

O. C. KAVLE.
 PAPER FEED MECHANISM FOR TYPE WRITING MACHINES.
 APPLICATION FILED APR. 14, 1906.

1,050,547.

Patented Jan. 14, 1913.

2 SHEETS—SHEET 1.

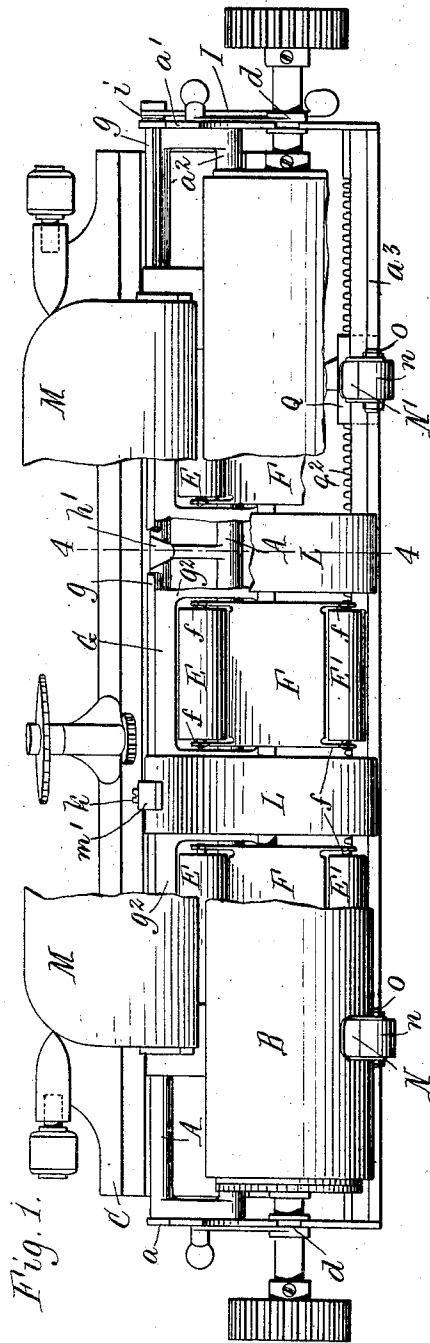
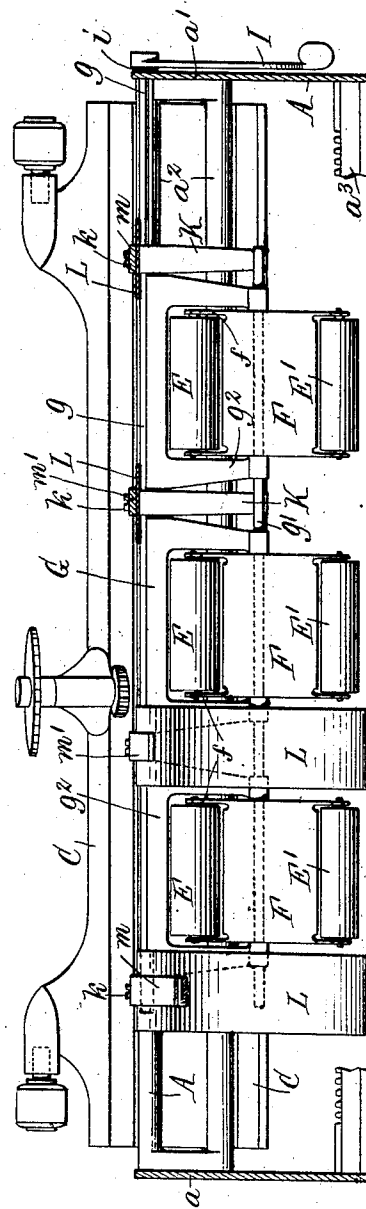


Fig. 1.

Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 3.

