A. W. SMITH.

TYPEWRITING MACHINE.

APPLICATION FILED NOV. 1, 1919.

1,372,568.

Patented Mar. 22, 1921.

2 SHEETS—SHEET 1.

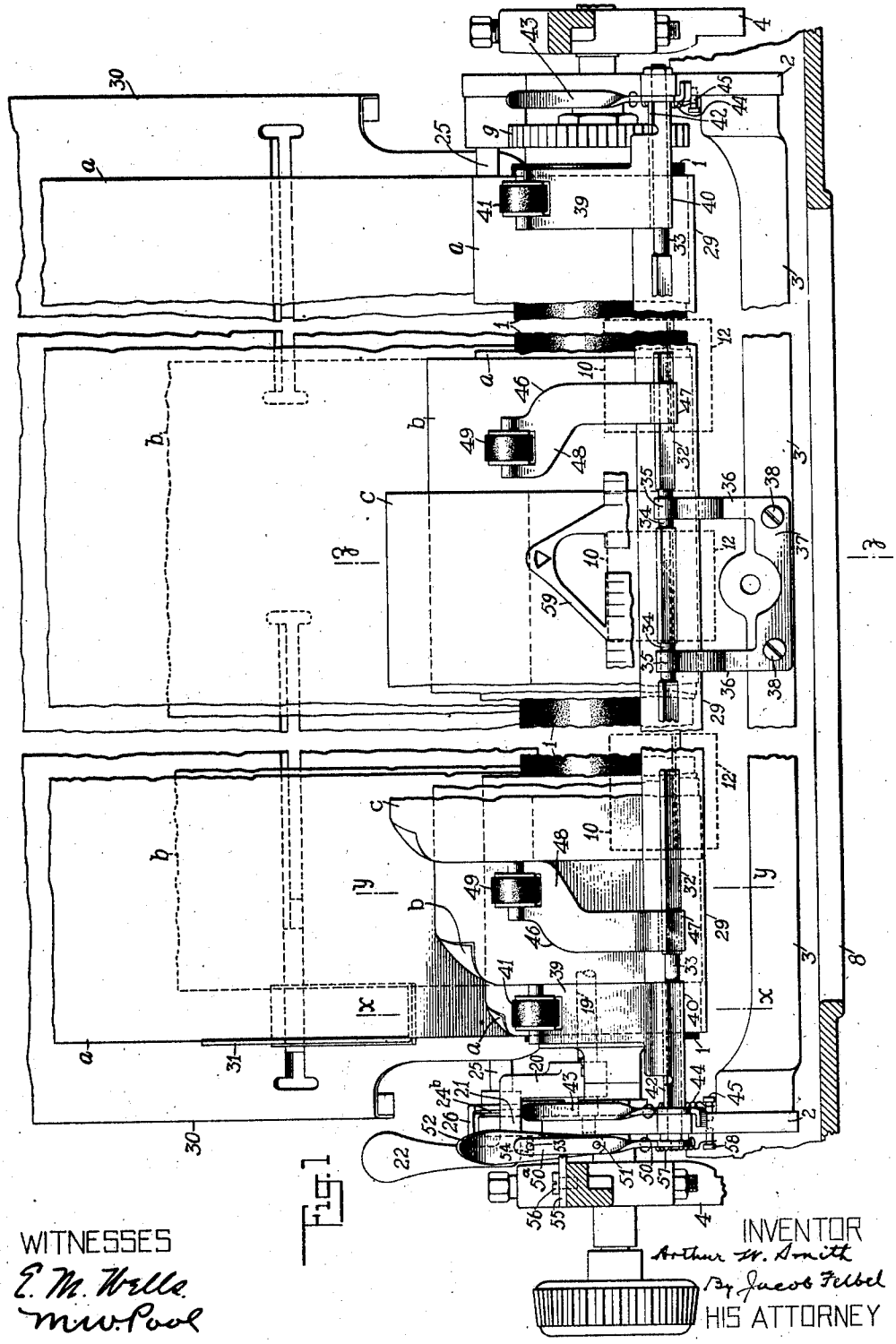


FIG. 1

WITNESSES

