

Aug. 31, 1943.

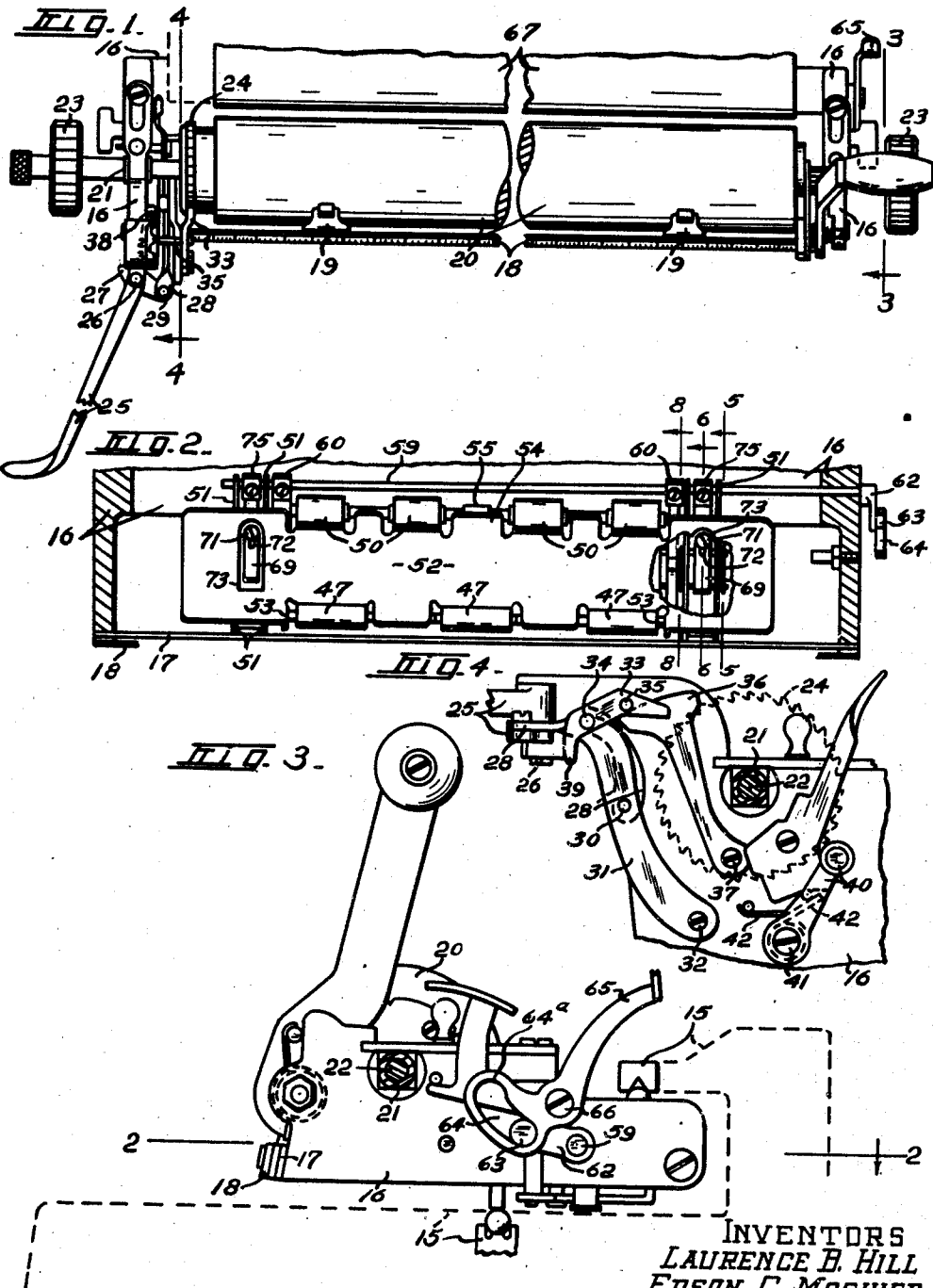
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2,328,146

TYPEWRITING MACHINE

Original Filed Aug. 8, 1941

2 Sheets-Sheet 1



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FIG. 5.

