April 2, 1929. H. L. WOOD 1,707,502

TYPEWRITING MACHINE

Filed Sept. 2, 1925 6 Sheets-Sheet 1

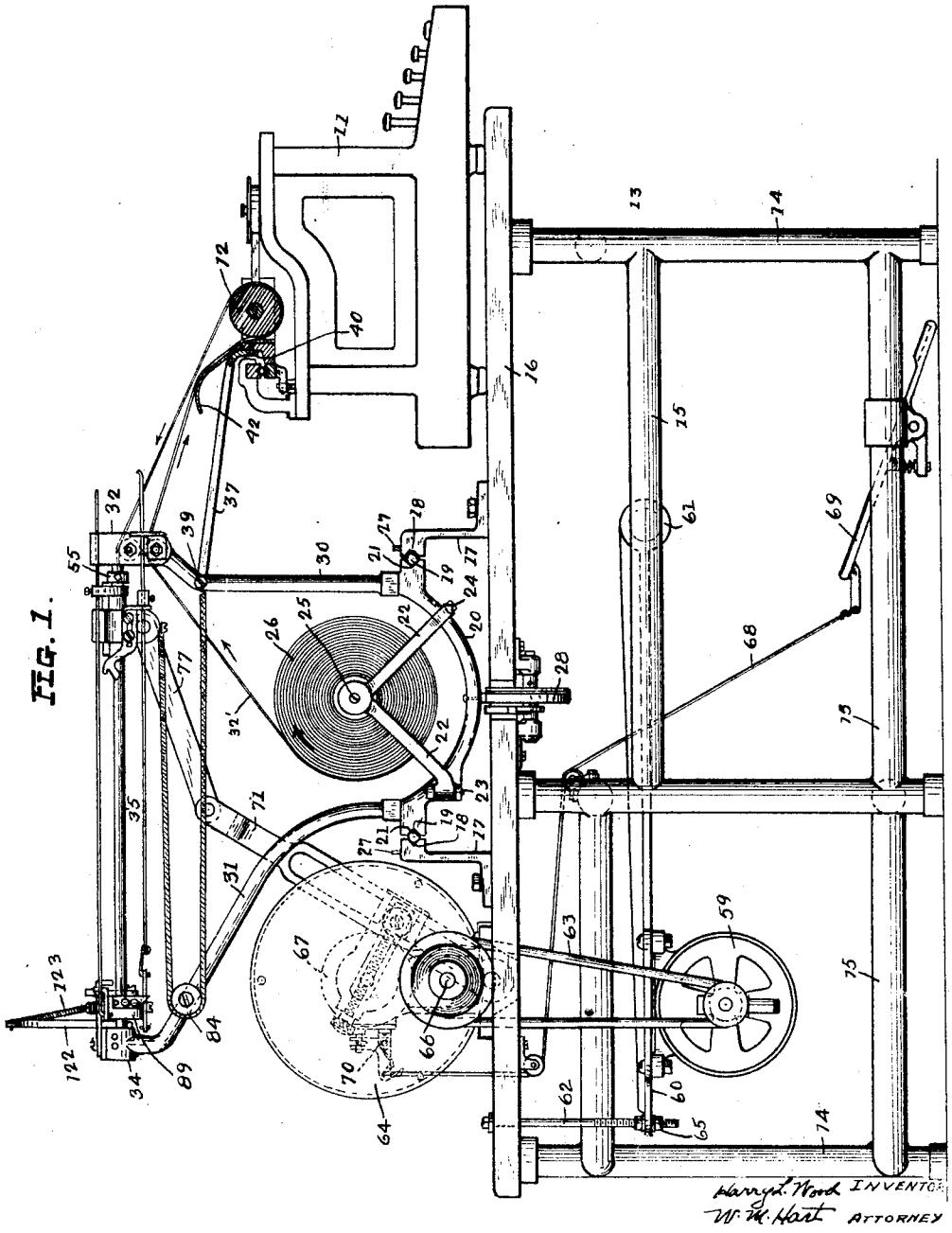


FIG. 1.

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TYPEWRITING MACHINE

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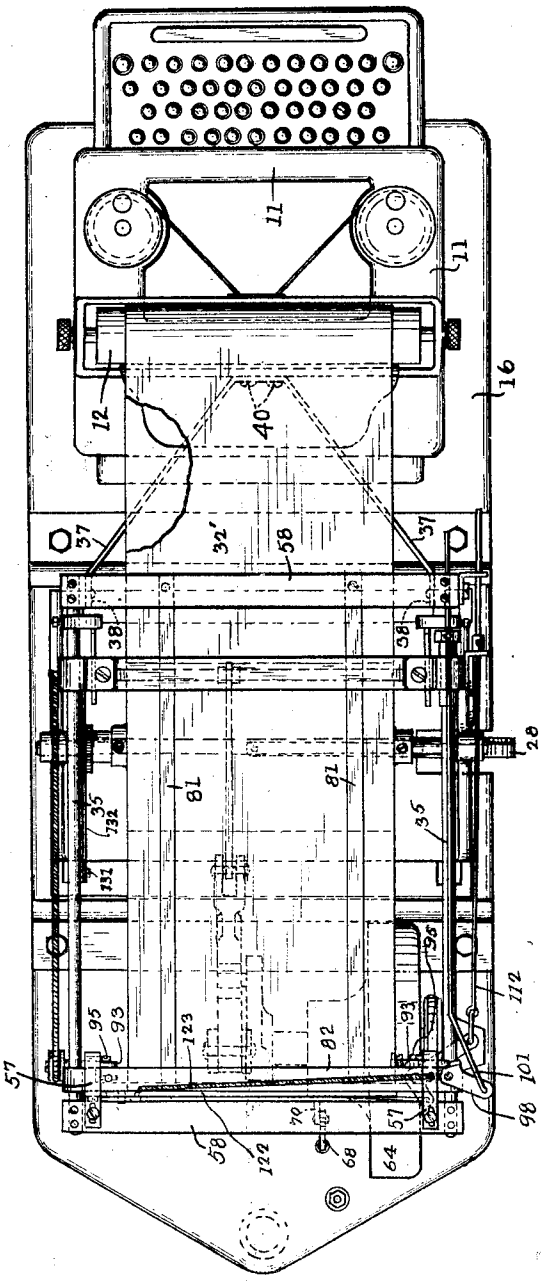


FIG. 2.

