

(No Model.)

4 Sheets—Sheet 1.

L. P. DISS.  
TYPE WRITING MACHINE.

No. 599,417.

Patented Feb. 22, 1898.

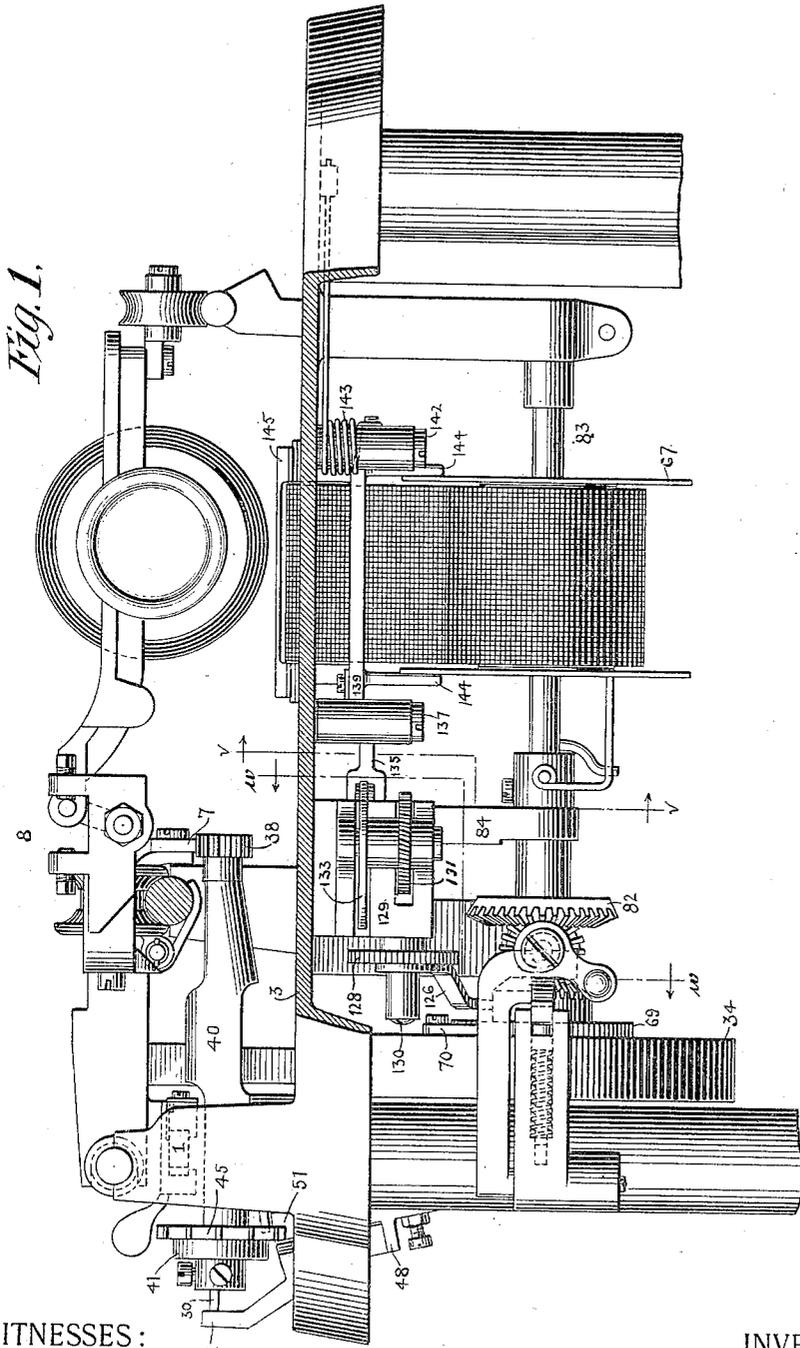


Fig. 1.