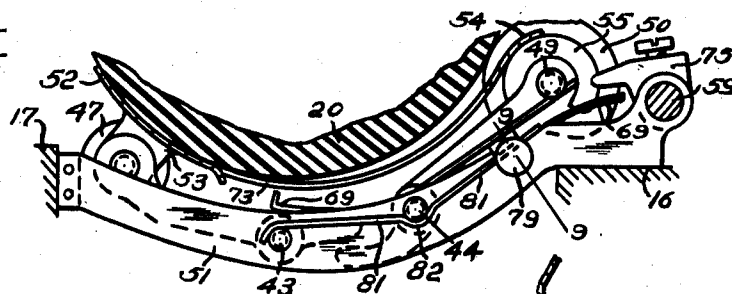


FIG. 6.

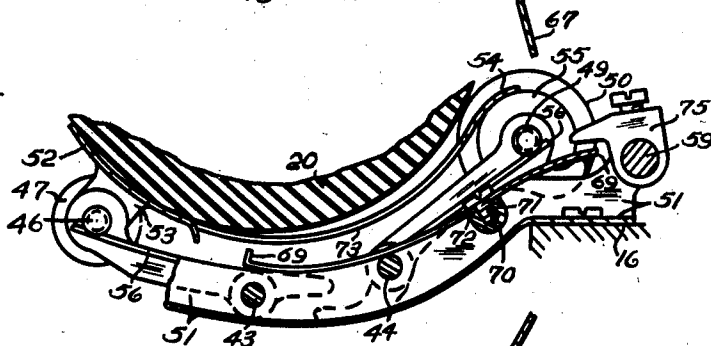


FIG. 7.

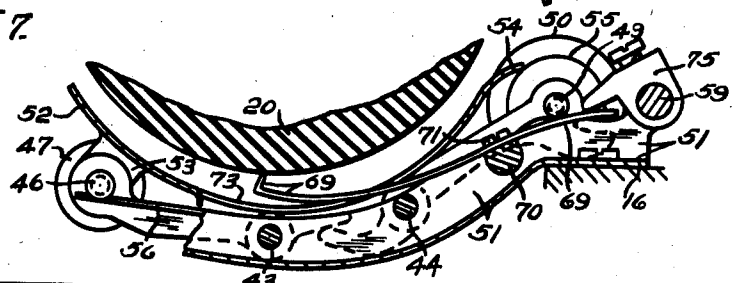


FIG. 9.

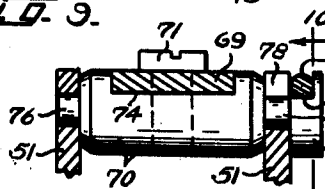


FIG. 8.

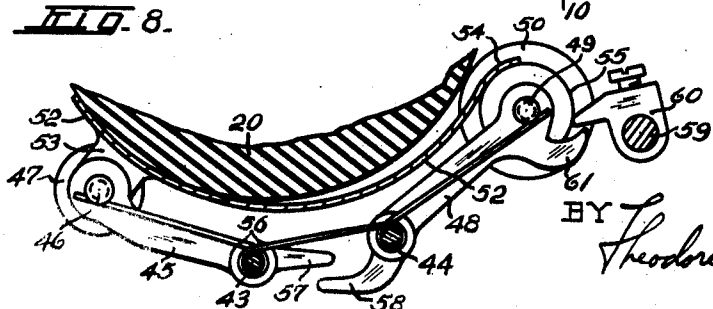
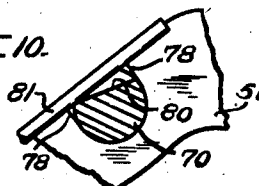


FIG. 10.



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TYPEWRITING MACHINE

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Original application August 8, 1941, Serial No. 406,016. Divided and this application November 29, 1941, Serial No. 420,912

7 Claims. (Cl. 197—140)

This application is a division of an application for patent for improvements in typewriting machines filed by us on August 8, 1941, and serially numbered 406,016.

The invention forming the subject matter of the present application relates particularly to improvements in paper feeding mechanism for typewriting machines.

The principal objects of the invention are to provide a paper feeding mechanism for typewriting machines so constructed as to facilitate rapid and accurate introduction of work sheets or webs into the machine, to provide for arresting the leading edge of such a sheet or web before it reaches the writing line of the machine, to provide for registering the leading edge of the arrested web or sheet so that said edge will lie parallel to the writing line, to provide for release of the arrested and registered sheet or web, and to provide for feeding of the released sheet or web across the writing line. The improved mechanism is particularly useful in connection with the typing of printed blank forms or webs of such forms.

To the foregoing and other ends which will hereinafter appear, the invention consists of the features of construction, arrangements of parts, and combinations of devices hereinafter described and particularly pointed out in the appended claims.

The preferred embodiment of the invention is illustrated in the accompanying drawings wherein the improvements are illustrated as embodied in the well-known L C Smith typewriting machine.