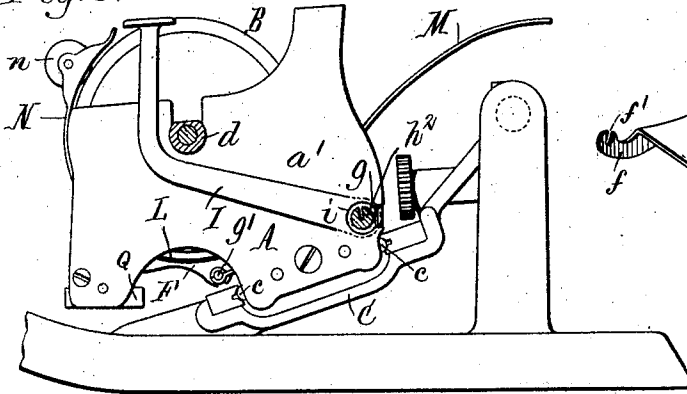


Fig. 6.

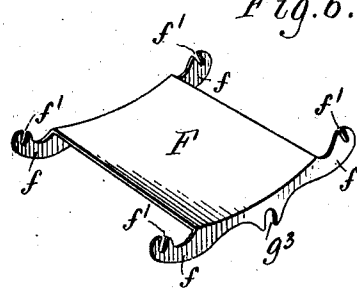


Fig. 7.

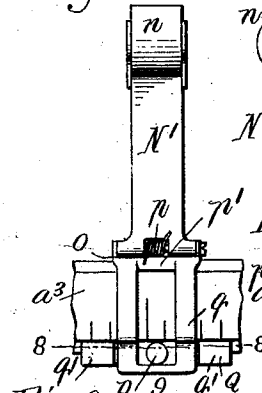


Fig. 4.

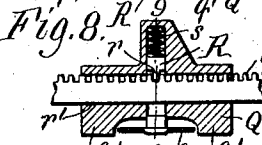
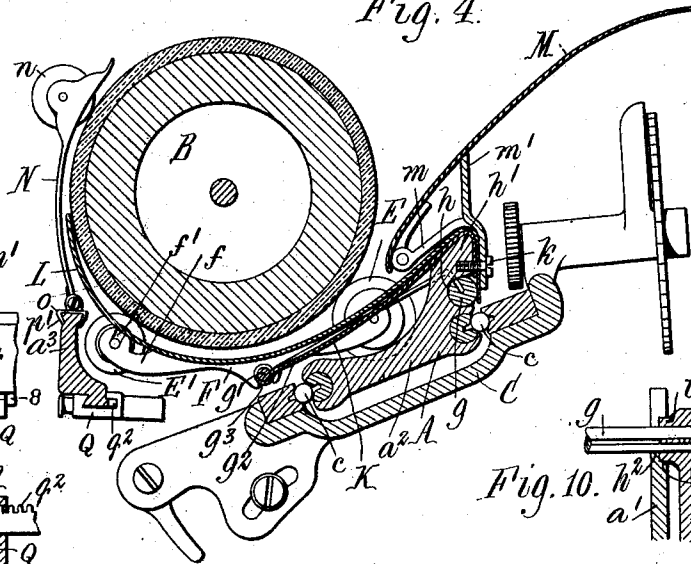


Fig. 10.

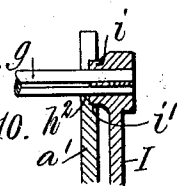


Fig. 9.

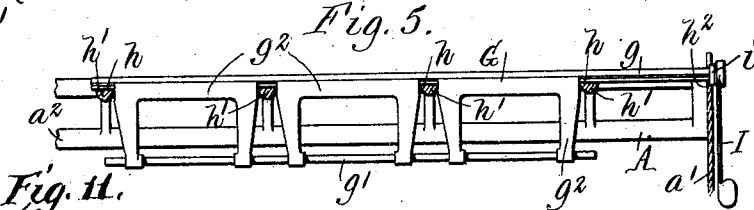
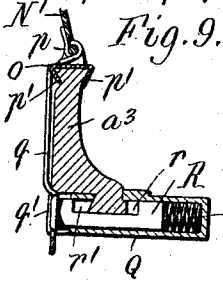
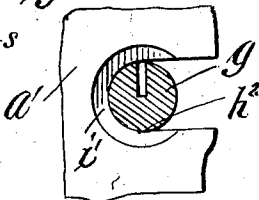


Fig. 11.



