M. W. POOL.

TYPE WRITING MACHINE.

APPLICATION FILED MAY 6, 1911.

1,062,729.

Patented May 27, 1913.

4 SHEETS—SHEET 1.

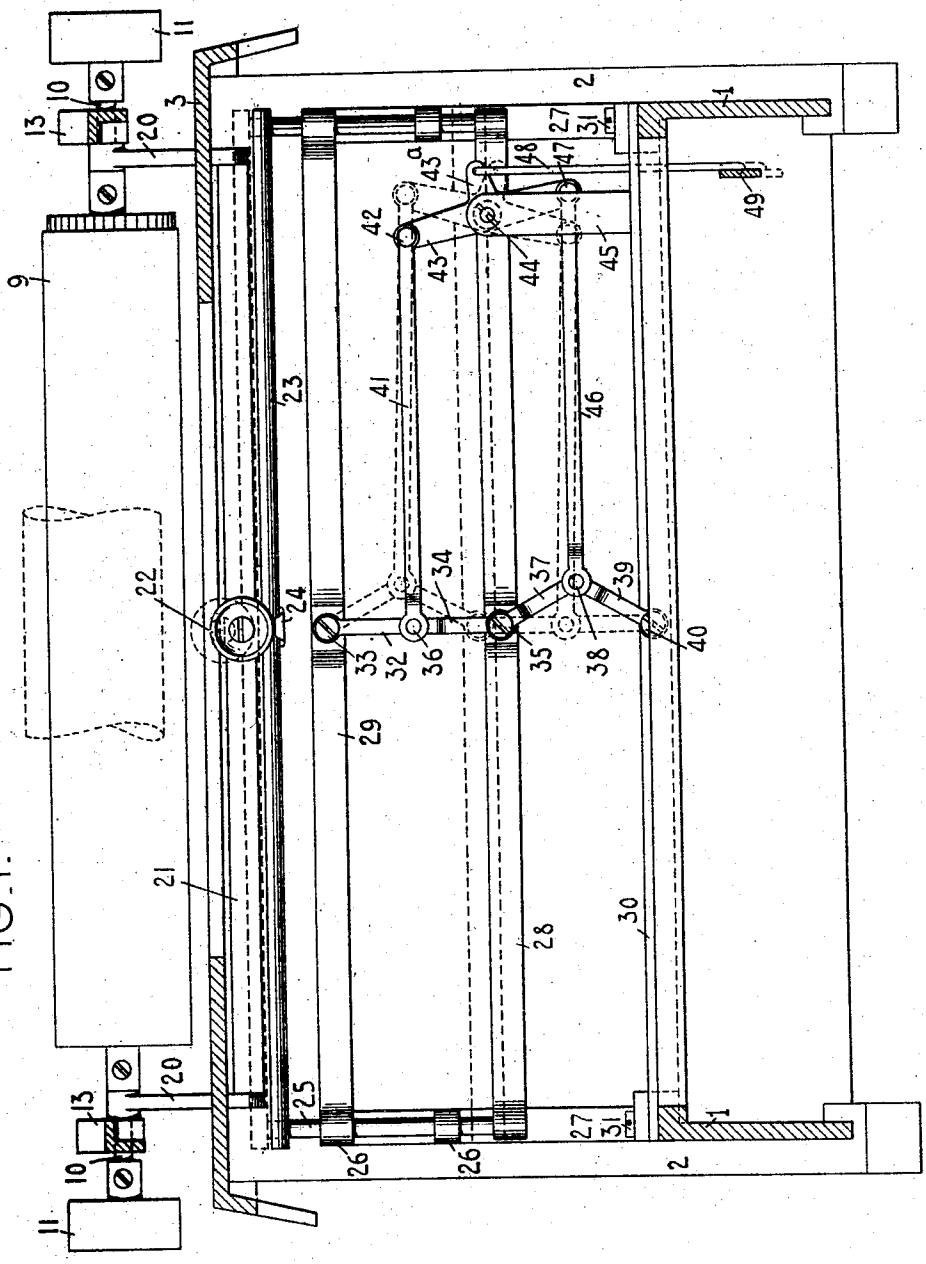


FIG. 1.

