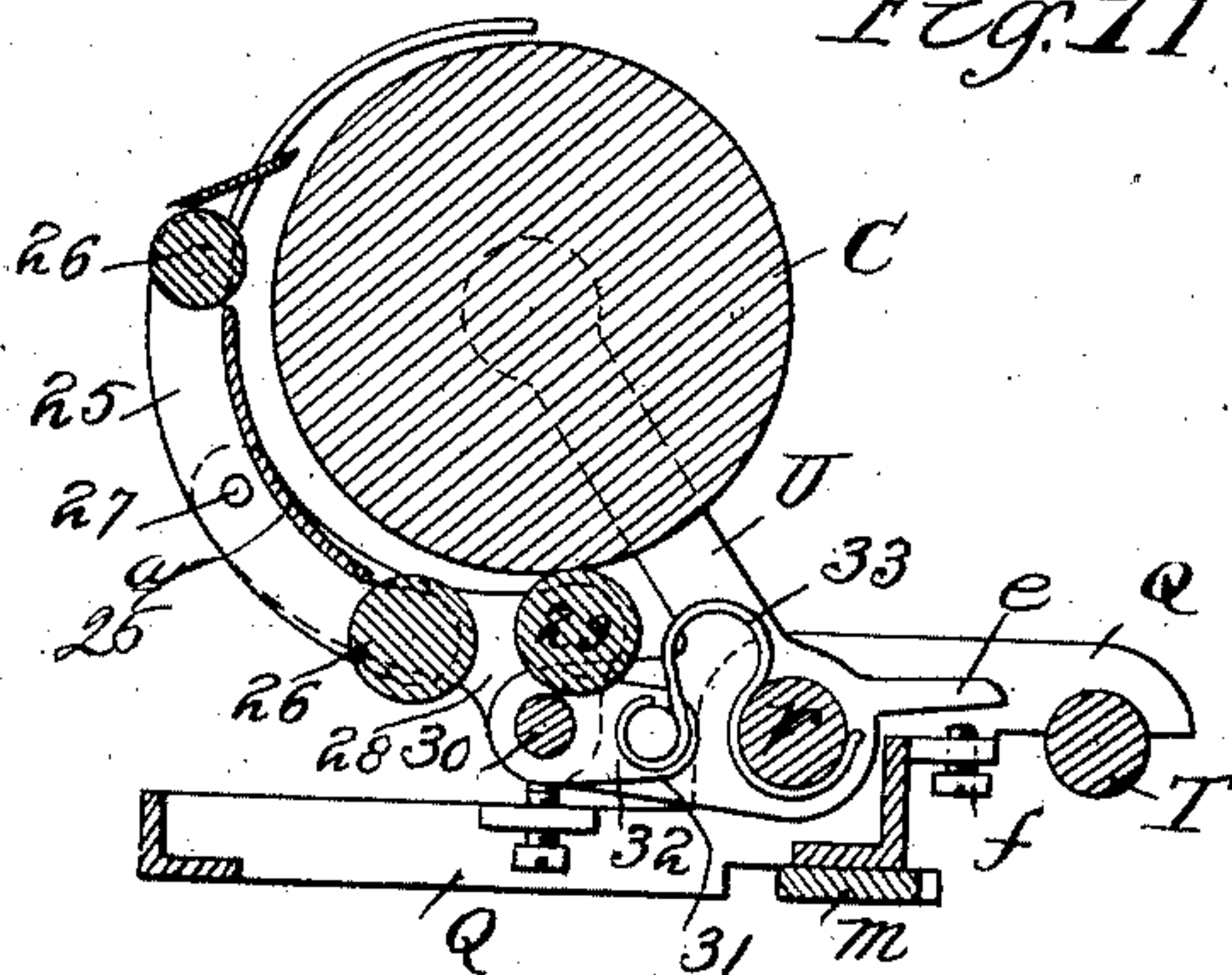


Fig. 11.



Witnesses  
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# UNITED STATES PATENT OFFICE.

HARVEY L. FISHER, OF WOODSTOCK, ILLINOIS, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO FISHER MANUFACTURING COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

## TYPE-WRITER.

No. 874,056.

Specification of Letters Patent.

Patented Dec. 17, 1907.

Application filed October 13, 1898, Serial No. 693,442. Renewed June 17, 1907. Serial No. 379,492.

*To all whom it may concern:*

Be it known that I, HARVEY L. FISHER, a citizen of the United States, residing at Woodstock, in the county of McHenry and State of Illinois, have invented certain new and useful Improvements in Type-Writers, of which the following is a specification.

This invention relates to improvements in typewriting machines, and while it comprehends features which are applicable to typewriters of any construction, all the features of the invention are particularly applicable to a typewriter designed for producing exposed writing, that is, writing that is visible, letter by letter, as it proceeds; and it is in connection with such a machine that I have herein illustrated my invention.

The principal objects of my invention are the following: First. The provision of a platen feed and escapement mechanism, comprising a rack and pinion, of such character that the carriage may be moved freely back and forth without disconnection or separation of the rack and pinion. Second. The provision of a detent mechanism for the escapement controlling the pinion of the carriage feed mechanism, which may be disconnected from, or thrown out of engagement with, the escapement so as to permit the free action thereof and consequently of the pinion without disengagement from the rack. Third. To insure the proper line spacing of the paper feed mechanism, notwithstanding the shifting of the carriage for upper and lower case type, and this without shifting the position of the feed mechanism which shall be stationary relative to the platen. Fourth. The utilization of the paper feed roll to line up the sheet or sheets, when inserted in the machine, and to insure the maintenance of such alinement, and at the same time prevent the shifting of the sheets of paper upon one another while being fed into the machine. Fifth. The provision of double universal spacing mechanism whereby the carriage feed mechanism alone will be operated by the spacing bar, while both the carriage feed and printing mechanism will be operated by the key bars, and this regardless of whether the platen is shifted for either the upper or lower case. Sixth. The provision of means for locking and releasing the shifting mechanism for the platen, whereby the machine is adapted for the continuous writing of either upper or

lower case type, or for the consecutive writing of as many letters of either case as the operator may desire. Seventh. The provision of a novel ribbon throw mechanism, whereby the ribbon is promptly thrown under the type and removed from over the writing at each operation of a key lever, so as to avoid obscuring the writing except at the instant a letter is made, and this notwithstanding the shifting of the platen for the writing of either upper or lower case letters. These and such other objects as may hereinafter appear are attained by the devices illustrated in the accompanying drawings, in which—

Figure 1 represents a plan view of a machine embodying my invention, the type ribbon being illustrated by dotted lines and the type being removed from the type bars for clearness of illustration. Fig. 2 represents a middle vertical section of the machine. Fig. 3 represents a plan view of the frame of the machine with the carriage, type bar and feed mechanism removed, for the purpose of more clearly illustrating the disposition of the key bars and the parts operated thereby. Figs. 4, 5 and 6 are detailed bottom plan views of the escapement, detent, rack and pinion of the carriage feed mechanism, showing the same in different positions. Fig. 7 is a detail rear elevation of the escapement devices. Figs. 8 and 9 are detailed elevations of the paper feed mechanism showing the same in different positions. Fig. 10 is a detail view of the adjustable stop for the spacing lever and platen-actuating pawl. Fig. 11 is a detailed section more clearly showing the paper feed rolls.

Similar letters of reference indicate the same parts in the several figures of the drawings.

Referring now by letter to the accompanying drawings, A indicates the main frame of my machine, which is generally rectangular in plan view and provided with an extension B at the front to receive the key-board, this frame being preferably formed of cast metal and so shaped as to best adapt it for supporting the various parts of the machine.

