A. T. BROWN.

TYPE WRITING MACHINE.

APPLICATION FILED APR. 9, 1913.

1,098,092.

Patented May 26, 1914.

4 SHEETS—SHEET 1.

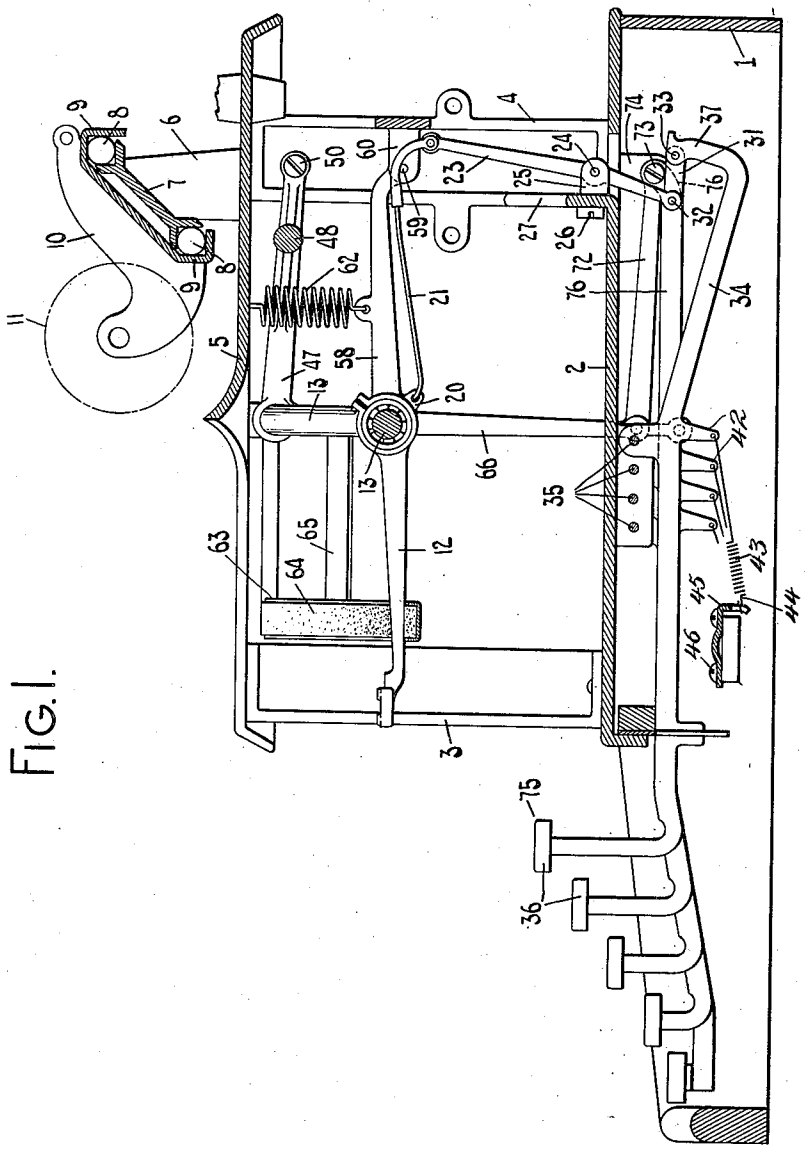

FIG. 1.