In the drawings:

Figure 1 is a fragmentary plan view of the machine with certain parts being broken away.

Figure 2 is a fragmentary view approximately on the line 2—2 of Figure 3, showing more particularly the paper feed roll mechanism and the leading edge gauging and registering mechanism of the machine.

Figure 3 is a sectional view on the line 3—3 of Figure 1.

Figure 4 is a sectional view on the line 4—4 of Figure 1.

Figure 5 is a detail sectional view on the line 5—5 of Figure 2, showing the paper feed rolls engaged with the platen and showing the stopping and registering means in ineffective position.

Figure 6 is a detail sectional view on the line 6—6 of Figure 2 showing the feed rolls and the stopping and registering means positioned as in Figure 5.

Figure 7 is a view similar to Figure 6, but showing the paper feed rolls cast off from the platen and showing the stopping and registering means in effective position.

Figure 8 is a detail sectional view on the line 8—8 of Figure 2, showing the paper feed rolls in their operative position.

Figure 9 is a detail sectional view on the line 9—9 of Figure 5.

Figure 10 is a detail sectional view on the line 10—10 of Figure 9.

Only as much of the known machine as is necessary to an understanding of the present invention is shown and will be described.

The machine comprises a main frame 15 upon which is mounted to travel transversely of the machine on the usual ball bearings the usual platen carriage 16. Extending across the front of the carriage 16 and affixed to the usual end plates of the carriage, is the usual bar 17 and the usual letter space scale bar 18. On the bar 17 may be mounted the usual paper fingers 19.

The shaft of the usual cylindrical platen 20 is rotatively journaled in the usual bearings 21 at opposite ends of the carriage, the shaft 22 of the platen extending horizontally transversely of the machine as usual. The usual pair of twirler knobs or finger wheels 23 are connected with the platen at opposite ends of the carriage for rotating the platen in either direction. The usual line space ratchet wheel 24 is held to the platen adjacent the left hand end of the carriage and is operable by the usual line space mechanism, settable to rotate the platen either 1, 2, or 3 tooth spaces of the ratchet 24. This ordinary or standard line space mechanism can be of any suitable construction, the construction shown being that of the L C Smith machine hereinbefore referred to. Said ordinary line spacing mechanism and the construction shown comprises generally the bell crank line space hand lever 25 journaled on the vertical pivot 26 on the carriage and having a stop lug 27 engageable with the left hand end of the carriage to limit the return movement of the line space lever which is effected through the usual line space lever return spring (not shown). The usual link 28 is pivotally connected at its opposite ends with one arm of the line space lever at 29 and its other end at 30 with the usual pawl carrier 31. The pawl carrier 31 is pivoted on the carriage at 32 and the line space pawl 33 is pivoted on the pawl carrier at 34. The line space pawl carries the usual pin 35 which, during the latter part of the return stroke of the line space lever, rides over the usual line space

regulator 36 which is pivoted to the carriage at 37 and is settable by the usual handle 38 (Figure 1) affixed to said regulator to cause the pawl in the known manner to rotate the ratchet 24 either 1, 2, or 3 letter spaces. Said pawl has the usual arm 39 engageable with the ratchet 24 to limit the operating stroke of the line space lever and prevent overthrow of ratchet 24.

The usual spring-urged detent 40 for ratchet 24 is pivoted on the carriage at 41 and is normally urged between two adjacent teeth of the ratchet by the usual ratchet detent spring 42 (Figure 4) to hold the platen against accidental rotation.

By means of this usual line spacing mechanism the platen may be rotated by a full stroke of the line space lever either 1, 2, or 3 tooth spaces of the ratchet depending on the adjustment of the regulator 36 as is common in the art.

Extending below the platen, and affixed to the carriage 16 and to the bar 17 adjacent opposite ends of the platen, are two supporting brackets 51 which are of U-shape in cross-section, the side flanges of each of which brackets 51 extend upwardly. Fixed to the flanges of this pair of brackets 51 are the ends of the usual two rods 43 and 44 which are spaced fore and aft of the machine and extend transversely thereof parallel to the axis of the platen. Adjacent opposite ends of said rod 43 are pivoted the usual two arms 45, the front ends of which support the respective ends of the usual front feed roll shaft 46 carrying the usual front feed rolls 47. Adjacent opposite ends of the rear rod 44 are pivoted the usual two arms 48, the rear ends of which support opposite ends of the usual rear feed roll shaft 49 carrying the usual rear feed rollers 50.