Suitably supported upon the framework in front of the platen C, in the present instance upon a bracket plate D having an upwardly and rearwardly inclined extension, Fig. 2, are four bearing plates E, Fig. 1, in



which are journaled the axles or pivots of the type-bars F. This particular method of arranging and supporting the type-bars constitutes the subject-matter of a separate application, Serial No. 706,481, filed February 23, 1899, and it will suffice here to say that the bearing plates E are so arranged, and the axles of the type-bars so journaled in them, that the types upon the extremities of the type-bars will all strike at the same point when the bars are operated. The type-blocks are secured to the respective bars F at such varying angles to the bodies of the bars as to cause all of the type-blocks to strike the platen at right-angles to its axis, as usual in machines in which each type-bar carries both an upper and lower case letter or character.

Each type-bar is provided near its lower end, Fig. 2, with a rearwardly projecting ear J to which is pivotally connected the upper end of a rod K whose lower end is connected with the key-lever L, so that when the front end of the lever is depressed the upper end of the type-bar will be swung rearward and downward into contact with the platen, to effect the printing.

When in normal position the upper ends of the type-bars F rest against type-rests M carried by brackets N supported upon the plate D, Figs. 1 and 2.

The transversely movable paper carriage in which the platen C is mounted comprises a rectangular frame Q, Figs. 1 and 2, upon whose forward side, near its middle, Fig. 2, is mounted a roller R which travels upon a fixed rod or rail S of the framework and supports the forward side of the carriage. The rear ends of the two opposite side arms of the frame Q are secured to a transverse rod T, Fig. 1, which is adapted to slide longitudinally in guides T<sup>5</sup> upon the main frame A of the machine. The platen C is supported at its opposite ends upon arms U, Figs. 1, 2, 8, and 11, secured to and projecting upwardly and forwardly from a rock-shaft V which is journaled at its opposite ends in the side arms of the paper carriage frame Q.

Secured to and projecting forwardly from the rock-shaft V is a short arm W, Fig. 2, which has secured to it the upper ends of two spring-arms *a a* which have mounted upon brackets *b b* secured to their lower ends two anti-friction rollers *c c* embracing and adapted to travel longitudinally upon a rod X carried by a pair of bell-crank levers Y which are secured, at the opposite sides of the machine, upon a rock-shaft Z. Each of the bell cranks Y is provided upon the front end of its lower horizontal arm with an inwardly projecting lug or foot *h*, Figs. 2 and 3, which lugs underlie the shift-keys *g* upon the opposite sides of the machine. When either one of said keys *g* is depressed the shaft Z will be rocked and the rod X thrown forward,

thereby rocking the shaft V and swinging the platen C upward and rearward, into position for the printing of upper-case characters.

The pressure of the anti-friction rollers *c c* upon the shift rod X, under the spring action of the arms *a a*, is regulated by means of a set-screw *d* passing through one of the brackets *b* and engaging the inner face of the opposite arm or bracket *b*.

The upward and rearward movement of the platen C, under the action of the shift-keys *g*, is limited by stops *f*, Fig. 2, with which contact short arms *e* projecting rearwardly from the supporting arms U of the platen, the stops *f* in the present instance being adjustable and consisting of screws threaded through projecting lugs provided for the purpose upon the paper carriage frame Q, Figs. 8 and 11.

For the purpose of locking the platen C in shifted position when the shift-key *g* at the right side of the machine is depressed, and for releasing it when the shift-key at the left side of the machine is depressed, the following devices are provided, reference being had to Figs. 2 and 3: Hung upon a stud *h'* projecting inward from the left hand side frame of the machine is a latch *i* in the form of a bell-crank having its upper and forwardly extending horizontal arm *j* weighted so as to swing the lower end of its depending arm rearward when permitted to do so. The depending arm of this bell crank latch normally rests against the forward end of the bell-crank Y at the left side of the machine, so that if the front end of said bell-crank be depressed the lower end of the latch I will swing rearward over the front end of the bell-crank Y and hold the latter depressed, thereby locking the platen in shifted position. This occurs whenever the shift-key at the right side of the machine is operated, since the effect of depressing such key is to rock the shaft Z and depress the front ends of both bell-cranks Y, as heretofore explained. The shift-key G at the left side of the machine, however, is provided with a lateral projection *k*, Fig. 3, adapted when the key is depressed to engage the depending arm of the latch *i* and swing it forward, thereby preventing its engaging the front end of the bell crank Y and locking the latter in depressed position. When, therefore, the shift-key *g* at the left side of the machine is depressed the platen C returns to its normal position as soon as the key is released. So, also, if the shift-key at the right side of the machine has been operated, and the platen thereby locked in shifted position, the depression of the shift-key at the left side of the machine will release the platen, since the projection *k* upon such key will contact with the rear side of the latch *i* and swing the latter forward, thereby disengaging it from the front end of



the bell-crank Y with which it had been engaged at the operation of the shift-key at the right side of the machine.

The means for advancing the paper carriage to the left step by step, at the operations of the type-keys and space-bar, is as follows, it being understood that the paper carriage is normally pulled toward the left by a suitable spring inclosed within a drum or casing X', Fig. 2: The paper carriage frame Q has secured to its rear side a horizontal rack-bar m, Figs. 1 and 2, which constantly meshes with a pinion n secured upon a short vertical shaft o suitably journaled in the frame A. Secured to the lower end of the shaft o is an escapement wheel p having its depending flange or rim cut to form alternating teeth and notches, as shown in Figs. 2 and 7. The action of the paper carriage spring tends to turn this escapement wheel p in the direction of the arrows upon it in Figs. 4, 5 and 6, these latter views being bottom plan views of the parts shown in them and the direction of movement of the parts indicated by the arrows being consequently the reverse of that in the top plan view in Fig. 1. The devices coöperating with the escapement wheel p, to permit the intermittent advance of the paper carriage, are shown most clearly in these latter views, where q is a lever pivoted at q' to a depending stud p' upon the under side of the top plate A of the main frame of the machine, Fig. 7. Also pivoted at q' is one end of an arm r' which has pivoted to its opposite end a short lever s having on one side of its fulcrum or pivot a thin horizontal end against which bears one end of a spring u secured at its opposite end to the lever q, and having upon the opposite side of its fulcrum or pivot a thin vertical end or tooth t adapted to pass through the notches in the escapement wheel p. The end of the lever q is provided with a notch or recess to receive the tooth t when the latter is in the position shown in Fig. 4, and it is also provided upon its upper side with a lug r which, when the parts are in the position shown in Fig. 4, is in line with the tooth t of the escapement lever s. The spring u bears against the end of the lever s at one side of its middle line and tends to rock said lever upon its fulcrum and throw it to the position shown in Fig. 5, but when the parts are in the position shown in Fig. 4 the lever is held in the position there shown, against the stress of the spring u, by the stress of the paper carriage spring tending to turn the escapement wheel p in the direction of the arrow. When, however, the lever q is swung to the position shown in Fig. 5 the tooth t of the escapement lever s will be withdrawn inward from engagement with the notch of the escapement wheel p in which it had been resting and the tooth r upon the lever q will enter such notch and hold the wheel p in fixed position and prevent its be-