WITNESSES:

E. M. Wells

M. F. Schanweber

INVENTOR:

Morris W. Pool

By Jacob Fehl

HIS ATTORNEY

M. W. POOL.

TYPE WRITING MACHINE.

APPLICATION FILED MAY 6, 1911.

1,062,729.

Patented May 27, 1913.

4 SHEETS—SHEET 2.

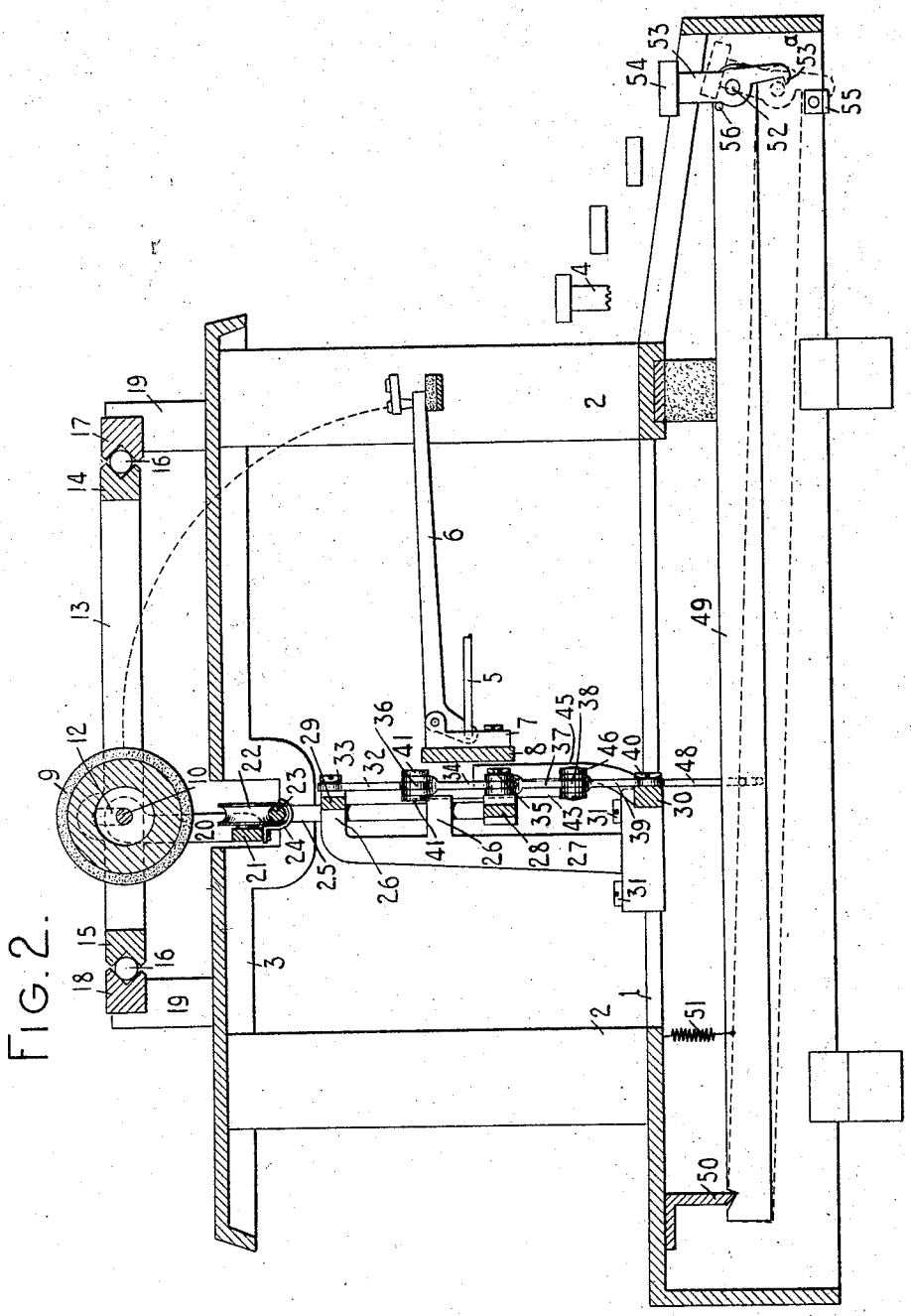


FIG. 2.