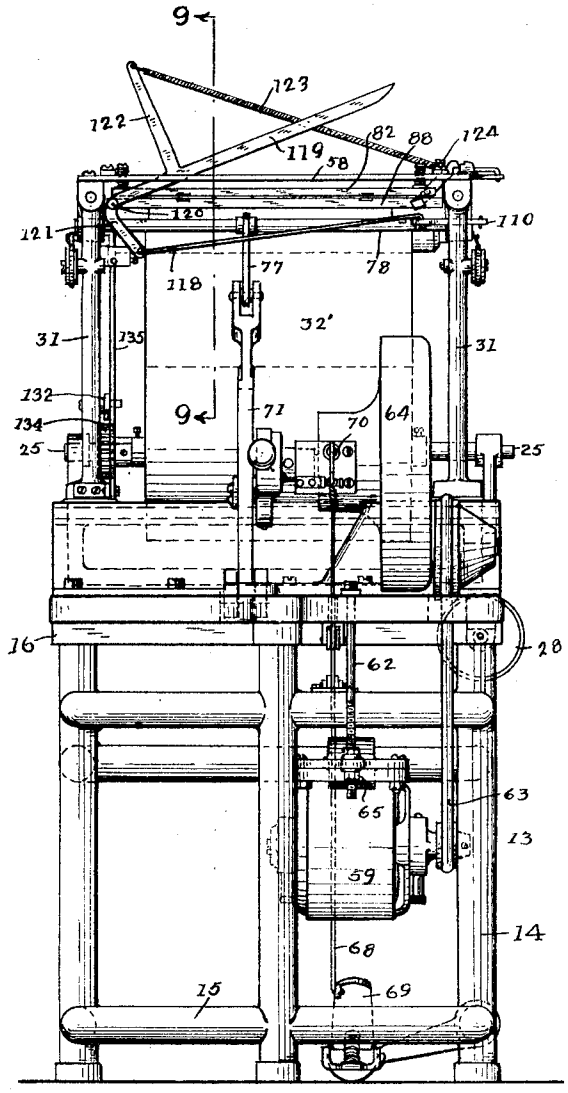
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TYPEWRITING MACHINE

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FIG. 3.



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TYPEWRITING MACHINE

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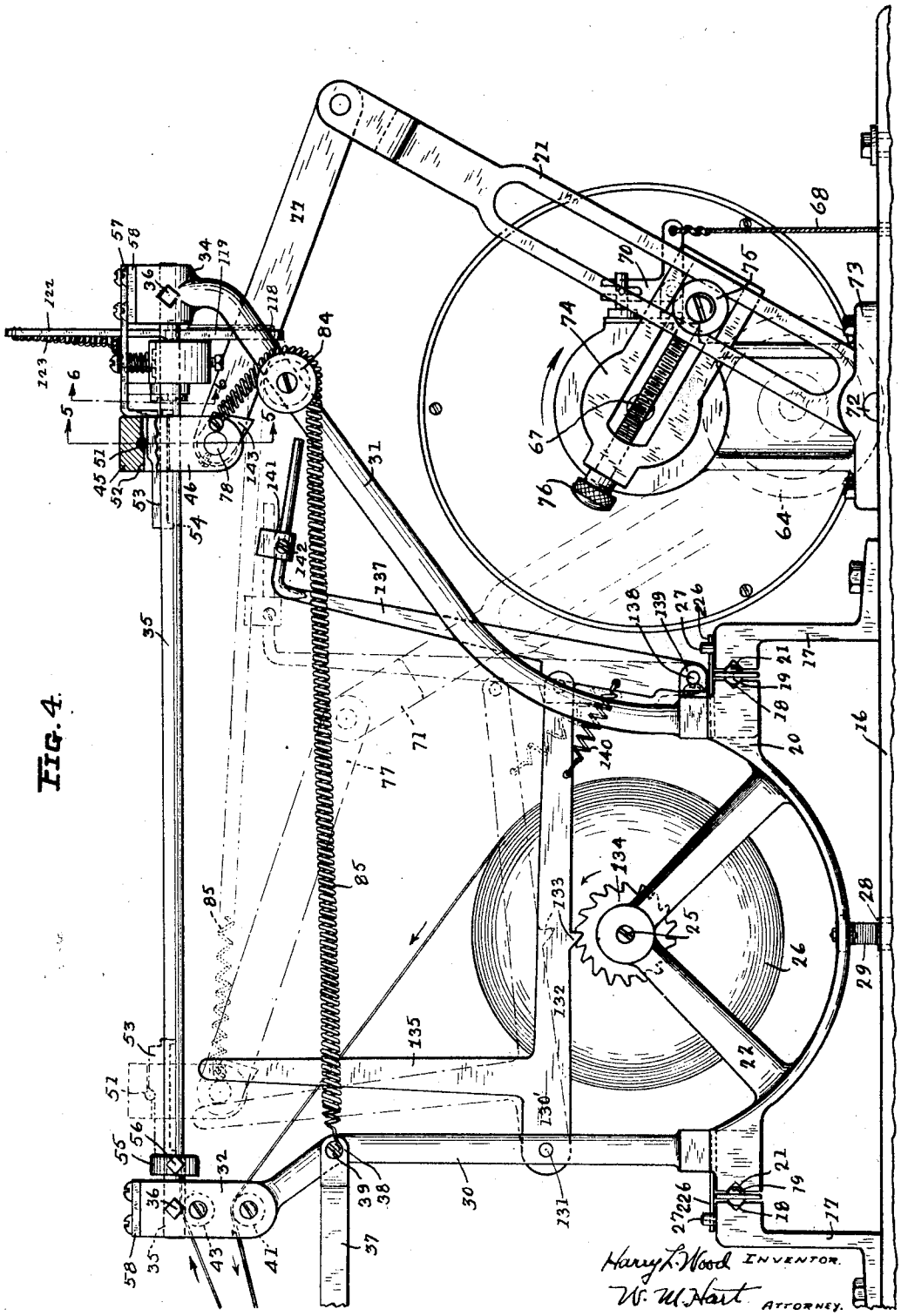


Fig. 4.

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TYPEWRITING MACHINE

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FIG. 5.

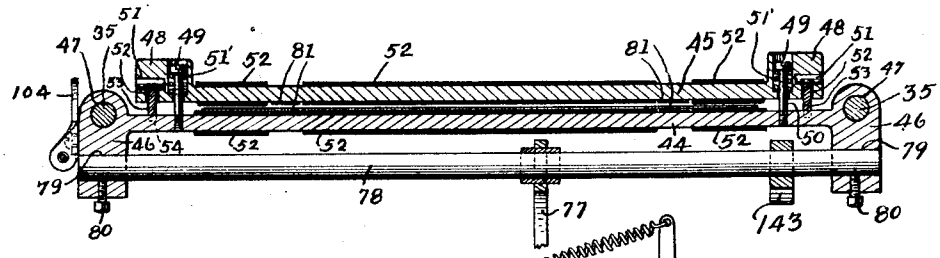


FIG. 6.

