G. G. GOING.

TYPE WRITING MACHINE.

APPLICATION FILED MAR. 31, 1916.

1,308,411.

Patented July 1, 1919.

2 SHEETS—SHEET 1.

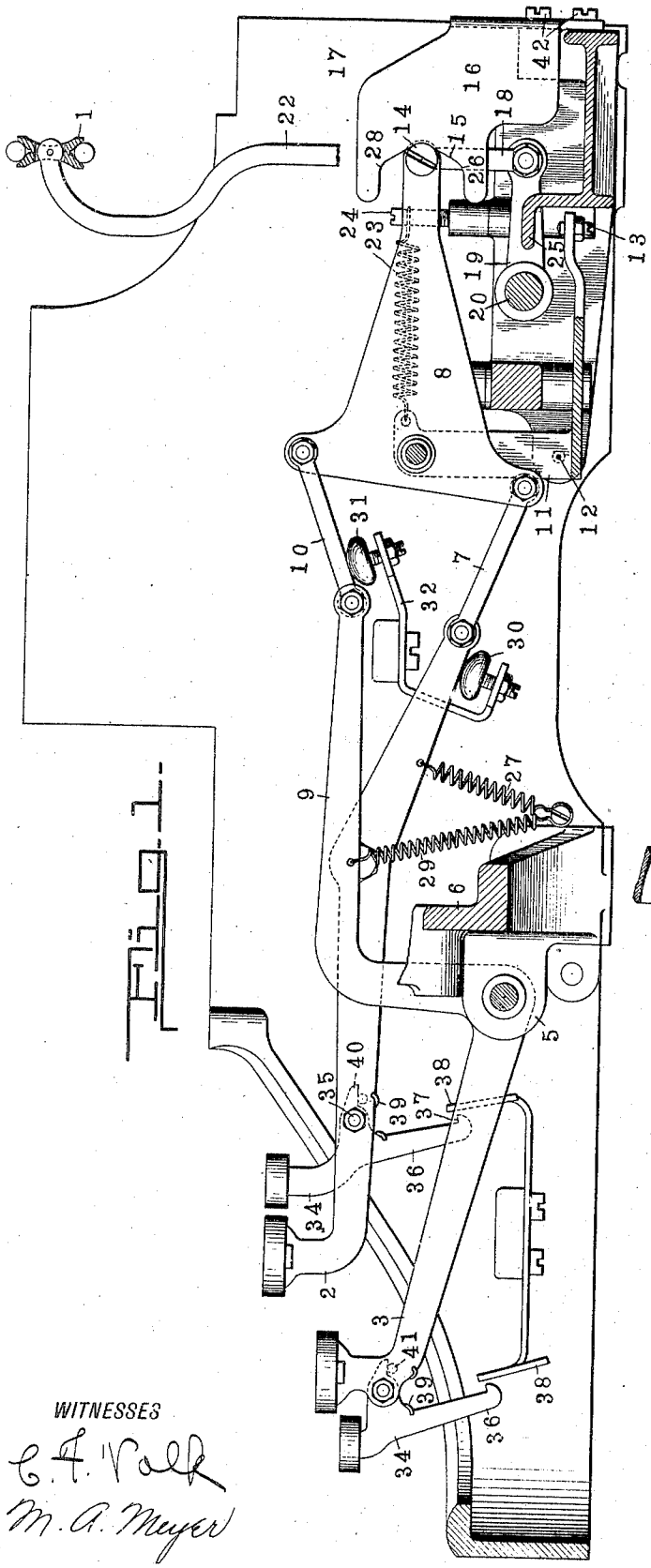


Fig. 1.

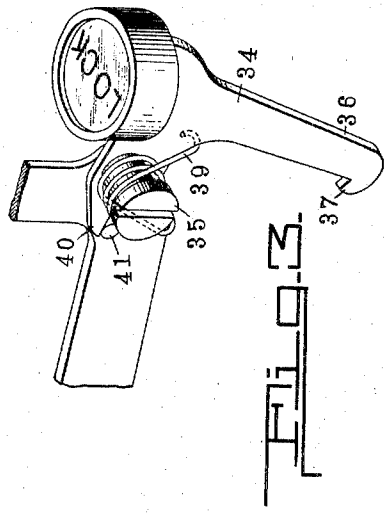


Fig. 2.