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UNITED STATES PATENT OFFICE.

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PAPER-FEED MECHANISM FOR TYPE-WRITING MACHINES.

1,050,547.

Specification of Letters Patent.

Patented Jan. 14, 1913.

Application filed April 14, 1906. Serial No. 311,756.

To all whom it may concern:

Be it known that I, OSCAR C. KAVLE, a citizen of the United States, residing at Syracuse, in the county of Onondaga and State of New York, have invented a new and useful Improvement in Paper-Feed Mechanisms for Type-Writing Machines, of which the following is a specification.

This invention relates to paper feed devices for typewriting machines having rotatable platens for supporting the paper or sheets in the use of the machine.

The primary object of the invention is to produce a desirable paper feed mechanism of simple, economical and practical construction which will perfectly feed and hold the paper on the platen and thereby insure accurate work.

Another object of the invention is to construct and arrange the feed devices, as hereinafter pointed out and set forth in the claims, with a view to securing the desirable results recited in the specification.

In the accompanying drawings, consisting of two sheets: Figure 1 is a plan view of a typewriter carriage and its supporting frame, the carriage being provided with paper feed devices embodying the invention, and parts of the carriage being broken away to disclose underlying portions of the feed devices. Fig. 2 is a horizontal sectional plan thereof partly broken away. Fig. 3 is an end view thereof on an enlarged scale. Fig. 4 is a transverse sectional elevation thereof, on an enlarged scale, in line 4-4, Fig. 1. Fig. 5 is a plan view, partly in section, on a reduced scale, of the supporting frame for the paper feed rolls, and the carriage frame. Fig. 6 is a perspective view detached of one of the rocker bearings for the feed rolls. Fig. 7 is a front elevation, on an enlarged scale, of one of the paper presser fingers and margin stops and a portion of the scale bar. Fig. 8 is a sectional plan thereof in line 8-8, Fig. 7. Fig. 9 is a sectional elevation thereof, on an enlarged scale, in line 9-9, Fig. 8. Fig. 10 is a detail section of the bearing for one end of the shaft of the feed roll support. Fig. 11 is a fragmentary elevation, on an enlarged scale, of one end of the carriage and section of the rock shaft of the feed roll support.

Like letters of reference refer to like parts in the several figures.

A represents the laterally movable car-

riage of a typewriting machine, B the rotatable platen journaled thereon, and C the frame or part on which the carriage travels laterally in the printing of a line. These parts may be of any suitable construction, but preferably the carriage consists of vertical end plates a a' rigidly connected at their lower portions by a body frame or casting a^2 and a front or scale bar a^3 , and the carriage is guided on antifriction bearings c , Fig. 4, on the frame C at opposite sides of the carriage casting a^2 , and the platen is removably journaled on the carriage, for instance, by bearings d surrounding the platen shaft, and removably held in seats in the ends of the carriage.

E E' represent the paper feed rolls, which are arranged in pairs beneath the platen, the rolls of each pair bearing against the platen in front and in rear of the vertical plane of its axis. The rolls may, as usual, be made of wood covered with rubber and preferably have pintles fixed therein and projecting therefrom to provide small end journals. Each pair of rolls is journaled in the front and rear sides of a rocker bearing frame F, see Figs. 1, 2, 4 and 6. The rocker bearings are located just below the platen and supported to rock independently on a yielding roll support or frame by which all of the feed rolls are held up against the platen. The rocker bearings shown consist each of a plate curved concentrically with the platen and having vertical ends f which extend beyond the front and rear edges of the plate, forming bearing arms for the rollers. The roller pintles bear in upwardly and inwardly opening seats f' in the bearing arms. The platen, when in position on the carriage, prevents the disengagement of the rolls from their seats, but the rolls can be lifted out of the seats when the platen or the rocker bearings are removed from the carriage. The rocker bearings are preferably made from sheet metal bent into the shape shown.

