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G. W. CAMPBELL.

PLATEN SHIFT MECHANISM.

APPLICATION FILED JAN. 15, 1907.

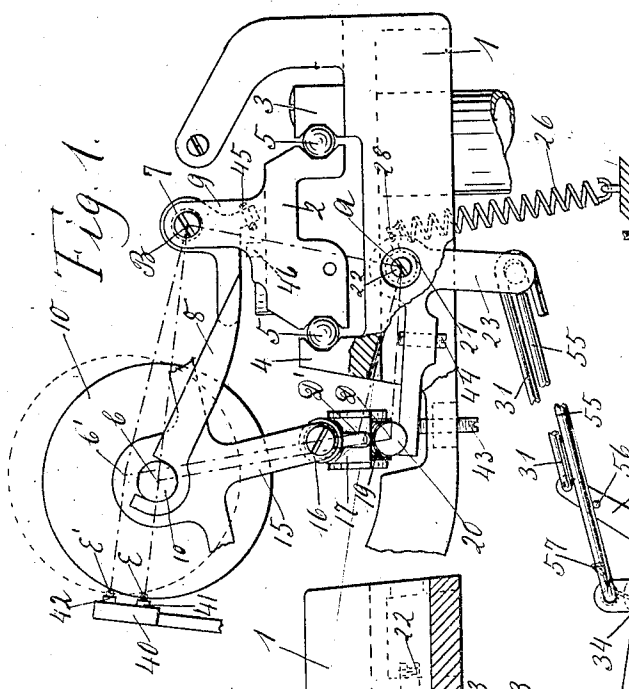

Fig. 1.

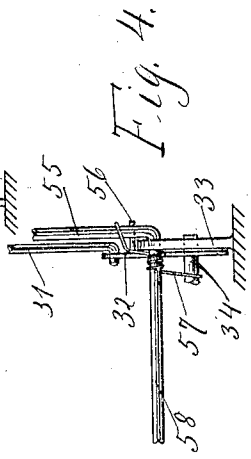

Fig. 4.

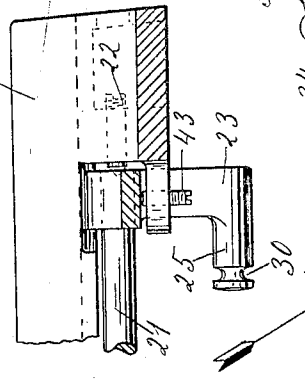

Fig. 2.

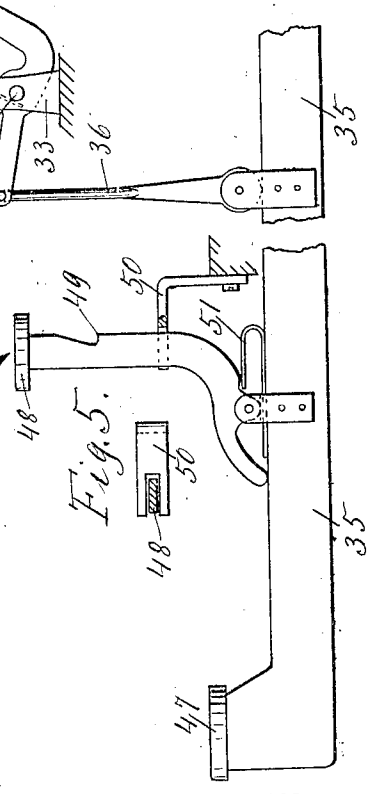

Fig. 5.

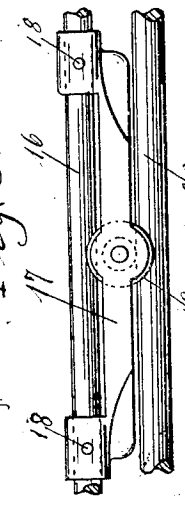

Fig. 3.

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PLATEN-SHIFT MECHANISM

No. 869,347. Specification of Letters Patent. Patented Oct. 29, 1907.

Application filed January 15, 1907. Serial No. 352,375.

To all whom it may concern:

Be it known that I, GEORGE W. CAMPBELL, a citizen of the United States, resident of the borough of Manhattan, city, county, and State of New York, have invented new and useful Improvements in Platen-Shift Mechanism, of which the following is a specification.

The present invention pertains to the platen shift mechanism of typewriting machines, the principal features of which are, that the shifting mechanism for the platen and the lever-system for keeping the platen in alinement while being shifted, are combined in one lever system, operated by the shifting key; and that the rebound of the platen, after shifting, is prevented. The device is shown in the drawings where:

Figure 1 is a side elevation of a part of the typewriting machine showing the novel device in connection with the carriage. Fig. 2 is a front sectional elevation of a part of the machine frame, showing how the bell-crank, operating the device, is disposed therein. Fig. 3 is a front elevation of the platen-supporting device. Fig. 4 is a front elevation of the locking-device for the shifting mechanism. Fig. 5 is a plan view of the notch, holding the shift-key in the shifted position.

In Fig. 1, 1 is the part of the machine frame on which the carriage 2 is slidingly arranged between the rails 3 and 4 by means of the balls 5.