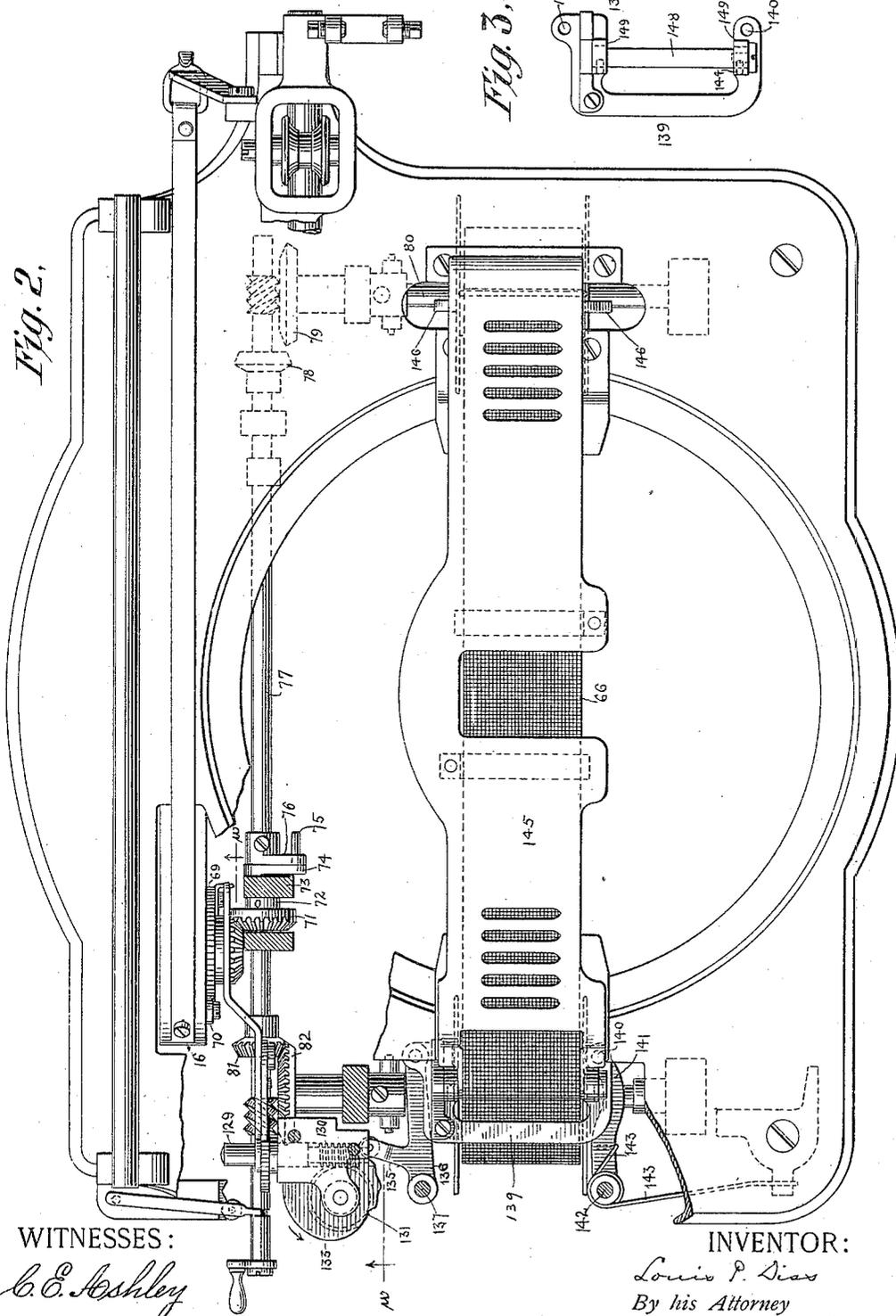
WITNESSES:  
*C. E. Ashley*  
*W. L. Lloyd.*

INVENTOR:  
*Louis P. Diss*  
By his Attorney  
*Jacob Felbel.*

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*Fig. 2.*

*Fig. 3.*

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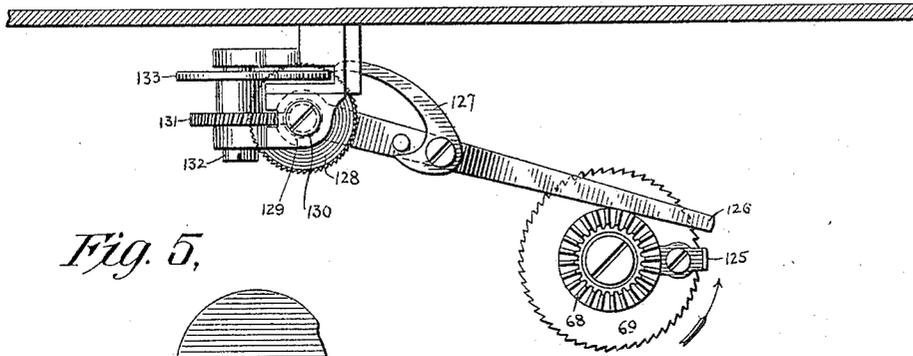
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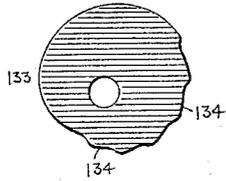
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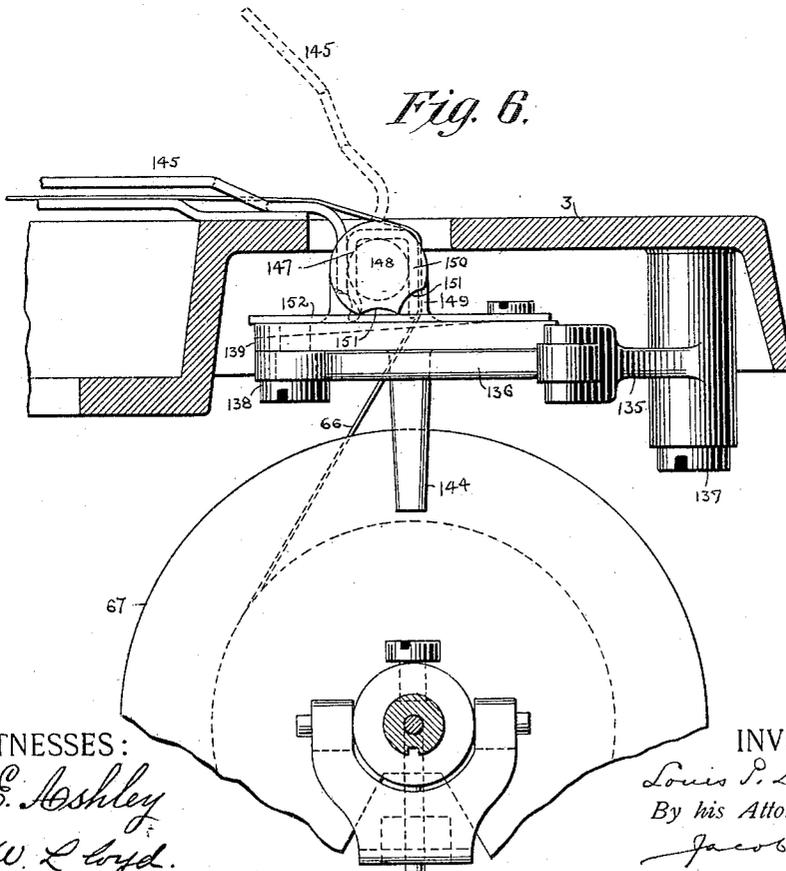
*Fig. 4.*



