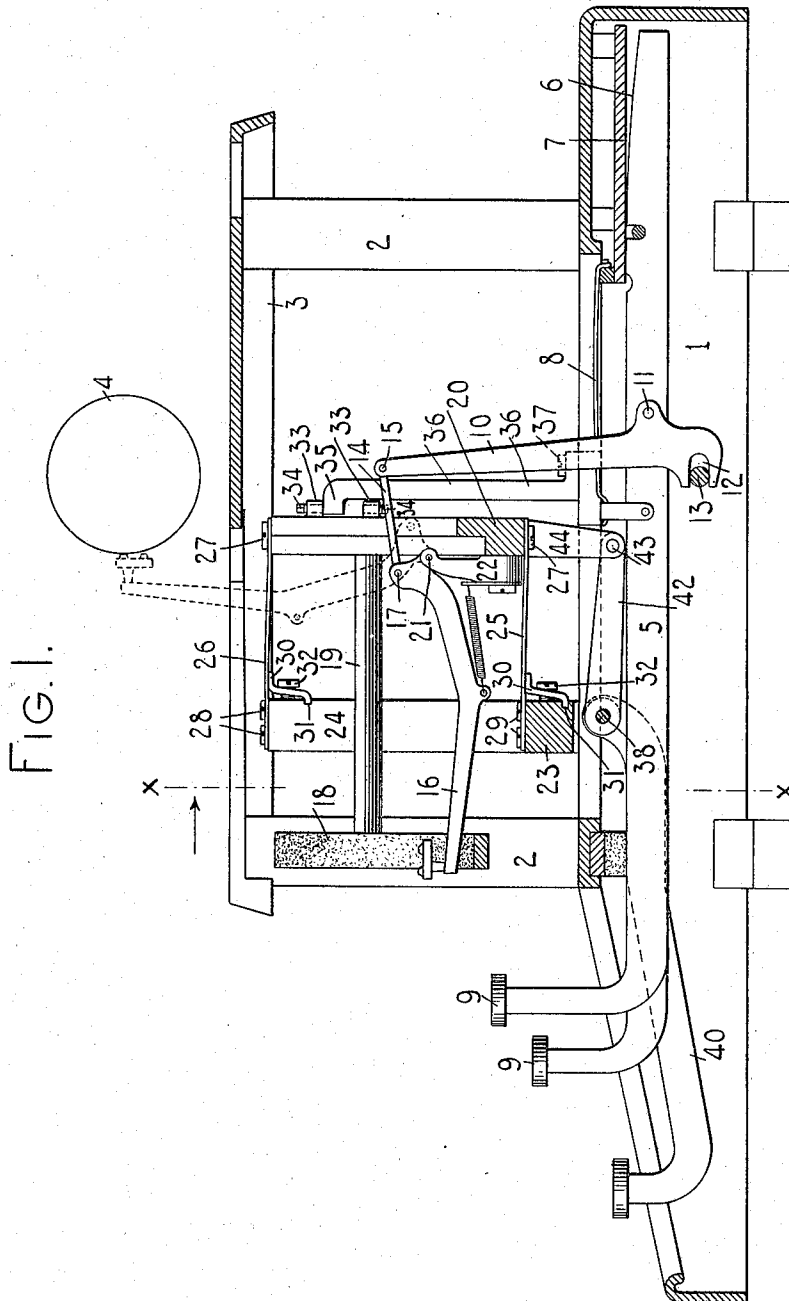


C. H. SHEPARD.
TYPE WRITING MACHINE.
APPLICATION FILED APR. 17, 1909.

932,644.

Patented Aug. 31, 1909.
3 SHEETS—SHEET 1.



WITNESSES.

E. M. Wells.

Charles Smith

INVENTOR.

