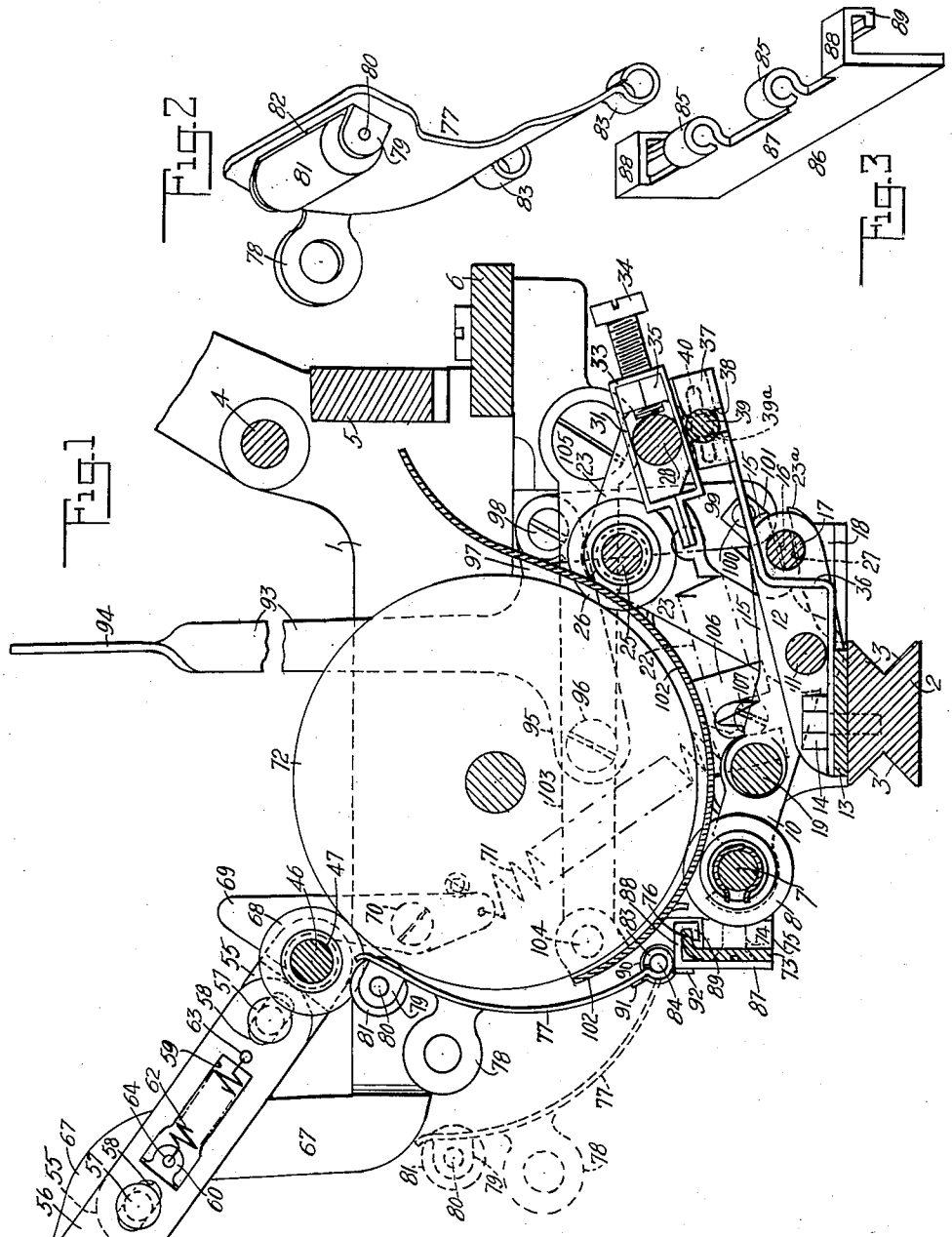
May 23, 1933. G. G. GOING 1,910,329

TYPEWRITING MACHINE

Filed May 2, 1927 3 Sheets-Sheet 1



WITNESSES

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TYPEWRITING MACHINE

Filed May 2, 1927 3 Sheets-Sheet 2

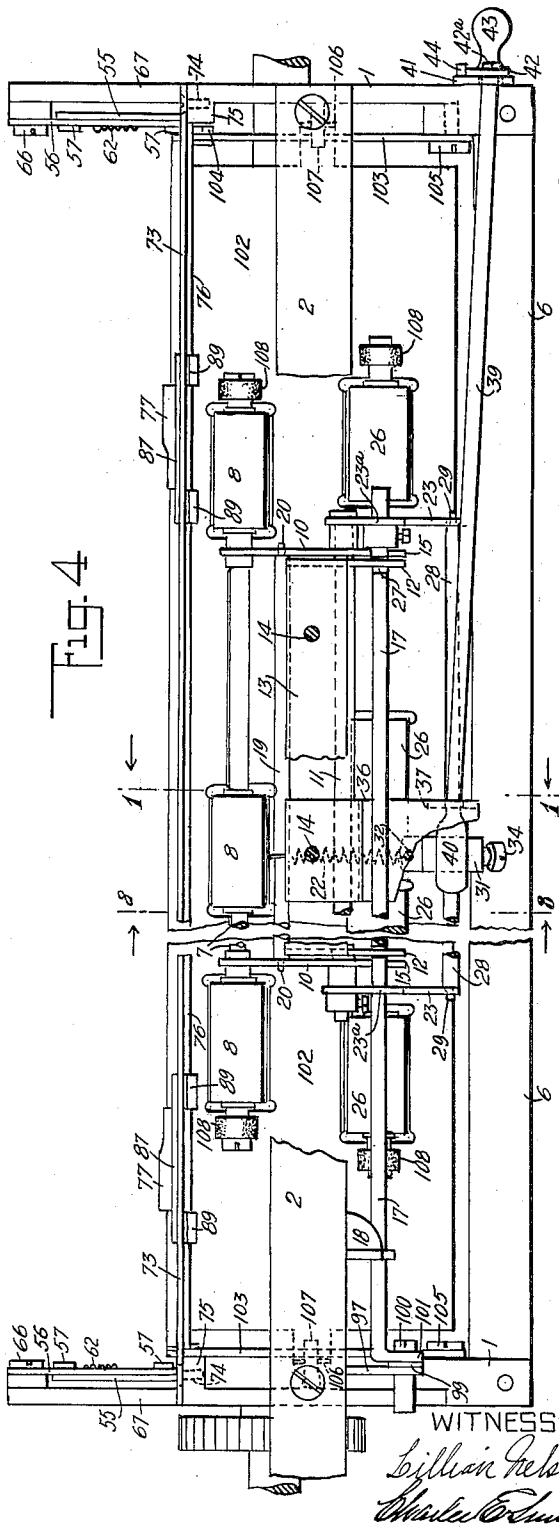


Fig. 4

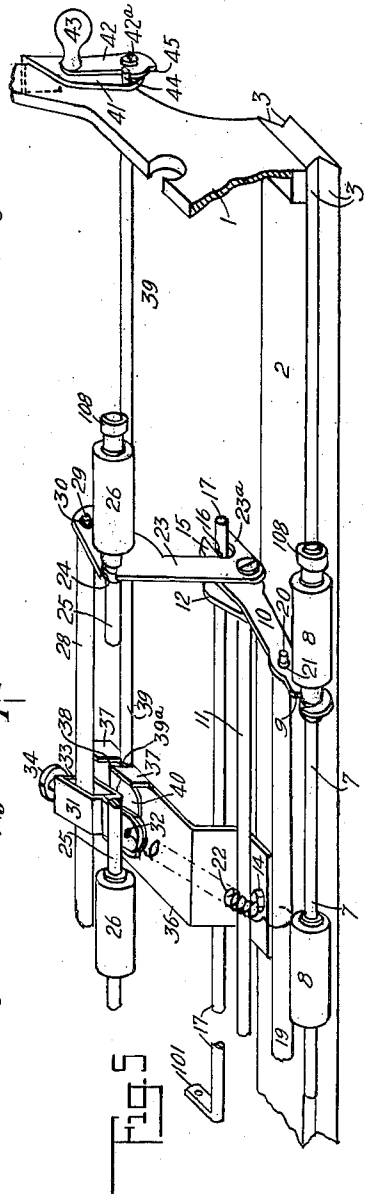


Fig. 5

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TYPEWRITING MACHINE

Filed May 2, 1927 3 Sheets-Sheet 3

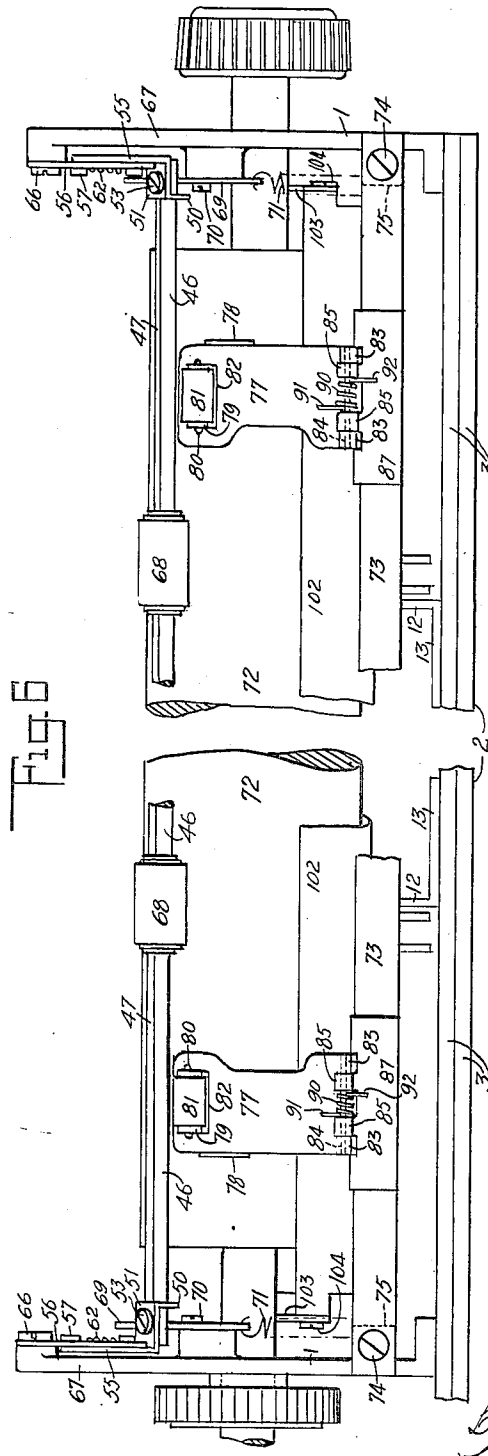


Fig. 6

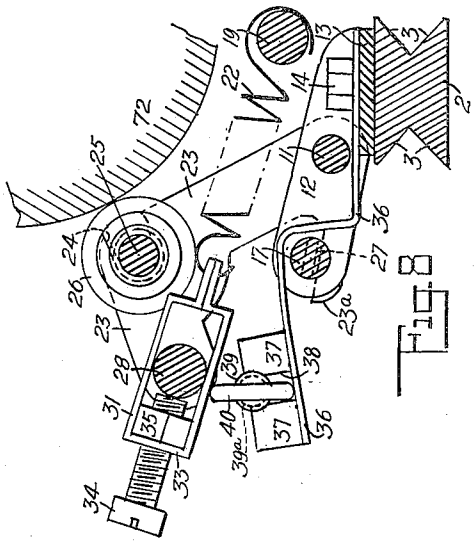


Fig. 8

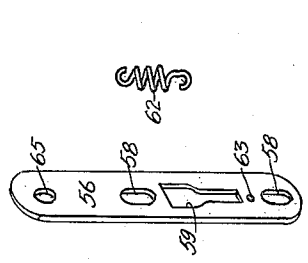


Fig. 7

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Patented May 23, 1933 1,910,329

UNITED STATES PATENT OFFICE

GEORGE G. GOING, OF MIDDLETOWN, CONNECTICUT, ASSIGNOR, BY MESNE ASSIGNMENTS, TO REMINGTON TYPEWRITER COMPANY, A CORPORATION OF NEW YORK

TYPEWRITING MACHINE

Application filed May 2, 1927. Serial No. 188,243.

My invention relates to typewriting machines and more particularly to paper feed mechanism therefor.

One of the main objects of my invention is to provide simple and efficient means whereby certain of the paper feed devices may be applied, when desired, with an increased spring force over that ordinarily applied to said devices, in order to more effectively feed comparatively heavy or stiff work sheets.

Another object of my invention is to evenly distribute the additional spring pressure to the paper feed devices to which it is applied in order to effect a straight and effective feed of the work sheets.

To the above and other ends which will hereinafter appear, my invention consists in the features of construction, combinations of devices and arrangements of parts set forth in the following description and particularly pointed out in the appended claims.

In the accompanying drawings wherein like reference characters designate corresponding parts in the different views—

Fig. 1 is an enlarged, detail, fore and aft, vertical sectional view of the carriage of a typewriting machine equipped with the devices of my invention, the section being taken on the line 1—1 of Fig. 4 and looking in the direction of the arrows at said line.