WITNESSES

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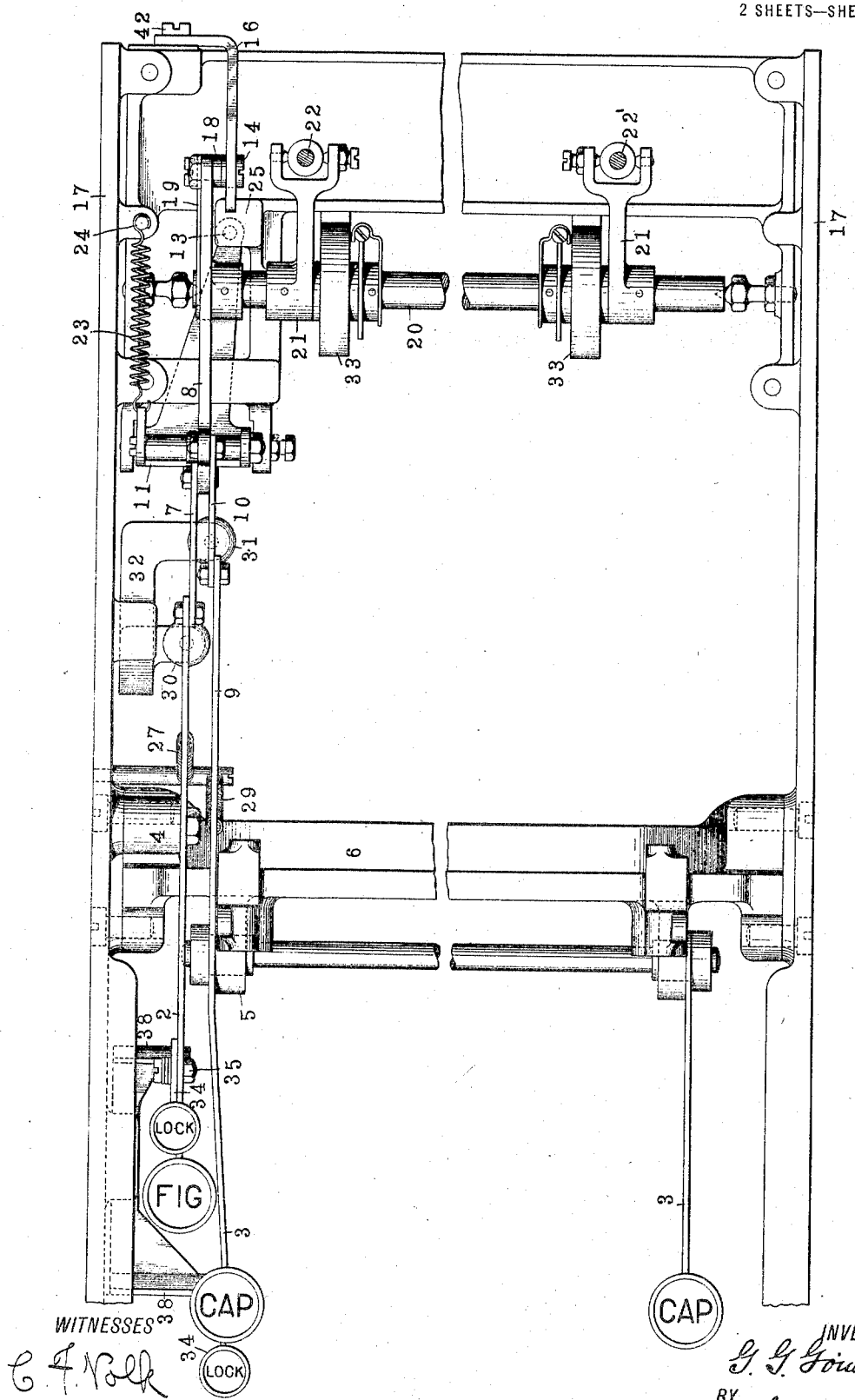


FIG. 2.