The usual concave paper apron or deflector 52 is supported beneath the platen in the usual manner, said apron having the usual pair of ears 53 journaled on the front feed roll shaft 46, and having the usual lug 54 supported on the usual small roller 55 mounted on the rear feed roll shaft 49. The usual two pressure springs 56, for normally urging the feed rollers toward the platen, are wrapped around the rods 43 and 44 adjacent opposite ends of said rods and each engaged adjacent its opposite ends beneath the front and rear feed roll shafts, as more clearly shown in Figure 8.

The usual feed roll cast-off mechanism for casting off the feed rolls to facilitate the insertion of paper in the machine is provided. Each of the arms 45 has the usual rearward extension 57 overlapping the usual forward extension 58 of its companion arm 48. A rock shaft 59 is journaled in the upstanding flanges of the brackets 51 and in the right hand end of the platen carriage 16. Affixed to this rock shaft is the usual pair of tappets or cams 60 having forwardly extending noses closely overlapping the usual rearward extensions 61 of arms 48 in the cast-on, or paper-feeding, position of the feed rolls. The rock shaft 59 has the usual forwardly extending rock arm 62 which is located at the right hand end of the carriage provided at its forward end with a laterally extending pin 63 engaged in the usual cam slot 64 in the paper feed roll cast-off lever 65. Lever 65 is journaled, as usual, on the right hand end of the carriage at 66 to swing fore and aft of the machine. The cam slot 64 has the usual upward enlargement 64a in its upper edge adjacent the forward end of the slot to releasably latch the feed rolls in

cast-off position when the handle end of lever 65 is drawn forward to its full limit of motion.

The paper feed rollers are contactive with the platen in their operative or "on" position through clearance notches in the forward and rear edges of the paper apron 52. When the handle end of the lever 65 is swung forwardly, the tappets 60 engage extensions 61 of arms 48 and swing these arms to lower the rear feed rollers, thereby causing the extensions 58 of arms 48 to engage extensions 57 of arms 45 and swing the front feed rollers away from the platen. When the front and rear forward rollers are swung downwardly away from the platen, the paper apron 52 is also lowered, as will be obvious.

Also mounted on the carriage in the usual manner is the usual paper table 67 for directing the paper forwardly and downwardly between the platen and the paper apron 52. A portion of this paper table 67 is shown in Figures 1, 6 and 7.

It will be obvious that the detailed construction of the paper feed mechanism above described, which is the paper feed mechanism of the known L C Smith machine, may be varied. The new features of the machine whereby the objects of the invention hereinbefore pointed out are accomplished will now be described.

Stopping and registering means is provided for squaring the leading edge of the sheet or web of printed forms with the writing line of the machine and arresting introduction of the web into the machine at a predetermined distance to the rear of the writing line. In the machine illustrated, the writing line extends horizontally along the periphery of the platen longitudinally of the platen slightly above the horizontal plane in which the axis of the platen lies.

The stopping means comprises two registering stops 68 located adjacent opposite ends of the platen and extending beneath the platen. Each stop 68 is formed of a bar of thin spring steel having its forward end bent upwardly for contact with the underside of the platen when the stop is in effective position. Each stop bar 68 is adjustably fixed intermediate its ends to an axle 70 by means of a screw 71 which extends through a longitudinal slot 72 in the bar. The arm of each stop bar forward of the axle 70 is movable up and down through the adjacent one of two fore-and-aft extending slots 73 in the paper apron 52. Screws 71 are accessible through slots 73, when the platen is removed from its bearings, to permit each stop 68 to be adjusted fore and aft of the machine, or transversely of the platen. Each stop bar 68 is held by its anchoring screw 71 in a notch 74 (Figure 9) formed in the axle 70 of the stop bar. The longitudinal side edges of each stop bar engage the side walls of the slot in its axle to prevent accidental turning of the stop bar about the shank of the screw 71. Each stop bar 68 extends rearwardly from its axle 70, and two tappets 75 which are fixed on the rock shaft 59 overhang the rearwardly extending arms of the two stop bars 68.

The tappets 75, in the normal position of the hand lever 65, are spaced slightly farther above the rear ends of the stop bars 68 than the tappets 60 are spaced above the extensions 61 of arms 48. It is thus possible to rock the hand lever 65 forward slightly to an extent sufficient to relieve the pressure of the paper feed rolls on the platen to permit straightening of a paper sheet in the machine without throwing the stops 68 into sheet

stopping position. It will be obvious that, when the arm 65 is thrown completely forward from the position shown in Figure 3, both sets of paper feed rolls 47 and 50 will be cast off from the platen into the position shown in Figure 7 and the two stops 69 will be rocked to press their upturned forward ends yielding against the under side of the platen into the position shown in Figure 7.