WITNESSES:

E. M. Wells

M. F. Hannweber

INVENTOR

Morris W. Pool

By Jacob Tebbel

HIS ATTORNEY

M. W. POOL.

TYPE WRITING MACHINE.

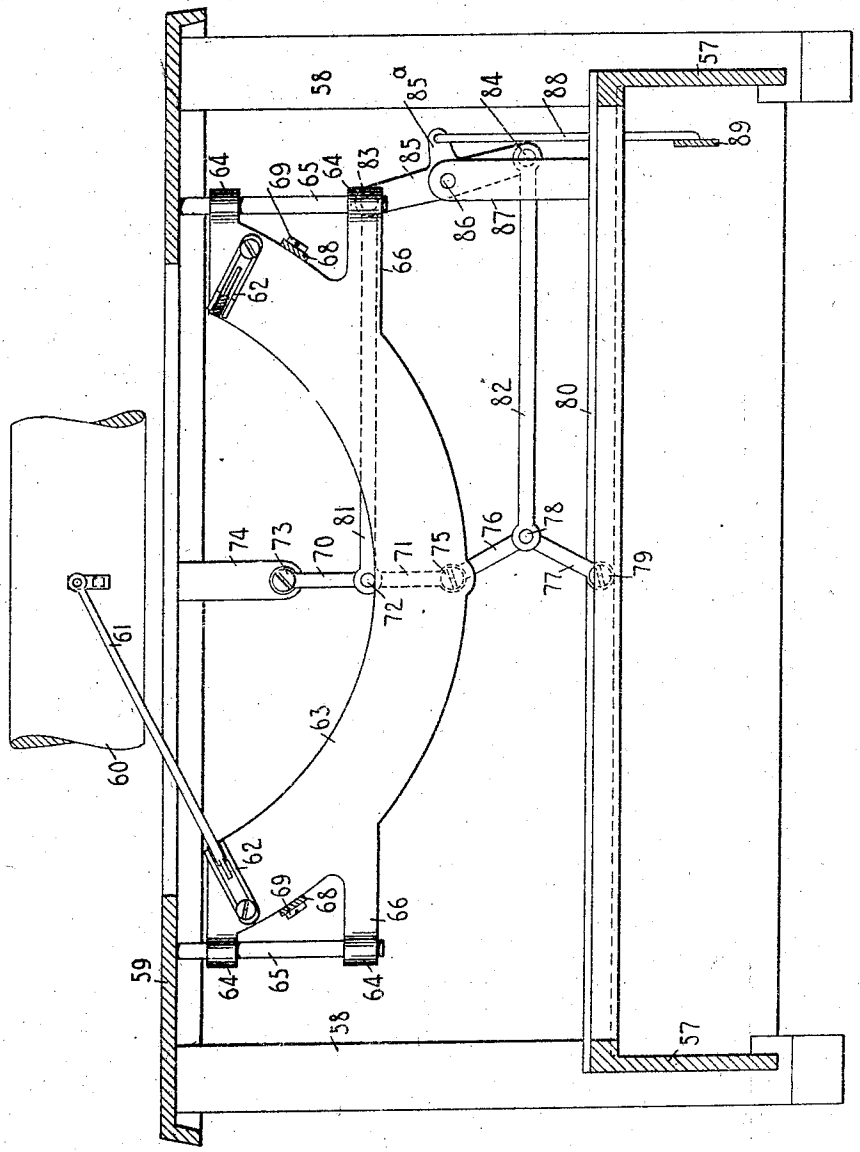
APPLICATION FILED MAY 6, 1911.

1,062,729.

Patented May 27, 1913.

4 SHEETS—SHEET 3.

FIG. 3.



WITNESSES:

E. M. Wells.

M. F. Hannocker

INVENTOR:

Morris W. Pool

By Jacob Felbel

HIS ATTORNEY

M. W. POOL.

TYPE WRITING MACHINE.