Fig. 2 is an enlarged, detail, perspective view of one of the paper fingers, shown detached.

Fig. 3 is an enlarged, detail, perspective view of the corresponding carrier for said paper finger, shown detached.

Fig. 4 is a bottom plan view of the carriage with parts broken away and omitted.

Fig. 5 is a fragmentary, perspective view showing a part of the carriage and certain of the paper feed devices, as viewed from the front of the machine.

Fig. 6 is a fragmentary front elevation of the carriage.

Fig. 7 shows detached a group of parts that enter into paper feeding bail construction.

Fig. 8 is a fragmentary, detail, vertical, fore and aft sectional view corresponding in part to Fig. 1, but looking in the opposite direction, and with the parts disposed to apply the additional spring pressure to the rear main feed rollers; the section being taken on the line 8—8 of Fig. 1 and looking in the direction of the arrows at said line.

I have shown my invention embodied, in the resent instance, in the carriage of a No. 6 Remington-Noiseless machine in which the invention may be readily incorporated without modifying, or materially modifiying, the existing structural features of said machine. It should be understood, however, that the invention is not restricted to embodiment in such machines, but may be employed in typewriting and like machines generally, wherever found available.

The main paper feed rollers, in the present instance, are constructed and mounted in the manner indicated in my copending application Sr. No. 180,202, filed April 1, 1927, (now Patent No. 1,817,251, dated Aug. 4, 1931) in which such construction is claimed, the claims of the present application being restricted to features not disclosed in said previously filed application.

In the present construction I combine with certain of the main paper feed rollers of the construction of the aforesaid application, means which may be applied at will to increase the spring pressure exerted thereon, to attain certain additional advantages without, however, detracting from advantageous results inherent in said prior construction, as will hereinafter more clearly appear.

Only so much of a No. 6 Remington-Noiseless machine is shown as is necessary to illustrate my invention in its embodiment therein.

The carriage comprises end plates 1 connected to a main supporting and guide bar 2 grooved on opposite sides thereof at 3 to receive anti-friction rollers which also are received in grooved faces in the guide rails of a case shift frame, not shown. The end plates 1 are further united by cross bars 4, 5 and 6.

A forward spindle 7 supports a series of forward main paper feed rollers 8 mounted for independent rotation thereon, said spin-

dle being supported in open-mouth bearings 9 in hanger arms 10. These arms are mounted for independent pivotal movement on a pivot rod 11, supported by bracket arms 12 that project up from a bracket plate 13 secured by screws 14 to the bar 2 of the carriage. Each hanger arm 10 is extended rearward beyond its pivot to provide a second arm 15 that overlies a flat cam face 16 (see Fig. 1) on a hand controlled release rock shaft 17. This shaft is supported in bearings in the bracket arms 12 and in the open mouth slot of an additional bracket arm 18 (see Fig. 4), secured to the bar 2. A cross bar 19 extends between the two hanger arms 10 and is provided with reduced ends 20 which are received in enlarged openings 21 in said arms, in order to allow a limited extent of independent pivotal movement between said hanger arms. One end of a comparatively heavy contractile spring 22 is connected to the cross bar 19 about midway in the length of the bar and exerts its force through said bar on the hanger arms 10 to apply the feed rollers 8 against the platen with an evenly balanced or distributed spring pressure.

A second pair of hanger arms 23 are mounted for independent movement on the pivot rod 11 and each has an open mouth bearing 24 in which a spindle 25 for the rear main paper feed rollers 26 is supported. A rearwardly projecting arm 23^a on each hanger arm 23 extends beneath the rock shaft 17 and coacts with a cam face 27 on said shaft. The hanger arms 23 also are connected by a cross bar 28 having reduced ends 29 received in enlarged openings 30 in said arms to afford a limited relative pivotal movement between said arms. Situated about midway in the length of the cross bar 28 and surrounding it, is a sheet metal yoke 31, apertured at its free ends as at 32 to receive an end of the spring 22. The cross head 33 of this yoke is apertured to receive freely therethrough the stem of a screw 34, that is then threaded into a hexagonal nut 35. Opposite flat sides of this nut 35 coact with the side arms of the yoke to prevent the nut from turning. The inner end of the screw 34 bears against the cross bar 28, and a turning of the screw in one direction or the other will cause a bodily adjustment of the yoke and corresponding adjustment of the end of the spring 22 connected therewith. This will cause a variation of the force exerted equally by the spring 22 on both forward and rear main feed rollers 8 and 26, and cause such force to be equally distributed on the feed rollers of each set irrespective of the position to which said yoke may be adjusted.