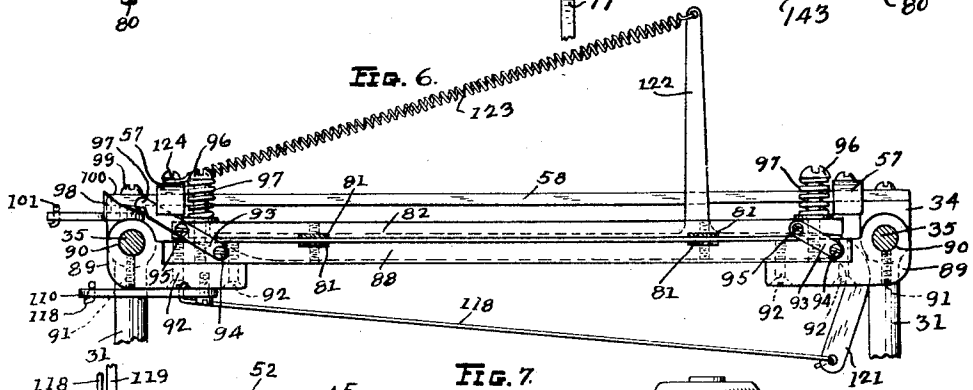
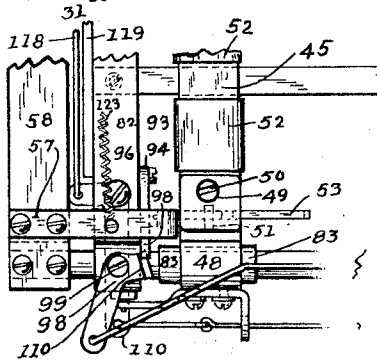


FIG. 7.



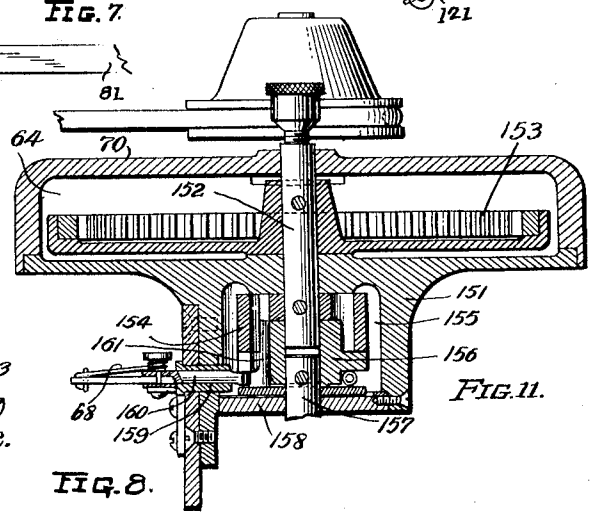


FIG. 11.



FIG. 12.

FIG. 8.

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TYPEWRITING MACHINE

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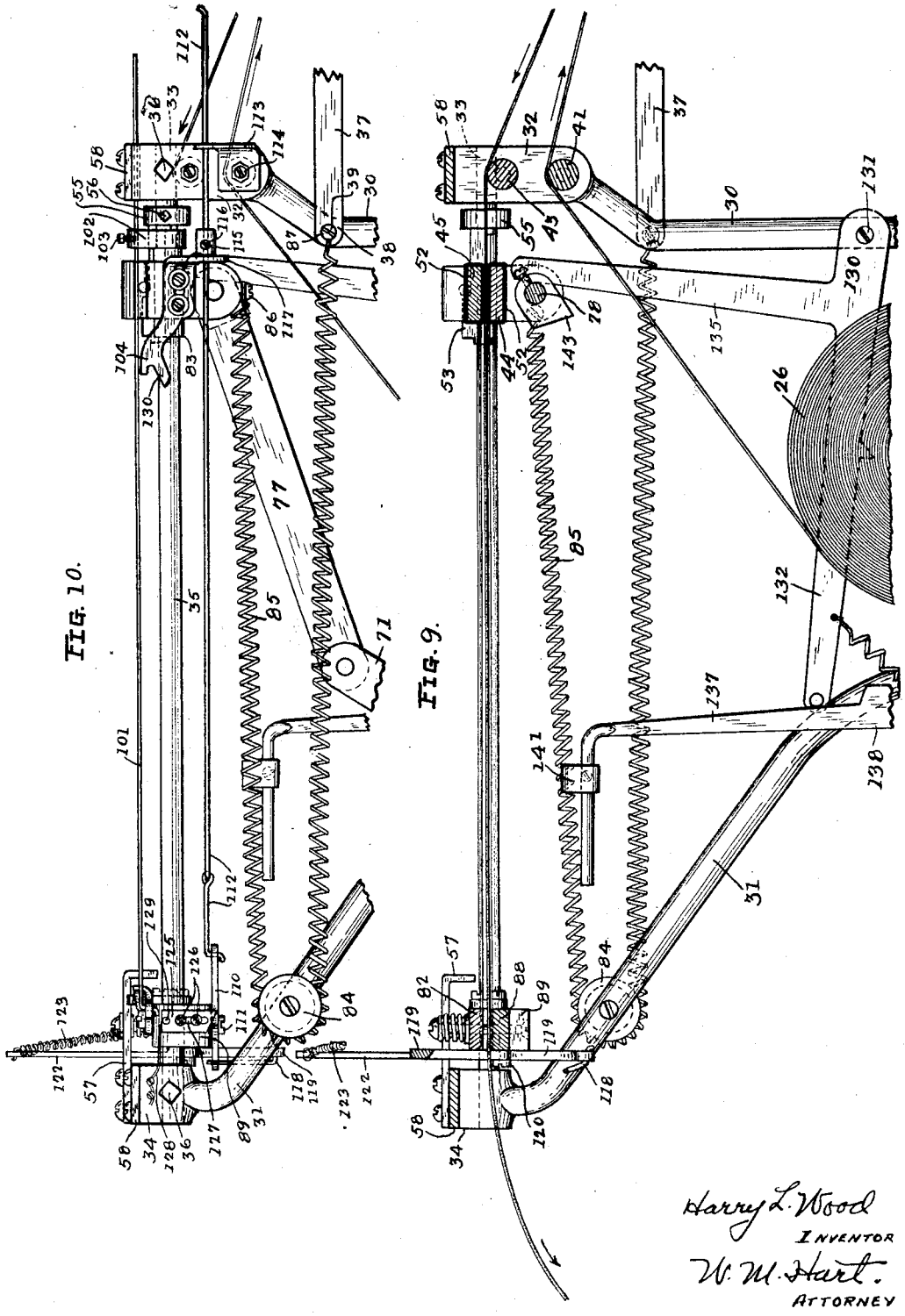


FIG. 10.

FIG. 9.

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Patented Apr. 2, 1929. 1,707,502

UNITED STATES PATENT OFFICE.

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TYPEWRITING MACHINE.

Application filed September 2, 1925. Serial No. 54,001.

This invention relates to typewriting machines, and more particularly to apparatus for systematically feeding a continuous strip of paper over the platen and severing the same into desired lengths after a typing operation.

One of the objects of the invention is to provide automatically operating mechanism for systematically feeding successive lengths of a continuous strip of paper over a typewriter platen which is under the control of the operator so that each succeeding length of paper can be quickly moved into position on the platen for a typing operation.