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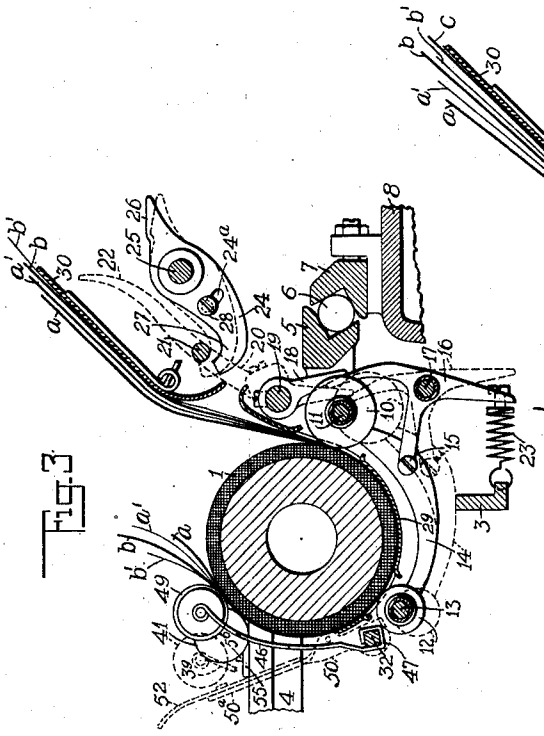


Fig. 3.

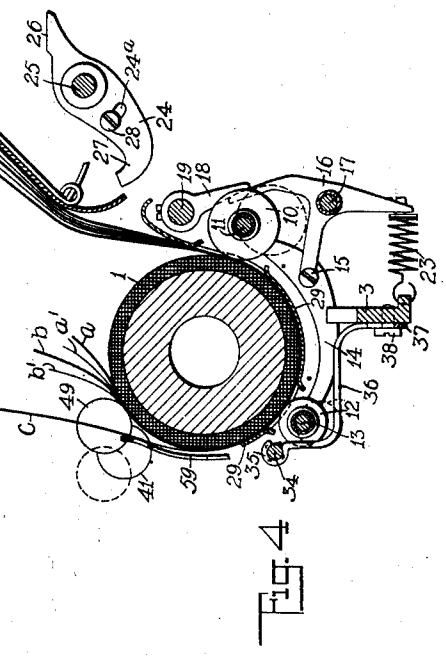


Fig. 4.

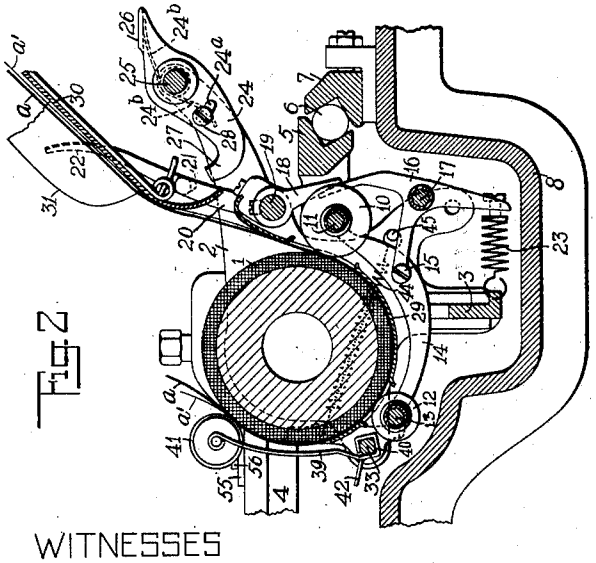


Fig. 2.