The support or frame G for the rocker bearings preferably consists, as shown in Fig. 5, of a rear rod or shaft g , a parallel front rod g' and connecting yokes or forks g^2 . The yokes are made of sheet metal, their rear downturned edges are soldered in a longitudinal groove in the shaft g , and the front ends of their arms are bent around and soldered to the front rod g' . The front

rod g' is preferably capable of springing or flexing somewhat, and the forks are also more or less flexible. The rocker bearings for the feed rolls are pivoted between the rolls on the front rod g' , the ends of the rocker bearings preferably having downwardly opening pivot slots g^3 to receive the rod. The rockers are prevented from disengagement from the rod when the platen is in place on the carriage, but can be lifted off of the rod when the platen is removed. The pivot slots g^3 are placed to locate the rear roll nearer to the pivot than the front roll so that the rear roll will exert the greater pressure on the platen. One rocker is located between the arms of each fork, see Fig. 2, being thereby held from sliding along the pivot rod.

The shaft g of the roll support or frame G bears and is adapted to rock in rearwardly opening seats h in the back of lugs h' , Figs. 1, 4 and 5, which rise from the rear portion of the carriage casting, and in a corresponding seat h^2 , Figs. 3 and 10, in the end plate a' of the carriage. The shaft g is provided at the end adjacent to the end plate a' with a lever I which extends forwardly beneath the platen shaft and upwardly in front thereof, by which the shaft g can be rocked in its bearings to swing the support and rolls carried thereby downwardly from the platen to release the sheets. The hub i of the lever engages in a counter bore i' , Figs. 10 and 11, in the carriage end plate to hold the rock shaft g in its bearing seat. The rock shaft is placed in its bearing seat in the end plate and lugs h' while the forks thereon are in an upright position. The shaft is then moved endwise to engage the hub of the lever I in the counter bore, and is then turned forwardly to swing the support down into the normal position shown in the drawings. When in this position the arms of the forks, which are located at opposite sides of the bearing lugs h' , prevent the endwise movement of the support and thereby prevent disengagement of the lever hub from the counter bore i' . Any other collar or enlargement on the rock-shaft g can be utilized for retaining the shaft in its bearing in place of the hub of the lever I . This shaft is held in the seats in the lugs h , as presently described. The described construction of the roll support and manner of pivoting the same on the carriage is preferred, but manifestly the rocker bearings for the rolls could be pivotally supported by other means permitting the rolls to yield away from the platen, and rocker bearings of other construction could also be employed.

K, Figs. 2 and 4, represents springs which exert a lifting action on the roll support G to press the feed rolls up against the platen, and L represents curved guides for direct-

ing the paper around the platen in the usual manner. A spring and guide are located between each two rocker bearings and at the outer ends of the end rockers. They rest at their rear portions on the bearing lugs h' , and the depending rear ends of the springs and guides are fastened by screws k , or otherwise, to the lugs. The free forward ends of the springs bear upwardly against the front rod g' of the roll support G , while the paper guides, which are above the springs, extend forwardly and upwardly under the platen over the front rod of the roll support. The rear attaching ends of the paper guides preferably extend down back of the rock shaft g and prevent the disengagement thereof from its bearing seats.

The springs K , together with the flexible rod g' and flexible forks g^2 of the support, permit the rolls to yield as required, either all together to admit sheets of uniform thickness, or independently to automatically adjust themselves properly to the sheets on the platen whether there be one or more and notwithstanding irregularities in the sheets, or the surface on which they bear. In all cases the rolls will be held parallel with the platen and will feed and hold the paper always parallel with the platen. The rocker bearings insure a proper distribution of the pressure between the front and rear rolls. The rolls and the rockers can be dropped into place on the support or removed therefrom when the platen is not in the carriage, but they can not be removed or displaced when the platen is in position for use. The described construction of the roll supporting means is very desirable from the manufacturer's standpoint, because the rockers, forks, springs and paper guides are all alike and may be applied without change to long or short carriages. A shorter carriage than that shown would have the same number of pairs of rolls, the rolls, of course, extending nearer to the ends of the carriage, while a longer carriage would be supplied with one or more extra pairs of rolls with the necessary additional forks and springs.