*Fig. 5.*



*Fig. 6.*



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Fig. 7.

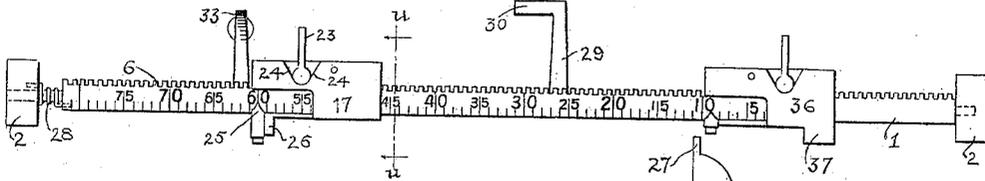


Fig. 8.

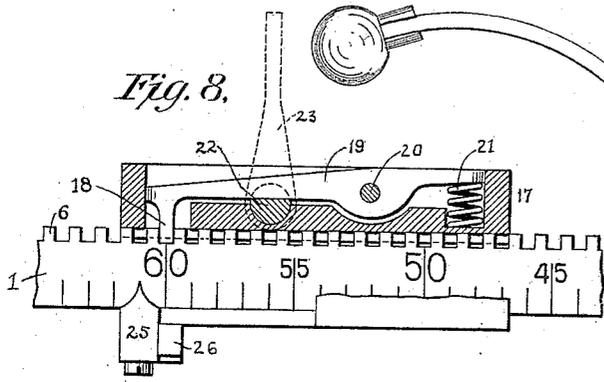


Fig. 9.

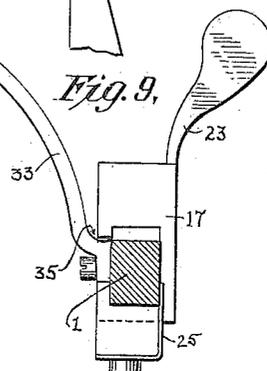


Fig. 11.

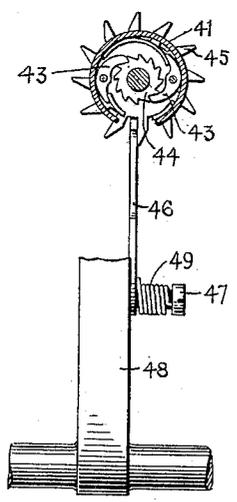
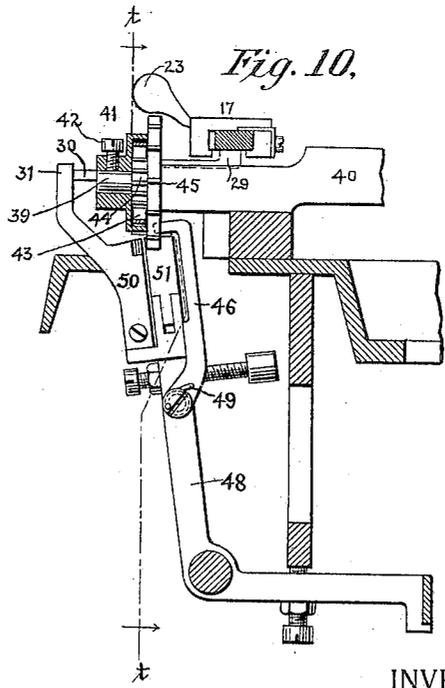


Fig. 10.



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# UNITED STATES PATENT OFFICE.

LOUIS P. DISS, OF ILION, NEW YORK, ASSIGNOR TO THE WYCKOFF,  
SEAMANS & BENEDICT, OF SAME PLACE.

## TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 599,417, dated February 22, 1898.

Application filed February 8, 1897. Serial No. 622,394. (No model.) Patented in England September 26, 1896, No. 6,912.

*To all whom it may concern:*

Be it known that I, LOUIS P. DISS, a citizen of the United States, and a resident of Ilion, in the county of Herkimer and State of New York, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

Some of my present improvements have been patented in Great Britain by Patent No. 6,912, dated September 26, 1896.

My improvements relate to the ribbon-moving mechanism, to stop-collar or carriage-arresting devices, and to the carriage-escape-ment mechanism.