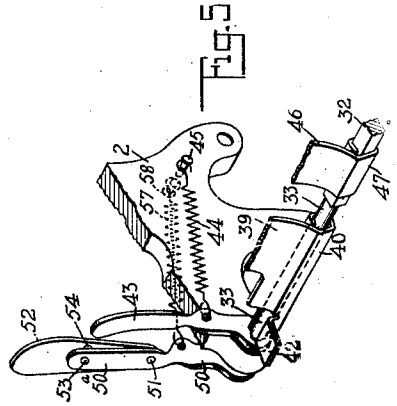


Fig. 5.

WITNESSES

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UNITED STATES PATENT OFFICE.

ARTHUR W. SMITH, OF NEW YORK, N. Y., ASSIGNOR TO REMINGTON TYPEWRITER COMPANY, OF ILION, NEW YORK, A CORPORATION OF NEW YORK.

TYPEWRITING-MACHINE.

1,372,568. Specification of Letters Patent. Patented Mar. 22, 1921.

Application filed November 1, 1919. Serial No. 335,053.

To all whom it may concern:

Be it known that I, ARTHUR W. SMITH, a citizen of the United States, and resident of the borough of Manhattan, city of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Typewriting-Machines, of which the following is a specification.

The main object of my present invention is to provide new and improved paper controlling devices for type-writing machines, said devices being especially adapted for use with a plurality of work sheets which are required from time to time to be relatively adjusted in respect to each other.

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 to be hereinafter described and particularly pointed out in the claims.

In carrying out my invention in the present instance I apply to the platen of a Remington typewriting machine, to which the preferred form of my invention is shown in the drawings as adapted, two sets or pairs of paper fingers or guiding devices, each pair extending upward at the front or delivery side of the platen and transversely of the paper deflector which extends along the platen below the printing line. The pairs of paper fingers are provided at their upper ends with pressure rolls which are adapted to coöperate with the platen above the printing line. All the paper fingers are mounted on a common supporting bar or rod which is arranged lengthwise of the platen below the printing line and supported at its ends on the platen frame part of the carriage. The outer pair of paper fingers, or terminal paper fingers as they are sometimes called, are mounted on rounded end portions of the bar and are each provided with individual springs which constantly tend to maintain them in engagement with the platen or with the marginal portions of the widest work sheet. The second pair of paper fingers are mounted intermediate or between the terminal pair of paper fingers and on the body portion of the supporting rod which is angular or squared so that when a release key connected to said bar is actuated the intermediate paper fingers will be simultaneously released but without affecting the terminal or duplicate paper fingers. The release key aforesaid is provided with a latch which enables the intermediate paper fingers to be locked away from the platen with which are associated the usual feed rollers of the Remington machine which may also be locked in released position. Certain of the paper fingers may also be employed as paper guides or gages for the side edges of some of the work sheets, providing in effect combined paper fingers and side guides. The construction is such that I am enabled to adjust with readiness and accuracy three work sheets of different widths, and properly to feed or advance the work sheets after such relative adjustment, certain of the work sheets being removed and replaced from time to time by other sheets.

My invention will be described in detail in connection with the accompanying drawings wherein—

Figure 1 is a fragmentary front elevation of the platen carriage and upper part of a Remington typewriting machine showing my invention applied thereto.

Figs. 2, 3 and 4 are transverse sectional views taken respectively on planes indicated by the dotted lines *x x*, *y y* and *z z* in Fig. 1, and showing different stages of adjustment of the work sheets.

Fig. 5 is a fragmentary perspective view illustrating the mounting of the paper fingers and devices for releasing the same.

Referring to the drawings, the platen of the Remington machine, which platen is designated as 1, is supported on a carriage which comprises a platen frame proper and a truck, said frame including end bars or plates 2 and a connecting cross bar 3 which extends under the platen and lengthwise thereof. The platen frame is supported on a truck which comprises end bars 4 and connecting front and rear bars, of which only the rear bar 5 is shown. The front and rear bars are grooved to coöperate with roller bearings 6 which connect the carriage with grooved guide rails at the front and rear of the machine, the rear guide rail 7 being illustrated, said guide rail being fixedly supported on a top plate 8 which is comprised in the main frame of the machine. The rotary platen 1 is provided with line spacing devices including a ratchet wheel 9 connected to the right-hand end of said platen. Letter feeding devices and key actuated type bars of the usual construction are also provided although they are not