The platen 10 is suspended on each end by the brackets or links 8, of which only one is shown in the drawing, said brackets being oscillatingly fastened on the rod 7 (shown in dotted lines) extending between and fastened to the lugs 9 of carriage 2. The weight of the platen may be counterbalanced by any well-known suitable means, as for instance by a coil spring on rod 7 (not shown in the drawing).

The center pin 6 of the platen is led on each side rotatably through the cross-shaped end frame 15, which end frame bears on each side the well known ratchet mechanism for revolving the platen (not shown in the drawing), and is held together by rod 16. In the middle of rod 16 is fastened frame 17 (Figs. 1, 3) by pins 18, which frame carries on its underside the roll 19 suitably shaped to roll on the cylindrical rail 20.

In parallel to the platen within the machine frame 1 is disposed the pivot-rod 21, Figs. 1, 2, pivoted on the screws 22 on each end and bearing on each end a bell-crank 23 to the forwardly arms of which bell-cranks is secured rail 20 (Figs. 1, 3) on which the roller of frame 17 can roll as the carriage 2 moves along the printing line when operated. A coil spring 26 is fastened on one end at a suitable place by pins 28 to rod 21, and on the other end to a suitable place on the frame, in order to keep rail 20 in secure contact with roll 19 and to help counterbalance the weight of the platen. The other arm of each bell-crank is provided with a pin 25 having on its end a groove 30 suitably shaped to receive the hook-shaped end of pull-rod 31.

In a suitable place on the machine frame is provided the lug 33 bearing pivot shaft 34 on which rocking bell-crank 32 is fastened. To one arm of this bell-crank is linked pull-rod 31, to the other arm pull-rod 36, which in turn is linked to the shift-key-bar 35.

It will be seen that if shift key-bar 35 is pressed downwardly the rocking of bell-crank 32 will cause pull-rod 31 to rock bell-crank 23, whereby the link system A, B, C, D denoted in dash and dot lines will be shifted into the position A, B, C′, D′, so that the point E of the platen 10, formerly opposite type 41 of type-bar 40, will be exactly opposite type 42, and the latter type will strike the platen in strict alinement, because line C D is in parallel with line C′ D′ and therefore C E in parallel with C′ E′. This effect is obtained by having the length of link A D of the system in certain proportion to the length of link B C, and A D and B C under a certain angle to A B, which may be found by geometrical construction by any one skilled in the art, assuming hereby that B—C, C—D and C—C′ viz: E—E′ are given. This parallelism is of course only correct for the shifting of the platen between the two lines C E and C′ E′ running perpendicular to the plane of type 41 and 42 and through the middle of these types.

The throw of the link system is limited, for bell-crank 23 by the set-screw 43 and 44, and for bracket 8 by set-screw 45 acting against stop 46.

If, in case of writing only capitals, it should be desired to keep the platen 10 permanently in the position indicated by the dotted circle, the shift-key 48 is pressed down instead of shift-key 47. Key 48 is linked to key-bar 35 and held in the normal position relatively to bar 35, shown in the drawing, by spring 51, and provided with a nose 49. Besides it is guided in the slot of catch 50 secured in a suitable place on the machine frame. If now key-bar 35 is operated through key 48 in the direction of the arrow, nose 49 will engage in the catch 50 and thus keep key-bar 35 locked in the down position, corresponding to the shifted position of the platen for writing capitals. For returning the platen to its normal position, shown in the drawing, enough lost downward-motion is provided for the key-bar 35, so that if key 47 is pressed down further, nose 49 will be released from catch 50 and spring 51 will return key 48 to its normal position relatively to bar 35. If now key-bar 35 is released into its normal position, nose 49 will slide past catch 50 and the platen thus be returned to its normal position.

It has been found that in fast writing the platen with its link system in returning to its normal position and thereby striking stop or setscrew 43, will slightly rebound, which may affect the correct alinement. Therefore a locking device has been provided, which locks the link system each time at the moment it returns to its normal position and touches stop 43, and which unlocks the system before the upward shift commences. For

this purpose lock-rod 55 is provided, which is journaled in lug 33 and yieldingly pressed by spring 57 against pin 56 of bell-crank 32. Rod 55 is of such a length that it will just touch pin 25 of bell-crank 23 when the latter is in its normal position, thereby preventing even the slightest rocking motion of this bell-crank and thus of the whole link system and the platen. It will be seen in Fig. 1 that the hook-shaped end of pull-rod 31 has some lost motion in its normal position (shown by dotted lines). During the shifting operation of the platen, this lost motion will be taken up first in pressing down key-bar 35, whereby pin 56 of bell-crank 32 will slide along lock-rod 55 and lift its end off the pin 25 of bell-crank 23, so that pull-rod 31 can now rock the link system. In releasing the shift-key, lock-rod 55 will return to its normal position together with the link system and lock bell-crank 23 before the rebound can take place.