Another object of my invention is to provide mechanism which will automatically control the movement of a continuous strip of paper over a typewriter platen so that manual feeding of the paper before and after a typing operation is eliminated, thereby speeding up the output of an operator.

A further object of my invention is to provide mechanism for automatically feeding similar successive lengths of paper from a roll into desired position on a typewriter platen, and for severing the preceding length of paper previously fed over the typewriter platen.

Another object of my invention resides in the mechanism I provide for gripping and feeding desired lengths of paper over a platen from a roll.

Another object of my invention is to provide a shearing mechanism which will be actuated at the completion of each paper feeding operation and which is adjustable to shear a continuous strip of paper into desired length which corresponds to the length of paper fed on each operation of the feeding mechanism.

To the above and other ends my invention consists in the features of construction, combinations of devices, and arrangements of parts hereinafter described and particularly pointed out in the claims.

In the accompanying drawings, wherein one embodiment of my invention is shown, Figure 1 is a side elevation of the apparatus associated with a typewriting machine; Fig. 2 is a plan view of the same; Fig. 3 is a rear end view of the same; Fig. 4 is a side elevation of the attachment taken at the side opposite to that shown in Fig. 1; Fig. 5 is a vertical sectional view taken on line 5—5 of Fig. 4 illustrating the paper gripping members; Fig. 6 is a vertical sectional view taken on line 6—6 of Fig. 4 illustrating the shearing mechanism; Fig. 7 is a fragmentary enlarged plan view of Fig. 8 showing the mechanism for actuating the knife and the opening and closing of the grippers; Fig. 8 is a side elevation of the mechanism shown in Fig. 7; Fig. 9 is a vertical section taken on line 9—9 of Fig. 3 illustrating the paper feeding and shearing mechanisms; Fig. 10 is an enlarged fragmentary side elevation of the apparatus shown in Fig. 1, illustrating the paper feeding and shearing mechanisms; Fig. 11 is a sectional view of a clutch employed in an embodiment of my invention; and Fig. 12 is a perspective view of the pin used in the clutch of Fig. 11.

Referring now to the drawings by characters of reference, 11 represents a conventional form of typewriting machine which is provided with a platen 12 over which paper is moved into position to receive character impressions. A suitable table 13 is provided to support the typewriting machine and the apparatus which forms the subject of this invention, and such table consists of legs 14, which are connected by braces 15 and a platform or top 16.

A pair of parallel spaced supporting brackets 17 extend transversely of the top 16 and are secured thereto adjacent the rear of the typewriting machine. The brackets 17 are provided on their inner upper edges with a raceway 18 which receive ball bearings 19 and a carriage 20 the sides of which extend adjacent the brackets and are provided with raceways 21 within which the bearings 19 are seated. The carriage 20 is in the form of a cradle and is provided at opposite ends with roll carrying arms 22. The arms 22 at one end of the cradle are formed integrally therewith, while the arms at the other end of the cradle are pivoted at 23 to the cradle and are removably secured at 24 so as to permit movement thereof relative to the cradle. The shaft 25 of a roll of paper 26 is secured in bearing carried by the arms 22, and the roll can be readily renewed by swinging the pivoted arm 22 from the cradle on its pivot. It will be seen that the brackets 17 are stationary on the table and that the cradle is free to move relative thereto transversely of the table. A lug 226

projects from each side of the cradle and pins 27 are secured adjacent the ends of the brackets to provide stops with which the lugs 226 engage to limit the movement of the cradle on the brackets. A suitable tension device 28 is secured upon the table beneath the cradle, and a flexible member 29 extends therefrom and is secured to the cradle. Such tension device being formed to assist in the movement of the cradle so that the weight of the roll of paper and mechanism carried thereby will not create an undue drag on the typewriter platen shifting mechanism with which the roll carrying cradle is connected.

The cradle 20 provides a support for a roll of paper, as previously described, and also carries a frame which supports the paper feeding and shearing mechanisms. A pair of standards 30 and 31 are secured to the cradle adjacent each end thereof and extend upwardly therefrom. The upper ends of the front standards terminate in housings 32 in which bearings 33 extend and the rear standards terminate in bearings 34 arranged in the same horizontal plane with the bearings 33. The bearings 33 and 34 of each pair of standards are in alignment and rods 35 are carried thereby in parallel relation, and are secured rigidly with the frame standards 30 and 31 by set screws 36. The frame also includes transversely extending bars 58 which are secured across the tops of the bearings 34 and the housings 32. The front standards 30 are secured to the movable platen carriage by a rigid connecting member 37, having its ends 38 secured to the standards 30 by screws 39 and its central portion secured to the platen carriage by screws 40, as shown in Figs. 1 and 2 of the drawings. It will be seen that the cradle, frame and mechanism carried thereby will be moved integrally with the platen carriage, so that the paper and mechanism for feeding the same will be moved with the platen when a line of typing is in progress.

The standards 30 and 31 are separated so that a desired width of paper can be moved therebetween. A roller 41 is mounted intermediate the housings 32, and the paper web 32′ from the roll 26 is passed over such roller in its movement to the guide apron 42 secured to the platen carriage. A roller 43 is secured intermediate the housings 32, above and parallel to the roller 41, and the paper extends thereover after passing around the platen from the guide apron. When a roll of paper is inserted in the arms 22 carried by the cradle 20, the operator draws the free outer end of the paper over the roll 41, then over the guide apron 42 and around the platen 12, and then back over the roller 43 whereupon gripping mechanism is applied.

The gripping mechanism is carried by the frame secured upon the cradle 20, and consists of a reciprocable device which grips during feeding movement and releases during the return movement, and a relatively stationary device which grips the paper during the return movement of the reciprocable feeding device and releases during the feeding operation thereof.

The feeding gripper mechanism is slidably mounted upon the parallel rods 35 and is arranged to move a length of paper over the platen during each feeding operation. Such paper feeding gripping device is comprised of a pair of relatively reciprocable bars 44 and 45 which extend intermediate the shafts 35 and are reciprocably mounted relative thereto. The lower bar 44 is provided with a housing 46 at each end having apertures 47 therein through which the shafts 35 extend. The upper gripper bar 45 is of less width than the lower gripper bar and is arranged in alignment therewith. The ends 48 of the upper bar are enlarged and are provided with apertures 49 through which screws 50 extend and are screwed into the lower gripper bar. The upper bar is vertically reciprocable relative to the lower bar and the screws, and coil springs 51′ are provided around the screws, within the apertures 49, and bear against the heads of the screws and the upper bar to normally create sufficient tension to hold the upper bar tightly against the lower bar. Rubber strips 52 are secured around the bars 44 and 45, in spaced relation, to prevent slippage of paper to be secured between the bars.