My main objects have been to improve the construction of the Remington No. 6 machine; but some of my improvements may be embodied in other styles or makes of machines; and my invention consists in the various features of construction and combinations of devices hereinafter more fully described, and particularly pointed out in the appended claims.

Some of the devices shown in the accompanying drawings disclose improvements made by G. B. Webb, whose application will be filed contemporaneously with this.

In the drawings, Figure 1 is an elevation, partly in section, looking from the left-hand side of a type-writing machine embodying my improvements. Fig. 2 is a plan view thereof, omitting some of the devices and designed to show more particularly the ribbon-moving mechanism. Fig. 3 is a top plan detail view of the frame or device for moving the left-hand ribbon-spool on its shaft. Fig. 4 is a vertical section taken at the line *w w* of Figs. 1 and 2. Fig. 5 is a detail plan view of the cam forming a part of the mechanism for moving the ribbon transversely. Fig. 6 is an enlarged vertical view taken at the line *v v* of Fig. 1. Fig. 7 is a plan view of a stop-collar rod and two stop collars or slides, showing also a portion of the carriage adapted to said slide or collar. Fig. 8 is an enlarged sectional plan view of one of the adjustable collars or slides. Fig. 9 is an enlarged vertical cross-section taken at the line *u u* of Fig. 7. Fig. 10 is a vertical section of the escapement mechanism. Fig. 11 is a vertical section taken at the line *t t* of Fig. 10.

In the various views the same part will be found designated by the same numeral of reference.

At the rear side of the machine is a bar or rod 1, preferably rectangular in cross-section and preferably pivotally supported at its ends in uprights or standards 2 on the top plate 3. This bar is formed at its rear side with a series of teeth 6, forming a series of intermediate notches which may be equal in number to the teeth and notches of the carriage-feed rack 7 and the number of letter-spaces to which the carriage 8 is susceptible. The said bar is preferably graduated on its upper face or marked with numerals and lines to correspond with the number of notches or teeth thereon to facilitate the adjustment of the various devices movably mounted thereupon. The said bar has a slight endwise movement upon its pivots or centers for the purpose of locking the escapement mechanism and through it the printing mechanism at a predetermined time, as will be presently referred to. The bar 1 may be rocked either by taking hold of it directly with the fingers or by any suitable mechanism—such, for example, as is shown in the aforesaid British patent and in the application of Webb, hereinbefore referred to.

On the sliding and rocking bar 1 is an oblong box-like structure 17, surrounding or embracing the said bar and provided with a spring tooth or dog 18, adapted to engage any of the notches on said bar. The said dog is formed at one end of a lever 19, pivoted at 20 within the box and provided at its opposite end with a coiled spring 21, adapted to maintain the dog in engagement with a notch of the rack. A cam, eccentric, or the like 22, having a handle portion 23, is pivoted on or in said device 17 to enable the dog or detent to be withdrawn from the notch by either a right or left hand movement of the hand piece or lever, in order that the locking device, box, collar, or slide 17 may be adjusted or moved to any desired point on said bar. The cam or the like may, as shown at Fig. 8, consist of a vertical pivot having one flat side to coact with the lever 19. By this construction it will be seen that when the handle 23 is turned in either direction the lever 19 is

forced outwardly and the dog is withdrawn from the notch. When the handle is released, the spring 21 forces the dog into reengagement with the rack. By reason of the stops or shoulders 24, formed by the notch or cut-away in the top of the box or slide, the handle-lever 23 has a limited motion in each direction, and hence cannot be moved to such an extent as that the dog may be permanently locked out of engagement. On the inner side, preferably, of said sliding box or collar is mounted an index or pointer 25, which cooperates with the scale or graduations on the upper side of said bar to facilitate the adjustments of the device. At the locality of said pointer and on the right-hand side thereof, preferably, is an abutment 26, which is adapted to be struck by some part moving with the carriage, as the finger or lug 27. This lug or finger 27 may be variously constructed and arranged. I prefer to use the contact lug or finger shown in the aforesaid British patent and in Webb's application; but as this specific device forms no part of my invention I have omitted to show the same in this case. When the finger 27 strikes the abutment 26, the bar 1 is forced endwise toward the left against the action of a returning-spring 28, and the carriage is arrested and the escapement and printing mechanisms locked, as will presently appear.

On the rocker-bar 1 is affixed an angular arm 29, which may be riveted to the under side of said bar. The free end 30 of said arm is adapted to pass in front of a projection or arm 31 at the rear edge of the rigid escapement-dog when the said rocker-bar is moved toward the left by reason of the contact of some moving part of or on the carriage with the collar 17, which also arrests the leftward movement of the carriage. When the end of the arm 30 is thus projected in front of or in the path of vibration of the arm 31, the escapement mechanism and hence the printing mechanism are locked or prevented from performing their full functions. When the obstructing arm has been brought into the path of vibration of the arm 31, (which may be said to be a part of the dog-rocker or the dog itself,) it remains in this position until the carriage is either returned toward the right or is caused to step over the abutment 26 of the stop or slide 17. As soon as the rocker-bar is freed from the action of the carriage-driving spring, which is the power by which said rocker-bar is moved toward the left, it returns immediately toward the right to its normal position by means of the spring 28. The stepping-over action just referred to may be effected by tilting the bar 1 so as to throw the abutment 26 down out of the path of the carriage-contact device 27, which may be of any preferred detail construction or arrangement. The bar 1 is adapted to return automatically to its normal position when released from the pressure of the carriage-contact device by means of the spring 28, which may be

so arranged as to act both as a compression-spring and a torsion-spring. When the bar is slid endwise, the spring is compressed, so as to return the bar endwise when relieved of the pressure of the carriage-contact device, and when the bar is rocked or tilted an increase of torsion is effected in said spring, whereby it is enabled to turn said bar back to its first position when the rocking force is released, at which a suitable stop is applied.