Charles H. Shepard

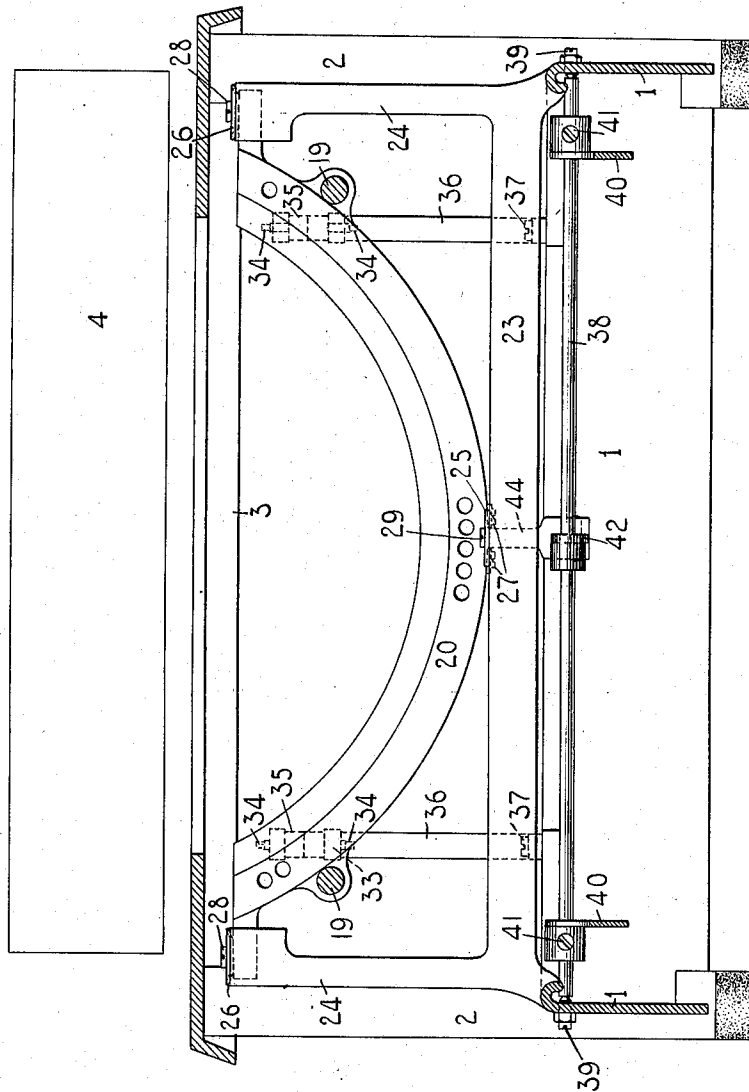
By Jacob F. Bell

HIS ATTORNEY

932,644.

Patented Aug. 31, 1909.
 3 SHEETS—SHEET 2.

FIG. 2.



WITNESSES:

E. M. Wells.

Charles E. Smith

INVENTOR:

Charles H. Shepard

By Jacob F. Ford

HIS ATTORNEY

C. H. SHEPARD.
TYPE WRITING MACHINE.
APPLICATION FILED APR. 17, 1909.

932,644.

Patented Aug. 31, 1909.
3 SHEETS—SHEET 3.

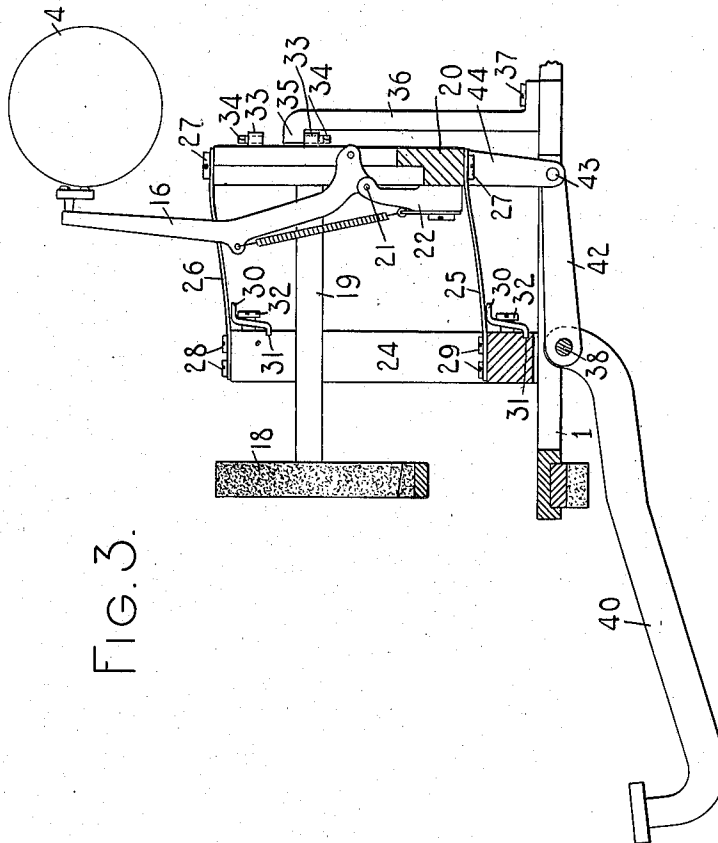


FIG. 3.