illustrated in the drawings. Associated with the platen are paper feeding and controlling devices of regular construction, comprising a main feed roller and a secondary feed roller. The main feed roller is composed of sections 10 supported on a rod 11, while the secondary feed roller is composed of sections 12 mounted on a rod 13. The main feed roller coöperates with the platen at its rear or introductory side, while the secondary feed roller coöperates with the lower front side of the platen. The main and secondary feed rollers are mounted on a frame comprising transverse bars 14 which provide supports for the rods 11 and 13. The bars 14 are pivotally connected at 15 with three-armed levers 16 fulcrumed on rods 17, the upward extensions of said levers being adapted for coöperation with releasing devices or fingers 18 on a rock shaft 19 mounted on the carriage and provided at its left-hand end with a releasing arm or lever 20 having a horizontal leftward offset 21 and terminating in an upstanding finger piece or release key 22. When said release key is pushed rearward from the Fig. 2 position to the dotted line position of Fig. 3, it operates to rock the shaft 19, causing the fingers 18 to actuate the three-armed levers 16 and move the main and secondary feed rollers to the released or dotted line position illustrated in Fig. 2. Such movement is in opposition to the springs 23 which will act to restore the feed rollers when the key 22 is released. The feed rollers may be locked in released position by devices comprising a spring pressed latch or lever 24 pivoted on a rod 25 on the rearwardly extending part of the left-hand end plate 2. The rear arm of the latch 24 terminates in a key or finger piece 26 and its forward end is curved upward to provide an engaging portion 27. When the release key 22 is pushed back to the dotted line position, the finger piece 26 may be depressed to swing the latch 24 on its pivot from the full line to the dotted line position of Fig. 3, this movement causing the engaging portion 27 to engage with the offset 21 to retain the release key and the main and secondary feed rollers in inoperative or released position. The friction between the offset 21 and the contact edge of the part 27 due to the springs 23 is sufficient to maintain the parts in locking engagement, but it is only necessary to press the release key 22 slightly toward the rear to release the latch and permit the parts to return to normal position when the key 22 is freed. Pivotal movements of the latch 24 are limited by a headed screw pin 28 threaded into the inner face of the end plate 2, the shank of said pin coöperating with a slot 24^a formed in the latch 24. When the latch is not in use the upper end of the slot 24^a engages with the screw pin 28 to maintain the latch in the position illustrated in Fig. 2. A restoring spring 24^b is provided for the latch, said spring being coiled around the rod 25 and so connected to the latch as to maintain it normally in the Fig. 2 position. The feed rollers coöperate with the platen through openings in a paper deflector or guiding device 29 made of sheet metal and curved around the rear and under sides of the platen, the forward edge of said guiding device terminating at the front face of the platen below the printing line. The deflector drops away from the platen when the feed rollers are released. Mounted on the carriage above the rear end portion of the deflector is a rearwardly inclined paper table 30 provided at its left-hand side with an adjustable side guide or gage 31.

The mechanism as thus far described is not new and is common to some styles of Remington typewriting machines.