From what has been said above it will of course be understood that when the carriage has been arrested and the dog-rocker locked the carriage may either be returned for the beginning of a new line or the rocking bar may be tilted to enable the projection 27 to step over the abutment 26 on the rocker-bar to permit several more characters to be printed on the line.

Fastened on the under side of the rocker-bar is a bell-hammer arm 33, which is adapted to strike a bell or gong on the shaft or axis of the carriage-driving drum 34 when the said rocking bar is tilted and then released; but the bell mechanism forms no part of my invention, and for that reason I have omitted to show the bell. Nevertheless, on account of the bell mechanism it has been necessary to devise a special construction of stop-collar 17 in order that its adjustments along the rocker-bar may be effected for substantially its entire length. The bell-hammer arm being attached to the under side of said rocker-bar it would offer an obstruction to the adjustment of the collar if the latter were constructed in the ordinary way. To obviate this difficulty, I have formed the said box or collar with a slot or opening 35 on its under side, which permits the said collar or slide to pass freely by the said bell-hammer arm when adjusted in either direction. At the right-hand end of the rocker-bar is another slide or collar 36 for arresting the return movement of the carriage and determining the amount of margin on the left-hand side of the paper. This slide or collar is constructed substantially like that arranged at the left-hand end of the rocker-bar and as illustrated in section at Fig. 8. On the return movement of the carriage the contact device 27 is adapted to strike the lug 37 on the slide 36 and thus effect the stoppage of the carriage. The rocker-bar may be tilted to enable the contact device 27 to pass over or beyond the lug 37 to enable printing to be done within the margin. The slide 36 is of course adjustable on the rocker-bar to stop the carriage at different points on its return movements just as the left-hand slide 17 is adjustable to stop the leftward movement of the carriage at different points. As far as the construction of the collar or slide is concerned, it is of course immaterial whether it is used in connection with a sliding and rocking bar or with a bar which is fixed.

The feed-rack 7 meshes with a pinion 38 on a shaft 39, which rotates in a fixed housing or

bearing 40 and which is provided at its opposite end with a box or collar 41, secured thereto by set-screws 42. The said box or collar contains a pair of oppositely-arranged spring-pressed pawls 43, which engage diametrically opposite teeth of a ratchet-wheel 44, attached to or formed integral with an escapement-wheel 45, both mounted loosely on the said shaft 39. The rack rotates the pinion, which, being fast on the shaft, causes the latter and its pawl-containing box to turn in unison, and during the advance of the carriage the pawls by their engagement with the teeth of the ratchet-wheel cause said wheel and the escapement-wheel to turn with the other members of the organism. During the return movement of the carriage the pawls slip over the backs of the teeth of the ratchet-wheel, and hence said wheel and the escapement-wheel may remain at rest; but the friction of said pawls on the teeth of said ratchet-wheel is sufficient to turn the escapement-wheel backwardly. To prevent this, I provide a hook or finger 46, which is pivoted at 47 on the dog-rocker 48 and is provided with a coiled spring 49, which tends to throw the upper free end of the hook or finger into engagement with the escapement-wheel. The free end of the hook stands normally between two teeth of the escapement-wheel and positively prevents it from rotating backwardly during the return movement of the carriage. This hook, however, being attached to the dog-rocker, has a vibratory movement during letter-space actions and is alternately withdrawn from and reengaged with the tooth-spaces of the escapement-wheel, so as to permit the latter to make its usual step-by-step rotatory movements in conjunction with the escapement-dogs 50 and 51, of which the former is the rigid or holding dog and the latter the pivoted spring-pressed stepping dog. This pivoted spring-pressed hook 46 has been devised as an improvement upon the construction shown in Webb's application, hereinbefore referred to. In that construction the finger or hook is made rigid or unyielding, and as a consequence the line-locking finger or projection (during that letter-space movement of the carriage at which the line-locking is to be effected) would collide either with the top of the member which is to be obstructed or with its side, according to the form of the mechanism, two forms being shown therein, and as a result thereof the mechanism would fail to be locked, or, in other words, the type might reach the paper on the platen. To overcome this objection in the mechanism, it has been necessary in the Webb construction to provide a certain amount of lost motion or a space between the locking-finger and the arm to be obstructed thereby equal at least to the extent of engagement of the tip or point of the hook with the escapement-wheel; but in practice it has been found that even with this provision there is a great liability of the type striking the paper after the escapement mech-

anism has been locked on account of the inherent spring or give to the various devices comprising the type-movement. It is desirable to have the hook engage the escapement-wheel as far or as deeply as possible; but with the prior construction the deeper the engagement the greater must be the space or lost motion, and hence the greater is the liability of the type printing after the line-locking devices have been actuated, because the arm to be obstructed, as 31, would have a greater movement, and as this is a part of the dog-rocker, which is connected to the type-movement, the type may consequently ascend during the entire movement of said arm 31 during the taking up of the lost motion; hence the nearer the type would be to the paper at the moment the arm 31 came into contact with the obstructing device.