While the shifting operation of the platen has been shown in the drawings only on one side of the machine, a shift-key and locking device of the same construction may be provided on the other side of the machine, so that the operator may shift the platen from either side of the keyboard at will. The lock-rods 55 of either side would have to be connected by a common shaft 58, Fig. 4, so that the link system is unlocked on both sides when the shift-key of only one side is operated.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is:

1. In a typewriting machine, the combination with a carriage guided rectilinearly longitudinally of the machine, a platen carrying frame, links connecting said frame to the carriage, lugs on said links near their pivot points, and lugs on the carriage frame against which said link lugs abut for limiting the upward motion of said links, a rail on which the platen carrying frame has rolling support independently of the carriage, types adapted to strike the platen, pivoted bell cranks having their forward arms operatively connected to said rail and suitably proportioned to the length of said frame connecting links and forming with said links a link system to guide the platen so as to have the same striking point in the normal and in the shifted position in a plane coincident with the plane through the type faces in their striking position, adjustable stops for limiting the motion of said bell cranks in both directions, and means for operating said pivoted bell cranks to shift the platen.

2. In a typewriting machine, the combination of a carriage guided rectilinearly longitudinally of the machine, a platen carrying frame, links connecting said frame to the carriage, lugs on said links near their pivot points having set screws and lugs on the carriage frame against which said link set screws abut for limiting the upward motion of said links, a rail on which the platen carrying frame has rolling support independently of the carriage, types adapted to strike the platen, pivoted bell cranks having their forward arms operatively connected to said rail and suitably proportioned to the lengths of said frame connecting links, and forming with said links a link system to guide the platen so as to have the same striking point in the normal and in the shifted position in a plane coincident with the plane through the type faces in their striking position, adjustable stops for limiting the motion of said bell cranks in both directions, and means for operating said pivoted bell cranks to shift the platen.

3. In a typewriting machine, the combination of a carriage guided rectilinearly longitudinally of the machine, a platen carrying frame, links connecting said frame to the carriage, lugs on said links near their pivot point having set screws, and lugs on the carriage frame against which said link set screws abut for limiting the upward motion of said links, a rail on which the platen carrying frame has rolling support independently of the carriage, types adapted to strike the platen, pivoted bell cranks having their forward arms operatively connected to said rail and suitably proportioned to the lengths of said frame connecting links, and forming with said links a link system to guide the platen so as to have the same striking point in the normal and in the shifted position in a plane coincident with the plane through the type faces in their striking position, adjustable stops for limiting the motion of said bell cranks in both directions, a shift-key, an intermediate bell crank and a pull rod, said intermediate bell crank being rockably fastened and having one arm suitably linked to said shift key and the other arm linked to one end of the pull rod, the other end of said pull rod being suitably connected to the downward arms of the platen shifting bell crank to shift the platen, and means for locking and unlocking the platen in its normal position.

4. In a typewriting machine, the combination of a carriage guided rectilinearly longitudinally of the machine, a platen carrying frame, links connecting said frame to the carriage, lugs on said links near their pivot point having set screws, a lug on the carriage frame against which said link set screws abut for limiting the upward motion of said links, a rail on which the platen carrying frame has rolling support independently of the carriage, types adapted to strike the platen, pivoted bell cranks having their forward arms operatively connected to said rail and suitably proportioned to the lengths of said frame connecting links and forming with said links a link system to guide the platen so as to have the same striking point in the normal and in the shifted position in a plane coincident with the plane through the type faces in their striking position, adjustable stops for limiting the motion of said bell cranks in both directions, a shift key, an intermediate bell crank and a pull rod, said intermediate bell crank being rockably fastened and having one arm suitably linked to said shift key and the other arm linked to one end of the pull rod, the other end of said pull rod having lost motion connection with the downward arms of said platen shifting bell crank to shift the platen, and a pin fastened on the pull rod bearing arm of said intermediate bell crank, a lock rod pivoted on one end close to said intermediate bell crank and supported by said pin and pushing against the downward arm of said platen shifting bell crank with its other end, the lost motion of said shift key operated pull rod causing said supporting pin to unlock said platen shifting bell crank before the platen is being shifted, and to lock said bell crank on the return of the platen to its normal position.

5. In a typewriting machine, the combination of a carriage guided rectilinearly longitudinally of the machine, a platen connected to said carriage to accompany its longitudinal motion having a shifting movement shifting the platen transversely thereto, pivoted bell cranks having one of their corresponding arms operatively connected to said shifting movement, a shift key, an intermediate bell crank and a pull rod, said intermediate bell crank being rockably fastened and having one arm suitably linked to said shift key and the other arm linked to one end of said pull rod, the other end of the pull rod having lost-motion connection with one of the other corresponding arms of said platen-shifting bell cranks to shift the platen, and a pin fastened on the pull-rod-bearing arm of said intermediate bell crank, a lock rod pivoted on one end close to said intermediate bell crank and supported by said pin and pushing against the pull rod connected arm of said platen shifting bell crank with its other end, the lost motion of said shift key operated pull rod causing said supporting pin to unlock said platen shifting bell crank before the platen is being shifted and to lock said bell crank on the return of the platen to its normal position.

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Witnesses:
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L. H. PERRY.