ing turned forward in the direction of the arrow notwithstanding the disengagement of the lever s from it. As soon as the tooth t of the escapement lever, at the inward movement of the parts from the position of Fig. 4 to that of Fig. 5, becomes disengaged from the escapement wheel p the spring u will throw the lever to the position shown in Fig. 5, in which position its tooth t will stand opposite the next succeeding notch in the wheel p. If, now, the lever q be moved to the position shown in Fig. 4 the tooth t of the escapement lever will pass outward through such succeeding notch in the wheel p, and as soon as the parts have moved outward far enough to disengage the lug r from the wheel p the paper carriage spring will be free to advance the paper carriage and rack m and turn the escapement wheel in the direction of the arrow until the tooth t of the lever s contacts with and is arrested by the end of the lever q in the position shown in Fig. 4. In this manner and by these means the movement of the lever from the position shown in Fig. 4 to that shown in Fig. 5 and then back to that shown in Fig. 4 will permit the escapement wheel p to turn the space of one notch or tooth, and thereby permit the paper carriage to advance one step. The movement of the lever q in one direction, for this purpose, is effected by a coiled spring v connected at one end to the lever and at its opposite end to the frame A, and its movement in the opposite direction is effected by means of a universal bar w, Figs. 2 and 3, underlying all of the type-levers L and the two side levers of the space-bar I, said bar w being carried by the front ends of arms x secured at their rear ends to a rock-shaft y, which rock-shaft has secured to and projecting upwardly from it, near its middle, an arm z whose upper end bears against or is adapted to engage a lug s' upon the under side of the lever q, Figs. 2, 4, and 5. When, therefore, the space-bar I or any one of the type-levers is depressed the end of the lever q adjacent the escapement wheel p will be thrown forward from the position shown in Fig. 4 to that shown in Fig. 5, and when the space-bar or operated type-lever is released the spring v will return the parts to the position shown in Fig. 4, with the result that the paper carriage will be advanced one step as described.

The spring u bearing upon the escapement lever s carried by the arm r' yieldingly holds the arm r' in contact with the lever q, and in the normal operation of the parts the lever q and arm r' move back and forth together, between the positions of Figs. 4 and 5, and operate in effect as one rigid member; but to guard against the contingency of the tooth t of the escapement lever s by any possibility engaging and becoming bound against the inner surface of the escapement wheel p when moving outward from the position of



Fig. 5 to that of Fig. 4, I provide the two separate members yieldingly connected together and operating as described.

The paper carriage is at all times free to be  
 5 returned to or toward right hand position by simply pressing it in that direction, such movement of the paper carriage simply turning the escapement wheel *p* backward or in a direction opposite to that indicated by the  
 10 arrow in Fig. 4, with the result that the escapement lever *s* will be swung upon its pivot by the turning of the wheel until its tooth *t* slips out of the notch in the wheel with which it has been engaged, after which, during the  
 15 further backward movement of the wheel, the end of the tooth will ride idly over the inner surface of the depending flange of the wheel; but for the purpose of enabling the paper carriage to be freely moved toward the  
 20 left without manipulating any of the key levers or the spacing bar, as well as for the purpose of permitting it to be moved toward the right without any engagement whatever of the lever tooth *t* with the wheel, I provide  
 25 means for moving the lever *q* to the extreme forward position shown in Fig. 6, thereby entirely disengaging both its lug *r* and the tooth *t* of the escapement lever *s* from the wheel *p*, and leaving the latter free to turn in  
 30 either direction, and thereby leaving the paper carriage to be freely shifted back and forth. Such means consists of a thin bar or plate 13 mounted upon the paper carriage frame *Q* and extending longitudinally of the  
 35 rack bar *m* immediately beneath the latter, Figs. 1, 2 and 8. As shown in Fig. 1 the plate 13 is provided with two parallel oblique slots 14--14 through which pass pins or screws 15 projecting from the paper carriage  
 40 frame and constituting the connection of the plate 13 with said frame. A rod 17 is connected at its right hand end to a forwardly projecting ear upon the plate 13, and at its left hand end projects beyond the side frame  
 45 of the machine and is provided with a push-button 18. A spring 16 connected at its right hand end to the plate 13, near the right hand end of the latter, and at its left hand end to the frame *Q*, pulls the plate 13 toward  
 50 the left and yieldingly holds it in the normal position shown in Fig. 1. When, however, the plate is slid toward the right by pressing upon the button 18 of the rod 17 the plate will also, owing to its connection with the  
 55 frame by the oblique slots 14 and pins 15, be moved rearwardly from the position shown in Figs. 1 and 4, to the position shown in Fig. 6. At such rearward movement the rear edge of the plate 13 will contact with an  
 60 anti-friction roller 12 mounted upon the up-turned forward end of an arm *q''* projecting forward at right angles from the pivoted end of the lever *q*, and constituting with that lever a bell crank having *q'* as its pivot or  
 65 fulcrum. The engagement of the plate 13

with the roller 12 rocks said bell crank from the position shown in Fig. 4 to that shown in Fig. 6, and thereby disengages both the lug *r* of the lever *q* and the escapement lever tooth *t* from the escapement wheel *p*. The paper carriage will then be free to be moved in either direction, the pinion *n* and escapement wheel *p* being idly turned by the rack *m* during such movement and the roller 12 upon the bell-crank lever traveling along the rear edge of the plate 13. When pressure on the push-button 18 is released the spring 16 will restore the parts to normal position shown in Figs. 1 and 4 and reengage the escapement devices which control the movements of the paper carriage under the operations of the keys and spacing bar.

The inking ribbon 52, shown in dotted lines in Fig. 1, is wound at its opposite ends upon spools mounted in the casings 38, each spool being provided upon its rear side, outside the casing, with a ratchet 41 which is engaged by the upper end of a pawl 42, Fig. 2, which is pivoted at its lower end to an arm 43 on the rock-shaft 9, it being understood that there are two pawls 42 connected to two separate arms 43 at the opposite ends of the rock-shaft 9 and cooperating with the ratchets 41 of the respective ribbon spools. A universal bar 11, underlying all of the type-levers but not the space-bar levers, Fig. 3, is supported by arms 10 secured to and projecting rearwardly from the rock-shaft 9, so that whenever any type-lever is depressed the shaft 9 will be rocked and the pawls 42 thrown upwards. Suitable means, not shown, is provided for holding one of the pawls 42 out of cooperation with its ratchet 41 while the opposite pawl is in cooperation with its ratchet, so that the ribbon will be shifted in one direction or the other according to the adjustment of the pawls.

In its passage from one ribbon spool to the other the ribbon 52 is led through guide-ways 2 upon the upper rear end of a reciprocating ribbon-throw 3 consisting, in the particular form shown, of a forked or yoke-shaped plate suitably guided to reciprocate backwardly and forwardly upon the forwardly and rearwardly inclined portion of the bracket plate *D* which supports the bearing plates *E* for the type-bars, Figs. 1 and 2. The upper rear ends of the two arms of this ribbon-throw plate are reversely bent and provided with upwardly projecting lugs, to form guide-ways for the retention and passage of the ribbon. To the under side of the plate 3 near its lower forward end is pivoted the upper end of the vertical arm 4 of a bent lever, whose other arm extends rearwardly and is pivotally connected to the upper end of an arm 6 fast at its lower end upon the rock-shaft *Z*, Fig. 2. Pivotally connected to the bent lever 4--5, at its angle, is the upper rear end of an arm or link 7 whose lower for-