As previously related, the bar 45 will be normally pressed tightly against the bar 44 by the springs 51′ to clamp the web of paper therebetween, and cam mechanism is provided to raise the upper bar at the completion of the feeding movements and during the return movement to the succeeding gripping and feeding position. The under face of each end 48 of the upper bar member 45 is slotted parallel with the rods 35 exteriorly of and adjacent the screws 50, and a pin 51 extends transversely across such slots 52. A member 53 extends through each of the slots 52 and is provided with an upper cam face which engages with the pins 51 therein, while the lower face of the cam member is straight and bears upon the upper face of the lower bar member 44. The cam members are of greater length than the width of the bars 44 and 45 and their ends are provided with depending flanges 54 to limit the endwise movement of the cam members in the slots through their engagement with the front and rear edge of the lower bar 44. The members 53 are slidably mounted in the slots 52, and by moving the members into a forward or rear position with respect to the bars 44 and 45, the upper cam surfaces will

engage with the pins 51 and raise the upper bar 45 against the action of the springs, when in one position or will permit the springs to press the upper bar tightly against the lower bar, when in another position.

The cam members 53 will be automatically shifted in the slots 52 against the pins 51, and collars 55 are adjustably secured upon one end of the rods 35 by set screws 56, while arms 57 are secured to the frame member 58 extending intermediate and secured to the housings 34. As the bars 44 and 45 move forwardly the forward ends of the members 53 will strike the depending portion of the arms 57, and will be stopped prior to the completion of the forward movement of the bars, so that when the bars reach the limit of their forward reciprocation the cam members will be in position relative to the pins 51 to allow the springs to clamp the paper extending from the roller 43 against the bar 44. As the gripper bars are moved rearwardly in a horizontally plane, the cams remain in their last position until they strike the collars 55, and therefore the bars will grip, and pull the paper therewith the distance of their travel. The collars are arranged so that the cam members 53 will engage therewith just prior to the completion of the feeding movement of the bars. Engagement of the cam members with the collars 55 will shift their relation with the pins 51, as the bars continue to move a short distance, and due to such movement of the pins 51 relative to the cam members, the upper bar 44 will be raised releasing the paper. The bars will remain separated as they move to the forward position to grip another length of paper prior to a feeding movement, as the cam members retain their last position until they strike the arms 57 at the forward end of the frame.

The feeding gripping bar members 44 and 45 are reciprocated by mechanism which is associated with a motor 59 which is carried by a platform 60 secured to the table 13. One end of the platform is pivoted to the table at 61 while the other end of platform is carried by a bolt 62 depending from the top of the table. A belt 63 extends to reduction driving gearing 64 and the belt is tightened by adjustment of nuts 65 which secure the end of the platform with the bolt 62. The reduction gearing extends intermediate the shaft 66 driven by the belt and a driven shaft 67 and a suitable clutch mechanism is provided for connecting or disconnecting the mechanism intermediate the shafts 66 and 67. The clutch mechanism 70 of the type disclosed in my co-pending application Ser. No. 54,000 filed August 28, 1925, can be operated by a rod 68 connected to a pivotally operated treadle 69, and can be pressed down to transmit power and will be self-releasing after each actuation as it will move back automatically to inoperative driving relation. Said clutch, as best shown in Fig. 11 of the drawings, preferably comprises a gear casing 64 having a projecting portion 151, a shaft 152 journalled in the casing, an internal ring gear 153 keyed to one end of the shaft and a clutch element 154 keyed to the other end of the shaft and disposed in the recess 155 of the projecting portion 151. A scond clutch element 156 is keyed to a short shaft 157 which shaft is journalled in an end wall 158 of the gear casing. The side of the projecting portion of the gear casing is apertured at 159 into which a dog 160 projects and is adapted to interconnect the clutch elements 154 and 156. Said pin 161 may be oscillated by the dog 160 to effect a connection between the clutch elements 154 and 156 or to oscillate the same in an opposite direction to disconnect the clutch elements. The clutch is of such a type that it will automatically disconnect the power drive upon each reciprocation of the feeding bars 44 and 45.

A lever 71 is pivotally mounted at its lower end upon a shaft 72 mounted in a bracket 73 secured upon the table 13. The lever 71 extends adjacent one end of the shaft 67 and is pivoted in the same vertical plane therewith. An eccentric arm 74 is secured to the end of shaft 67 and a bearing 75 is adjustably secured to the eccentric arm by the bolt 76. The upper end of the lever 71 is pivotally connected to one end of a link 77, while the other end of such link is loosely mounted on the shaft 78. The shaft 78 extends through apertures 79 in the housings 46 at the ends of the lower gripper bar 44 and is secured therewith by the set screws 80.

It will be seen that rotation of the shaft 67 will cause the bearing 75 to rotate and being slidably mounted in the slot in the lever 71, it will rock or oscillate the lever 71 on its pivot 72, and such movement of the lever 71 will be transmitted to the link 77 which will reciprocate the gripping members through its connection with the shaft 78. By adjusting the bolt 76 the bearing 75 will be moved relative to the axis of the rotation of the shaft 67, and the rocking movement of the lever 71 can thus be varied to regulate the reciprocal movement transmitted to the feeding gripping bars 44 and 45, thereby regulating the length of paper fed from the roll during the feeding operation.

This machine is adapted in one of its uses to be utilized for filling in the names and addresses on form letters and the like where blank lines are to be inserted by the operator of a typewriter, and in such use the reciprocating gripping bars are operated the desired distance by the lever 71 stroke so as to feed the paper in desired relation on the platen for typing by the operator of the

typewriter. When more than one line is to be typed the platen can be rotated manually in the usual manner and the slack in the web 32′ will lie intermediate the gripping bars 44 and 45 and the platen, so that it will not interfere with the succeeding feeding operation.

It will be seen that the link 77 remains stationary relative to the transverse movement of the cradle and the paper gripping mechanism while in any of its transversely adjusted positions. Pairs of paper supporting strips 81, preferably formed of ribbon metal, extend longitudinally of the supporting frame carried by the cradle 20 and are secured at one end to the underside of the forward frame member 58 and at the other end to the under side of the upper relatively stationary gripper member 82. The metal strips 81 extend intermediate the rubber strips 52 on the bars 44 and 45 and serve as a support for the web of paper which is moved over the frame. The bar 44 is provided with extended bearing portions 83, adjacent the ends of the apertures 47 therein, through which the rods 35 extend. To insure that the bar 44 will not bind at either end on the rods 35 during reciprocation, equalizing mechanism is provided. A pulley 84 is secured to each of the frame standards 31, and a coiled tension spring 85 extends around each pulley. The springs are secured at one end to the enlarged ends 46 of the bar 44 by screws 86 and at the other end to the front standards 30 by screws 87. The tension of the springs at opposite sides of the bar 44 will assist in maintaining the bar so that it will slide freely on the rods 35 when reciprocated.

Gripper members 82 and 88 are mounted upon the rods 35 and are adjustable thereupon so that they can be positioned adjacent the rear position of the variable reciprocable movement of the feeding grippers 44 and 45. The grippers 82 and 88 are arranged to be automatically actuated to grip the web of paper, while the reciprocating feeding grippers are released, and thus secure the web of paper during the return movement of the feeding grippers.

