A. T. BROWN.

TYPE WRITING MACHINE.

APPLICATION FILED NOV. 6, 1908.

923,763. **Patented June 1, 1909.**

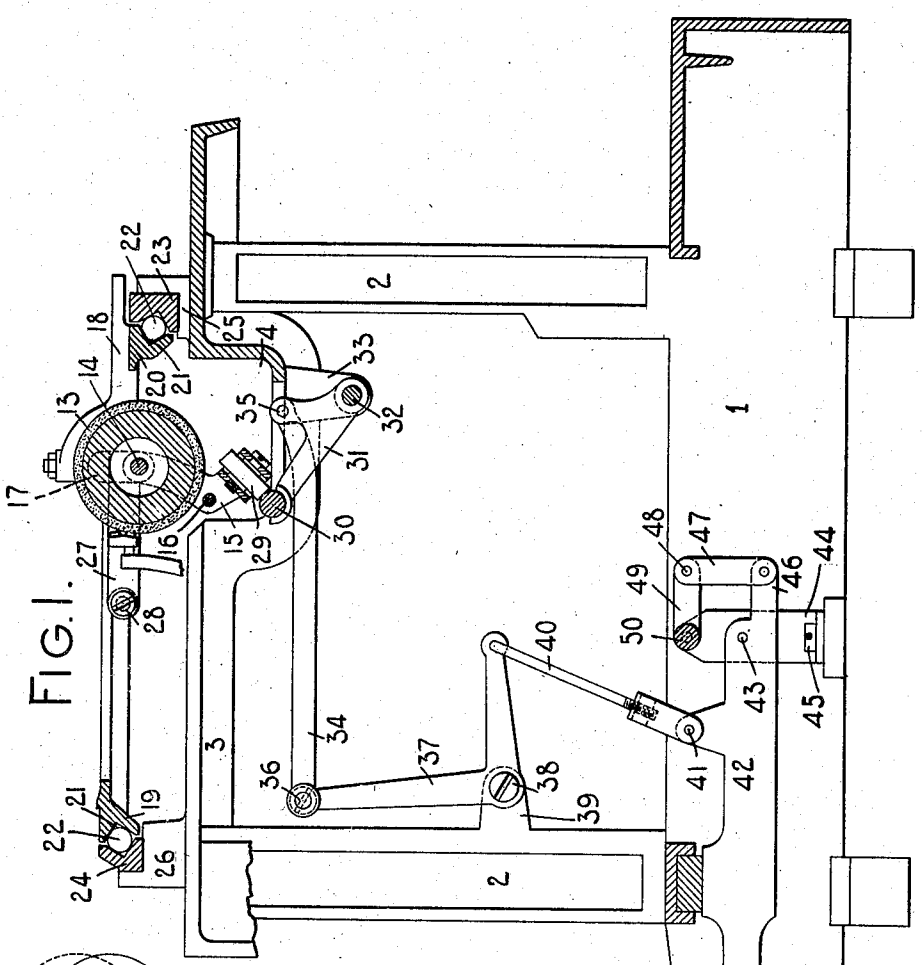

FIG. 1.

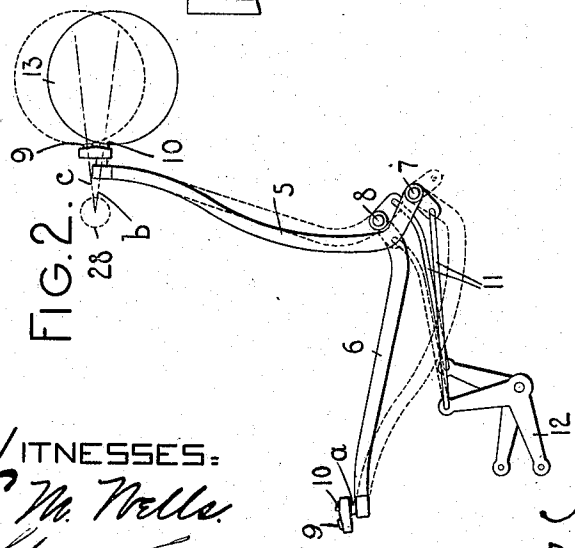

FIG. 2.

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ALEXANDER T. BROWN, OF SYRACUSE, NEW YORK.

TYPE-WRITING MACHINE.

No. 923,763. Specification of Letters Patent. Patented June 1, 1909.

Original application filed March 4, 1904, Serial No. 196,537. Divided and this application filed November 6, 1908. Serial No. 461,396.

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 case shifting mechanism for such machines.

The main object of the invention is to provide comparatively simple and efficient case shifting mechanism.