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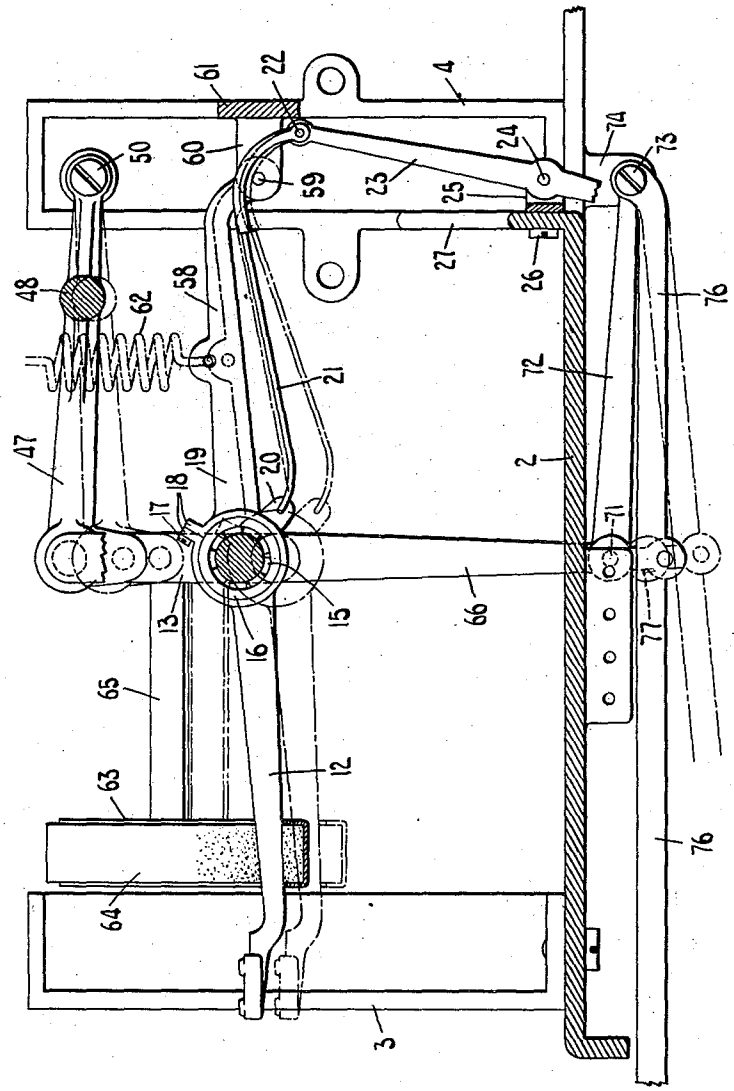
4 SHEETS—SHEET 2.

FIG. 2.



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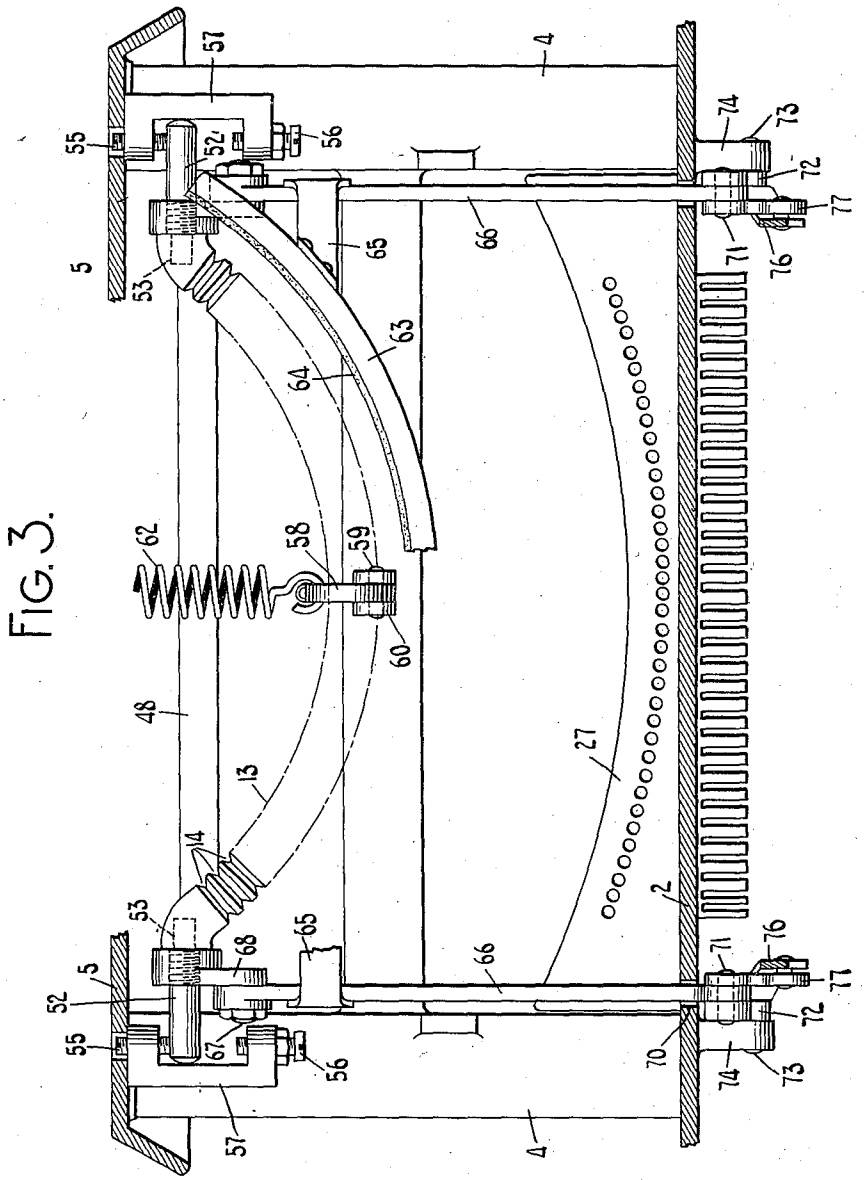
4 SHEETS—SHEET 3.