M represents the usual paper shield. This is preferably hinged at its lower edge to swing forwardly on brackets m adjacent to its ends, and rests and is supported between its ends on other brackets m' , see Figs. 2 and 4. These brackets are conveniently attached to the bearing lugs h' of the carriage by the same screws k which fasten the paper guides L and springs K for the roll support. The shield could, however, be mounted on the carriage in any other suitable way.

N N' represent paper pressers or fingers for holding back against the platen the portions of the sheets which project up in front of the platen. There are two of these presser fingers, each one carrying a roller n which

bears on the sheets on the platen, and being mounted to slide on the front or scale bar a^3 of the carriage so that it can be adjusted to bear on the paper nearer to or farther from the end of the platen, as may be necessary or desirable. The presser finger is preferably hinged at its lower end to a base piece O and is pressed toward the platen by a spring p coiled about the hinge pin with its ends engaging the finger and base. The front or scale bar a^3 has a dovetailed or flanged upper edge which is embraced by inturned flanges p' on the base O, see Figs. 7 and 9. These flanges of the base closely hug the flanges of the carriage bar so as to hold the finger frictionally in the position to which it is moved.

The presser finger for the right-hand end of the carriage is releasably connected to a block or slide Q, on the scale bar preferably by means of a spring leg q on the finger base which depends in front of the scale bar and engages between shoulders q' on the slide. The slide has an undercut or dovetailed groove by which it is slidably held on the dovetailed or flanged lower edge of the scale bar, see Fig. 4. The scale bar has rack teeth q^2 on its rear side spaced similarly to the teeth of the carriage escapement bar (not shown), and the block is positively held at any desired position along the scale bar by a releasable latch adapted to engage with said rack teeth. Preferably the latch consists of a bolt R which slides transversely beneath the scale bar in a pocket in the slide Q, and has a tooth r to engage the rack teeth. The bolt is recessed at its upper central portion at r' for the passage of the dovetailed bottom of the scale bar, and the flat bottom of the recess bearing against the bottom of the scale bar holds the bolt from turning in its pocket. A spring s in the bolt pocket presses the bolt tooth into engagement with the rack teeth to lock the slide, and the bolt can move rearwardly to release the slide by pressing on the front end of the bolt which is exposed at the front of the slide. The slide Q projects from the scale bar to cooperate with a part (not shown) to constitute the right-hand margin stop for the carriage. The right hand presser finger is caused to move with the stop slide Q by reason of the engagement of its spring leg therewith, as explained, but this presser finger may be disengaged from the stop slide and adjusted independently thereof to either side of the stop, or it may be locked to the slide in three different positions relative thereto by engaging its spring leg between the two shoulders of the slide, or to straddle one or the other shoulder of the slide.

The scale for the carriage is preferably formed on or secured to the bar a^3 on which the presser fingers are mounted, but these

fingers could be mounted as described, on another bar of the carriage.

I claim as my invention:

1. In a typewriting machine, the combination of a platen, a carriage therefor, a plurality of feed rolls which are arranged in a series lengthwise of the platen and are movable toward and from the platen, and a common movable support for all of said rolls which presses the rolls toward the platen and is flexible lengthwise whereby one or more rolls of the series can yield independently of the other roll or rolls, substantially as set forth.

2. In a typewriting machine, the combination of a platen, a carriage therefor, a plurality of feed rolls which are arranged in a series lengthwise of the platen, and a common support for all of said rolls which presses said rolls toward the platen, is pivoted to move the series of rolls away from the platen and is flexible lengthwise whereby one or more rolls of the series can yield independently of the other roll or rolls, substantially as set forth.

3. In a typewriting machine, the combination of a platen, a carriage therefor, a feed roll support comprising a shaft mounted on the carriage, flexible arms secured to said shaft, and a flexible rod supported by said arms, and a series of feed rolls supported by said flexible rod, said support adapting the feed rolls to yield independently, substantially as set forth.

4. In a typewriting machine, the combination of a platen, a carriage therefor, a feed roll support comprising a shaft mounted to rock on the carriage, flexible arms secured to said rock shaft, and a flexible rod supported by said arms, a series of feed rolls supported by said flexible rod, and means for pressing the feed rolls toward the platen, said support adapting the feed rolls to yield independently, substantially as set forth.