In this position of the feed rolls and stops, the paper sheet or web may be introduced into the machine down over the paper table 67 and between the platen and the apron 52 until the front edge of the sheet or web is arrested and is registered or squared with the writing line of the machine by contact of said edge with the upturned forward ends of the stop arms 69. The lever 65 is releasably held to maintain the stops and the paper feed rolls in the position shown in Figure 7 until the lever 65 is pushed rearwardly. When the lever 65 is pushed rearwardly to its normal position shown in Figure 3, the feed rolls and paper apron are restored to normal position to press the sheet to the platen, and the forward ends of the stops 69 move downwardly through the slots 73 into the ineffective position shown in Figures 5 and 6.

To simplify the construction and mounting of the two stops 69 and facilitate assembly thereof in the machine, the axle 70 of each stop has a reduced cylindrical bearing portion 76 inserted in a circular bearing aperture in one of the upstanding flanges of the adjacent bracket 51, and adjacent its other end each axle has a reduced cylindrical bearing portion 77 engaged in an open notch or slot 78 in the other upstanding flange of the adjacent bracket 51. Outwardly beyond the bearing portion 77 of each axle, the axle is formed with a cylindrical head 79 provided adjacent the outer face of the slotted flange of bracket 51 with a kerf 80 through which extends the rear arm of one of two springs 81. The rear arm of each spring 81, in the normal position of the stops 69 and feed rollers shown in Figure 5, engages the front end edge of the bottom of kerfs 80 in axles 70 as shown in Figure 10. Each spring 81 is provided intermediate its ends with a downward bend or bow 82 in which is seated the adjacent end of rod 44, while the forward end of each spring 81 is engaged over the adjacent end of the rod 43. The springs 81 thus are normally tensioned to urge each of the stops 69 to their ineffective position and hold them there. The springs 81 also releasably hold the axles of the stops 69 in their mountings in brackets 51. The ends of rods 43 and 44 are grooved as indicated in dotted lines in Figure 5 to receive the springs 81.

It will be observed that the stops 69 will arrest the leading end of a work sheet or web being introduced into the machine at a predetermined distance from the writing line and said stops also permit the operator to square the leading end of the work sheet with the writing line.

It will be observed that the stopping levers 69 are formed of thin spring steel and that their upturned sheet-arresting forward ends are resiliently pressed against the under side of the platen by the tappets 75 when the levers are moved into effective stopping position, thereby insuring arrest of thin sheets without liability of damaging the platen.

When the stops are moved to ineffective position, an arrested and registered sheet or web may thereafter be fed across the writing line by

the platen and feed rolls by rotating the platen.

We claim:

1. In a typewriting machine, a platen carriage, a platen journaled on the carriage, front and rear feed rolls, a paper deflector apron, means on the carriage supporting said feed rolls and apron beneath the platen for movement toward and from the platen, spring means constantly urging said supporting means to move the feed rolls and apron toward the platen, a rock shaft journaled on the carriage behind the platen, tappets on said shaft overhanging and engageable with parts of said supporting means to force the feed rolls and apron downward away from the platen when said shaft is rocked in one direction, paper stop levers journaled intermediate their ends on the carriage to rock about an axis extending parallel to the platen and having upstanding forward end portions adapted to abut the under side of the platen behind the writing line of the machine and also having rear ends extending toward said rock shaft, tappets on said rock shaft overhanging and engageable with the rear ends of said stop levers to rock the upstanding forward end portions of said levers against the platen, spring means normally urging said forward end portions of the stop levers downward away from the platen, and means operable to rock said rock shaft from a position in which said feed rolls are coactive with the platen to feed paper and said stop levers are ineffective to arrest paper to a position in which the stop levers are rendered effective and the feed rolls are rendered ineffective, said apron having openings through which the stop levers are movable.

2. In a typewriting machine as claimed in claim 1, an arrangement of the tappets on the rock shaft whereby the feed rolls may be moved slightly away from the platen before the stop levers engage the platen.