FIG. 3.



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4 SHEETS—SHEET 4.

FIG. 4.

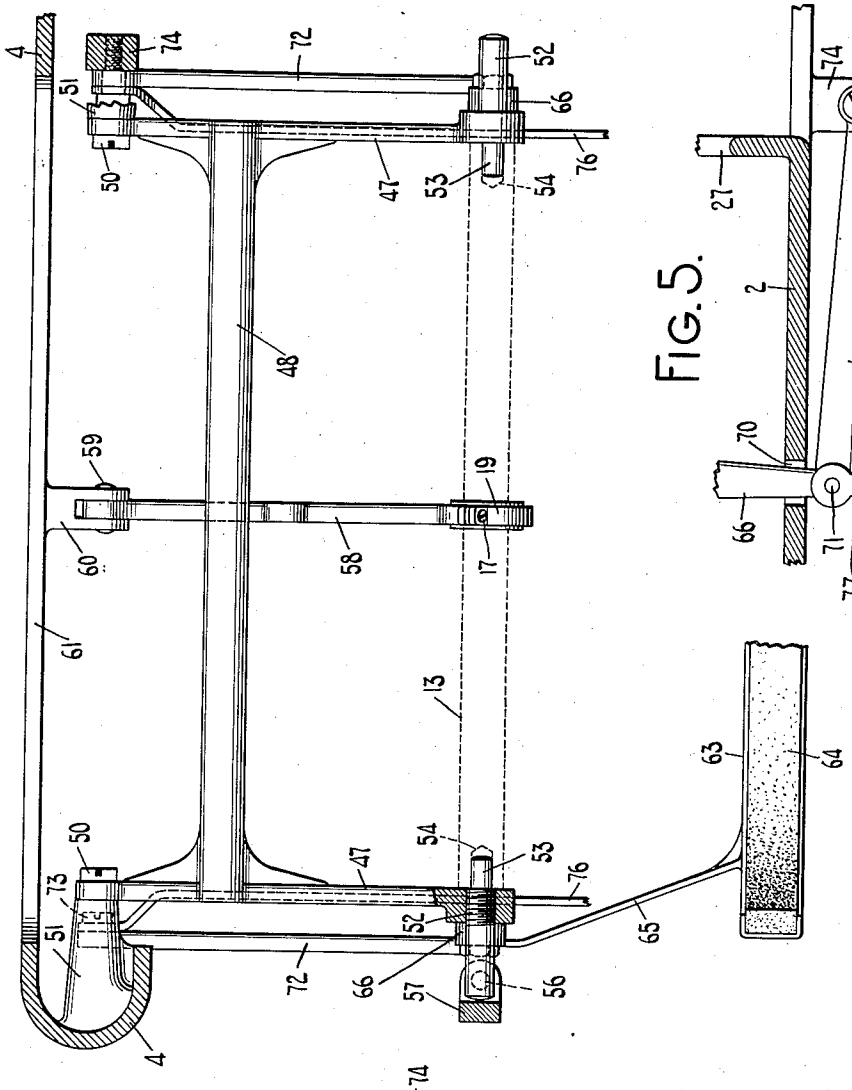


FIG. 5.

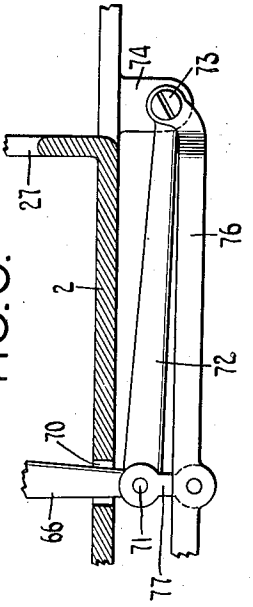
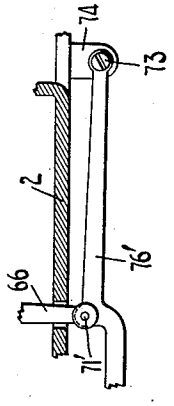


FIG. 6.