ward end is pivoted to the upper end of an arm 8 fastened at its lower end to the rock-shaft 9, which rock-shaft, as before explained, is operated by the universal-bar 11 which is depressed by the operation of any one of the type levers. In its normal or retracted position, Figs. 1 and 2, the ribbon-throw plate holds the ribbon 52 to the front of the line of print upon the platen C and out of the path of the types upon the type-bars, but when any type-lever is depressed and the shaft 9 thereby rocked the connection of said shaft with the ribbon-throw plate, through the medium of the arm 8, link 7, and lever-arm 4, will slide the ribbon-throw plate 3 upward and rearward and carry the ribbon into the path of the type upon the type-bar. This is the operation for the printing of lower-case letters and characters, but when the platen C is swung rearward by the operation of one of the shift-keys in the manner heretofore explained, for the printing of upper-case letters and characters, it is necessary that the ribbon shall be carried further rearward by the ribbon-throw, so as to bring it over the line of print upon the platen in the shifted position of the latter. This is effected by means of the connection of the rock-shaft Z with the bent lever 4—5 through the medium of the arm 6. Whenever either one of the shift-keys is depressed, to shift the platen C to upper-case position, the shaft Z is rocked in the manner heretofore explained, thereby throwing forward the upper end of the arm 6 and consequently moving forward the point of pivotal connection between the link 7 and bent lever 4—5 and straightening out the toggle formed by said link and the arm 4 of the bent lever, also slightly rocking the latter on the pivot of its angle, with the result that the ribbon-throw plate 3 will be slid upward and rearward a proportionate distance, and when the type-lever is then depressed and the shaft 9 rocked its arm 8, operating upon the ribbon-throw plate through the link 7 and arm 4 of the bent lever, will move the ribbon throw plate rearward to the necessary position for the printing of the upper-case characters.

For the purpose of rotating the platen C, for line spacing, the platen has secured upon the right hand end of its projecting spindle a ratchet 19, Figs. 1, 8, and 9, with which co-operates the upper end of a hook pawl 22 which in the present instance is in the form of a bell-crank lever pivoted at its angle upon the depending rear end of the spacing lever 21. A spring 21<sup>a</sup> coiled around the pivot of the lever 21 and secured at one end to said lever and at its opposite end to the paper carriage frame Q yieldingly holds the lever in the position shown with the depending arm 23 of the pawl lever 22 bearing against the lower forward edge of a pivoted stop 24

upon the frame Q, this stop serving to limit the movement of the lever 21 under the stress of its spring 21<sup>a</sup>.

Coiled around the pivot of the pawl lever 22—23 is a spring 22<sup>a</sup> connected at one end to the depending arm of the spacing lever 21 and at its opposite end to the depending arm 23 of the pawl lever and exerting its force in a direction which tends to spread the two arms of the levers apart as shown in Fig. 9. In normal position, however, the tension of the spring 21<sup>a</sup> overcomes that of the spring 22<sup>a</sup> and causes the depending arm of the pawl-lever against the stop 24 and maintain the ends of the two levers in contact with each other, as in Fig. 8. Whenever the front end of the spacing lever 21 is lifted by hand, however, the spring 22<sup>a</sup> will be permitted to act and will at once rock the pawl-lever upon its pivot and throw its upper rear end into engagement with the ratchet 19, after which any further movement of the spacing-lever 21 will cause the pawl to turn the ratchet and platen.

As shown in Fig. 10 the stop 24 consists of a pivoted plate or lever of such shape that when in one position it will present a contact surface  $x'$  to the depending arm 23 of the pawl lever which will arrest the rearward movement of the depending arm of the spacing-lever 21, (under the action of its spring 21<sup>a</sup>) at a given point, and when in another position will present a contact surface  $x''$  which will arrest it at a point forward of the one just mentioned. When in the position shown in the drawings the stop permits a maximum rearward movement of the parts, and consequently a maximum length of forward movement when the front end of the spacing lever is lifted by hand from the position shown in Fig. 8 to that shown in Fig. 9; and inasmuch as the pawl 22 is thrown into engagement with the ratchet 19 by the spring 22<sup>a</sup> as soon as the front end of the spacing lever 21 is lifted, it follows that with the stop 24 in the position shown in the drawings movement of the spacing lever 21 to the position shown in Fig. 9 will impart a maximum movement to the ratchet 19 and platen C, and advance the platen a "full space". When, however, the stop plate 24 is swung to position to present its other contact surface  $x''$  to the depending arm 23 of the pawl lever the parts will be arrested and maintained in a normal position forward of that shown in Fig. 8, with the result that a movement of the spacing lever from that position to the position shown in Fig. 9 will advance the ratchet 19 and platen C but one-half the distance which they are advanced under the other adjustment of the stop, or, in other words, a "half space".

The adjustment and proportion of the parts are such that, notwithstanding the fact



that the spacing lever and actuating pawl for the platen ratchet are mounted upon the paper carriage frame Q, instead of being mounted upon the swinging platen frame U, the pawl will cooperate with the ratchet in the manner and with the result above described whether the platen be in one of its shifted positions or the other, the only difference being that when the platen is swung rearward to upper-case position the pawl 22 will, when the spacing lever is operated, engage the ratchet 19 one notch or tooth in advance of the point at which it would engage it if the platen were in its normal forward position. After its engagement with the ratchet the further movement of the spacing lever will cause the pawl to turn the ratchet platen one space or two spaces, according to the adjustment of the stop 24, whether the platen be in one of its shifted positions or the other.

A roller 20 carried by a spring arm 20<sup>a</sup> secured at its lower end to one of the supporting arms U of the platen bears against the ratchet 19 and serves as a brake and arresting pawl for the ratchet and platen.

The spindle of the platen has secured to its extreme ends the hand-wheels 35 by which the platen may be turned back and forth at any time independently of the spacing mechanism above described.

The feed-rollers which cooperate with the platen to advance or retract the paper as the platen is turned forward or backward consist of two rollers 26 26, (Figs. 2 and 11), journaled at their opposite ends in the upper and lower ends of the two opposite side arms 25 of a pivoted frame composed of said side arms and a curved cross-plate 25<sup>a</sup> connecting them and curved to conform to the forward face of the platen. The side arms 25 of this frame are pivoted at 27 to the upper forward ends of a pair of arms 28 secured at their lower rear ends to the opposite ends of a rock-shaft 30, which rock-shaft is journaled at its opposite ends in two short arms 31 projecting forwardly from the lower ends of the platen-supporting arms U, or otherwise made fast upon the rock-shaft V. The rock-shaft 30 has fast upon it near its middle a rearwardly projecting arm 32 provided with a laterally projecting stud to which is connected one end of a spring 33 whose opposite end is connected to the rock-shaft V. The tension of this spring tends to force the rear end of the arm 32 downward and rock the shaft 30 in a direction to force the feed-rollers 26 against the platen C, as shown in Fig. 2. The shaft 30 has secured upon its right hand end, Figs. 1 and 8, a handle 34 by means of which the shaft may be rocked in the opposite direction and the feed rollers 26 thrown forward away from the platen C, as shown in Fig. 11.

The side arms 28 which are fast upon the rock-shaft 30 and carry the frame in which

the feed rollers 26 are mounted also have journaled in them a third roller 29 which is normally out of contact with the platen C, as in Fig. 2, but adapted to be thrown into contact therewith whenever the shaft 30 is rocked by means of the handle 34 to throw the feed rollers 26 forward to the position shown in Fig. 11.

The above described construction and arrangement of parts is particularly advantageous where the machine is being used for manifolding work, and a considerable number of sheets of paper, with interposed carbon sheets, have to be inserted between the platen and feed rollers. The front ends of such sheets are inserted from the rear between the platen C and roller 29 when the parts are in normal position as in Fig. 2, and are pressed forward until they abut against the lower feed roller 26, the roller 29 serving as a guide for the insertion of the front ends of the sheets and the roller 26 serving as a longitudinal stop against which they may be straightened and lined up. Upon then lifting the rear end of the handle 34 with the right hand the roller 29 will be thrown upward to the position shown in Fig. 11 and caused to firmly grip the front ends of the inserted sheets between itself and the platen C, the feed rollers 26 being at the same time thrown forward to permit the free passage of the ends of the inserted sheets between them. With the parts held in this position with his right hand the operator can turn the platen C forward with his left hand until the sheets have been advanced far enough for their upper front ends to have passed above the upper feed roller 26. Upon then releasing the handle 34 the spring 33 will instantly return the parts to the position shown in Fig. 2 and cause the rollers 26 to grip the paper between themselves and the platen, after which the paper will be further advanced by the turning of the platen, either by hand or by means of the spacing mechanism.