The lower gripper bar 88 extends substantially parallel with the gripper bar 44, intermediate the rods 35 of the frame, and is secured at its ends by screws 92 upon bearing members 89. The bearing members 89 are provided with apertures 90 through which the rods 35 extend and set screws 91 are associated therewith to secure such bearing members in desired longitudinal position on the rods. The upper stationary gripper bar 82 lies parallel with the lower bar 88 and is supported in such relation by toggle links 93 adjacent each end. The toggle links are secured at one end to the front side of the bar 88 by screws 94 and at the other end to the front side of the upper bar 82 by screws 95. The bar 82 is provided adjacent each end with vertically extending apertures through which bolts 96 extend, such bolts being screwed into the lower bar member 88. The upper bar gripper 82 is reciprocable vertically and coil springs 97 are provided around the bolts 96 and bear at their ends against the upper side of the upper gripper member 82 and the head of the bolts, thus creating a tension sufficient to normally move the upper gripping member 82 tightly against the lower gripping member 88.

One of the toggle members 93 terminates in an extension 97 which extends beyond the gripper bars 82 and 88. A bell crank member 98 is pivoted upon the housing 89 beneath the extension 97 of the toggle member, by the screw 99, and a cam face 100 is provided upon the bell crank 98 to actuate the toggles by engagement with the toggle extension 97. A rod 101 is connected to the bell crank and extends forwardly of the supporting frame substantially parallel with the rod 35 and is secured adjacent the forward end of the frame in a collar 102, which is slidably mounted upon one of the rods 35, by a set screw 103. The cam 100 and the toggle extension 97 are so related that when the collar 102 to which the connection 101 is secured is in its forward sliding position, the cam will engage the toggle extension and operate it to raise the upper bar gripping member 82 from the lower gripping member 88. When the reciprocating gripping members move forwardly the stationary grippers will clamp the web of paper therebetween, and as the bearing 83 strikes the collar 102 it will move it therewith and also the connection 101 which in turn will swing the bell crank 98 and cause the cam 100 to engage and raise the projecting end 98 of the toggle, which will raise the upper bar member 82 therewith. It will be seen that the mechanism described for raising the gripper 82 is timed so that it operates at the completion of the forward movement of the reciprocating grippers, and simultaneously with the movement of the cams 53 which effects gripping of the paper web by the reciprocating gripping mechanism as previously described. The cam 100 and the toggle remain in position effected by the forward movement of the collar 102 during the rearward movement of the reciprocating mechanism, and a pawl 104 secured to the side of enlarged end 46 of the lower reciprocating gripper 44 is arranged to engage the bell crank and swing it so that the cam 100 is released sufficiently to permit the springs 97 to force the upper gripper bar 82 tightly against the web of paper, where it remains during the return movement of the reciprocating gripper members and until the collar 102 is again moved forwardly.

It will thus be seen that the stationary and reciprocating gripping mechanism will grip the paper alternately, so that it is held by one or the other at all times. It will also be seen that the reciprocating grippers will engage the web of paper, move it a desired length, usually the length of a sheet to be later severed, with the stationary grippers released, whereupon the stationary grippers engage the web of paper adjacent the point engaged and moved by the reciprocating grippers, and hold the paper while the reciprocating grippers move forwardly to engage the succeeding length of the web to be moved. When similar letters are printed upon a continuous roll of paper, the paper is first positioned so that the blank address and names to be typed will be in the proper relation on the platen of the typewriting machine, and the lever 71 is set with the bearing 75 so that the stroke of the reciprocating grippers will be the length of the sheet of the letters to be severed. The stationary grippers are then set to lie adjacent the reciprocating grippers at the completion of their feeding stroke and the collar 55 is set in proper relation to actuate the cams 53 at the proper time.

A shearing mechanism is actuated by the mechanism for reciprocating the feeding grippers, and is timed in its action to sever the continuous web of paper projecting at the rear of the stationary grippers after each feeding operation.

A bell crank 110 is pivotally secured to the under side of the housing 89, in a plane below the bell crank 98, by a stud 111. A wire connection 112 is secured at one end to one arm of the bell crank 110 and extends parallel with the connection 101 along one side of the movable frame and extends through a plate 113 secured to the side of one of the frame standards 30 by a stud 114. A collar 115 is secured by set screws 116 to the wire 112 and provides an abutment with which a downturned flange 117 of the pawl member 104 engages. A stiff wire connection 118 extends across the rear end of the frame and is connected to the other arm of the bell crank 110.

A knife member is pivotally secured by a stud 120 to the rear side of the lower stationary gripper bar 88 and adjacent one end thereof. The pivoted end 121 of the knife member is angular in form and the wire 118 is secured to the lower end thereof. The knife member is preferably integral in form and includes a cutting blade 119 and an upwardly extending arm 122. The blade is pivotally connected with the stationary gripper members 82 and 88 so that it can be moved relative to the rear faces thereof and cooperates therewith to shear the web of paper transversely at the point where it projects rearwardly from the gripping members. A coil spring 123 is secured at one end to the upper end of the knife arm 122 and at other end to one of the members 57 by a screw 124, and normally maintains the knife blade in a position above the stationary gripping members with which it cooperates.

When the reciprocating gripper members 44 and 45 approach their forward position, the flange 117 of the pawl 104 secured with the gripper bar 44 will engage the collar 115 and move it therewith. The movement of the collar toward the front of the machine will move the wire connection 112 therewith and will swing the bell crank 110 on its pivot, thereby operating the wire connection 118 to move the knife blade downwardly, against the tension of the spring 123, across the rear end adjacent faces of the gripping members 82 and 88 which are holding the paper and thus shear the web of paper projecting beyond the stationary gripping members. It will be seen that this shearing operation is arranged to be automatically performed by the movement of the reciprocating gripping member 44, and that it is timed to operate as the gripping member 44 is returning to a forward position and while the paper is gripped between the bars 82 and 88.

The bell crank when swung to actuate the knife passes under a stop member 125 which is provided with a lower angular edge and is slidably secured to the housing 89 by studs 126 which extend through a vertically arranged slot 127 formed therein. A spring 128 is coiled around a stud 129 screwed into the side of one of the bearings 34 and bears against the top of the stop member 125 creating a downward tension thereupon. An arm of the bell crank 110 will force the stop member 125 upwardly when it is swung by the forward movement of the wire 112 to operate the knife, and after it passes thereunder, the spring will force the stop member to its lower position so that the bell crank is prevented from returning to its former position. The stop member is provided with a pin 129 extending from one side thereof, and the pawl member 104 is provided with an angular face 130 which engages under the pin and raises the stop member when the pawl moves rearwardly with the reciprocating gripping members, thereby releasing the bell crank 110 so that the spring 123 will move the knife to its uppermost position, so that it can be actuated by the next return movement of the reciprocating gripping mechanism. The knife and its operating mechanism are carried by the transversely movable frame on which the gripping and feeding mechanism are supported, and that the operation of the knife is automatic and timed to operate after each paper feeding operation.