It is sometimes desirable to provide a considerable additional spring pressure on the main paper feed rollers, and more particularly on the set of rear main feed rollers 26, as for example when heavy or stiff work sheets or cards are to be fed around the platen. In accordance with my present invention I provide for this by a very simple, yet highly effective, means which comprises a relatively stiff sheet leaf spring 36 secured to the carriage at its anchored end by one of the screws 14. The free end portion of this spring extends beneath the yoke 31 and the cross bar 28 on which it is mounted. One side edge of the spring has upwardly extending integral ears or guide arms 37 spaced apart to provide an intermediate slot 38 in which is received a rock shaft 39. A circumferential groove 39^a is provided in the shaft and in which enter the inner edges of the arms 37 so as to prevent an axial movement of the shaft but permit a relative lateral movement of the spring and shaft towards and away from each other. The inner free floating end of this rock shaft is flattened to provide an off-set enlargement or cam 40 which overlies and is supported by the free end portion of the spring 36 and is located intermediate the spring and the yoke 31. The outer end of the rock shaft passes through an enlarged bearing opening in a sheet metal bracket arm 41 secured to the right-hand end plate 1 of the carriage. The rock shaft is thus supported to have a slight lateral movement at its inner end, as well as to turn in its bearings. The outer end of the rock shaft 39 has a crank arm 42 secured thereto by a screw 42^a, said arm carrying a finger piece 43 by which the shaft may be given a quarter turn from the normal position shown in Figs. 1, 4 and 5, to the Fig. 8 position where it will be arrested by two coacting stops 44, 45 one on the bracket 41 and the other on the crank arm 42. The position of the parts at this time is shown in Fig. 8 from which it will be seen that cam 40 has been turned at substantially right angles to the position it normally occupies. The effect of this movement of the cam is to cause one side of it to flex the spring 36 while the other side of the cam bears against the yoke 31. This results in the force of the flexed spring 36 being applied through the floating cam 40, the yoke 31 and the cross bar 28 to the hangers 23 and the feed rollers 26 carried thereby. This additional spring force is applied to the feed rollers 26 independently of the front main feed rollers 8, which continue to be pressed against the platen, or a work sheet thereon, from the power exerted by spring 22, as before. It will be seen that the additional force exerted by the spring 36 is evenly distributed on the feed rollers 26 because such force is exerted on the cross bar 28 midway in the length thereof, and for the same reason that the force of the spring 22 is evenly distributed on

said feed rollers. When the cam 40 is turned to the effective Fig. 8 position, the force of the spring 36 will be exerted edgewise against the cam which is practically dead centered against the point of resistance. Therefore, the rock shaft 39 and cam 40 will be held by the pressure of the spring in the actuated Fig. 8 position indefinitely, or until such time as the operator turns the rock shaft back to normal position with the aid of the finger piece 43. It will be seen that the arms or ears 37 on the spring 36 act as guides for the inner floating end portion of the rock shaft 39 as the cam 40 is turned into and out of effective position by the rock shaft and said arms working in the groove 39a prevent any axial displacement of the shaft.

Referring now to the paper feed bail it will be seen that a spindle or cross bar 46 has opposite flat sides 47. This bar is received at each end in a bearing opening 48 in a suporting arm designated as a whole by the reference numeral 49, and shown in detail in Fig. 7. The vertically disposed ear 50 on each arm in which a bearing opening 48 is provided is inwardly off-set from a horizontally disposed member 51, pierced at 52 to receive the stem of a headed screw 53. This screw after passing into the opening 52 is threaded into a tapped opening 54 in the rod 46. An upright member 55 joins the member 51 of each supporting arm 49 and has a lengthwise sliding connection with a companion pivoted supporting arm 56. In the present instance this sliding connection is provided by a pair of headed pins 57 that are received in slots 58 disposed lengthwise in the arms 56. A cut-out 59 in each pivoted arm 56 receives a lug 60 extending laterally from the companion supporting arm 49 from a point at the upper end of a cut-out 61 therein. A contractile spring 62 is hooked at one end in an opening 63 in each arm 56, and at its other end in a hole 64 in the lug 60 of the companion arm 49. Each spring 62 is received in the cut-outs 59 and 61 of the companion arms and is confined substantially within the thickness of the metal of the two arms to which it is connected. Each of the arms 56 is pierced at 65 to receive a headed pivot screw 66 threaded into a tapped opening in an upwardly and forwardly projecting arm 67 on an end plate 1 of the carriage. Paper feed devices, such as the feed rollers 68 are adjustably mounted in the usual manner along the supporting spindle 46 and rotate freely thereon in any positions to which they may be adjusted. As will be seen, more particularly from an inspection of Fig. 1, the feed rollers 68 coact with the platen above the printing line, and the bail, comprising the arms 49 and 56 and the spindle 46, is pivoted at 66 forward of and above the printing line to swing into and out of the effective position. A suitable catch 69 is pivoted at 70 on each end plate 1 and is forced by the power of a spring 71 to coact with the spindle 46 and hold the bail from swinging from effective position.