The arrangement of the rollers cooperating with the platen in the manner above described is not only advantageous in connection with the initial introduction of the paper into the machine, particularly in manifolding work, but it has an advantage in connection with the adjustment of the paper from time to time while it is being written upon, since by moving the handle 34 to middle position the three rollers 26, 26, and 29 may all be held out of engagement with the platen, thus entirely releasing the paper and permitting it to be freely adjusted up and down or sidewise, as occasion may require or may be desirable, after which by simply releasing the handle 34 the paper will be firmly gripped between the rollers 26 and platen again.

Having described my invention, what I



claim and desire to secure by Letters Patent is

1. In a typewriting machine, the combination of a transversely movable paper carriage frame, a rock-shaft mounted therein, a platen supported in arms fast upon said rock-shaft and adapted to be shifted from lower-case to upper-case position and vice versa by the rocking of said shaft, and a shift-key and connections for rocking said shaft, substantially as described.

2. In a typewriting machine, the combination of a transversely movable paper carriage frame, a rock-shaft mounted therein, a platen supported in arms fast upon said rock-shaft and adapted to be shifted from lower-case to upper-case position and vice versa by the rocking of said shaft, a pair of bell-crank levers and means for rocking the same, a shift-rod or bar connecting the ends of said levers, and an arm projecting from said rock-shaft and cooperating with the shift-rod, substantially as described.

3. In a typewriting machine, the combination of a transversely movable paper carriage frame, a rock-shaft mounted therein, a platen supported in arms fast upon said shaft and adapted to be shifted from lower-case to upper-case position and vice versa by the rocking of said shaft, a pair of bell-crank levers, a shift-rod or bar connecting their ends, an arm projecting from the rock-shaft and cooperating with said shift-rod, and a pair of shift-keys at opposite sides of the machine cooperating with the respective bell-cranks, substantially as described.

4. In a type-writing machine, the combination with a platen, a movable carriage, a rock-shaft therein, arms on said rock-shaft carrying said platen, and a shifting bar, of an arm connecting said bar and shaft comprising a pair of spring bars connected together at one end and adapted at their free ends to engage said bar and means for adjusting the free ends of said spring bars with relation to each other, substantially as described.

5. In a type-writing machine, the combination with a platen, a movable carriage, a rock-shaft therein, arms on said rock-shaft carrying said platen, and a shifting bar, of an arm connecting said bar and shaft comprising a pair of spring bars secured together at one end and at their free ends carrying anti-friction rollers engaging said shifting bar, and a set-screw passing through one of said spring bars and impinging against the other for adjusting the free ends of said spring bars with relation to each other, substantially as described.

6. In a typewriting machine, the combination of the transversely movable paper carriage frame Q, the rock shaft V journaled therein, the arms U fast upon and projecting upward from the rock shaft V, the platen C mounted in said arms, the rock shaft Z jour-

naled in the main frame of the machine, the bell crank levers Y fast upon said shaft, the shift rod X connecting the upper ends of the bell cranks Y, an arm depending from the rock shaft V and cooperating with the shift rod X, and a shift key for rocking the bell cranks Y, substantially as described.

7. In a typewriting machine, the combination of the transversely movable paper carriage frame Q, the rock shaft V journaled therein, the arms U fast upon and projecting upward from the rock shaft V, the platen C mounted in said arms, the rock shaft Z journaled in the main frame of the machine, the bell crank levers Y fast upon said shaft, the shift rod X connecting the upper ends of the bell cranks Y, an arm depending from the rock shaft V and carrying at its lower end an anti-friction roller c bearing against the forward side of the shift rod X, and a shift key for rocking the bell cranks Y, substantially as described.

8. In a typewriting machine, the combination of the transversely movable paper carriage frame Q, the rock shaft V journaled therein, the arms U fast upon and projecting upward from the rock shaft V, the platen C mounted in said arms, the rock shaft Z journaled in the main frame of the machine, the bell crank levers Y fast upon said shaft, the shift rod X connecting the upper ends of the bell cranks Y, the pair of spring arms a a depending from the rock shaft V and carrying at their lower ends the anti-friction rollers c c bearing upon opposite sides of the shift rod X, and a shift key for rocking the bell cranks Y, substantially as described.

9. In a typewriting machine, the combination of the transversely movable paper carriage frame Q, the rock shaft V journaled therein, the arms U fast upon and projecting upward from the rock shaft V, the platen C mounted in said arms, the rock shaft Z journaled in the main frame of the machine, the bell crank levers Y fast upon said shaft, the shift rod X connecting the upper ends of the bell cranks Y, the pair of spring arms a a secured at their upper ends to the short arm W projecting from the rock shaft V and carrying at their lower ends the brackets b b and embracing the shift rod X, the set screw d for adjusting the rollers c c relatively to each other and the rod X, and a shift key for rocking the bell cranks Y, substantially as described.

10. In a typewriting machine, the combination, with a paper carriage and a shifting platen suitably mounted thereon, of a pair of bell crank levers mounted in the main frame of the machine, a shift rod or bar connecting said levers, means intermediate said shift rod and the shifting platen for causing the rocking of the bell cranks to shift the platen from lower case position to upper case position, or vice versa, a pair of shift keys co-



operating with the respective bell-cranks to rock the same, and a latch cooperating with one of said bell cranks and with one of said shift keys, said latch engaging one of the bell cranks and holding it in shifted position when one of the shift keys is operated, and being disengaged from the bell crank when the other one of the shift keys is operated, whereby upon operating one of the shift keys the bell cranks and platen will be locked in shifted position, and upon operating the other of said shift keys they will be released and permitted to return to normal position, substantially as described.

11. In a typewriting machine, the combination, with a paper carriage and a shifting platen suitably mounted thereon, of a pair of bell crank levers mounted in the main frame of the machine, a shift rod or bar connecting said levers, means intermediate said shift rod and the shifting platen for causing the rocking of the bell cranks to shift the platen from lower case to upper case position, or vice versa, a pair of shift keys cooperating with the respective bell cranks to rock the same, and a latch cooperating with one of said bell cranks and with one of said shift keys, said latch engaging the bell crank and locking it and the platen in shifted position when one of said shift keys is operated, but prevented from engaging the bell crank when the other one of said shift keys is operated, whereby when one of the shift keys is operated the platen will become locked in shifted position, and whereby when the other one of said shift keys is operated the platen will be moved to shifted position but released and returned to normal position as soon as the shift key is released.

12. In a typewriting machine, the combination with a platen, a movable carriage and a rock shaft mounted thereon and having arms carrying the platen, of an arm on said shaft engaging a shifting bar carried by a pair of bell crank levers, a pair of key levers for rocking the same and thereby moving the shifting bar, a pivoted catch adapted to engage and lock one of said bell crank levers in a depressed position, and a projection on one of said key levers adapted and arranged to engage said catch when the lever is depressed, substantially as described.