5. In a typewriting machine, the combination of a platen, a carriage therefor, a series of feed rolls, a common pivoted flexible support for all of said feed rolls adapting the feed rolls to yield independently, and one or more springs acting on said support to press the feed rolls yieldingly toward the platen, substantially as set forth.

6. In a typewriting machine, the combination of a platen, a carriage therefor, a series of pairs of feed rolls, a separate rocker bearing for each pair of rolls, and a common pivotal support for said rocker bearings located between the rolls of said pairs, substantially as set forth.

7. In a typewriting machine, the combination of a platen, a carriage therefor, a series of pairs of feed rolls, a separate rocker bearing for each pair of rolls, a common pivotal support for the several rocker bear-

ings movable toward and from the platen, and means for pressing the rocker bearings yieldingly toward the platen, substantially as set forth.

8. In a typewriting machine, the combination of a platen, a carriage therefor, a series of pairs of feed rolls, a separate rocker bearing for each pair of rolls, a common pivoted support on which the several rocker bearings are pivoted between the rolls, and means for pressing said support yieldingly toward the platen, substantially as set forth.

9. In a typewriting machine, the combination of a platen, a carriage therefor, a series of pairs of feed rolls, a separate rocker bearing for each pair of rolls, a common support on which the several rocker bearings are pivoted, and which support is pressed yieldingly toward the platen, and means for moving said support to move the feed rolls away from the platen, substantially as set forth.

10. In a typewriting machine, the combination of a platen, a carriage on which the platen is removably supported, a pair of feed rolls, a rocker bearing for said pair of rolls, and a support on which said rocker bearing is removably seated, said rocker bearing being held from removal from the support by the platen and being removable from the support when the platen is removed from the carriage, substantially as set forth.

11. In a typewriting machine, the combination of a platen, a carriage on which the platen is removably supported, a series of pairs of feed rolls, a rocker bearing for each pair of rolls, and a support on which said rocker bearings are removably seated, said rocker bearings being held from removal from the support by the platen, and being removable from the support when the platen is removed from the carriage, substantially as set forth.

12. In a typewriting machine, the combination of a platen, a carriage on which the platen is removably supported, a pair of feed rolls, a rocker bearing in which said feed rolls are removably journaled, a support on which said rocker bearing is removably seated, said rolls and rocker bearing being held from removal by the platen, said feed rolls being removable from the rocker bearing and the rocker bearing being removable from its support when the platen is removed from the carriage, substantially as set forth.

13. In a typewriting machine, the combination of a platen, a carriage therefor, a feed roll support pivoted on the carriage at one side of the platen with its free end adjacent to the platen and movable toward and from the platen, a rocker bearing pivoted between its ends on the free end of said support, and feed rolls journaled on said

rocker bearing at opposite sides of its pivot, substantially as set forth.

14. In a typewriting machine, the combination of a platen, a carriage therefor, feed rolls, a rock shaft provided with laterally projecting supports for said feed rolls, means for rocking the same, an enlargement on said shaft, open bearing seats in the carriage for said shaft, one of said seats having an enlarged part to receive said shaft enlargement and a reduced opening to admit the shaft laterally, said shaft being moved endwise to seat said enlargement in said enlarged part of said bearing seat, and parts on said carriage which enter between said roll supports for retaining said shaft enlargement in its seat, substantially as set forth.

15. In a typewriting machine, the combination of a platen, a carriage therefor, feed rolls, a rock shaft provided with laterally projecting supports for said feed rolls, a lever secured to one end of said rock shaft for rocking the same and having a hub, open bearing seats in said carriage to receive said shaft, one of said seats having an enlarged part to receive said lever hub and a reduced opening to admit the shaft laterally, said shaft being moved endwise to seat said lever hub in said bearing seat, and parts on said carriage which enter between said roll supports for retaining the lever hub in its seat, substantially as set forth.