It will be seen that when the bail is in effective position, shown in Fig. 1, the arms 49 are capable of receiving a limited, rectilinear, sliding movement on the arms 56 towards and from the platen 72 and substantially towards and from the axis thereof. It will be seen, moreover, that the force of each of the springs 62 is exerted independently of the other in this direction to force the feed rollers 68 against the platen, and that it is unnecessary to exert a spring pressure laterally against the arms of the bail to force the feed rollers against the platen and that the spring pressure applied to the feed rollers 68 in the present instance is independent of any lateral movement of the arms of the bail. This construction enables an evenly distributed and effective pressure to be exerted by both feed rollers 68 against a work sheet and to provide a straight feed of the work sheet.

The above described paper bail construction is not claimed herein but is claimed in a divisional application filed by me December 17, 1927, Serial #240,734.

Referring now to the paper finger construction, and the means for mounting the same, it will be seen that a sheet metal supporting bar 73 is secured at its ends by screws 74 to lugs 75 on the end plates 1. This bar is thus supported on the carriage below the printing line, the heads of the screws 74 preferably being received in counter-sunk openings in the face of the bar for purposes which will presently appear. Referring particularly to Fig. 1, it will be seen that the bar 73 has substantially an inverted L-shape in cross section, the cross head or flange 76 thereof extending horizontally rearward from the upper edge of the vertically disposed portion of the bar. The bar is attached to the end plates 1 only at the upright portion thereof, leaving the cross head 76 free from obstruction by both end plates so that the paper finger carriers may receive a sliding motion on and off the supporting bar 73, as will hereinafter more clearly appear.

There are two paper fingers or marginal feed devices and carriers therefor, and the description of one applies to the other. Each sheet metal paper finger 77 has a forwardly extending integral finger piece 78 at its inner edge, and struck-up ears 79 support a spindle 80 for a marginal feed roller 81 that extends through an opening 82 in the finger and bears against the platen. Projecting from the lower end of the paper finger are two lugs bent to provide barrels

83 to receive a pivot rod 84. This rod also is received in and supported by barrel-like bearings 85 of a comparatively long sheet metal carrier or slide designated as a whole by the reference numeral 86. This carrier comprises a flat plate-like vertically disposed portion 87 which at its upper edge is provided with rearwardly extending horizontal projections or lugs 88 bent downward and forward at their free ends, as indicated at 89, to surround the rear edge of and embrace the flange 76 of the supporting bar, as shown in Fig. 1. These extensions or projections 88 are widely separated, being located at the ends of the plate-like body portion 87 of the carrier and leaving a large intervening space between them. A coiled spring 90 (see Fig. 6) surrounds the pivot rod 84, one end 91 of the spring bearing against the associated paper finger 77, and the other end 92 bearing against the plate-like member 87 of the associated carrier. The power of this spring is exerted at one end to force the member 87 against the front flat face of the supporting bar, whereas the spring at its other end exerts its force against the companion paper finger 77 to maintain its feed roller 68 in contact with the platen or the paper thereon.

This very simple and inexpensive form of paper finger construction and mounting requires no nice fitting of the slide or carrier on its supporting bar, and yet enables each of the paper fingers and its carrier to be easily adjusted longitudinally of the platen without any undue cramping or binding action of the carrier on the bar, such as is formed in many constructions heretofore employed. This freedom for sliding adjustment of the frictionally held carrier is provided, in the present instance, notwithstanding the finger piece 78 by which a finger 77 and its carrier or slide are adjusted along the supporting bar, is located at a point remote from the carrier where it is most convenient to the operator.