WITNESSES:

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UNITED STATES PATENT OFFICE.

ALEXANDER T. BROWN, OF SYRACUSE, NEW YORK.

TYPE-WRITING MACHINE.

1,098,092. Specification of Letters Patent. Patented May 26, 1914.

Original application filed June 1, 1912, Serial No. 700,939. Divided and this application filed April 9, 1913. Serial No. 759,879.

To all whom it may concern:

Be it known that I, ALEXANDER T. BROWN, citizen of the United States, and resident of Syracuse, in the county of Onondaga and State of New York, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

My invention relates to typewriting machines and more particularly to type bar machines with shifting basket.

The principal object of my invention is to provide an improved shiftable type bar supporting means. This has been devised especially for front strike or visible machines, but some, at least, of its features are applicable or adaptable to other machines.

To the above ends, the invention consists in certain features of construction and combinations and arrangements of parts, all of which will be fully set forth herein and particularly pointed out in the claims.

My invention is embodied in the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a front to rear vertical sectional view of so much of a typewriting machine as is necessary to illustrate the embodiment of my invention therein. Fig. 2 is a view showing parts of Fig. 1 on a larger scale and with some parts broken away or removed and showing also by broken lines the shifted position of the shiftable mechanism. Fig. 3 is a front elevation in transverse vertical section, with parts broken away. Fig. 4 is a fragmentary top plan view, with parts broken away and parts in section, and illustrating the case shift mechanism. Fig. 5 is a fragmentary side elevation, partly in section, of a part of said case shift mechanism. Fig. 6 is a view similar to Fig. 5 but on a smaller scale and illustrating a modification.

Referring more especially to Fig. 1, the main frame of the machine comprises a base part 1, on which is mounted a sort of base top plate 2 consisting essentially of a horizontal plate or sheet of metal covering part of the rectangular base 1 back of the key-board. This plate 2 may be secured to the base 1 in any suitable manner, as, for example, by bolts or screws. Front posts 3 and rear posts 4 are mounted on the plate 2 and support a top plate 5 from which rise standards 6, supporting a stationary rail or trackway 7, as shown in Fig. 1, inclined at an angle of about 45° and having race-ways in its upper rear and lower forward edges for the accommodation of balls or rollers 8 which coöperate with suitable grooved rails 9 formed in a carriage 10 which carries a platen 11.

Front strike type bars 12 are mounted on a segment 13 which, as shown in Fig. 3, consists of a round rod bent, at least through part of its length, in the arc of a circle and having a series of peripheral grooves 14 cut therein and serving as stationary race-ways for anti-friction balls 15 (Fig. 2). Said balls coöperate with rings 16 threaded into the eyes at the heels of the type bars and secured in adjusted position by screws 17 connecting together two lugs 18 projecting from the ring-like hub 19 of each of the type bars. Said ring-like hub is sawed through or split between the two lugs 18 so that the screw 17 tightens the ring or hub about the rings 16 and thus secures said rings in adjusted position. This ball bearing is or may be substantially identical with that shown in the patent to Barr, No. 943,643, dated December 21, 1909.

Below the pivotal center of each type bar and projecting somewhat toward the rear from the heel thereof, is a lug or ear 20 to which is pivoted the forward end of a push link 21, the rear end of which is pivoted at 22 to the upper end of a substantially upright sub-lever 23. There is a series of these sub-levers 23 each consisting of a lever of the first order pivoted at 24 in a hanger 25 which is secured by a screw 26 to the rear face of a flange or vertical part 27 of the plate 2. The upper ends of the sub-levers 23 are arranged in an arc substantially corresponding with the arc of the pivots 20 in the heels of the type bars.

The sub-levers 23 may be operated in any suitable way, as far as the present invention is concerned. As here shown, said sub-levers have their lower ends disposed substantially in a straight horizontal line and operated by links 31 each pivoted to the sub-lever at 32 and extending from said pivot approximately horizontally toward the rear, being pivoted at 33 to the rear end of a substantially horizontal key lever 34 of the first order, said key lever being pivoted between

its ends at 35 and carrying a key 36 at its forward end. The links 31 are comparatively short, as shown, and when one of the keys 36 is depressed to move the pivot point 33 upward, the sub-lever 23 and parts connected therewith are operated, throwing the type bar to the printing position. In order to avoid conflict between the key lever and the lower end of the sub-lever, said key lever is formed at its rear end with a substantially upright section 37.