WITNESSES.

E. M. Wells.

Charles Smith

INVENTOR.

Charles H. Shepard

By Jacob F. Felt

HIS ATTORNEY

UNITED STATES PATENT OFFICE.

CHARLES H. SHEPARD, OF NEW YORK, N. Y., ASSIGNOR TO UNION TYPEWRITER COMPANY, OF JERSEY CITY, NEW JERSEY, A CORPORATION OF NEW JERSEY.

TYPE-WRITING MACHINE.

932,644.

Specification of Letters Patent.

Patented Aug. 31, 1909.

Application filed April 17, 1909. Serial No. 490,530.

To all whom it may concern:

Be it known that I, CHARLES H. SHEPARD, citizen of the United States, and resident of the borough of Manhattan, city of New York, in the county of New York 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 and the object of my invention is to provide simple and efficient means whereby a relative case shifting movement between the type bars and platen may be effected.

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 wherein like reference characters indicate corresponding parts in the various views, Figure 1 is a vertical, central, fore and aft sectional view of the typewriting machine embodying my invention, so much only of the machine being shown as is necessary to illustrate my invention in its embodiment therein. Fig. 2 is a vertical, transverse sectional view of the same taken on the line $x-x$ of Fig. 1 and looking in the direction of the arrow at said line. Fig. 3 is a fragmentary, vertical sectional view corresponding to Fig. 1 except that the segment is shown shifted to the upper case position and some of the parts illustrated in Fig. 1 are omitted.

I have shown my invention embodied in a typewriting machine resembling the Monarch machine, though it should be understood that the invention may be embodied in various styles of typewriting machines.

The frame of the machine comprises a base 1, corner posts 2 and a top plate 3. A carriage of any suitable description is mounted on a top plate for movement from side to side of the machine, the carriage carrying a platen 4 diagrammatically shown in the drawings. Key levers 5 are provided with curved contact edges 6 which cooperate with a fulcrum plate 7 secured in the base of the machine, each key lever being

provided with a restoring spring 8 and a finger key 9. A sub-lever 10 is pivoted to each key lever at 11 and is slotted at 12 for the reception of a fulcrum rod 13 which extends beneath the various key levers and is secured at its ends to the base of the machine. Pull links 14 are each pivotally connected at one end to the upper end of a sub-lever, as at 15, and at the opposite end are pivoted to a type bar 16, as indicated at 17. The type bars are supported at their forward ends on a type rest 18 secured to forwardly projecting rods 19 which are secured to a type bar segment 20. The various type bars are pivoted, as at 21, to the type bar hangers 22 secured to the type bar segment 20. The frame of the machine also comprises a cross bar 23 and upright end bars 24.

Parallel leaf springs 25 and 26 are each secured at one end to the type bar segment by screws 27, the springs 26 being connected to the upper and outer ends of the segment and extending forwardly therefrom to the upright bars 24 to which they are connected by screws 28. The single centrally disposed spring 25 is connected at one end to the middle of the segment and at its opposite end by screws 29 to the cross bar 23. These leaf springs are all disposed parallel to one another and constitute springs on which the type bar segment is supported and adapted to be shifted, the segment in its case shifting movement being guided by the springs. Each of the springs 25 and 26 has an adjusting device, shoe or contact piece 30 cooperating therewith. One end of each of the adjusting devices 30 bears against the bottom of its associated spring when the segment is in the normal or lower case position, whereas the opposite end of each device 30 is received in a slot or cut-out 31 in the part to which it is secured. An adjusting screw 32 passes freely through an opening in each adjusting device 30 and takes at its threaded end in a tapped opening in the part to which the spring is connected. From a comparison of Figs. 1 and 3 it will be seen that the adjusting devices cooperate with the springs when the segment, or shiftable element, is in the normal or lower case position shown in Fig. 1, but that they do not cooperate with the springs when the segment is in the shifted position shown in