13. In a typewriting machine, the combination of the rock shaft Z, the bell cranks Y fast thereon, the shift rod X connecting the upper ends of said bell cranks, a shifting platen and a connection between the same and the rod X for causing the rocking of the bell cranks Y to shift the platen, the shift keys *g* engaging the respective bell cranks Y to rock the same, the pivoted latch *i* cooperating with one of the bell cranks Y, and the projection *k* upon one of the shift keys *g* cooperating with the latch *i*, substantially as described.

14. In a typewriting machine, the combination of the transversely movable paper carriage, the rock shaft V mounted therein, the arms U fast upon and projecting upwardly from the shaft V, the platen C mounted in the arms U, the rock shaft Z mounted in the main frame of the machine, the bell cranks Y fast upon the shaft Z, the shift rod X connecting the upper ends of the bell cranks Y, an arm depending from the rock shaft V and cooperating with the shift rod X to cause the rocking of the bell cranks Y to shift the platen C, the shift keys *g* cooperating with the respective bell cranks Y, the latch *i* cooperating with one of said bell cranks, and the projection *k* upon one of the shift keys *g* cooperating with the latch *i*, substantially as described.

15. In a typewriting machine, the combination, with a transversely movable paper-carriage and a shifting platen mounted thereon, of a ribbon-throw mounted upon the fixed frame of the machine, a rock-shaft, a universal bar located in the path of movement of the type-levers and supported by arms projecting from said rock-shaft, for actuating the latter means intermediate the rock-shaft and ribbon throw for actuating the latter through the medium of the rock shaft to cause it to carry the ribbon to and from the line of print upon the platen, and a connection between such actuating means and the platen-shifting mechanism for causing the operations of the type-levers to carry the inking ribbon to the line of print upon the platen when the latter has been shifted to upper-case position by the operation of said mechanism, substantially as described.

16. In a typewriting machine, the combination, with a transversely movable paper-carriage and a shifting platen mounted thereon, of a ribbon-throw mounted upon the fixed frame of the machine, a rock-shaft, a universal bar located in the path of movement of the type-levers and supported by arms projecting from said rock-shaft, a second rock-shaft, bell crank levers fast thereon, a shift-rod connecting said bell-crank levers, means intermediate said rod and the shifting platen for causing the rocking of the levers to shift the platen, means for rocking the levers, two arms projecting from the two rock-shafts, and a joint connection between said arms and the ribbon-throw, whereby when the type-levers are operated the ribbon-throw is caused to carry the ribbon to the line of print upon the platen whether the latter be in lower case position or in upper-case position, substantially as described.

17. In a typewriting machine, the combination, with a transversely movable paper-carriage, a rock-shaft mounted therein, arms fast upon and projecting upwardly from said rock-shaft, a platen mounted in said arms, and platen-shifting mechanism operating



through said rock-shaft to shift the platen from lower-case to upper-case position, of a ribbon-throw mounted upon the fixed frame of the machine, and means connecting said ribbon-throw with the type levers and with the platen-shifting mechanism for causing said ribbon-throw to carry the inking ribbon to the line of print upon the platen whether the latter be in lower-case position or in upper-case position, substantially as described.

18. In a typewriting machine, the combination, with a transversely movable paper carriage, a rock-shaft mounted therein, arms fast upon and projecting upwardly from said rock-shaft, a platen mounted in said arms, a rock-shaft mounted in the fixed frame of the machine, bell-crank levers fast upon said shaft, a shift-rod connecting said bell-crank levers, an arm depending from the platen-supporting rock-shaft and cooperating with said rock-shaft, means for rocking the bell-cranks to shift the platen, a second rock-shaft mounted in the fixed frame of the machine, a universal-bar located in the path of the type-levers and supported by arms projecting from said rock-shaft, a ribbon-throw, and means connecting said ribbon-throw with the two rock-shafts for causing said throw to carry the ribbon to the line of print upon the platen whether the latter be in lower-case or upper-case position, substantially as described.

19. In a typewriting machine, the combination, with a transversely movable paper-carriage, a rock-shaft mounted therein, arms fast upon and projecting upwardly from said rock-shaft, a platen mounted in said arms, a rock-shaft mounted in the fixed frame of the machine, bell-crank levers fast upon said shaft, a shift-rod connecting said bell-cranks, an arm depending from the platen-supporting rock-shaft and cooperating with said shift-rod, means for rocking the bell-cranks to shift the platen, a second rock-shaft mounted in the fixed frame of the machine, a universal-bar located in the path of the type-levers and supported by arms projecting from said rock-shaft, a ribbon throw, an arm projecting from each of said rock-shafts, and a joint connection between the ribbon-throw and said arms for causing the ribbon-throw to carry the ribbon to the printing line upon the platen when the latter is shifted to upper-case position, substantially as described.

20. In a typewriting machine, the combination, with a transversely movable paper carriage, a rock-shaft mounted therein, arms fast upon and projecting upwardly from said rock-shaft, a platen mounted in said arms, a rock-shaft mounted in the fixed frame of the machine, bell-crank levers fast upon said shaft, a shift-rod connecting said bell-cranks, an arm depending from the platen-supporting rock-shaft and cooperating with said shift-rod, means for rocking the bell-cranks

to shift the platen, a second rock-shaft mounted in the fixed frame of the machine, a universal-bar located in the path of the type-levers and supported by arms projecting from said rock-shaft, a ribbon-throw, an arm projecting from each of said rock-shafts, a bent lever connecting the ribbon-throw with the arm projecting from the platen-shifting rock-shaft, and a link connecting said bent lever with the arm projecting from the other rock-shaft, substantially as described.

21. In a typewriting machine, the combination of a transversely movable paper carriage, a shifting platen suitably mounted therein, a platen-shifting rock-shaft with means intermediate the same and the platen for shifting the latter when the shaft is rocked, a ribbon-throw for carrying the ribbon to the printing line upon the platen, a second rock-shaft actuated by the type-levers, a bent lever connected at one end to the ribbon-throw and at its opposite end to an arm projecting from the platen-shifting rock-shaft, and a link connecting said bent lever to an arm projecting from the other rock-shaft, substantially as described.

22. In a typewriting machine, the combination of the shifting platen C, the platen-shifting rock-shaft Z with means intermediate the same and the platen C for shifting the latter when the shaft is rocked, the rock-shaft 9, the universal-bar 11 located in the path of movement of the type-levers and supported by arms projecting from the rock-shaft 9, the reciprocating ribbon-throw, the bent lever 4—5 connected at one end to said ribbon-throw and at its opposite end to the arm 6 projecting from the rock-shaft Z, and the link 7 connecting the bent lever 4—5 with an arm 8 projecting from the rock-shaft 9, substantially as described.

23. In a typewriting machine, the combination of the transversely movable paper carriage frame Q, the rock-shaft V mounted therein, the platen C supported in the arms U secured to and projecting upwardly from the rock-shaft V, the rock-shaft Z, the bell-cranks Y fast thereon, the shift-rod X connecting the ends of said bell-cranks, the shift keys *g* for rocking said bell-cranks, an arm depending from the rock-shaft V and cooperating with the shift-rod X, the rock-shaft 9, the universal-bar 11 located in the path of the type-levers L and supported by the arms 10 projecting from the rock-shaft 9, the reciprocating ribbon-throw, the bent lever 4—5 connected at one end to said throw and at its opposite end to the arm 6 projecting from the rock-shaft Z, and the link 7 connecting the bent lever 4—5 with an arm 8 projecting from the rock-shaft 9, substantially as described.

24. In a type-writing machine, the combination with a movable carriage carrying a shifting platen, of a movable ribbon-throw



constituting a guide for the ribbon, a bent lever connected at one end to said throw and at its opposite end with the platen-shifting mechanism, a rock-shaft, an arm thereon, a link connecting said arm with the angle of said lever and a universal bar underlying the key levers and adapted to be operated thereby and to operate the rock shaft, substantially as described.