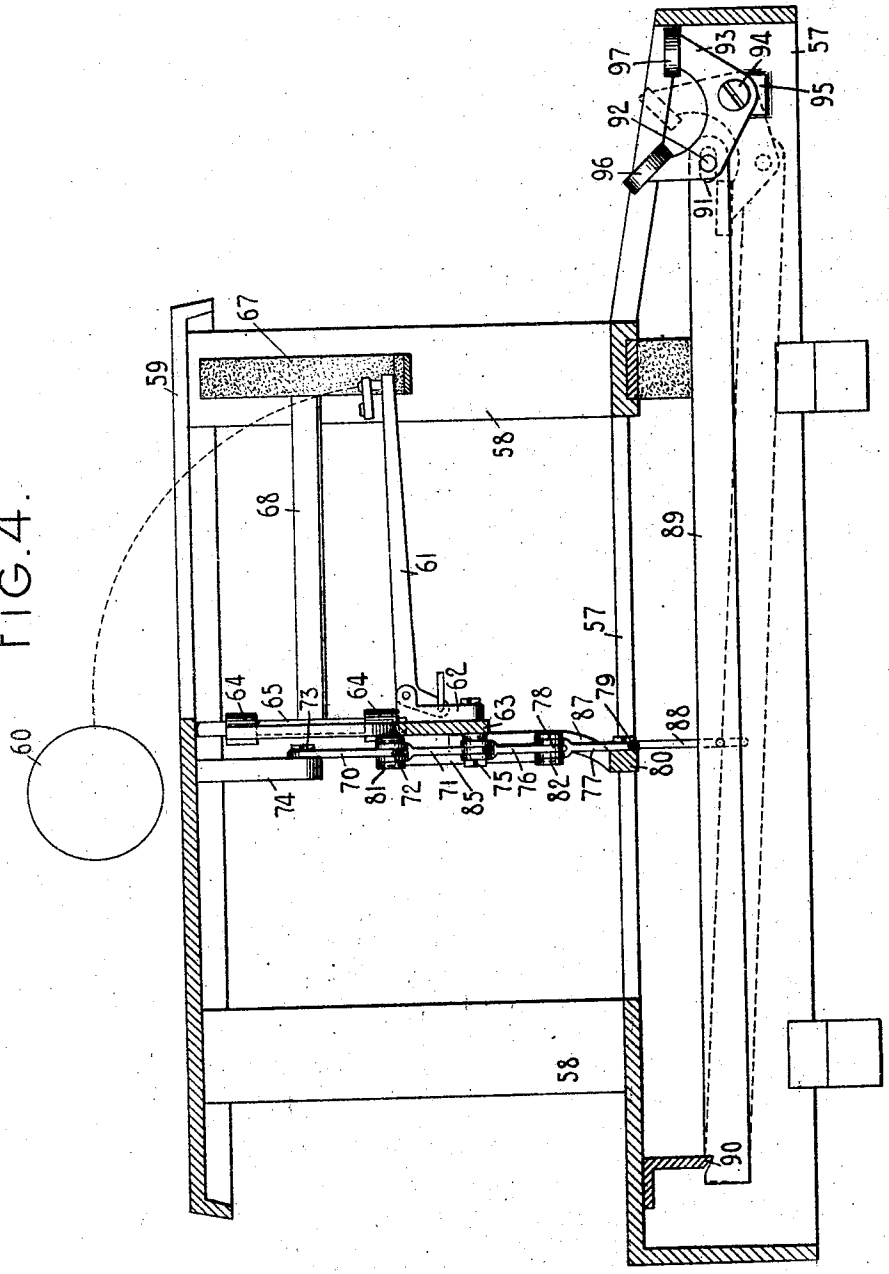
APPLICATION FILED MAY 6, 1911.

1,062,729.

Patented May 27, 1913.

4 SHEETS—SHEET 4.

FIG. 4.



WITNESSES.

E. M. Wells.

M. F. Hannweber

INVENTOR.

Morris W. Pool

By Jacob Tell

HIS ATTORNEY

UNITED STATES PATENT OFFICE.

MORRIS W. POOL, OF NEW YORK, N. Y., ASSIGNOR, BY MESNE ASSIGNMENTS, TO REMINGTON TYPEWRITER COMPANY, OF ILION, NEW YORK, A CORPORATION OF NEW YORK.