As herein exemplified, my invention comprises two sets or pairs of paper fingers which are mounted on a support or bar designated as a whole by the numeral 32, said bar extending lengthwise of the platen at the front side thereof and below the printing line. The bar or rod 32 is generally square in cross section but its ends are reduced to provide cylindrical portions 33, the outer extremities of which bear in the end plates 2. Also near its middle the paper finger bar 32 is provided with reduced cylindrical bearing portions 34 which coöperate with bearings 35 formed at the upper ends of two parallel arms 36 comprised in a U-shaped bearing member 37 that is secured to the front face of the cross bar 3 by screws 38. The terminal paper fingers 39 are mounted one on each of the cylindrical end portions 33 of the paper finger rod. These terminal paper fingers are made of sheet metal and have their lower ends bent around, as indicated at 40, to bear loosely on the cylindrical parts 33. Thence the paper fingers extend upward transversely of the guiding device or deflector 29 and of the platen and at their upper ends are provided with pressure rolls 41 which are adapted to coöperate with the front upper side of the platen above the printing line. The lower or bearing portions 40 of the terminal paper fingers are extended outward and terminate in forwardly bent lips or finger pieces 42. Also there is fixed to the outer end of the bearing portion an upwardly extending arm or finger piece 43 by which the paper fingers may be turned on and relatively to the supporting rod. The finger piece 43 is perforated to afford a passage for the supporting rod and has connected to it a restoring spring 44 which extends rearward and is anchored to a pin 45 that projects laterally from the inner face of the associate end plate 2. Each paper finger 39, as will be

understood, is provided with one of these restoring springs 44 which normally maintains it in coöperative engagement with the platen or with the paper thereon. It will be understood that the terminal paper finger 39 may be swung forward away from the platen independently of and without disturbing either its companion terminal paper finger or the supporting rod 32.

The other set or pair of paper fingers, each of which is designated as a whole by the reference numeral 46, are arranged between or intermediate of the terminal paper fingers and bear on the squared portions of the supporting bar or rod 32 along which said paper fingers are slidably adjustable. Each intermediate paper finger 46 is preferably of sheet metal and has its lower end formed or bent, as indicated at 47, to provide a rectangular bearing opening which slidably engages the squared portion of the supporting bar 32, the construction being such that the paper fingers 46 are slidably supported on the bar but a turning movement communicated to the bar will turn also the paper fingers 46; and, conversely, if the paper fingers 46 are pulled away from the platen the bar 32 will be given a rotary movement and the associate paper finger 46 will also be swung away or released. From the supporting bar the paper fingers 46 extend upward transversely of the platen and of the guiding device 29 and their upper end portions are offset or inclined inward as indicated at 48, and support at their upper ends pressure rolls 49 which coöperate with the upper front side of the platen above the printing line and slightly above the pressure rolls 41. It will be understood that a rotary forward movement communicated to the paper finger bar 32 will be effective to swing both of the paper fingers 46 forward away from the platen and that such movement will not affect the terminal paper fingers 39. In order conveniently to turn the bar 32 devices are provided comprising an arm 50 which is suitably secured to the end portion of the bar 32 which projects through and slightly beyond the left-hand end plate 2. The arm 50 is arranged outside said end plate and extends vertically upward, its upper portion 50^a being bent or twisted so that it is in a plane parallel with the platen axis. To the lower part of the portion 50^a is pivoted at 51 a finger piece or key 52 which is arranged behind and in contact with the rear face of the portion 50^a and is adapted for swinging or pivotal movement across said face about the pivot 51, such movement being limited by a pin 53 which projects rearward from the upper end of the portion 50^a into a slot 54 in the finger piece 52. This finger piece serves both as a key by which the paper fingers 46 may be released and also as a latch to hold the paper fingers in released position, said finger piece being adapted for coöperation with a plate or abutment 55 that is secured by a screw 56 to the top of the left-hand end bar 4 and has its inner edge projecting beyond the inner face of the end bar. The plate 55 is so located that when the arm 50 has been swung forward by pulling on the key 52 the latter may be swung pivotally leftward about the pivot 51 until it has been moved into the plane of the plate 55, so that if said key 52 be now released it will contact with the front edge of said plate, the latter serving as a stop to maintain the intermediate paper fingers released. The locked off position of the key 52 is as illustrated by dotted lines in Fig. 3. To restore the intermediate paper fingers and to maintain them in coöperation with the platen a coiled spring 57 is provided, the forward end of said spring being hooked into a hole in the arm 50, the rear end being anchored to a pin 58 projecting laterally outward from the end plate 2. It will be understood that to restore the parts when the intermediate paper fingers are locked off, it is only necessary to swing the key 52 rightward to clear the plate or stop 55 and permit the spring 57 to become effective to swing the arm 50 rearward and through it to turn the bar 32 and restore the paper fingers 46. During the releasing and restoring operations the reduced end portions 33 of the bar 32 will turn freely in the bearing portions of the terminal paper fingers. As illustrated in Fig. 1, the usual line gage member 59 is preferably employed with the present construction.