By means of the pivoted spring-pressed hook or finger 46 I am enabled to effectually overcome all of the objections to the prior construction. In operation the tip or point of the hook rides against the backs of the teeth of the escapement-wheel during the rotative movement of the latter and instantly drops into a tooth-space at the termination of a letter-space movement in consequence of the pivoting of said hook and the presence of its spring. Owing to the fact that the said hook is yieldingly mounted on the dog-rocker it can never obstruct or limit the rearward vibration of said dog-rocker, which might be the case if the hook were rigidly mounted, and hence the dog-rocker will always vibrate far enough back to carry the rigid dog out of the escapement-wheel and the arm 31 far enough back to enable the obstructing-arm 30 to instantly pass in front of the same when the line-locking bar 1 is slid endwise. In other words, the yielding hook will always permit the arm 31 to go back far enough to let in the obstructing-arm, and hence there is no danger of collision between these parts. It is necessary that the arm 31 should have passed out of the path of the locking-arm 30 before the carriage has completed its movement, because the locking-arm 30 is actuated by the carriage. Owing to the fact that the pivoted hook may engage the escapement-wheel subsequently to the line-locking operation, it follows that the arm 31 need not be moved back any farther than is just necessary to enable the locking-arm 30 to come in front of it, which is not so where the rigid hook is employed, because in the latter case the arm 31 must move back an additional distance equal to the extent of engagement of the tip of the rigid arm. Another advantage of the pivoted spring-pressed hook over the rigid hook is that the friction of the hook against the sides of the teeth of the escapement-wheel is greatly reduced. In the case of the rigid hook the friction against the escapement-wheel is made excessive by the usual heavy dog-rocker spring and tends to retard the carriage, whereas with the use of the

lighter spring 49 the friction of the hook against the escapement-wheel is inappreciable as compared with that caused by the heavier or stronger dog-rocker spring.

5 The ribbon-moving mechanism will now be described.

The inking-ribbon 66 is moved lengthwise or from one spool 67 to the other by substantially the same means and in substantially the same manner as in the usual Remington machine. In the present case, however, novel means are provided for moving the ribbon crosswise or widthwise. Upon the fixed pivot or stud of the spring-drum 34 is mounted a beveled gear 68 and a ratchet-wheel 69, which are united to turn together. The pawl 70, pivoted on the spring-drum, takes into the said ratchet-wheel and turns it and the beveled gear during the forward movement of the carriage, but slips idly over said gear during the return movement of the carriage. The said beveled gear meshes with another beveled or miter gear 71, fixed upon a sleeve 72, which has a bearing in a hanger or support 73, depending from the top plate 3, and which sleeve at its opposite end is provided with a crank-arm 74, that has a pin 75 projecting toward the right. This pin enters a hole in another crank-arm 76, which by means of a collar and set-screw is made fast on a long power-shaft 77, arranged at the rear of the machine and extending transversely thereof. This shaft passes through said sleeve and through the beveled gear thereon and takes a bearing in said sleeve and in other suitable supports or hangers, and by means of the crank-arms and connecting-pin, which is elongated, the rotation of the beveled gear 71 on the sleeve is transmitted to the said long shaft 77, while at the same time the said shaft is capable of longitudinal or endwise sliding movements without losing its connection with the driving beveled gear on the sleeve. At near the right-hand end of said long shaft is a beveled pinion 78, which is adapted to engage with and disengage from a larger beveled gear 79 on the right-hand ribbon-spool shaft 80, and at near the right-hand end of said long shaft 77 is a like beveled pinion 81, adapted to engage with and disengage from a like larger beveled gear 82 on the left-hand ribbon-spool shaft 83. By means of these two pairs of beveled gears either ribbon-spool shaft may be rotated by the power transmitted from the spring driving-drum, and hence the ribbon may be moved longitudinally by winding on either spool in one direction or another, according to which pair of gears is in engagement. Each ribbon-spool shaft is adapted to turn in suitable bearings or supports 84, depending from the top plate, and on each shaft is mounted to rotate therewith a ribbon spool or reel 67. Means are shown for automatically reversing the longitudinal travel of the ribbon; but since said means do not form

any part of my invention I shall refrain from a description thereof.