Fig. 3. The purpose of these adjusting devices is to alter the effective pressure of the springs when the segment, or shiftable element, is in the normal or lower case position, and thus regulate or determine the amount of effort or pressure required to shift the segment from the normal position. By adjusting a screw 32, the companion adjusting device 30 may be turned around its lower end as a fulcrum in the slot 31, to increase or decrease the effectiveness of the associated spring when the segment is in the normal or lower case position, thereby determining the amount of pressure required on a shift key to shift the segment. If the screw be turned out pressure of the adjusting device 30 on the spring, when the segment is in the normal position, is relieved or entirely released, whereas if the screws be turned in or adjusted forwardly then the devices 30 exert an upward pressure on the springs to decrease the effective downward pressure of the springs on the segment when the latter is in the normal position. Projecting rearwardly from the type bar segment are lugs 33 tapped to receive oppositely disposed set screws 34. A set of these lugs and set screws is provided on each side of the segment and the screws cooperate with a fixed abutment or stop 35 which projects forwardly from an upwardly extending bracket arm 36 secured by a screw 37 to the base of the machine. The screw stops 34 and abutments 35 with which they cooperate limit the case shifting movements of the segment. A rock shaft 38 is mounted at its ends on pivot screws 39 received in tapped openings in the base of the machine. Shift key levers 40 are secured at opposite ends of the rock shaft by screws 41. A centrally disposed crank arm 42 projects rearwardly from the rock shaft and is pivoted at 43 to a depending arm 44 secured to the type bar segment.

The segment 20 is normally disposed as shown in Fig. 1 so that the types of the outer end of the type bars strike the printing point. A depression of either of the shift keys is effective to move the type bar segment upwardly on the parallel springs 25 and 26 as indicated in Fig. 3, flexing the springs and bringing the upper case types into use.

It will be seen that the parallel springs or flexing elements 25 and 26 extend longitudinally in directions transverse to the plane of movement of the segment or shiftable element, and that the springs thus effectively guide the segment in its shifting movements. It will also be seen that by the use of the springs disposed in the manner described, the springs effectively resist any backward movement of the segment due to the backward pull of the links 14 on the type bars and also to a certain extent resist any forward

reactionary movement of the segment; the backward pull and forward reaction being exerted in the directions of the lengths of the springs. The mounting of the segment on springs in the manner shown, therefore most effectively preserves the "alinement." Moreover, by the use of springs or flexing elements, each secured at one end to the frame of the machine, or to the part which carries it, and secured at the other end to the shiftable element, all jointed connections are avoided in the elements on which the segment is shifted. Where such jointed connections are employed there is apt to be lost motion produced by wear or necessary looseness at the joints and such lost motion may seriously affect the "alinement." These disadvantages are, however, overcome by the employment of my construction and the alinement is efficiently preserved.

When the springs are employed in a top or bottom-strike machine they may likewise constitute means for restoring the segment or shifted element to normal position when pressure is released upon the depressed shift key.

It will be understood that the springs 25 and 26 constitute what I term "bar springs" and this term I use to distinguish them from coiled springs. The term "flexing elements" or the like is employed herein to designate a pliable member or one which is made of flexible material as distinguished from the jointed members.

It will also be understood that I have provided simple and efficient means for affording a relative case shifting movement between the types and the platen and that from a broad aspect of my invention it is immaterial which of these elements, *i. e.*, the types or the platen is shifted, my invention contemplating broadly the employment of springs on which the shiftable element shall receive a case shifting movement.

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

1. In a typewriting machine, the combination of a platen, a series of type bars, means for affording a relative shift between the type bars and platen to change the case position, said means comprising one or more springs on which the movable element is shifted.

2. In a typewriting machine, the combination of a platen, a series of type bars, means for affording a relative shift between the type bars and platen to change the case position, said means comprising a plurality of parallel springs on which the movable element is shifted.

3. In a typewriting machine, the combination of a platen, a series of type bars, means for affording a relative shift between the type bars and platen to change the case position, said means comprising a plurality of

bar springs on which the shiftable element is shifted, said springs being secured to the shiftable element.

the type bars and platen to change the case position, said means comprising one or more springs on which the movable element is shifted, and means for regulating the pressure exerted by said spring or springs. 70

4. In a typewriting machine, the combination of a platen, a series of type bars, means for affording a relative shift between the type bars and platen to change the case position, said means comprising a plurality of parallel leaf springs on which the shiftable element is shifted, each of said leaf springs being secured at one end to the shiftable element and at the other end to a relatively fixed support, the springs being flexed at each case shifting movement.