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

In the accompanying drawings, Figure 1 is a side elevation with parts broken away and parts in section of one form of typewriting machine embodying my invention, only so much of the typewriting machine being shown as is necessary to illustrate my invention. Fig. 2 is a diagrammatic side elevation of portions of two of the type actions and the platen.

The present invention is a division of my application Serial No. 196,537, filed March 4th, 1904.

The frame of the machine comprises a base 1, corner posts 2 and top plate 3. The top plate has a dropped, recessed or depressed portion 4 for purposes which will presently appear. Two sets of type bars 5 and 6 are pivoted respectively at 7 and 8 and are suitably mounted in a segmental arrangement on an upright type bar segment (not shown). The type bars are each provided with type blocks having two types 9 and 10, the faces of which are preferably beveled outwardly and downwardly from the center toward the ends of the type block. Each type block is connected by a stem *a* to its type bar, the stem in each instance being situated directly back of the lower case type. Each of the type bars is connected to a pull link 11 which in turn is connected to a bell crank lever 12 suitably connected to a key lever. The type bars are arranged to strike upwardly and rearwardly against the front face of a rotative cylindrical platen 13 as indicated in Fig. 2. The platen is carried by a platen shaft 14 received in bearing openings in a suitable platen frame comprising end plates 15 connected by a tie rod 16. The platen shaft extends through openings 17 in the end bars 18 of a carriage. The carriage is or may be in the form of a rectangular frame comprising the end bars 18, a front cross bar 19 and a rear cross bar 20. The front and rear cross bars have opposite faces thereof grooved as indicated at 21 to receive anti-friction balls or rollers 22, which latter are likewise received in oppositely grooved fixed rails 23 and 24 secured to risers 25 and 26 respectively which project from the top plate of the machine.

The platen frame has forwardly extending arms 27 pivoted at their forward ends as at 28 to the end bars of the carriage, the pivots 28 being forward of the platen and in the present instance they are positioned so that the printing point is between the axis of the platen and a line drawn through the pivots 28. By this arrangement the platen may have a limited general up and down motion with the platen frame around the pivots 28 as a center, it being understood that the usual detent (not shown) is carried by the platen frame and coöperates with the platen or the line spacing wheel thereof. The end plates 15 of the platen frame are connected by a cross bar which is provided with bearings for an anti-friction roller 29, the plane of said roller being angularly disposed as shown in Fig. 1 and bearing downwardly and forwardly against a shift rail 30 which extends from side to side of the machine and coöperates with the roller 29 at any point in the travel of the carriage. The shift rail 30 is supported on arms 31 which project from a rock shaft 32 journaled in depending hangers 33 on the top plate 3. The rock shaft is turned by a substantially horizontally disposed link 34 pivoted at its rear end as at 35 to a crank arm 31. The forward end of the link 34 is pivoted at 36 to the upright arm of a bell crank lever 37 pivoted at 38 on a lug or projection 39 on the frame of the machine. The rearwardly extending arm of the bell crank lever 37 is pivotally connected to one end of a link 40, the lower end of which is pivoted at 41 to a shift lever 42 pivoted at 43 to a bracket 44 secured by a screw 45 to the frame of the machine. If it be desired to mount another shift key at the right hand side of the ma-

chine, the rearwardly extending arm 46 of the shift lever may be pivoted to a link 47 pivoted in turn at 48 to a crank arm 49 projecting from a rock shaft 50, the rock shaft being received in a bearing in the bracket 44 and in a corresponding bearing at the other side of the machine. This rock shaft may be connected to the other shift key at the other side of the machine.

From the foregoing description it will be understood that the drop 4 in the frame provides an unobstructed space for the lower part of the platen carrier or frame to afford a travel thereof with the carriage beyond the sides of the machine frame.

It will also be observed that while the types 9 and 10 upon each type head or block are arranged with their faces in planes which intersect in front of the type faces and at an obtuse angle, these type faces nevertheless match the face of the platen as indicated in Fig. 2 in either position of the platen.

In the operation of the shift mechanism the platen is normally in the position shown in Fig. 1 and in full lines in Fig. 2 of the drawings where it will coöperate with the lowercase types 10 on the type bars. When the shift key is depressed motion will be transmitted through the link 40, bell crank lever 37 and link 34 to the shift rail to elevate the platen frame which turns on the pivots 28, thereby moving the platen around the pivots 28 to the dotted line position shown in Fig. 2, the printing line on the platen moving from the line *b* to the line *c*. At this time the platen is in position to coöperate with the upper case types 9 on the type bars. When pressure on the shift key lever is released the parts will be restored to normal position by gravity.