3. In a typewriting machine, the combination of a platen carriage, a roller platen journaled on the carriage, paper feed rolls spaced around the platen, a paper guiding apron for guiding paper between said rolls and the platen, means for resiliently urging said rolls to the platen, a plurality of resiliency flexible sheet registering stops spaced apart longitudinally of the platen and each having an axle extending longitudinally of the platen and provided with two reduced bearing portions, said carriage having for each stop a cylindrical bearing opening receiving one of the reduced bearing portions of the stop axle and also having for each stop an open bearing slot receiving the other reduced bearing portion of the stop axle, the axle of each stop having a head adjacent the latter bearing portion of its axle provided with a kerf which extends transversely of the axle adjacent the open end of the open bearing slot for the axle, spring arms on the carriage engaged in the kerfs of the stop axles to hold the axles releasably in their bearings and urge the stops away from the platen, and means operable at will to shift the feed rolls away from the platen and concurrently resiliently press the sheet registering stops against the platen, said paper guiding apron having openings therein through which said stops are movable into and out of contact with the platen.

4. In a typewriting machine, the combination of a platen carriage, a roller platen journaled on the carriage, a resiliently flexible sheet stopping lever fulcrumed intermediate its ends on the carriage for rocking of said lever about an axis parallel to the axis of the roller platen, one arm of

said lever having its free end bent toward the platen to form an abutment for engagement by a paper sheet, spring means urging said stopping lever about its axis to yieldingly maintain the bent end of the lever out of contact with the platen, manually operable means on the carriage engageable with the other arm of said lever to resiliently press the bent end of said lever against the platen, and means on the carriage for guiding paper sheets between the platen and said lever when the bent end of the lever is held away from the platen and for guiding such sheets against the bent end of the lever when the latter is engaged with the platen.

5. In a typewriting machine, the combination of a platen carriage, a roller platen journaled on the carriage, a support journaled on the carriage to rock about an axis parallel to the platen axis, a two-arm sheet stopping lever, means for detachably holding said lever intermediate the ends of the lever to said support in different endwise-adjusted positions of the lever relatively to said support, one arm of said lever having an abutment extending toward the platen, manually operable means on the carriage operable upon the other arm of said lever to cause said abutment to contact the platen for stopping a sheet, spring means for yieldingly holding said lever and its support with the abutment out of contact with the platen, and means on the carriage for guiding paper sheets between the platen and said abutment when the abutment is held out of contact with the platen and for guiding such sheets against the abutment when the latter is engaged with the platen.

6. In a visible writing typewriting machine, the combination of a platen carriage, a roller platen journaled on the carriage for rotation about a horizontal axis, front and rear paper feed rolls coactive with the lower portion of the platen, a paper deflecting apron mounted on the carriage under the platen to guide paper between said platen and feed rolls, a plurality of two-arm paper stop levers each having one arm thereof extending forward under the platen and also having the other arm thereof extending rearward, each said lever being formed of resiliently flexible material and having its forwardly extending arm formed with an abutment extending toward the platen intermediate the lines of contact of the front and rear feed rolls with the platen,

supporting axles, one for each stop lever, detachably journaled on the carriage for rocking thereof about an axis parallel to the platen axis, means for holding each stop lever in different endwise-adjusted positions thereof to its axle, spring means associated with each lever for normally yieldingly holding the lever with its abutment rocked away from the platen, a rock shaft journaled on the carriage behind the platen for rocking about an axis parallel to the platen axis, tappets on said rock shaft overhanging the rearwardly extending arms of the stop levers, and manually operable means on said carriage for rocking said shaft in a direction to depress said tappets to cause the latter to rock the stop levers to resiliently press the stop lever abutments against the platen, said apron having openings through which the stop lever abutments are movable into and out of contact with the platen.

7. A typewriting machine having a rotative platen, a guiding apron associated with said platen for guiding about the platen paper sheets introduced into the machine, a plurality of paper sheet registering stops spaced apart longitudinally of the platen, each stop having an axle extending parallel to the axis of the platen and an abutment extending toward the platen, said apron having openings therein through which the stop abutments are movable into and out of contact with the platen, means associated with each stop providing a cylindrical bearing and an open slot bearing for the stop axle, each stop axle having at one end a reduced cylindrical bearing portion engaged in the cylindrical bearing for said axle and having adjacent its opposite end both a kerf extending transversely of the axle and its open slot bearing adjacent the open end of the slot bearing and also a reduced cylindrical bearing portion seated in the open slot bearing, a resilient arm supported adjacent each axle and engaged in the kerf in the axle to releasably hold the axle in its bearings and normally resiliently hold the stop rocked to a position in which the stop abutment is at the opposite side of the apron from that at which the platen is located, and manually operable means for rocking the stops simultaneously to engage their abutments with the platen.

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