WITNESSES

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UNITED STATES PATENT OFFICE.

GEORGE GOULD GOING, OF MIDDLETOWN, CONNECTICUT, ASSIGNOR TO THE NOISELESS TYPEWRITER COMPANY, OF MIDDLETOWN, CONNECTICUT, A CORPORATION OF CONNECTICUT.

TYPE-WRITING MACHINE.

1,308,411. Specification of Letters Patent. Patented July 1, 1919.

Application filed March 31, 1916. Serial No. 87,910.

To all whom it may concern:

Be it known that I, GEORGE GOULD GOING, a citizen of the United States, residing at Middletown, in the county of Middlesex and State of Connecticut, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to typewriting machines, and more particularly to improved mechanism to effect movement of a shiftable part to permit different case printing.

One of the objects of the invention is to provide a simple and reliable structure to effect expeditious case shifting of a carriage platen.

A further object is to provide improved means to govern accurately the shifted position of such part while permitting, preferably, direct movement through an intermediate normal position.

Other objects and advantages will be in part obvious and in part appear hereinafter in connection with a description of one embodiment of the invention shown in the accompanying drawings.

The invention accordingly consists in the features of construction, combinations of elements and arrangement of parts which will be exemplified in the construction hereinafter set forth, and the scope of the application of which will be indicated in the following claims.

In the drawings—

Figure 1 is a fragmentary sectional view, fore and aft, of a typewriting machine;

Fig. 2 is a fragmentary plan and sectional view thereof; and

Fig. 3 is a detail perspective view of a locking device for one of the shift levers.

The invention is typically illustrated as incorporated in a Noiseless typewriting machine, having a platen carriage mounted at the rear for longitudinal letter-space movement and also up-and-down movement through three positions to permit upper, lower and intermediate case printing. The case position of the carriage is controlled by shift key levers arranged at the side of the machine in the keyboard.

Referring more particularly to the drawings, there is shown a shift rail 1 on which the carriage is mounted for longitudinal reciprocation and which itself is connected, as will be described, to a mechanism for controlling its elevated position. Shift key levers, comprising the figure key 2 and the capital key 3, are respectively pivoted to a lug 4 on the side of the machine and a bracket 5 attached to a cross piece 6. The figure key lever 2 inclines downward at its rear end and is pivotally connected to a floating link 7, in turn pivotally attached to a floating lever or triangular piece 8. The capital key lever is turned upward at its axis and provided with a horizontally extending rearward arm 9 fulcrumed at its extremity to a floating link 10, also in turn pivoted to the upper end of the floating lever 8. This last-mentioned lever is fulcrumed on a bell crank bracket 11, in turn trunnioned at 12, and having its lower arm disposed horizontally rearward, with an adjusting screw 13 at its extremity. The rear apex of the floating lever 8 is provided with a roller 14 disposed in contact with the edge of a V-shaped recess 15 in a rigid fixed plate 16 attached at the rear of the machine frame 17. The rear apex of the floating lever is also pivotally connected by a vertical link 18 to the rear extremity of an arm 19 keyed or integral with a main rock shaft 20 trunnioned at its ends in opposite sides of the machine frame. A second rearward arm 21 keyed or integral with the rock shaft (Fig. 2) is pivotally attached at its rear, by a trunnion, with a vertical link 22, which supports the shift rail 1. A duplicate arm 21 and trunnion located at the opposite end of the rock shaft 20 is likewise connected to a second upright link 22′ attached to the other end of the shift rail 1. A retractile coil spring 23 is connected between a fixed post 24 on the machine frame and the upper end of the bell crank bracket 11 in such a manner that the floating triangular lever 8 is normally urged toward the rear of the machine so that the roller 14 rests in the apex of the V-recess 15 in the limiting bracket 16,

and so that the screw 13 in the lower arm of the bell crank bracket 11 is out of contact with the stop 25 on the machine frame.