25. In a type-writing machine, the combination with a movable carriage carrying a shifting platen, a shifting bar carried by bell-crank levers mounted upon a rock-shaft journaled in the frame of the machine, of an arm on said shaft, a movable ribbon-throw constituting a guide for the ribbon, a bent lever pivotally connected at one end with said throw and at its opposite end with said arm, a link connecting said lever at its angle with an arm on another rock-shaft journaled in the frame of the machine, a universal bar underlying the key levers for actuating said rock-shaft, and key levers adapted and arranged to rock the bell-crank levers, substantially as described.

26. In a type-writing machine, the combination with the movable carriage carrying the platen and a rack secured to said carriage, of a shaft journaled in the frame of the machine, a pinion fixed on said shaft and permanently engaging said rack, an escapement wheel fixed on said shaft, a detent mechanism, engaging said wheel, an arm on a rock-shaft adapted and arranged to actuate said detent mechanism and a universal bar underlying the key levers and levers supporting the spacing bar for actuating said rock-shaft, substantially as described.

27. In a type-writing machine, the combination with the movable carriage carrying the platen and a rack secured to said carriage, of a shaft journaled in the frame of the machine, a pinion fixed on said shaft and permanently engaging said rack, an escapement wheel fixed on said shaft, and a detent mechanism comprising a spring-actuated, pivoted lever provided with a rigid tooth a spring-actuated tooth pivoted to said lever, an arm on a rock shaft adapted and arranged to actuate said detent mechanism, and a universal bar underlying the key levers and levers supporting the spacing bar for actuating said rock shaft, substantially as described.

28. In a type-writing machine, the combination with the movable carriage carrying the platen, and a rack secured to said carriage, of a shaft journaled in the frame of the machine, a pinion mounted on said shaft engaging said rack, an escapement wheel fixed on said shaft, and a detent mechanism comprising a spring-actuated bell-crank lever having a rigid tooth on one end thereof, a spring-actuated tooth pivoted to said lever in line with and adjacent to said rigid tooth, an arm on a rock shaft adapted and arranged to actu-

ate said detent mechanism, and a universal bar underlying the key levers and levers supporting the spacing bar for actuating said rock shaft, substantially as described, and a slide bar mounted upon the carriage and adapted and arranged to engage the other arm of said bell-crank lever when moved laterally, substantially as described.

29. In a type-writing machine, the combination with the movable carriage carrying the platen, and a rack secured to said carriage, of a shaft journaled in the frame of the machine, a pinion mounted on said shaft and engaging said rack, an escapement wheel fixed on said shaft, and a detent mechanism comprising a spring-actuated bell-crank lever having a rigid tooth on one end thereof, a spring-actuated tooth pivoted to said lever in line with and adjacent to said rigid tooth, means for actuating said lever by the key levers and spacing bar, and a slide bar carried by the movable carriage block, cam slots therein receiving pins on said carriage, and a push rod attached to said bar and for actuating the same, substantially as described.

30. In a typewriting machine, the combination of the escapement wheel *p* geared to the paper carriage, the lever *q* having the lug or tooth *r*, the separate arm or lever *r'* moving with the lever *q*, the lever *s* pivoted to the arm *r'* and having the tooth *t* cooperating with the wheel *p*, the spring *u* acting upon the lever *s*, and means for actuating the lever *q*, substantially as described.

31. In a typewriting machine, the combination of the escapement wheel *p* geared to the paper carriage, the lever *q* provided with the lug or tooth *r* adapted to cooperate with the wheel *p*, and with the notch or recess in line with said lug, the lever *s* suitably supported to move with the lever *q* and having the tooth *t* cooperating with the wheel *p* and adapted to fit in the notch or recess in the end of the lever *q* in line with the lug *r*, the spring *u* acting upon the lever *s*, and means for actuating the lever *q* substantially as described.

32. In a typewriting machine, the combination of the escapement wheel *p* geared to the paper carriage, the lever *q* having the lug or tooth *r* adapted to cooperate with said wheel and provided with a notch or recess in line with said lug, the arm or lever *r'* adapted to move with the lever *q*, the lever *s* pivoted to the arm *r'* and having the tooth *t* adapted to cooperate with the wheel *p* and to fit in the notch or recess in the end of the lever *q*, and means for actuating the lever *q*, substantially as described.

33. In a typewriting machine, the combination of the escapement wheel *p* geared to the paper carriage, the lever *q* having the lug or tooth *r* adapted to cooperate with the wheel *p*, the lever *s* pivotally supported to move with the lever *q* and provided with the



tooth *t* adapted to cooperate with the wheel *q*, the spring *u* acting upon the lever *s*, the spring *v* connected to the lever *q*, the rock-shaft *y*, the arm *z* secured to and cooperating with the lever *q*, and the universal-bar *w* underlying the key-levers of the machine and connected to the rock-shaft *y* by the arms *x*, substantially as described.

34. In a type writing machine, the combination of the escapement wheel *p* permanently geared to the paper carriage and turned in opposite directions by the movement of the carriage back and forth across the machine, the bell-crank lever *q''* provided at one end with the lug or tooth *r* adapted to cooperate with the wheel *p* and carrying at its opposite end the anti-friction roller 12, the lever *s* pivotally supported to move with the lever *q* and having the tooth *t* adapted to cooperate with the wheel *p*, the spring *u* acting upon the lever *s*, means for actuating the lever *q* to disengage the lever *s* from the wheel *p* and engage the lug *r* with said wheel, and then reengage the lever *s* with said wheel and disengage the lug *r* therefrom, and the releasing bar 13 cooperating with the roller 12 to rock the bell-crank to position to entirely disengage both the lever *s* and the lug *r* from the wheel *p* and permit the latter to be freely turned independently of the levers *q* and *s*, substantially as described.

35. In a type-writing machine, the combination with the paper carriage and the platen mounted therein of a pair of feed rolls mounted in one shifting frame and a single feed roll mounted in another shifting frame pivotally connected with the first-mentioned frame, and a means for moving said frames so as to cause the pair of rolls to engage the platen alternately with the single roll, substantially as and for the purpose described.

36. In a type-writing machine, the combination with the paper carriage and the platen mounted therein of a pair of feed rolls mounted in a movable frame, a single feed roll mounted in a second movable frame pivotally attached to the first-mentioned frame, means for yieldingly maintaining the pair of rolls in contact with the platen, and means for simultaneously shifting the pair of rolls out of contact with the platen and throwing the single roll in contact with the platen, substantially as and for the purpose described.

37. In a type-writing machine, the combination with the paper carriage and the platen mounted therein of a frame having a pair of feed rolls journaled therein parallel with the platen, said frame being mounted at its center upon one arm each of a pair of rocking arms pivoted to the platen-supporting frame, a feed roll journaled in the other arms of said rocking frames, and means for rocking said arms, substantially as and for the purpose described.

38. In a typewriting machine, the combination of the platen C, the pivoted supporting frame 28, the second frame 25 pivotally hung at its middle in said supporting frame and carrying the rollers 26—26 at equal distances from its pivotal axis, and a spring applied to the supporting frame 28 and operating to press both rollers 26—26 against the platen with a uniform pressure; substantially as described.

39. In a typewriting machine, the combination of the platen C, the pivoted supporting frame 28, the second frame 25 pivotally hung at its middle in said supporting frame and carrying the rollers 26—26 at equal distances from its pivotal axis, a spring applied to the supporting frame 28 and operating to press both rollers 26—26 against the platen with a uniform pressure, and means for swinging the frame 28 away from the platen to separate the rollers 26—26 therefrom; substantially as described.