TYPE-WRITING MACHINE.

1,062,729. Specification of Letters Patent. Patented May 27, 1913.

Application filed May 6, 1911. Serial No. 625,482.

To all whom it may concern:

Be it known that I, MORRIS W. POOL, citizen of the United States, and resident of the borough of Brooklyn, city of New York, in the county of Kings 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 case shifting mechanism for typewriting machines and its object is to provide a case shift mechanism which is certain and effective in operation and wherein vibration and noise are reduced to a minimum.

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

In the accompanying drawings, Figure 1 is a front elevation, partly in section, of so much of a typewriting machine as is necessary to illustrate my invention. Fig. 2 is a central, vertical, front to rear sectional view of said machine. Fig. 3 is a front elevation, partly in section, of a typewriting machine illustrating another form of my invention, parts of the machine being omitted. Fig. 4 is a vertical front to rear sectional view of the machine shown in Fig. 3.

In Figs. 1 and 2 I have illustrated my invention as embodied in mechanism for shifting a platen while in Figs. 3 and 4 I have shown my invention applied to a machine wherein the types are shifted to change case.

Referring first to Figs. 1 and 2, the main frame of the machine comprises a base 1, posts 2 and a top plate 3. Key levers 4 are fulcrumed in the base and each is connected by devices comprising a link 5 with a type bar 6 which is provided with two types, an upper case type and a lower case type, the latter being normally operative. Each type bar is pivotally supported on a hanger 7 secured to a stationary support or element 8 and the types are adapted to coöperate with the front face of a cylindrical platen 9 having an axle 10 terminating in finger wheels 11. The end portions of the axle pass through vertical slots 12 in the side bars 13 of a rectangular carriage truck which further comprises front and rear bars 14 and 15 grooved to coöperate with anti-friction balls 16, said balls being also seated in corresponding grooves formed in front and rear track-ways or guide rails numbered respectively 17 and 18, said track-ways being secured to standards 19 rising from the top plate. Inside the bars 13 the axle 10 bears in and is supported by uprights 20 which are connected at their lower ends by a cross bar 21, the uprights and cross bar comprising a shiftable platen frame or carrier, and said carrier, together with the carriage truck, comprising a carriage which is adapted to move back and forth from side to side of the machine above the top plate under the control of a spring drum and escapement devices of suitable character not herein shown.

A wheel or roller 22 is supported at the middle of the cross bar and runs on a shift rail or bar 23, being prevented from accidental displacement from said shift rail by a hook 24 which curves around the under side of the rail and is secured to the cross bar 21. The construction is such that the roller 22 may run freely along the shift rail 23 during letter space and return movements of the carriage; but at all times and especially when the platen frame 20, 21 is shifted up and down on the truck 13, 14, 15 to change case as presently to be described, the roller 22 and the hook 24 will coöperate to prevent displacement of the platen frame transversely of the shift frame comprising the shift rail 23. The ends of the shift rail 23 are secured to the tops of vertical rods 25 which are adapted to slide in lugs 26 projecting forward from upright stationary standards 27. The lower ends of the slide rods 25 are connected by a cross bar 28. The cross bar 28, slide rods 25 and shift rail 23 constitute a platen shifting frame or supporting element. The standards 27 are connected at their upper ends by a cross bar 29 and at their lower ends by a cross bar 30. The cross bars 29 and 30 and the standards 27 constitute a detachable support which is rigidly secured by screws 31 to the side frames of the base 1.

As herein embodied my invention comprises opposing toggles which are operative concurrently, one toggle straightening and shifting the platen upward and the other concurrently breaking to permit this movement; and vice versa. The upper toggle comprises a toggle arm 32 pivoted at its upper end at 33 to the middle of the stationary cross bar 29 and further comprises

a second toggle arm 34 which is pivoted at 35 to the middle of the shiftable bar 28. The toggle arms 32 and 34 are pivotally connected at 36. The second toggle comprises a toggle arm 37 pivoted at its upper end at 35 and at its lower end at 38 to the other toggle arm 39, the lower end of the arm 39 being pivoted at 40 to the middle of the stationary cross bar 30. The upper toggle 32, 34 is controlled by a push and pull rod 41 pivoted at 36 at its inner end and extending laterally rightward, the outer end of the rod 41 being pivoted at 42 to the upper arm of a three-armed lever 43 fulcrumed at 44 to a standard 45 integral with and rising from the cross bar 30 near the right-hand end thereof. The lower toggle 37, 39 is controlled by a push and pull rod 46 pivoted at one end to the toggle at 38 and at the other end at 47 to the lower arm of the lever 43.