In the position of the parts shown in Fig. 1 the platen is in intermediate position to insure printing by the middle characters of the type bars. This position is positively controlled by the pressure of the lever roller 14 in the apex of the V-shaped recess 15 of the bracket 16. Upon depression of the figure lever 2 the toggle comprised by its rear arm and floating link 7 is broken upward and lever 8 is rocked on the rear axis of link 10 as a fulcrum to carry the roller 14 to the lower dwell 26 of the notch 15 and to pull the supporting bell crank bracket 11 forward and carry the adjusting pin 13 into contact with the stop 25. The engagement of the roller 14 with the dwell in the V-notch 15 thus positively limits rotation of the rock shaft 20. This motion is transmitted, through the rock shaft arms 21 and upright links 22 to lower the shift rail and platen for receiving imprint from the upper characters of the type bars. Upon release of the figure shift key the spring 23 restores the floating lever 8 to its intermediate position quickly, but smoothly and without shock or impact. A coil spring 27 attached to the rear arm of the lever 2 also assists in returning the key lever to normal position when released and thereby straighten the toggle 2—7. Similarly, on actuation of the capital key lever 3 the forward end of floating link 10 is elevated to pull forward the upper apex of the floating lever 8, which fulcrums on the rear axis of the link 7 and again rocks the bell crank supporting bracket 11 to carry the adjustable screw 13 again into contact with its stop 25 and raise the roller 14 into contact with the upper dwell 28 of the V-notch 15 in the limiting plate 16. The link 18 is thus raised to rock the main shaft which, through its arms 21 and upright links 22, elevates the carriage and platen to receive the imprint from the lower characters of the type carriers. Spring 29 urges lever 3 to normal position.

The normal positions of the key levers 2 and 3 are determined by engagement with cushioned silencing pads 30 and 31, adjustably mounted on a bracket 32 attached to an offset stud integral with the side of the machine frame. It will be noticed that the figure shift key lever 2 forms a toggle with the floating link 7, which is extended in intermediate position of the carriage, while the capital key lever 3 is obliquely disposed with its connected floating link 10 in the same position. This arrangement eliminates any tendency of rebound of the carriage or overthrow when brought from upward position to intermediate position.

In order to reduce the load when the shifting is effected, adjustable balancing springs 33 are mounted on the rock shaft 20, and connected at their outer extremities with a fixed portion of the machine frame.

Auxiliary locking keys 34 are associated with the figure and capital shift keys, as shown, in order to lock the carriage in either shifted position for continued operation. The locking key is illustrated in Fig. 3 as comprising a lever fulcrumed on a pivot screw 35 attached to its respective key lever and provided with a downward arm 36 having a notch 37 at its extremity to engage beneath the edge of a fixed bracket 38, carried at the side of the machine frame. A spiral spring 39 is wound about the pivot 35 with its ends confined beneath the lever 34 and the key lever, and tending to rotate the locking key to bring a rearward arm 40 thereof into engagement with a stop 41 on the key lever, in which position the notch 37 at the lower end of the locking key is held out of engagement with the bracket 38 when the shift lever is depressed. When, however, shifting is effected by direct manipulation of the locking key, the spring 39 is overcome so that the lower arm 36 of the locking key rides along the bracket when depressed and catches the lower edge of the latter as the platen is moved to its limit. Frictional engagement between these parts is sufficient to overcome the action of the spiral spring 39 and accordingly the carriage is held in its moved position. Slight pressure on either figure or capital key thereafter carries the notch 37 out of contact with the bracket 38, so that the spring 39 rotates the locking key out of locking position and the carriage is free to return.

An important advantage of the structure described is that after the carriage is locked in either shifted position, it may be released and simultaneously moved to the other extreme position by direct application of pressure to the other shift lever. This is accomplished by the arrangement of floating links 7—10 and floating lever 8, which transmit initial force to the locked lever, upon depression of the unlocked lever, sufficient to release the then engaged locking key, whereupon continued depression moves the carriage to the desired position.

The limiting plate 16 is provided with a vertical slot through which headed screws 42 project into the rear of the machine frame, whereby as the screws are loosened the plate may be vertically adjusted, so that the shifted positions of the carriage may be accurately set. Further, the simplicity of the limiting device renders it economical to manufacture, and the absence of friction or impact renders it durable and reliable in service.