While my present invention is adapted for use with many different styles of work sheets and systems of billing, it was especially designed and is particularly suitable for employment with three work sheets of different widths such as are illustrated in the drawing and indicated by the letters *a*, *b* and *c*. Accordingly, the operation of the invention will be explained in detail in connection with said work sheets although of course it is to be understood that the use of the invention is not restricted to the specific character of work sheets shown nor to such manipulations as are hereinafter detailed.

The widest sheet *a*, sometimes called an "auditor's proof sheet," is adapted to receive duplications of all matter written on the machine and, being the innermost sheet or the one nearest the platen, receives such duplications through a carbon sheet *a'*. The sheet *b*, sometimes called a "ledger sheet," is narrower than the auditor's proof sheet and is devoted to the account of an individual customer. Sheet *b* receives duplications through a superposed carbon sheet *b'*. The outermost or narrowest sheet *c*, usually called the "statement," receives impressions directly from the inking ribbon of the ma-

chine which is not shown herein. The statement in the system under consideration is a monthly sheet, that is, it is concluded at the end of the month and forwarded to the customer. The ledger sheet may contain duplicates of monthly statements covering a number of months, while the auditor's proof sheet, together with several others, is ordinarily completely filled in the course of a single day and contains the purchases or transactions of a considerable number of customers, which transactions take place in the course of the day. This proof sheet remains in the machine until it is fully written or filled. It extends substantially throughout the working length of the platen and its side margins are controlled by the terminal or duplicate paper fingers 39. The auditor's proof sheet *a* is introduced into the machine in the usual way over the table 30 with its left-hand edge in contact with the margin gage 31, and, ordinarily together with its carbon sheet *a'*, is passed around the platen between it and the paper deflector and up at the front of the machine under the paper fingers and between the pressure rolls and the platen. Thereafter it is intended that the proof sheet shall remain under control of the paper fingers 39 and their pressure rolls until it has been completely filled in. The condition of the machine after the sheet *a* has been introduced is illustrated in Fig. 2. The ledger sheet *b*, usually with its carbon *b'*, is next introduced into the machine behind the sheet *a* and its carbon. Sometimes the carbon sheet for the sheet *b* is introduced with the statement but that is a matter of preference. The sheet *b*, it will be understood, may, and ordinarily will, contain a number of entries from prior transactions so that it is necessary to adjust it variably at different times in order to bring the first blank line on it opposite the printing line. To facilitate the adjustment of the sheet *b*, the main and secondary feed rollers are released and locked off and the intermediate paper fingers 46 are also released and locked off, all as illustrated by dotted lines in Fig. 3. The sheet *b* is narrow enough to pass freely between the terminal or duplicate paper fingers 39, and consequently with the feed rollers and intermediate paper fingers locked off, a free passageway is afforded for the sheet *b* which may readily be passed around the platen and advanced to the proper position for receiving the first line of writing. The sheet *b* is preferably adjusted against the inner edge of the left-hand paper finger 39, which thus serves as a margin or side gage or guide for said sheet *b*. It has been found in practice that the paper finger in itself provides an adequate side gage but if preferred of course a separate gage that may be connected with the paper finger or a special guide part made integral with the paper finger may be employed. After the ledger sheet *b* has been thus adjusted the intermediate paper fingers are released to engage with the sheet *b* and hold it in place or adjusted position while the sheet *c* is introduced and adjusted. The sheet *c*, or statement sheet, is less in width than the distance between the inner edges of the two paper fingers 46 so that these paper fingers do not interfere with the introduction of the statement sheet. A clear and unobstructed passageway is thus afforded for the statement when, as has been assumed, the feed rollers are locked in released position. Accordingly the sheet *c* may be passed freely around the platen, being introduced beneath the other two sheets over the paper table and so that when it is brought to the front side of the platen it will be on the outside of the other sheets. In adjusting the statement sheet *c* the inner edge of the left-hand paper finger 46 is preferably employed as a side or margin guide or gage, although as has been stated in connection with the terminal paper fingers, a gage separate from the paper finger 46 or a special guide part on or part of said paper finger 46 may be employed if preferred. The sheets having all been adjusted as described, the feed rollers are restored to engagement with the platen (Fig. 4), said feed rollers assisting primarily to retain the statement sheet in proper position although of course they cooperate with the other sheets as well. The line gage 59 is also of assistance in retaining the statement *c* in proper relationship with the printing line, as well of course facilitating the adjustment in respect thereto of all of the sheets as they are introduced. With the sheets thus adjusted and the various paper controlling and feeding devices related as last described, the necessary entries may be made on the statement sheet and duplicated through the interposed transfer sheets or carbons on sheets *b* and *a*, it being understood that when the platen is advanced for line spacing during the course of the writing, all of the sheets will be simultaneously moved upward a line space distance, with the result that their original relationship is maintained until the entry has been completed. Thereafter the sheets *c* and *b* are withdrawn from the machine the platen is line spaced to advance the auditor's proof sheet *a* to the next writing line, and other ledger and statement sheets are introduced and adjusted in the manner hereinbefore set forth.