As appears clearly from Fig. 2 the upper end of the toggle arm 34 is bifurcated to embrace the lower end of the toggle arm 32, and the inner end of the cross rod 41 is also bifurcated to embrace the two toggle arms 32 and 34 at their point of connection. The pivot member or pin 36 passes through the bifurcations of 41 and 34 as well as through the lower end of the arm 32 which comprises only a single ply or thickness of metal. The upper end of the toggle arm 37 is bifurcated to embrace the lower end of the arm 34, and the screw pivot which connects the arms 34 and 37 to the shift bar 28 passes through the three plies and screws into the bar 28. The lower pivot pin or member 38, similarly to the upper pin 36, passes through five plies comprising the bifurcated inner end of the rod 46 which embraces the toggle arms 37 and 39, the upper end of the arm 39 in turn being bifurcated to embrace the lower end of the arm 37 which is a single ply.

The lever 43 is adapted to be rocked to break and straighten the toggles alternately by devices comprising a link 48, the upper end of which is pivotally connected to the short laterally extending arm 43^a of the lever 43. The lower end of the link 48 is connected to a key lever 49 which is fulcrumed on a fulcrum bar 50 secured to the base 1. The lever 49 is provided with a restoring spring 51 and has pivoted at 52 to its front end a key stem 53 terminating at its upper end in a key or finger button 54 and at its lower end in a hook 53^a which is adapted to engage a stationary bracket 55 secured to the base 1. A stop pin 56 on the key lever 49 limits rearward movement of the upper arm of the key stem 53.

Assuming that the parts are normally in the relationship shown in Figs. 1 and 2, it will be observed that the upper toggle 32, 34 is straight, its arms being vertically disposed, while the lower toggle 37, 39 is broken. The straight upper toggle is anchored or fixed at its upper end at 33 and consequently will maintain the shiftable cross bar 28 to which it is pivotally connected at 35 in a fixed predetermined position, thus controlling the platen shifting frame or element 23, 25, 28 and maintaining or holding the platen in proper position to coact with the lower case types. When it is desired to change case the platen is shifted by depressing the key 54, thus swinging down the lever 49 and lowering the link 48 which in turn operates on the arm 43^a to swing the lever 43 from the full line to the dotted line position of Fig. 1. This movement of the lever 43 pulls the rod 41 rightward and pushes the rod 46 leftward, breaking the toggle 32, 34 and straightening the toggle 37, 39. This latter operation raises the pivotal point 35 and consequently shifts the shiftable frame or element and the platen vertically upward, the parts being proportioned so that when the toggle 37, 39 is straight, the platen will be in upper case position. On releasing the key 54, the parts will be restored to the full line position of Fig. 1 by gravity after the toggle has been broken by the spring 51. If it is desired to lock the platen in upper case position the key 54, after it has been depressed, is pulled or pressed forward to lock the hook 53^a under the bracket 55 as shown by dotted lines in Fig. 2.

It will be observed that by the use of two toggle devices as described, the stops commonly employed for limiting the shifting movements of the case-shifting element, whether platen or type bar support, may be dispensed with, and the vibration incident to the sudden contact of the stop devices, as well as the noise caused thereby, is practically eliminated. The toggles are easy and certain in operation, and when constructed as described, operate to hold the platen rigidly either in its lower or upper case position.