As many changes could be made in the above construction and many apparently widely different embodiments of this inven-

tion could be made without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

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

1. In a typewriting machine, in combination, a shiftable part having three printing positions, a floating lever pivotally movable selectively about either of two spaced axes and connected to shift said part, and means engaging a portion of said lever to stop the same in each position corresponding to a printing position of said part.

2. In a typewriting machine, in combination, a vertically shiftable part having three printing positions, a floating lever connected to shift said part, and a stationary member having abutment walls to be engaged by said lever in each shifted position of said part for determining such position, said member also acting to restrain said part against displacement from intermediate position.

3. In a typewriting machine, in combination, a shiftable part having three printing positions, a floating lever, the normal position of which corresponds with the intermediate position of said part, said lever being movable from normal position about either of two spaced axes, and a stationary member having a concave portion engaged by said lever for determining the normal and pivotally moved positions thereof.

4. In a typewriting machine, in combination, a shiftable part having three printing positions, a floating lever connected to shift said part, two separate toggles, which when extended hold said part in one position and which are independently breakable to move said part to second and third positions, and means coöperating with said lever to determine each of said positions of said part substantially independently of said toggles.

5. In a typewriting machine, in combination, a carriage shift rail having three printing positions, a rock shaft connected therewith, a floating member connected with said rock shaft, means for moving said member from intermediate position about either of two spaced axes to extreme positions, and means coacting with said member to limit its movements to extreme positions and determining its return movement to intermediate position.

6. In a typewriting machine, in combination, a carriage shift rail, a floating lever connected therewith, two actuating keys having spaced independent connection with said lever, and means engaging with said lever to determine the movement of said rail from any position to an adjacent position.

7. In a typewriting machine, in combination, a shiftable part having three printing positions, shifting means therefor including a floating member having a part movable in a substantially V-shaped path, and a stationary member having a substantially V-shaped recess to receive said part and control the intermediate and extreme positions of said member.

8. In a typewriting machine, in combination, a carriage shift rail having an intermediate and two extreme printing positions, a rock shaft rotatable to move said rail, a floating lever connected to move said shaft, actuating keys connected to move said lever, a rigid stop plate mounted to coöperate with said lever for determining the three positions thereof, and means whereby said plate may be adjusted for varying the three positions of said lever.

9. In a typewriting machine, in combination, a carriage shift rail having an intermediate and two extreme printing positions, a rock shaft connected to move said rail, a triangular floating lever connected at one apex to move said shaft, two actuating keys connected at the other apices of said lever for moving the latter, a rigid stop plate mounted to coöperate with said lever for limiting the movement thereof, and means whereby said plate may be adjusted for varying the extreme and intermediate positions of said rail.

10. In a typewriting machine, in combination, a shiftable element having an intermediate and two opposite extreme positions, a rock shaft rotatable to move said element, a triangular floating lever connected at its rear apex to move said shaft, two actuating keys having separate toggle connections with the other apices of said lever for moving the latter about spaced fulcrums whereby said rear apex travels in a substantially V-shaped path, and a stationary member having a substantially V-shaped recess to receive said rear apex and control the intermediate and extreme positions of said element.

11. In a typewriting machine, in combination, a shiftable element having an intermediate and two opposite extreme positions, a rock shaft rotatable to move said element, a triangular floating lever connected at its rear apex to move said shaft, two actuating keys having separate toggle connections with the other apices of said lever for moving the latter about spaced fulcrums whereby said rear apex travels in a substantially V-shaped path, a stationary member having a substantially V-shaped recess to receive said rear apex and control the intermediate and extreme positions of said element, and means whereby said member may be adjusted for varying uniformly the three positions of said element.

12. In a typewriting machine, in combi-

nation, a vertically shiftable part having three printing positions; a horizontally extending floating lever pivotally movable selectively about either of two spaced axes, one above the other, and having connection with said part; actuating key levers having link connections, respectively, to said lever at said axes; and means engaging a portion of said lever in a plane intermediate said axes to resist vertical displacement of said portion from intermediate position by force from said shiftable part.

In testimony whereof I affix my signature, in the presence of two witnesses.

GEORGE GOULD GOING.

Witnesses:

D. B. WESTIN,

ERENA K. ALLEN.