The construction also enables the fingers to be readily mounted in place or removed without detaching the supporting bar 73 from the carriage. Thus, by turning a paper finger forward around its pivot 84 to a point where it will clear the arm 67 on the adjacent end plate 1 on the carriage, as shown in dotted lines in Fig. 1, the carrier may be forced along and off over the corresponding end of the supporting bar. Said arms 67, however, will prevent an accidental displacement of the fingers and their carriers from the supporting bar when the parts are in use. In a like manner the carriers and fingers may be readily mounted in place.

The above described paper finger construction and the means for mounting the same are not claimed herein but are claimed in a divisional application filed by me December 20, 1928, Serial #241,328.

The means shown in the present instance for controlling the rock shaft 17 to release the main feed rollers 8 and 26 is the same as disclosed in my application Serial No. 180,202 hereinbefore referred to, although any suitable means may be employed for this purpose. Such release mechanism includes a three-arm lever comprising an upstanding arm 93 which terminates in a finger piece 94. A second arm 95 of the lever is pivoted at 96 to an end plate 1 of the carriage. A third arm 97 is pivoted at 98 to a depending link 99 which is pivotally connected at 100 to a crank arm 101 on an end of the rock shaft 17. A rearward movement of the finger piece 94 turns the rock shaft 17, causing the cams 16 and 27 thereon to shift the hangers 10 and 23 to release the main feed rollers 8 and 26. A quarter turn of the rock shaft 17 brings the cams thereon crosswise of the hanger arms, and the parts including the feed rollers are held indefinitely in the released position.

If at the time when the feed rollers 8 and 26 are released by the finger piece 94, the cam 40 should be in the Fig. 8 position to apply the extra force of the spring 36, this will not interfere with the release of the feed rollers 8 and 26. The action of the release key 94 will merely result in effecting a bodily downward movement of the floating cam 40, causing a further flexing of the spring 36 while the hangers 10 and 23 are moved away from the platen, thus releasing both sets of feed rollers. When the key 94 is returned, the feed rollers 8 and 26 will be applied as before, and the spring 36 will still exert its extra pressure on the rollers 26.

No mention has as yet been made of the combined paper table and apron 102. This member is constructed, mounted and actuated in the same manner as indicated in my hereinbefore mentioned application, being guided by links 103 each pivoted at one end to the member 102, as indicated at 104, and at the other end on a pivot screw 105 threaded into a tapped opening in an end plate 1. Each end of the member 102 has a forked lug 106 that straddles a pin 107 on the adjacent end plate 1 to further guide the paper apron. Rubber rollers 108 on the spindles 7 and 25 support the combined paper table and apron and control its movement towards and from the platen.

From the foregoing description it will be seen that the entire paper feed mechanism is simple, compact, inexpensive to manufacture and assemble, is highly efficient in use and may readily be embodied in existing machines without modifying, or materially modifying, the other structural features thereof.

Various changes may be made in the construction, and parts thereof may be employed without others, without departing from my invention as it is defined in the accompanying claims.

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

1. The combination of a platen, a paper feed roller coacting therewith, spring means for furnishing the pressure ordinarily required for pressing said feed roller against the platen to feed the paper, a separate auxiliary spring normally substantially ineffective, and hand controlled means shiftable at will into and out of effective position for applying at will the additional effective force of said separate spring to said feed roller and applying the latter against the platen with a spring pressure in excess of that normally required and applied by said first mentioned spring means to feed the paper.

2. The combination of a platen, two sets of paper feed rollers, spring means for pressing said feed rollers against the platen, and separate means shiftable at will into and out of effective position and when in the effective position forcing one set only of said feed rollers against the platen with a spring pressure in excess of that applied by said first mentioned spring means.

3. The combination of a platen, a forward set of main paper feed rollers beneath the platen, a rear set of main paper feed rollers beneath the platen, spring means for pressing said forward and rear sets of feed rollers against the platen, and separate means operable at will on the rear set only of said feed rollers and shiftable at will into and out of effective position and when in the effective position causing a force to be exerted by the rear set of feed rollers against the platen in addition to and in excess of the pressure exerted by said first mentioned spring means.

4. The combination of a platen, a paper feed roller coacting therewith, spring means for pressing said feed roller against the platen, and separate means operable at will for forcing said feed roller against the platen with a spring pressure in excess of that applied by said spring means, said separate means including a finger piece, a cam intermediate said finger piece and said rollers, and a relatively heavy spring against which said cam acts for exerting an additional force against said rollers.