Figs. 3 and 4 show a machine of the shifting type basket style, the main frame whereof comprises a base 57, posts 58 and a top plate 59 above which is arranged a platen 60 diagrammatically illustrated, said platen being adapted to move horizontally back and forth over the top plate for letter spacing but being of the non-shifting style. The type bars 61 are each provided with a lower case type and an upper case type and are pivotally supported on hangers 62 secured to the front face of a shiftable segment 63, the segment being provided at its upper end with laterally extending lugs 64 which are perforated to engage and bear on stationary guide rods 65, said guide rods being fixed to and depending from the top plate 59. Lugs 66 project laterally from the segment 63 below the lugs 64, said arms 66 be-

ing perforated to engage and bear on the guide rods 65. The free ends of the type bars are supported on a curved rest 67 which is secured to the forward ends of arms 68 extending horizontally from the segment 63 and secured thereto by screws 69, the parts 63 and 68 being in rigid relationship and constituting a supporting element for the type bars. In this construction the upper toggle comprises arms 70 and 71 pivotally connected at 72. The upper arm 70 is pivoted at 73 to a lug 74 depending from the top plate while the lower arm 71 is pivoted at 75 to the rear of the segment 63 and at the middle thereof. The lower toggle is composed of arms 76 and 77 pivotally connected at 78, the upper arm 76 being pivoted to the segment at 75 and the lower arm being pivoted at 79 to a stationary cross bar 80 which extends transversely of the base and is secured at its ends to the side portions thereof. Parallel controlling rods 81 and 82 are pivoted at their inner ends respectively at 72 and 78, the outer ends of said rods being pivoted respectively at 83 and 84 to the ends of a lever 85 which is fulcrumed at 86 to a standard 87 rising from the cross bar 80, and has an arm or projection 85[a] connected by a link 88 with a key lever 89 having a stationary fulcrum 90 at its rear end. The forward end of the lever 89 has a horizontal slot 91 which is engaged by a pin 92 on a rocker 93 pivoted at 94 to a lug 95 on the base 57. The rocker 93 is provided with angularly disposed keys or finger buttons 96 and 97 at opposite sides of the pivot 94. In the normal lowercase position the upper toggle 70, 71 is straight while the lower toggle 76, 77 is broken. By pressing the key 96 the rocker 93 and lever 89 are swung from the full line position of Fig. 4 to the dotted line positions shown therein. This operation pulls down the link 88 and swings the lever 85 on its fulcrum, pulling the rod 81 rightward and pushing the rod 82 leftward. This movement of the rod 81 breaks the toggle 70, 71 and concurrently straightens or makes the toggle 76, 77. The straightening of the toggle 76, 77 raises the type bar segment 63, said segment sliding up on the guide rods 65 until, when arrested by the straightened toggle 76, 77, it will be in upper case position, so that the type bars when actuated will print from the capital or upper case types.

In the Figs. 3-4 construction no restoring spring is provided and consequently the type bar segment and type bars will remain in upper case position, being held therein by the straight toggle 76, 77. In order to return to lower case position it is necessary to press the key 97 which will rock the rocker 93 back to the full line position of Fig. 4 and lift the lever 89. It will be apparent that the angular disposition of the keys 96, 97 is such that if the shifting movement is to be temporary only, as for the insertion of a single letter or character, the operator may conveniently press the key 96 with the tip of the finger and shift the segment to upper case position, and then by practically the same operation in removing the finger from the key 96 draw the under side of the finger downward against the key 97 to restore the parts to lower case position. If preferred, however, the key construction shown in Figs. 1 and 2 may be employed, or any other suitable manual devices for operating the toggle mechanism may be provided.

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 typewriting machine, the combination of an element shiftable to change case, and means for shifting said element comprising opposing toggles, one or the other of said toggles constantly supporting said shiftable element.

2. Case shift mechanism for typewriting machines comprising the combination of a plurality of toggles, and means for operating said toggles in alternation to effect the case shifting operation.

3. Case shift mechanism for typewriting machines comprising the combination of a plurality of toggles, and means controlled by a single key for breaking one toggle and concurrently straightening another toggle.

4. In a typewriting machine, the combination with a platen, and a set of type bars, the platen and type bars being relatively movable to change case, of means for effecting such relative movement, said means comprising two toggles oppositely acting, and hand controlled means for at will straightening and breaking said toggles.

5. In a typewriting machine, the combination of a platen supporting element, a type bar supporting element, one of said elements being shiftable to change case, a toggle for shifting said shiftable element in one direction, and a second toggle for shifting said shiftable element in the opposite direction.