By reason of the peculiar beveled or inclined arrangement of the faces of the types, I am enabled to place the types much closer together than heretofore and thus reduce the amount of offset or extent of "cranking" heretofore necessary in mounting several types upon a bar, and especially those bars which approach and are at the upper ends of the segment. For example, it will be understood that if the faces of the types were both in the same plane or were inclined reversely to that shown, the types would have to be more widely separated in order to avoid the liability of a portion of one type printing when another on the same bar is leaving its impression. When, however, the faces of the types on the same bar are inclined backwardly away from each other in the manner shown, a greater space is provided between the surface of the platen and the type on the bar which is not at the printing point when the other type is in printing position, and hence a relatively shorter shift of the line of print may be obtained without liability of both types printing at the same blow. Thus the close arrangement of the types on each type block not only reduces cranking action, thereby avoiding blurring when the offset type is printing, but it likewise enables a reduced shifting movement at the printing point without liability of a part of one type printing upon the platen when the other type on the same bar is printing. By this construction I am also able to employ comparatively thick and rigid type bars which are straight throughout their lengths, that is to say, bars which at their type ends have no lateral or sidewise bends, but of course my improved types may be used with bars having such bends. The straight type bar avoids the liability of the type being deflected or "whipped" out of its proper course during a rapid or violent movement of the type bar to the printing position. This defect is particularly apparent in a thin sheet metal type bar having a lateral bend at its free end where the types are located.

Types arranged on the type bars with their faces at an inclination to each other as shown herein, together with a platen having the peculiar shifting motion necessary to coöperate with said types, are claimed in my prior application, Serial No. 103,898, filed April 21, 1902. The claims in the present case are limited to features not shown in said prior application.

Various changes may be made without departing from the spirit and scope of 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 support for the platen pivoted in front of the platen, and key actuated means for shifting said support around the pivots to change the case position of the platen.

2. In a front-strike typewriting machine, the combination of a platen, a platen carrier, parallel arms on which said platen carrier may be shifted up and down to change the case position of the platen, said arms turning on fixed axial centers at their forward ends and swinging up and down at their rear ends.

3. In a front-strike typewriting machine, the combination of a platen, a platen carrier, parallel arms on which said platen carrier may be shifted up and down to change the case position of the platen, said arms turning on fixed axial centers at their forward ends and swinging up and down at their rear ends, the pivotal centers of the arms at the forward ends thereof being forward of the platen.

4. In a front-strike typewriting machine, the combination of a carriage, a cylindrical platen, a platen frame in which said platen

is journaled, the platen frame having forwardly extending arms that are pivoted to the carriage forward of the platen, and a shift rail situated below the platen.

5. In a front-strike typewriting machine, the combination of upwardly and rearwardly striking type bars provided each with a plurality of type having their faces in intersecting planes, a carriage, a platen that is adapted to receive a movement in a general vertical direction, a platen-carrier pivoted to said carriage in front of the printing point, and a shift bar co-acting with said platen-carrier below the platen.

6. In a front-strike typewriting machine, the combination of upwardly and rearwardly striking type bars provided each with a plurality of type having their faces in planes which intersect in front or forward of the type faces, a platen, a carriage, a platen frame which is pivoted to the carriage forward of the platen and which carries said platen and causes it to swing with it in the movement of the platen frame around its pivotal connection with the carriage, a shift rail situated beneath the platen and effective to move the platen frame on its pivots, and a key at the keyboard operatively connected with said shift rail.

7. In a front-strike typewriting machine, the combination of upwardly and rearwardly striking type bars provided each with a plurality of type having their faces in planes which intersect in front or forward of the type faces, a platen, a carriage, a platen frame which is pivoted to the carriage forward of the platen and which carries said platen and causes it to swing with it in the movement of the platen frame around its pivotal connection with the carriage, a shift rail situated beneath the platen and effective to move the platen frame on its pivots, a link operatively connected with said shift rail, a bell crank lever connected with said link, and a shift key operatively connected with said bell crank lever.

8. In a front-strike typewriting machine, the combination of upwardly and rearwardly striking type bars provided each with a plurality of type having their faces in planes which intersect in front or forward of the type faces, a platen, a carriage, a platen frame which is pivoted to the carriage forward of the platen and which carries said platen and causes it to swing with it in the movement of the platen frame around its pivotal connection with the carriage, a shift rail situated beneath the platen and effective to move the platen frame on its pivots, a rock shaft, crank arms which support said shift rail and which are fixed to said rock shaft, a link connected with one of said crank arms, a bell crank lever connected with said link, and a shift key lever operatively connected with said bell crank lever.

Signed at Syracuse, in the county of Onondaga, and State of New York, this 31st day of October, A. D. 1908.

ALEXANDER T. BROWN.

Witnesses:
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C. E. TOMLINSON.