40. In a typewriting machine, the combination of the platen C, the feed rollers 26—26 and the roller 29 mounted in a rocking frame, and a spring operating to normally press the rollers 26—26 against the platen C and hold the roller 29 retracted therefrom, substantially as described.

41. In a typewriting machine, the combination of the platen C, the feed-rollers 26—26 and the roller 29 mounted in a rocking frame, a spring operating to normally press the rollers 26—26 against the platen C and hold the roller 29 retracted therefrom, and means for throwing the rollers 26—26 away from the platen and bringing the roller 29 against the platen, substantially as described.

42. In a typewriting machine, the combination of the platen C, the rock-shaft 30, the arms 28 secured to said rock-shaft, the feed-roller frame 25 25<sup>a</sup> pivotally supported by the arms 28, the feed rollers 26—26 mounted in said pivoted frame, and a spring operating upon the rock shaft to press the rollers 26 26 against the platen C, substantially as described.

43. In a typewriting machine, the combination of the platen C, the rock-shaft 30, the arms 28 secured thereto, the pivoted feed-roller frame 25 25<sup>a</sup> carried by the arms 28, the feed rollers 26 26 mounted in said pivoted frame, the roller 29 mounted in the arms 28, and a spring operating to press the rollers 26 26 against the platen C and hold the roller 29 retracted therefrom, substantially as described.

44. In a typewriting machine, the combination of the platen C, the rock-shaft 30, the arms 28 secured thereto, the pivoted feed-roller frame 25 25<sup>a</sup> carried by the arms 28, the feed-rollers 26 26 mounted in said pivoted frame, a spring operating to press the rollers 26 26 against the platen C and hold the roller 29 retracted therefrom, and the handle 34



fast upon the rock-shaft 30 for rocking the same to throw the rollers 26 26 away from the platen, substantially as described.

45. In a typewriting machine, the combination of the platen C, the rock-shaft 30, the arms 28 secured thereto, the pivoted feed-roller frame 25 25<sup>a</sup> carried by the arms 28, the feed rollers 26 26 mounted in said pivoted frame, the roller 29 mounted in the arms 28, a spring operating to press the rollers 26 26 against the platen C and hold the roller 29 retracted therefrom, and the handle 34 fast upon the rock-shaft 30 for rocking the same to throw the roller 29 against the platen C and retract the rollers 26 26 therefrom, substantially as described.

46. In a typewriting machine, the combination of the rock-shaft V, the arms U secured thereto, the platen C mounted in the arms U, means for rocking the shaft V to shift the platen, the rock-shaft 30 mounted in arms fast upon the rock-shaft V, the arms 28 fast upon the rock-shaft 30, the pivoted feed-roller frame 25 25<sup>a</sup> carried by the arms 28, the feed-rollers 26 26 mounted in said pivoted frame, and a spring operating to press the rollers 26 26 against the platen C in both of its shifted positions, substantially as described.

47. In a typewriting machine, the combination of the rock-shaft V, the arms U secured thereto, the platen C mounted in the arms U, means for rocking the shaft V to shift the platen, the rock-shaft 30 mounted in arms fast upon the rock-shaft V, the arms 28 fast upon the rock-shaft 30, the pivoted feed-roller frame 25 25<sup>a</sup> carried by the arms 28, the feed-rollers 26 26 mounted in said pivoted frame, the roller 29 mounted in the arms 28, a spring operating to normally press the rollers 26 26 against the platen C and hold the roller 29 retracted therefrom, and the handle 34 fast upon the rock-shaft 30 for throwing the roller against the platen C and retracting the rollers 26 26 therefrom, substantially as described.

48. In a typewriting machine, the combination of the rock-shaft V, the arms U secured thereto, the platen C mounted in the arms U, means for rocking the shaft V to shift the platen, the rock-shaft 30 mounted in arms fast upon the rock-shaft V, the arms 28 fast upon the rock-shaft 30, the pivoted feed-roller frame 25 25<sup>a</sup> carried by the arms 28, the feed rollers 26 26 mounted in said pivoted frame, the roller 29 mounted in the arms 28, the arm 32 fast upon the rock-shaft 30, the spring 33 connecting the arm 32 with the rock-shaft V, and the handle 34 fast upon the rock-shaft 30, substantially as described.

49. In a type-writing machine, the combination with the paper carriage, a rock-shaft journaled therein, the platen, arms on said shaft carrying said platen, and means

for shifting said arms and platen, of a ratchet-wheel on the shaft of said platen, a spacing lever pivoted to the carriage, and a spring-actuated pawl pivoted to said lever and adapted and arranged to engage said ratchet-wheel in either the normal or shifted position of the platen, substantially as described.

50. In a typewriting machine, the combination of the platen C, the ratchet 19 turning therewith, the spring pressed spacing lever 21, the bell-crank pawl 22 23 pivoted to the lever 21, the spring 22<sup>a</sup> tending to throw the pawl into engagement with the ratchet, and the stop 24 operating to hold it out of engagement therewith, substantially as described.

51. In a typewriting machine, the combination of the paper carriage frame Q, the rock-shaft V mounted therein, the arms U carried by the rock-shaft, the platen C mounted in the arms U, the ratchet 19 fast upon the spindle of the platen C, means for rocking the shaft V to shift the platen, the spacing-lever 21 fulcrumed upon the paper carriage frame Q, and the pawl 22 carried by the lever 21 and coöperating with the ratchet 19, substantially as described.

52. In a typewriting machine, the combination of the paper carriage frame Q, the rock-shaft V mounted therein, the arms U carried by said rock-shaft, the platen C mounted in the arms U, the ratchet 19 fast upon the spindle of the platen C, means for rocking the shaft V to shift the platen, the spacing-lever 21 fulcrumed upon the paper carriage frame Q, the bell-crank pawl 23 22 pivoted to the lever 21, the spring 22<sup>a</sup> tending to throw said pawl into engagement with the ratchet, and the stop 24 operating to hold it out of engagement therewith, substantially as described.

53. In a typewriting machine, the combination, with the escapement mechanism controlling the movements of the paper carriage and the feed-mechanism for the inking ribbon, of a universal bar lying in the path of movement of both the type levers and the spacing-bar levers, with means intermediate said bar and the escapement mechanism for operating said mechanism to advance the paper carriage whenever said bar is depressed either by a type-lever or by the spacing-bar levers, a second universal-bar lying in the path of movement of the levers only, and means intermediate said second bar and the ribbon-feeding mechanism for causing the latter to be operated only when a type lever is depressed, substantially as described.

54. In a typewriting machine, the combination, with the escapement mechanism for controlling the movement of the paper carriage and the feed-mechanism for the inking ribbon, of the rock-shaft *y* and means intermediate the same and the escapement



mechanism for operating the latter when the shaft is rocked, the universal-bar *w* carried by the arms *x* projecting from the rock-shaft *y* and underlying both the type-levers *L* and 5 the supporting levers of the spacing-bar 1, the rock-shaft 9 and means intermediate the same and the ribbon-feeding mechanism for actuating the latter, and the universal-bar 11 carried by the arms 10 projecting from 10 the rock-shaft 9 and underlying the type-levers *L* only, whereby the escapement

mechanism will be operated to advance the paper carriage by the depression of either a type-lever or the spacing-bar, and whereby the ribbon-feeding mechanism will be oper- 15 ated only by depression of a type lever, substantially as described.

HARVEY L. FISHER.

Witnesses:

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