The keys 36 are arranged in four rows as usual as shown in Fig. 1 and there are four of the pivot wires 35, one for each row of keys. Each of the key levers has a downwardly extending arm 42 to which is connected the rear end of a restoring spring 43. The said springs have their forward ends connected to a row of hooks 44 formed on the edge of a bar 45 secured by screws 46 to the base 1 of the frame.

I have provided a very light, simple and effective shifting segment construction. This mechanism includes a frame best shown in Fig. 4 and which consists of two end bars or pieces 47 and a cross bar 48, the latter being made stiff and rigid and being rigidly connected with the former. Preferably this entire frame consists of a single integral piece. The arms 47 are approximately horizontal and are pivoted at their rear ends on pivot screws 50 threaded into lugs 51 projecting from the rear posts 4. The right-hand lug 51 is shown broken away in Fig. 4 in order to disclose other parts of the mechanism. At their forward ends the arms 47 are formed with threaded holes into which are screwed combined pivot and stop screws 52, as perhaps best shown in Fig. 4. Each of these screws has a reduced inner end 53 which projects into a hole 54 in the end of the segment 13, the two holes 54 at the two ends of the segment being in line with each other. The ends of the segment are trued up and abut against the inner surfaces of the arms 47 so that transverse motion of the segment is prevented. The construction is such that said segment is pivoted in the frame 47, 48 on the pivots 53. Said frame 47, 48 is adapted to be shifted down and up for upper and lower case writing, its motion in this respect being limited by the elongated heads of the screws 52 coöperating with stop screws 55 and 56, the screws 55 being above and the screws 56 being beneath the heads of the screws 52. Said screws 55 and 56 are threaded through brackets 57 secured to the underside of the top plate 5. Each of these brackets 57 comprises a vertical part and two horizontal projecting ears through which latter the screws 55 and 56 are threaded. The vertical part of each of the brackets 57 either contacts with or is very close to the end of the corresponding screw 52 and serves to guide said screw in its up and down motion against motion in a right and left-hand direction.

In order to cause the segment 13 to maintain a vertical position when it is shifted up and down, said segment has pivoted to the middle thereof a guide link 58, which is pivoted at 59 to an ear 60 projecting from a cross bar 61, which cross bar connects the two rear posts 4. As here shown, said cross bar 61 is integral with said posts, but it can of course be a separate piece secured in position in any suitable way. The forward end of the guide link 58 may be pivoted to the segment 13 in any suitable manner. As here shown (Fig. 4) said guide link is formed at its forward end with the same sort of strap 19 as the heels of the type bars, said strap being split at one point and being provided with a screw 17 like those of the type bars and said link is pivoted to the segment by a ball bearing which occupies the middle one of the grooves 14 of the segment. It will of course be understood that it is not essential that this link be pivoted to the segment by a ball bearing but the form of the segment is such that that is as convenient a way as any to pivot it.

A spring 62 is connected at its lower end to the guide link 58 and at its upper end to the top plate 5, and this spring normally holds the segment 13 and the parts associated therewith in their upper positions, as shown, for example, in Fig. 3. Shift key mechanism to be presently described, is provided for pulling the segment down to its lower position for upper case writing.

The type bars 12 near their free ends normally rest against a type rest 63 having a pad 64. In order to shift this type rest up and down with the segment 13 and in a substantially constant relation to said segment, said type rest is supported by arms 65, which at their rear ends are secured to upright bars 66, each at its upper end pivoted at 67 to an ear 68 extending downward from the forward end of one of the arms or bars 47. The bars 66 extend down through holes 70 (Fig. 3) in the plate 2 and just beneath said plate (Fig. 5) each of said bars 66 is pivoted at 71 to the forward end of a guide link 72, which guide link is substantially parallel with the bars 47, being pivoted at its rear end at 73 to a lug 74 depending from the plate 2. These guide links 72, acting on the lower ends of the bars 66, and the arms 47, acting on the upper ends of said bars, maintain said bars in substantially a vertical position, the bars shifting down and up with the type bar segment and causing the type rest 63 to shift correspondingly.