The means for moving the inking-ribbon crosswise or transversely will now be described. 70

On the ratchet-wheel 69, which is driven by the pawl 70 on the spring-drum, is secured a pin or lug 125, which acts to lift the free end of a lever 126, carrying a pivoted pawl 127, adapted to act on a ratchet-wheel 128, fixed on a horizontal shaft 129, which carries or is formed with a worm 130, that is in engagement with a worm-wheel 131 on a vertical shaft 132. At the upper end of the vertical worm-wheel shaft 132 is secured a cam 133, having, as shown at Fig. 5, one half its edge smooth or of uniform rise and the other half formed with a series of steps 134, six steps being shown. The cam 133 acts on the short arm 135 of the bell-crank or two-armed link 136. The arm 135 is provided at its free end with an antifriction-roller for the edge of the cam to work against. The said link 136 has a vertical pivot 137 depending from the top plate, and the inner end of the longer arm of said link is pivotally attached at 138 to the rear end of a ribbon-frame or ribbon-spool carrier 139. To the opposite end of said ribbon-spool carrier or frame is pivotally attached at 140 the inner end of another link 141, which at its outer end is pivoted on a screw 142, depending from the top plate. This link 141 is provided with a spring 143, which acts to move the ribbon carrier or frame rearwardly, or, in other words, said spring acts against the said cam 133. The ribbon carrier or frame shown in plan view at Fig. 3 and thus supported on the pivoted links is provided with depending arms 144, which embrace the heads of the spool on the left-hand side of the machine, so that when the ribbon-carrier is moved in one direction by the cam 133 and in the other direction by the spring 143 the ribbon-spool and ribbon are caused to move in unison therewith. Removably attached to the ribbon-spool carrier 139 is a ribbon-guide plate or arm 145 quite similar to that shown and claimed in another application filed by me January 16, 1895, Serial No. 535,089, and its right-hand end is provided with two downwardly-extending fingers or arms 146, which embrace the heads or flanges of the right-hand spool, which slides freely on its shaft and in unison with the left-hand spool. 80 85 90 95 100 105 110 115 120

The ribbon-guide plate, which extends across from one spool to the other, is provided with a hook or bent portion 147, which clasps or embraces a bar or pin 148, mounted to turn in ears or lugs 149 at the upper portion of the ribbon-spool carrier 139, the said bar or pin being preferably flattened on one side, and the said hook-like part is preferably formed with a spring-tongue 150, which acts as a spring-catch. The bar or rod 148 is formed with two notches or cut-aways 151, against 125 130

which bears a flat spring 152, said spring operating to hold the hinge-pin and the ribbon guide or plate firmly in either of its two positions—that is, in its turned-down or working position and in its upturned or non-working position.

The operation of the mechanism for moving the ribbon crosswise, as illustrated, is as follows: When the pin or lug 125 on the ratchet-wheel 69 raises the pawl-carrying lever 126, the pawl 127 is vibrated to turn the ratchet-wheel 128 and worm 130, worm-wheel 131 and cam 133, and the latter acting on the bell-crank lever or link 136, the ribbon-carrier 139, the ribbon-spool, ribbon guide or plate, and right-hand ribbon-spool are all moved forward or toward the operator, but very slightly. When the ribbon has been moved substantially its whole width in a forward direction, it then travels rearwardly under the action of the spring 143, following the recession of the cam. The cam movement is intermittent and the movements take place at comparatively long intervals apart, and these cam movements when effected are so extremely small that the ribbon movement effected thereby is likewise extremely slight. Hence the ribbon moves crosswise very slowly and in such minute spaces as that practically the entire surface of the ribbon is utilized. The ribbon is moved forward when the smooth portion of the cam is in contact with the roller on the arm 135 and is moved backward when the stepped portion of the cam is working in contact with said roller. The object of stepping this portion of the cam is to cause the ribbon to step or move quickly sidewise a distance equal to about a type-face, thus using the ribbon in lines parallel to its length on the return or backward movement of the ribbon.

The object of using the oscillating links 136 and 141 is to greatly reduce the friction of the ribbon-carriers. As far as this feature of the ribbon-moving mechanism is concerned the cam may have smooth or continuous edges.

The devices herein shown and described for effecting rotative movements of the cam are the invention of Webb. As far as the stepped cam and the mode of mounting the ribbon-spool carrier are concerned any other mechanism for rotating the cam may be employed than that shown herein.

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

1. In a type-writing machine, the slide or collar adapted to a notched bar and comprising a spring-pressed lever having a detent, and a cam or eccentric having a handle for disengaging said detent by a movement in either direction of said handle.

2. In a type-writing machine, the slide or collar adapted to a notched bar, a lever pivoted to said slide or collar and having a spring and a detent, a cam or eccentric on said slide or collar for vibrating said lever and disengaging said detent, and a handle attached to said cam or eccentric.

3. In a type-writing machine, the combination of a notched bar, a slide or collar, a lever pivoted to the slide or collar and having a spring at one end and a detent at the other, a cam or eccentric on said slide or collar between said detent and the pivot of the lever and provided with a handle, and a pointer and a contact or stop.

4. In a type-writing machine, a box-like slide slotted on one side from end to end and comprising a spring-pressed lever pivoted thereto and having a detent, and a cam or eccentric on said slide and having a handle.

5. In a type-writing machine, a box-like slide slotted on one side from end to end, a spring-pressed detent, a cam or eccentric on said slide and having a handle, and stops for limiting the lateral movements of the handle.

6. In a type-writing machine, a box-like slide comprising a spring-pressed lever having a detent, a pivot having a flattened side to engage with said lever, and a handle attached to said pivot.