6. In a typewriting machine, the combination of a platen supporting element, a type bar supporting element, one of said elements being shiftable to change case, a toggle for shifting said shiftable element in one direction, a second toggle for shifting said shiftable element in the opposite direction, and means for operating said toggles alternately.

7. In a typewriting machine, the combination of a platen supporting element, a type bar supporting element, one of said elements being shiftable to change case, and key actuated duplex sets of shifting devices, said sets being connected and oppositely acting, one set for shifting the shiftable element to

change case, and the other set for restoring the shiftable element to and maintaining it in its original position.

8. In a typewriting machine, the combination of a platen supporting element, a type bar supporting element, one of said elements being shiftable to change case, a toggle having one of its arms pivoted to said shiftable element, the other arm of said toggle having a fixed pivot, and a second toggle having one of its arms pivoted to said shiftable element, the other arm of said second toggle having a fixed pivot, one of said toggles being normally straight and supporting said shiftable element.

9. In a typewriting machine, the combination of a platen supporting element, a type bar supporting element, one of said elements being shiftable to change case, a toggle having one of its arms pivoted to said shiftable element, the other arm of said toggle having a fixed pivot, a second toggle having one of its arms pivoted to said shiftable element, the other arm of said second toggle having a fixed pivot, and means for operating said toggles alternately to shift said shiftable element back and forth in opposite directions.

10. In a typewriting machine, the combination of a platen supporting element, a type bar supporting element, one of said elements being shiftable to change case, a toggle having one of its arms pivoted to said shiftable element, the other arm of said toggle having a fixed pivot, a second toggle having one of its arms pivoted to said shiftable element, the other arm of said second toggle having a fixed pivot, and means for operating said toggles comprising push and pull rods, one for each toggle, and a key controlled lever to which said push and pull rods are connected.

11. In a typewriting machine, the combination of a platen supporting element, a type bar supporting element, one of said elements being shiftable to change case, a toggle having one of its arms pivoted to said shiftable element, the other arm of said toggle having a fixed pivot, a second toggle having one of its arms pivoted to said shiftable element, the other arm of said second toggle having a fixed pivot, and means for operating said toggles comprising a lever connected to both toggles, and key operated devices for moving said lever in opposite directions.

12. In a front-strike typewriting machine, the combination of a platen supporting element, a type bar supporting element, one of said elements being shiftable up and down, a toggle connected to said shiftable element, the arms of said toggle being normally substantially vertical, and a second toggle connected to said shiftable element, the arms of said second toggle being angularly disposed normally.

13. In a front-strike typewriting machine, the combination of a platen, a shiftable type bar segment, a toggle connected to said segment, the arms of said toggle being normally substantially vertical, and a second toggle connected to said segment, the arms of said second toggle being angularly disposed normally.

14. In a front-strike typewriting machine, the combination of a platen, a type bar segment, a plurality of toggles connected to said segment, operating rods, one for each toggle, a rocking lever to which said operating rods are connected, and a key lever connected to said rocking lever.

15. In a front-strike typewriting machine, the combination of a platen supporting element, a type bar supporting element, one of said elements being shiftable to change case, a toggle operative when straightened to raise said shiftable element and hold it fixed in raised position, and a second toggle operative when straightened to lower said shiftable element and hold it fixed in lowered position.

16. In a front-strike typewriting machine, the combination of a platen supporting element, a type bar supporting element, one of said elements being shiftable to change case, a toggle operative when straightened to move said shiftable element to upper case position, and a spring for breaking said toggle and assisting to restore the parts to normal lower case position.

17. In a front-strike typewriting machine, the combination of a platen supporting element, a type bar supporting element, one of said elements being shiftable to change case, a toggle operative when straigtened to move said shiftable element to upper case position, key connections to said toggle, and a spring operative through said connections to break said toggle.

Signed at the borough of Manhattan, city of New York, in the county of New York, and State of New York, this 5th day of May A. D. 1911.

MORRIS W. POOL.

Witnesses:
E. M. WELLS.
CHARLES E. SMITH.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents Washington, D. C."