The paper fingers afford the best means that have been devised for carrying out the purposes of my present invention, but it is apparent that for some purposes the pressure rolls such as 41 and 49 may be otherwise mounted than on what may strictly be termed paper fingers, it being necessary only

to insure that said pressure rolls are capable of control and adjustment in the manner hereinbefore described and explained.

Various changes may be made without departing from my invention.

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

1. In a front strike typewriting machine, the combination of a platen; a paper finger supporting bar extending lengthwise of the platen; two sets of independently controlled paper fingers mounted on said supporting bar, each paper finger being provided with a pressure roll that coöperates with the platen above the printing line; a paper guide extending lengthwise of the platen below the printing line; a main paper feed roller extending lengthwise of the platen at the introductory side thereof; key controlled devices for releasing said main feed roller; and key controlled devices operative on said bar for releasing one only of said sets of paper fingers.

2. In a front strike typewriting machine, the combination of a platen, a bar extending lengthwise of said platen, two sets of independently controlled paper fingers mounted on said bar, each paper finger being provided with a pressure roll that coöperates with the platen above the printing line, a paper guide extending lengthwise of the platen below the printing line, a main paper feed roller extending lengthwise of the platen at the introductory side thereof, a release key for said main feed roller, a separate release key effective on said bar for releasing one of said sets of paper fingers, and locks coöperating with said release keys.

3. In a front strike typewriting machine, the combination of a platen, a paper apron curved around the under side of said platen, sets of main and secondary feed rollers, a pair of terminal pressure rolls coöperative with the front face of the platen above the printing line, a set of paper fingers arranged inside said terminal rolls, a common support for said pair of pressure rolls and for said set of paper fingers, a release key, connections including said support between said key and said paper fingers, and a release key for said feed rollers.

4. In a front strike typewriting machine, the combination of a platen, a paper apron curved around the under side of said platen, sets of main and secondary feed rollers, a pair of terminal pressure rolls coöperative with the front face of the platen above the printing line, a set of paper fingers arranged inside said terminal rolls, a supporting bar for said pair of pressure rolls and for said set of paper fingers, a release key effective through said bar on said set of paper fingers independently of the other paper controlling elements, and a lock operative to maintain said paper fingers in released position.

5. In a typewriting machine, the combination of a platen, a pair of terminal paper fingers coöperative with the marginal portions of a work sheet at the front side of the platen, a second pair of paper fingers coöperative with the marginal portions of a narrower work sheet at the front side of the platen, a support common to both of said pairs of paper fingers, feed rollers extending lengthwise of the platen in advance of the paper fingers, coöperative with both of said work sheets as well as with a third and still narrower work sheet, means for releasing the feed rollers to entirely free the narrowest work sheet, and independent means acting through said support for releasing the second set of paper fingers.