Mechanism is provided to engage the roll of paper after each feeding operation so that

there will be no slack to interfere with the feeding operations. A bell crank lever 130' is pivoted to one of the standards 30 of the frame by the stud 131 and the lower leg 132 thereof is provided with a pawl 133 which is arranged to engage with the teeth of a ratchet 134 secured to the shaft supporting the roll of paper. An upwardly extending arm 137 is pivotally secured at its lower end upon a shaft 138 which is secured in brackets 139 extending from the base of one of the standards 31. The arm 132 is held in contact with one side of the arm 137 by a spring 140 which is connected at its ends to such arms, and the upper end of the arm 137 is bent and has a collar 141 adjustably secured thereon by a set screw 142. The collar extends into the path traversed by the reciprocating gripper members, and a cam member 143 is secured to the shaft 78 beneath the gripping member 44 to engage with the collar 141 during a portion of its reciprocable travel and thereby rock the arm 137 to allow the lever 132 to drop to a position where the pawl 133 will engage with the ratchet 134 and prevent rotation of the roll of paper. As the reciprocating gripping members 44 and 45 move forwardly, the shaft 78 will engage the upper end of the arm 135 of the bell crank 130' and will carry it therewith and thus rock the bell crank so that the pawl is raised from the ratchet 134 thus permitting the paper to unroll as the gripping members pull a length of paper therewith during their feeding movement. As the gripping bar 44 approaches the rear position, the cam member 143 will engage the collar 142 on the arm 137 and swing the arm on its pivot in a direction to allow the pawl 133 of arm 132 to engage the ratchet 134. The collar is adjustable so that it can be properly positioned relative to the movement of the shaft 78, so as to drop the pawl into engagement with the ratchet immediately upon the completion of each paper feeding operation, and thus prevent the momentum of the feed operation from unwinding the paper from the roll intermediate the feeding operations. The spring 140 will retain the pawl in engagement with the ratchet until the arm 135 is again rocked by the engagement therewith of the shaft 78 just prior to each feeding operation. During the return movement of the bar gripper 44 the shaft 78 and cam 145 will clear the collar 141. It will be seen that the roll controlling mechanism will operate automatically to secure the roll intermediate the feeding operations, and to release the roll during the feeding operations.

Assuming that the motor is running, the operator can press down on the treadle 69 which will operate the clutch 70 to connect the speed reduction gearing to drive the lever 71, the clutch being arranged to oscillate the lever 71 one full movement whereupon it is self releasing. The full movement of the lever 71 will reciprocate the grippers 44 and 45 to feed a length of paper from over the typewriting machine platen whereupon the paper web remains stationary until the operator again throws in the clutch. Between the feeding operations the operator can type upon the portion of the paper on the platen, and the paper can be manually fed over the platen if typing is desired on successive lines.

It will be seen that one operation of the lever 71 will automatically feed the paper a definite length from the roll, and that the reciprocating gripping members will automatically actuate the stationary grippers to open and close, will operate the knife, and the roll control mechanism. It will also be seen that the various mechanisms are adjustable so that the web of paper can be moved different lengths and can be sheared in such lengths. With the mechanism described the operator is enable to materially increase the output of form letters and the like, over the present method of inserting separate sheets and positioning and feeding them manually.

Various changes can be made in the details of construction, and their arrangement therein described without departing from the spirit of my invention and the scope of what is claimed.

What I claim is:—

1. The combination of a typewriting machine having a platen; a paper roll carrying frame secured to move transversely with said platen; two sets of paper gripping mechanisms carried by said frame, one of said sets being reciprocable to feed the paper during movement in one direction, said sets being arranged to alternately grip and release the paper beyond the platen; and means for reciprocating said set of reciprocatory gripping mechanism only one complete movement following each actuation thereof a single time.

2. The combination of a typewriting machine having a platen; a paper carrying frame secured to move transversely with said platen; two sets of paper gripping bars; automatically operated mechanism for causing the bars of said sets to alternately grip and release the paper, one of said sets of bars being reciprocably mounted to grip and feed the paper during its movement in one direction; and means for reciprocating said set of reciprocatory gripping bars a complete movement upon each actuation thereof.

3. The combination of a typewriting machine having a platen; a paper carrying frame secured to move transversely with said platen; two sets of gripping bars between which the paper extends after passing

around said platen carried by said frame, one of said sets being reciprocable to grip and move the paper during its movement in one direction; automatic mechanism for actuating said sets of gripping bars to alternately grip and release the paper; said automatic mechanism being controlled by said set of reciprocable bars, and mechanism for reciprocating said reciprocable bars one complete movement upon each actuation thereof.

4. The combination of a typewriting machine having a platen; a paper carrying frame secured to move transversely with said platen; two sets of paper relatively movable gripping bars normally held in clamping relation by tension carried by said frame; automatically operated mechanism for spacing said sets of bars alternately, one of said sets of bars being reciprocable and actuated to grip the paper during its movement in one direction; and mechanism for reciprocating said reciprocable set of bars one complete movement upon each actuation thereof.

5. The combination of a typewriting machine having a platen; a paper carrying frame secured to move transversely with said platen; two sets of gripping bars between which the paper extends after passing around said platen carried by said frame, one of said sets being reciprocable to grip and move the paper during its movement in one direction; automatic mechanism for actuating said sets of gripping bars to alternately grip and release the paper, said mechanism being adjustable to vary the actuation thereof, and mechanism for reciprocating said set of reciprocable bars one complete movement upon each actuation thereof.

6. The combination of a typewriting machine having a platen; a paper carrying frame secured to move transversely with said platen; a pair of cooperating reciprocable paper gripping bars carried by said frame and normally held together under tension; a slidable cam member for separating said bars; means for shifting said cam member automatically at the end of the travel of said pair of gripping bars; mechanism for reciprocating said gripping bars; means for securing the paper stationary when said gripping bars are separated by said cam on the return stroke; and means for operating said bar reciprocating mechanism a complete movement upon each actuation thereof.

7. The combination of a typewriting machine having a platen; a paper carrying frame secured to move transversely with said platen; a pair of cooperative reciprocable paper gripping bars carried by said frame at the rear of said platen, said bars being automatically operated to alternately release and grip the paper during reciprocable movement in opposite directions; means for reciprocating said reciprocable bars a complete movement upon each actuation thereof; a pair of relatively stationary paper gripping bars adjustably secured upon said frame adjacent the end of the feeding stroke of said reciprocable bars; toggle members associated with said stationary gripping bars; a cam engaging one of said toggle members; and means operated by one of said reciprocating gripping bars to actuate said cam to separate said stationary gripping bars while said reciprocating bars grip the paper; and means for normally causing said stationary bars to cooperate to grip the paper.