In order to shift the segment downward, a case shift key 75 is provided in the keyboard and mounted on a lever 76, Figs. 2, 3 and 5, which lever at its forward part cor-

responds in outline with the key levers 34 and at its rear end is pivoted on the same pivot 73 as the guide link 72. Each of the shift key levers 76 is connected with one of the bars 66 by means of a short link or connecting piece 77. The construction is such that when either one of the keys 75 is depressed it pulls the segment 13 down to its upper case position, as will be understood from the above description.

Instead of part of the construction above described, the modification shown in Fig. 6 may be employed. According to this modification the guide link 72 is dispensed with and the rear end of the shift key lever 76′ is pivoted at 73, and said lever is connected directly at 71′ to the lower end of the bar 66. In this construction the rear end of the key lever 76′ serves as a guide link for the lower end of the bar 66.

In a construction like that shown in the drawings, where the type bars are mounted on a grooved rod, which rod they surround, it is necessary in assembling the type bars to slip the said type bars over the ends of the segment and then to assemble and adjust the ball bearings thereon. It is, therefore, necessary to leave the ends of the segment free from all rigidly secured attachments which would interfere with the easy assembling and disassembling of the printing mechanism. It is very difficult to make a rigid attachment for this type bar bearing segment that can be taken off when it is necessary to mount and remove type bars and which can then be reattached so that it will not become loose in use. This segment shifts up and down between stops and in use it is subjected to constant jarring which makes rigid connections for it difficult to maintain. It is also an advantage with this structure to leave this segment in such position that it is free from any strain due to distortion of the main frame of the machine.

The present application is a division of my prior application, Serial No. 700,939, filed June 1, 1912.

Various changes can be made in the details of construction and arrangement without departing from my invention.

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

1. In a typewriting machine, the combination of a series of type bars, a shiftable segment on which said type bars are mounted, a shift frame pivoted to the machine frame and having said segment pivoted thereto, means for guiding said segment in its shifting motion, a type rest, bars pivotally connected with said shift frame and supporting said type rest, and means for guiding said bars.

2. In a typewriting machine, the combination of a series of type bars, a shiftable segment on which said type bars are mounted, a type rest, a shiftable frame, independent pivotal connections for said shiftable frame with said segment and said type rest, and guiding means for said segment and type rest.

3. In a typewriting machine, the combination of a series of type bars, a shiftable segment on which said type bars are mounted, a shift frame to which said segment is pivoted, a type rest, supporting means for said type rest pivoted to said shift frame, and a shift key connected with said supporting means.

4. In a typewriting machine, the combination of a type bar support consisting of a rod having a series of ball bearing grooves therein, a shiftable support to which said rod is directly pivoted at its ends, and a guide link pivoted to the middle of said rod.

5. In a typewriting machine, the combination of a series of type bars, a type bar support consisting of a rod having a series of ball bearing grooves therein for said type bars, a shift frame to which said rod is pivoted at its ends, and a guide link pivoted to said rod by a ball bearing groove in said rod.

6. In a typewriting machine, the combination of a series of type bars, a support for said type bars consisting of a rod having a series of ball bearing grooves therein, a shiftable frame to which said rod is directly pivoted at its ends, and a type rest independently pivotally connected with said frame.

7. In a typewriting machine, the combination of a shift frame pivotally mounted, a type bar segment pivotally connected with said shift frame, front strike type bars mounted in said segment, a frame comprising a type rest and two bars, one at either side of the machine, said frame pivoted to said shift frame and said bars extending downward, means for guiding the lower ends of said bars, and means for shifting said shift frame, type bar segment and type rest frame.

8. In a typewriting machine, the combination of a series of front strike type bars, a support for said type bars shiftably mounted, and a shift key lever, one of the lever arms of said key lever serving as a guide link for said support.

9. In a typewriting machine, the combination of a shift frame, a type bar segment having a series of front strike type bars thereon, a pivotal connection between said shift frame and said segment, said connection comprising a screw having one end reduced to serve as a pivot and having an elongated head, a bracket having stops cooperating with said head, and guiding means cooperating with said head.

10. In a typewriting machine, the combi-

nation of a shift frame, a segment, a series of front strike type bars mounted on said segment, pivotal connections between said segment and said shift frame comprising two pivot screws or pins one at each end of the segment, each of said pins or screws having a reduced inner end to serve as a pivot and a head, upper and lower stops co-operating with said heads, and guides for the ends of said heads to prevent transverse motion of said segment.

Signed at Syracuse, in the county of Onondaga, and State of New York, this fourth day of April A. D. 1913.

ALEXANDER T. BROWN.

Witnesses:

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CARRIE E. ALLEN.