11. In a typewriting machine, the combination of a platen, a series of type bars, means for affording a relative shift between the type bars and platen to change the case position, said means comprising a plurality of parallel springs on which the movable element is shifted, and means for regulating the pressure exerted by said springs. 75

5. In a typewriting machine, the combination of a platen, a series of type bars, means for affording a relative shift between the type bars and platen to change the case position, said means comprising a plurality of parallel bar springs on which the shiftable element is shifted, the bar springs extending longitudinally in a direction transverse to the plane of movement of the shiftable element and guiding the shiftable element in its case shifting movement.

12. In a typewriting machine, the combination of a platen, a series of type bars, means for affording a relative shift between the type bars and platen to change the case position, said means comprising a plurality of bar springs on which the shiftable element is shifted, said springs being secured to the shiftable element, and adjustable means for regulating the pressure exerted by said springs. 80

6. In a typewriting machine, the combination of a vertically movable type bar segment, and springs on which said segment is mounted and on which it is adapted to receive its case shifting movements.

13. In a typewriting machine, the combination of a platen, a series of type bars, means for affording a relative shift between the type bars and platen to change the case position, said means comprising a plurality of parallel leaf springs on which the shiftable element is shifted, each of said leaf springs being secured at one end to the shiftable element and at the other end to a relatively fixed support, the springs being flexed at each case shifting movement, and individually adjustable means associated with each of said springs to regulate the pressure exerted by said springs. 85

7. In a typewriting machine, the combination of a vertically movable type bar segment, and parallel bar springs on which said segment is mounted and by which it is guided in its case shifting movements, said springs extending longitudinally in a direction transverse to the plane of movement of the type bar segment.

14. In a typewriting machine, the combination of a platen, a series of type bars, means for affording a relative shift between the type bars and platen to change the case position, said means comprising a plurality of parallel bar springs on which the shiftable element is shifted, the bar springs extending longitudinally in a direction transverse to the plane of movement of the shiftable element and guiding the shiftable element in its case shifting movement, and adjusting means associated with each of said springs. 100

8. In a typewriting machine, the combination of a vertically movable type bar segment, and parallel bar springs on which said segment is mounted and by which it is guided in its case shifting movements, each of said springs being rigidly secured at one end to said segment and at the other end to the frame of the machine and all of said springs extending longitudinally in a direction transverse to the plane of movement of the type bar segment.

15. In a typewriting machine, the combination of a platen, a series of type bars, means for affording a relative shift between the type bars and platen to change the case position, said means comprising a plurality of parallel bar springs on which the shiftable element is shifted, the bar springs extending longitudinally in a direction transverse to the plane of movement of the shiftable element and guiding the shiftable element in its case shifting movement, and an adjustable contact adapted to bear on each spring and regulate the pressure exerted thereby. 115

9. In a typewriting machine, the combination of a type bar segment shiftable to change the case position of the type, three parallel leaf springs on which said segment is mounted and by which the segment is guided in its case shifting movements, two of the springs being connected at or near the ends of the segment and one of the springs being connected to the segment near the middle thereof, and all of said springs extending longitudinally in a direction at substantially right angles to the case shifting movements of the segment.

10. In a typewriting machine, the combination of a platen, a series of type bars, means for affording a relative shift between

16. In a typewriting machine, the combination of a platen, a series of type bars, means for affording a relative shift between the type bars and platen to change the case position, said means comprising a plurality of parallel bar springs on which the shiftable element is shifted, the bar springs extending longitudinally in a direction transverse to the plane of movement of the shiftable element and guiding the shiftable element in its case shifting movement, and an adjustable contact adapted to bear on each spring and regulate the pressure exerted thereby. 120

16. In a typewriting machine, the combination of a platen, a series of type bars, means for affording a relative shift between the type bars and platen to change the case position, said means comprising a plurality of parallel bar springs on which the shiftable element is shifted, the bar springs extending longitudinally in a direction transverse to the plane of movement of the shiftable element and guiding the shiftable element in its case shifting movement, and an adjustable contact adapted to bear on each spring and regulate the pressure exerted thereby. 125

nation of a platen, a series of type bars, and means for affording a relative case shift between the type bars and platen, said means comprising a plurality of flexing elements on which the shiftable member is mounted and shifted.

Signed at the borough of Manhattan,

city of New York, in the county of New York, and State of New York, this 16th day of April A. D. 1909.

CHARLES H. SHEPARD.

Witnesses:

CHARLES E. SMITH,
M. F. HANNWEBER.