6. In a typewriting machine, the combination of a platen, a paper finger supporting bar extending lengthwise of said platen, a plurality of paper fingers mounted on said bar, and means for moving said bar to release certain only of said paper fingers.

7. In a typewriting machine, the combination of a platen, a paper finger supporting bar extending lengthwise of said platen, two pairs of paper fingers mounted on said bar, and means for turning said bar to release one of said pairs while the other pair remains in effective engagement with said platen.

8. In a front strike typewriting machine, the combination of a platen, a paper finger supporting bar extending lengthwise of said platen at the front side thereof, terminal paper fingers mounted on said bar near its ends, a second pair of paper fingers mounted on said bar between said terminal paper fingers, and means operative on said bar to release said second pair of paper fingers while the terminal paper fingers remain in effective engagement with said platen.

9. In a typewriting machine, the combination of a platen, a platen carrier, a paper finger supporting bar supported on said carrier and having rounded end portions, a pair of paper fingers supported on said end portions, a second pair of paper fingers supported on the body portion of the bar, a release key connected to said bar, and spring means effective to maintain said paper fingers in operative engagement with the platen.

10. In a typewriting machine, the combination of a platen, a platen carrier, a paper finger supporting bar supported on said carrier and having rounded end portions, a pair of paper fingers supported on said end portions, a second pair of paper fingers supported on the body portion of the bar, a release key connected to said bar, a latch mounted on said release key, detent devices for maintaining said release key in released position, and spring means constantly acting to turn said bar to maintain said second

set of paper fingers in coöperative engagement with the platen.

11. In a typewriting machine, the combination of a platen, a platen carrier, a paper finger supporting bar supported on said carrier and having rounded end portions, a pair of terminal paper fingers supported on said end portions, a second pair of paper fingers supported on the body portion of the bar, a release key connected to said bar, individual springs for said terminal paper fingers, and a spring connected with said bar and effective on both of said second pair of paper fingers.

12. In a typewriting machine, the combination of a platen, a platen carrier, a paper finger supporting bar supported on said carrier and having rounded end portions, a pair of terminal paper fingers supported on said end portions, a second pair of paper fingers supported on the body portion of the bar, a release key connected to said bar, and individual release keys for said terminal paper fingers, said terminal paper fingers being each releasable independently of the other as well as the second pair of paper fingers.

13. In a typewriting machine, the combination of a platen, a platen carrier, a paper finger supporting bar supported on said carrier and having rounded end portions, a pair of terminal paper fingers supported on said end portions, a second pair of paper fingers supported on the body portion of the bar, a release key connected to said bar, individual release keys for said terminal paper fingers, individual restoring springs for said terminal paper fingers, and a single restoring spring for said second pair of paper fingers, said single restoring spring being connected to said bar.

14. In a typewriting machine, the combination of a platen, a platen carrier, a paper finger supporting bar supported on said carrier and having rounded end portions, a pair of paper fingers supported on said end portions, a second pair of paper fingers supported on the body portion of the bar, an arm fixed to one end of said bar, a finger piece pivoted to said arm, an abutment with which said finger piece coöperates to maintain said second pair of paper fingers in released position, and spring restoring means for said second pair of paper fingers.

15. In a typewriting machine, the combination of a platen, a paper finger supporting bar extending lengthwise of said platen, a combined paper finger and side guide mounted on said bar, and a second combined paper finger and side guide also mounted on said bar, said bar being movable to release one of said combined paper fingers and side guides independently of the other.

Signed at the borough of Manhattan, city of New York, in the county of New York and State of New York, this 30th day of Oct., A. D. 1919.

ARTHUR W. SMITH.

Witnesses:
CHARLES E. SMITH,
LILLIAN NELSON.