8. The combination of a typewriting machine having a platen; a paper carrying frame secured to move transversely with said platen; a pair of cooperative reciprocable paper gripping and feeding bars carried by said frame at the rear of said platen; means for normally causing said bars to grip the paper; a cam automatically positioned to separate said bars during their reciprocation; a pair of cooperating stationary paper gripping bars secured to said frame at the rear of the reciprocable movement of said first mentioned bars; springs normally causing said bars to grip the paper; means for separating said stationary bars while said reciprocating bars are gripping and feeding the paper; said means being actuated by said reciprocable bars; and mechanism for reciprocating said reciprocable bars a complete movement upon each actuation thereof.

9. The combination of a typewriting machine having a platen; a paper carrying frame secured to move transversely with said platen; a pair of reciprocable paper gripping and feeding bars mounted upon said frame at the rear of said platen; mechanism for reciprocating said reciprocable paper gripping bars including an oscillating lever and an adjustable driving connection for varying the movement of said lever, said bars being slidably connected with said lever; means for operating said mechanism to reciprocate said paper gripping bars one complete movement upon each actuation thereof; and means operated automatically by the movement of said bars to separate them during the return stroke and to close them on the paper during the feeding stroke.

10. The combination of a typewriting machine having a platen; a frame for carrying a continuous web of paper and mounted to move transversely with said platen; a pair of paper gripping and feeding bars reciprocably mounted upon said frame at the rear of said platen; mechanism connected with said bars for reciprocating them, said bars being slidable transversely relative to said mechanism, means operated automatically by the movement of said bars to move the bars into paper gripping relation during

their movement away from said platen and to separate them during their movement toward said platen; and means for operating said mechanism to move said bars one complete reciprocation only upon each actuation thereof.

11. The combination of a typewriting machine having a platen; a frame for carrying a continuous web of paper and mounted to move transversely with said platen; and mechanism for feeding successive lengths of said paper from said platen upon actuation, said mechanism comprising paper gripping members mounted to reciprocate on said frame, means to automatically actuate one of said bars to clamp paper against the other bar during reciprocal movement away from said platen and to be separated from the other bar during the return stroke, driving mechanism for reciprocating said bars, a motor, and a self releasing manually operable clutch for connecting said motor with said driving mechanism, said mechanism operating said gripping bars one complete reciprocation upon each actuation of said clutch.

12. The combination of a typewriting machine having a platen; a frame movable transversely with said platen, said frame carrying a roll of paper which is fed around said platen; paper gripping and feeding means carried by said frame at the rear of said platen; mechanism for reciprocating said gripping and feeding means one complete movement upon each actuation; and means for securing said roll to prevent paper being fed therefrom when said reciprocating means is not moving in a paper feeding stroke.

13. The combination of a typewriting machine having a platen; a frame movable transversely with said platen, a paper feeding and gripping mechanism, said frame carrying a roll of paper to be fed around said platen; means normally locking said roll of paper against rotation; and mechanism operated automatically by said paper feeding and gripping mechanism for releasing said roll locking means during the paper feeding operation thereof.

14. The combination of a typewriting machine having a platen; a frame movable transversely with said platen, said frame carrying a roll of paper to be fed around said platen; paper gripping and feeding bars reciprocably mounted with said frame at the rear of said platen; and means for normally locking said roll of paper against rotation; one of said bars engaging with said roll locking means in its reciprocable travel to release said locking means from said roll while traveling in a paper feeding movement.

15. The combination of a typewriting machine having a platen; a frame movable transversely with said platen, said frame including a pair of parallel rods extending rearwardly from said platen and adapted to carry a continuous web of paper to be fed around said platen; a pair of paper feeding members reciprocably mounted upon said frame rods; a pair of stationary paper gripping members adjustably mounted upon said frame rods; means for automatically causing said pairs of gripping members to alternately grip and release the paper; mechanism for reciprocating said feeding members; and tension means for maintaining said reciprocable feeding members in a definite relation with said rods during their reciprocable movement.

16. The combination of a typewriting machine having a platen; a frame movable transversely with said platen, said frame including a pair of parallel rods extending rearwardly from said platen and adapted to carry a continuous web of paper to be fed around said platen; a pair of cooperating paper feeding members mounted to reciprocate on said frame rods; a pair of cooperating paper gripping members adjustably secured across said frame rods at the rear of the movement of said feeding members; means for automatically causing said pairs of members to alternately grip and release the paper; mechanism for reciprocating said feeding members; means secured to create equal tension on each side of said feeding members to maintain them in a definite relation with said frame mechanism for reciprocating said feeding members.

17. The combination of a typewriting machine having a transversely movable platen; a frame movable transversely with said platen and carrying a continuous web of paper adapted to be fed around said platen; reciprocating paper feeding mechanism carried by said movable frame at the rear of said platen; a pair of paper gripping members carried by said frame at the rear of the movement of said feeding mechanism; a knife pivoted to said frame; and means for moving said knife to shear the web of paper fed beyond said grippers, said knife cooperating with the rear side of said grippers.

18. The combination of a typewriting machine having a transversely movable platen; a frame mounted to move transversely with said platen and adapted to carry a continuous web of paper to be fed around said platen; reciprocating paper feeding mechanism carried by said movable frame at the rear of said platen; a pair of stationary paper gripping members secured to said frame beyond the movement of said reciprocating feeding mechanism; a knife pivoted to the rear side of one of said stationary gripping members and cooperating with said gripping members to shear the web of paper; and means for actuating said knife.

19. The combination of a typwriting ma-

chine having a transversely movable platen; a frame mounted to move transversely with said platen and adapted to carry a continuous web of paper to be fed around said platen; reciprocating paper feeding mechanism carried by said movable frame at the rear of said platen; a pair of stationary gripping members secured to said frame beyond the movement of said reciprocating feeding mechanism; a knife pivoted to the rear side of one of said stationary gripping members and cooperating with said gripping members to shear the web of paper; and means for actuating said knife automatically after each feeding operation.

20. The combination of a typewriting machine having a transversely movable platen; a frame mounted to move transversely with said platen and adapted to carry a continuous web of paper to be fed around said platen; paper feeding mechanism carried by said movable frame at the rear of said platen; a pair of stationary paper gripping members secured to said frame beyond the movement of said feeding mechanism and automatically operable to secure the web intermediate the feeding movement; a knife pivoted to operate across the rear faces of said gripping members and cooperating therewith to shear the paper extending beyond the members from the web; and means for operating said knife in a shearing movement automatically actuated by said paper feeding mechanism after each feeding movement thereof.

21. The combination of a typewriting machine having a platen; a paper carriage secured to moved transversely with said platen; two sets of paper gripping mechanisms carried by said carriage, one of which sets is reciprocable to feed the paper during its movement in one direction, said sets being arranged to alternately grip and release the paper beyond the platen; and power actuated means for reciprocating said set of reciprocating gripping mechanism one complete movement upon each actuation thereof.

In testimony whereof I affix my signature.

HARRY L. WOOD.