16. In a typewriting machine, the combination of a platen, a carriage therefor, feed rolls, a rock shaft having supporting means for said feed rolls, brackets on the carriage having open seats for said rock shaft, a paper guide and a spring for said roll support secured to each of said brackets, one of said parts extending opposite said seats to hold the rock shaft therein, substantially as set forth.

17. In a typewriting machine, the combination of a platen, a carriage therefor, feed rolls, a support for said feed rolls, a series of brackets on the carriage, paper guides and springs for said roll support, and a single screw for securing one of said guides and springs to each of said brackets, substantially as set forth.

18. In a typewriting machine, the combination of a platen, a carriage therefor having a bar extending parallel with the platen, a margin stop movable on said bar, and a presser finger movable on said carriage bar and having a releasable connection with said margin stop whereby the presser finger can be moved with or independently of said margin stop, substantially as set forth.

19. In a typewriting machine, the combination of a platen, a carriage therefor having a bar extending parallel with the platen, a margin stop and a presser finger separately supported to slide on said carriage

bar, and means for releasably connecting said presser finger to said margin stop to move therewith, substantially as set forth.

20. In a typewriting machine, the combination of a platen, a carriage therefor having a bar extending parallel with the platen, a margin stop movable on said bar, a presser finger also movable on said bar, and means for securing said presser finger to said margin stop in different positions relative to said margin stop, substantially as set forth.

21. In a typewriting machine, the combination of a platen, a carriage therefor having a bar parallel with the platen, a presser finger slidably secured on one portion of said bar, and a margin stop slidably secured on another portion of said bar, the one being movable on the bar past the other without interference therewith, substantially as set forth.

22. In a typewriting machine, the combination of a platen, a carriage for the platen having an angular bar parallel with the platen, a presser finger slidably secured to the upper edge of the bar, and a margin stop slidably secured to the lower edge of the bar, whereby the presser finger and stop can be slid past each other to be placed at any desired part of the bar without interference, substantially as set forth.

23. In a typewriting machine, the combination of a platen, a carriage therefor having a bar parallel with the platen, a presser finger, a slide on said carriage bar to which said presser finger is connected, a slide bolt on said slide, and a spring for moving said bolt into engagement with said bar to lock the slide, said bolt having a face bearing against said bar whereby the bolt is held from turning, substantially as set forth.

24. In a front strike typewriting machine, the combination of a rotatable platen, a carriage therefor, a pair of opposable feed rolls located under the front and rear portions of the platen, a rocker bearing frame which supports the rolls in fixed relation to each other but permits either roll to move toward and from the platen independently of the other roll, said rocker bearing frame having

a curved plate located between the rolls and extending substantially from one roll to the other, and means for holding the rolls against the platen with a yielding pressure, substantially as set forth.

25. In a front strike typewriting machine, the combination of a rotatable platen, a carriage therefor, a pair of opposable feed rolls located under the platen, a bearing frame which supports the rolls in fixed relation to each other and is bodily movable vertically, a curved plate located between the rolls and forming a rigid part of said frame, and means for holding the rolls against the platen with a yielding pressure, substantially as set forth.

26. In a front strike typewriting machine, the combination of a rotatable platen, a carriage therefor, a pair of opposable feed rolls located under the platen, a bearing frame for the rolls comprising a pair of end plates connecting the roll shafts and a curved plate connecting the end plates, a pair of arms which are connected to the carriage and extend forwardly from such connection, means pivotally connecting said arms to the end plates of said bearing frame, and means for pressing the rolls against the platen with a yielding pressure, substantially as set forth.

27. In a front strike typewriting machine, the combination of a rotatable platen, a carriage therefor, a pair of opposable feed rolls located under the platen, a curved plate located between the rolls and acting to hold the rolls parallel with the platen, a connection between said curved plate and the carriage in rear of the platen, said curved plate being pivotally movable on said connection, means for holding the rolls against the platen with a yielding pressure, and manually operable means for withdrawing the rolls from the platen, substantially as set forth.

Witness my hand, this 7th day of April, 1906.

OSCAR C. KAVLE.

Witnesses:

CHESTER U. REID,
FRANK E. REID.