7. In a type-writing machine, the combination of a ribbon, a ribbon-spool, a ribbon-spool shaft, a ribbon-spool carrier, a pair of pivoted links pivotally connected to and supporting said ribbon-spool carrier, and means for moving the ribbon-spool carrier endwise.

8. In a type-writing machine, the combination of an inking-ribbon, a pair of ribbon-spools, a pair of ribbon-spool shafts, a ribbon-spool carrier for one of said ribbon-spools, a ribbon-plate attached to said carrier at one end and connected at its opposite end to the other ribbon-spool, a pair of pivoted links pivotally attached to said ribbon-spool carrier, a cam acting on one of said links, and means for turning said cam connected to the carriage-driving power.

9. In a type-writing machine and in a mechanism for moving the ribbon transversely, the combination of a carriage-driving drum carrying a lug or projection, a lever carrying a pawl, a worm-shaft carrying a ratchet-wheel adapted to be turned by said pawl, a worm-wheel in engagement with said worm-shaft, and a cam having one part of its periphery smooth and the other part formed with a series of steps.

10. In a type-writing machine, the combination of an inking-ribbon, a pair of ribbon-spools connected together, a pair of ribbon-spool shafts, and a ribbon-spool carrying a pair of pivoted links pivotally attached to said ribbon-spool carrier, an antifriction-roller on one of said pivoted links, a cam having a smooth edge and a stepped edge adapted to said roller, a worm-wheel and worm for turning said cam, and a pawl-and-ratchet mechanism for turning said worm.

11. In a type-writing machine, and in a mechanism for moving the inking-ribbon transversely in both directions, the combination of a pair of ribbon-spools connected together, a ribbon-spool carrier, a spring for moving said carrier in one direction, a pair

of pivoted links pivotally attached to said carrier, and a mechanism for moving the ribbon in the opposite direction consisting of a cam, a worm-wheel, a worm, and a pawl-and-ratchet mechanism.

12. In a type-writing machine, the combination of a ribbon, a pair of connected ribbon-spools adapted to travel endwise, a ribbon-carrier connected to one of said spools, a pair of pivoted links supporting the ribbon-carrier at their free ends, and means for reciprocating said links and ribbon-carrier.

13. In a type-writing machine, the combination of a ribbon, a pair of connected ribbon-spools adapted to move endwise, a pair of pivoted links, a bar, frame, or carrier connected to one of the ribbon-spools and attached to the free ends of said links, and means for reciprocating said links and ribbon-carrier.

14. In a type-writing machine, the combination of a ribbon, a pair of ribbon-spools connected together, a frame or carrier connected to one of said spools, a pair of pivoted links pivotally attached to said frame or carrier, a cam acting against said links to move them in one direction, and a spring acting against said links to move them in the opposite direction.

15. In a type-writing machine, the combination of a ribbon, a pair of ribbon-spools, a ribbon-guide plate having a fork, a ribbon-spool carrier having a hinge-pin, and a spring acting to hold said pin in either of two positions.

16. In a type-writing machine and in a cross-wise ribbon movement, a ribbon-spool adapted to slide endwise on a shaft, and a ribbon-spool carrier or frame connected to said ribbon-spool and mounted on and supported by pivoted links.

17. In a type-writing machine and in a cross-wise ribbon movement, the combination of an inking-ribbon, a ribbon-spool, a ribbon-spool carrier, and a cam having a smooth portion and also a portion provided with a series of steps and operating in substantially the manner set forth.

18. In a type-writing machine and in a cross-wise ribbon movement, the combination of an inking-ribbon, a ribbon-spool, a ribbon-spool carrier, a cam having a smooth portion and also provided with a series of steps adapted to operate substantially as described, means for rotating said cam, and a spring acting in opposition to said cam.

19. In a type-writing machine, the combination of a carriage having a feed-rack, a shaft carrying a pinion and a loose escapement-wheel provided with a ratchet-wheel, a pawl mechanism attached to said shaft and in engagement with said ratchet-wheel, escapement-dogs, and a spring-pressed hook or lock movable with the said dogs to arrest the backward rotation of said escapement-wheel.

20. In a type-writing machine, the combination of a carriage having a feed-rack, a shaft carrying a pinion and a loose escapement-wheel provided with a ratchet-wheel, a pawl mechanism attached to said shaft and in engagement with said ratchet-wheel, escapement-dogs, a spring-pressed hook or lock movable with said dogs to arrest the backward rotation of said escapement-wheel, a bar adapted to slide endwise when struck by a contact on the carriage, a locking-arm put into action by said endwise movement of said bar, and an arm or projection attached to the dog-rocker.

21. In a type-writing machine, the combination with a line-locking mechanism substantially as described, and an escapement mechanism substantially as described comprising an escapement-wheel, of a dog-rocker carrying escapement-dogs and also carrying a pivoted or yielding spring-pressed hook or lock adapted to cooperate with said escapement-wheel in substantially the manner set forth.

Signed at New York city, in the county of New York and State of New York, this 6th day of February, A. D. 1897.

LOUIS P. DISS.

Witnesses:

JACOB FELBEL,  
K. V. DONOVAN.