5. The combination of a platen, a set of paper feed rollers, independently movable hangers by which said feed rollers are supported, a cross bar which connects said hangers so that a limited extent of relative movement may be effected between them and thus enable an evenly applied pressure to be exerted by the feed rollers against the platen, a spring, and a hand controlled floating cam intermediate said spring and cross bar and coacting with the latter intermediate the ends thereof to apply the feed rollers to the platen from the force of said spring exerted through the cam.

6. The combination of a platen, a set of paper feed rollers, independently movable hangers by which said feed rollers are supported, a cross bar which connects said hangers so that a limited extent of relative movement may be effected between them and thus enable an evenly applied pressure to be exerted by the feed rollers against the platen, a spring, a hand controlled floating cam between said cross bar and spring that coacts with the cross bar intermediate the ends thereof to apply the feed rollers to the platen from the force of said spring exerted through the cam, and spring means for exerting an evenly applied pressure by the feed rollers against the platen independently of the pressure exerted through said cam.

7. The combination of a platen, a set of paper feed rollers, independently movable hangers by which said feed rollers are supported, a cross bar which connects said hangers so that a limited extent of relative movement may be effected between them and thus enable an evenly applied pressure to be exerted by the feed rollers against the platen, a spring connected to said cross bar intermediate its ends to apply an evenly distributed spring pressure by said feed rollers against the platen, releasing means for moving the feed rollers away from the platen against the force of said spring, a second relatively heavy spring, and a separate hand controlled cam that coacts with said cross bar intermediate the ends thereof and with said second spring to apply the feed rollers to the platen with an even pressure in excess of the pressure exerted by said first mentioned spring.

8. The combination of a platen, a forward set of main paper feed rollers beneath the platen, a rear set of main paper feed rollers beneath the platen, spring means, means for applying the force of said spring means so as to exert an evenly distributed pressure by the feed rollers of each set against the platen, and separate means for applying an additional and evenly distributed spring pressure by the feed rollers of one set only against the platen, such additional pressure being in excess of the pressure applied by said first mentioned spring means.

9. The combination of a platen, a forward set of main paper feed rollers beneath the platen, a rear set of main paper feed rollers beneath the platen, spring means, means for applying the force of said spring means so as to exert an evenly distributed pressure by the feed rollers of each set

against the platen, and a separately controlled and independently actuated means for forcing the feed rollers of the rear set against the platen with an additional and evenly distributed spring pressure in excess of the pressure exerted by said first mentioned spring means and while the feed rollers of the front set remain unaffected by said independently actuated means.

10. The combination of a platen, a set of front main paper feed rollers, independently movable hangers by which said feed rollers are supported, a cross bar which connects said hangers so that a limited extent of relative movement between them may be effected and thus enable an evenly applied pressure to be exerted by said feed rollers against the platen, a second set of rear main paper feed rollers mounted in the same manner as said front set of feed rollers, a spring connected to the cross bars for the two sets of feed rollers intermediate the ends of said bars, and separate means operable at will for applying an additional spring pressure by the feed rollers of the rear set against the platen.

11. The combination of a platen, a set of front main paper feed rollers, independently movable hangers by which said feed rollers are supported, a cross bar which connects said hangers so that a limited extent of relative movement between them may be effected and thus enable an evenly applied pressure to be exerted by said feed rollers against the platen, a second set of rear main paper feed rollers mounted in the same manner as said front set of feed rollers, a spring connected to the cross bars for the two sets of feed rollers intermediate the ends of said bars, and hand controlled means including a cam operative at will on the cross bar for said rear set of feed rollers intermediate the ends of such bar for exerting an additional and evenly distributed spring pressure by the feed rollers of the rear set against the platen, the additional pressure of the rear set of feed rollers being in excess of that applied thereby from the force of said first mentioned spring.

12. The combination of a platen, a set of front main paper feed rollers, independently movable hangers by which said feed rollers are supported, a cross bar which connects said hangers so that a limited extent of relative movement between them may be effected and thus enable an evenly applied pressure to be exerted by said feed rollers against the platen, a second set of rear main paper feed rollers mounted in the same manner as said front set of feed rollers, a spring connected to the cross bars for the two sets of feed rollers intermediate the ends of said bars, a second spring, a hand controlled rock-shaft, and a cam carried by said rock-shaft and cooperative with said second spring and with one of said cross bars to exert an additional spring pressure on the associated set of feed rollers and force the latter with an additional pressure against the platen.

Signed at Middletown, in the county of Middlesex and State of Connecticut this 29th day of April, A. D. 1927.

GEORGE G. GOING.