No. 862,638. PATENTED AUG. 6, 1907.

W. E. INGRAM.

CARRIAGE SHIFTING MECHANISM FOR TYPE WRITERS.

APPLICATION FILED SEPT. 28, 1906.

2 SHEETS—SHEET 1.

Fig. 1

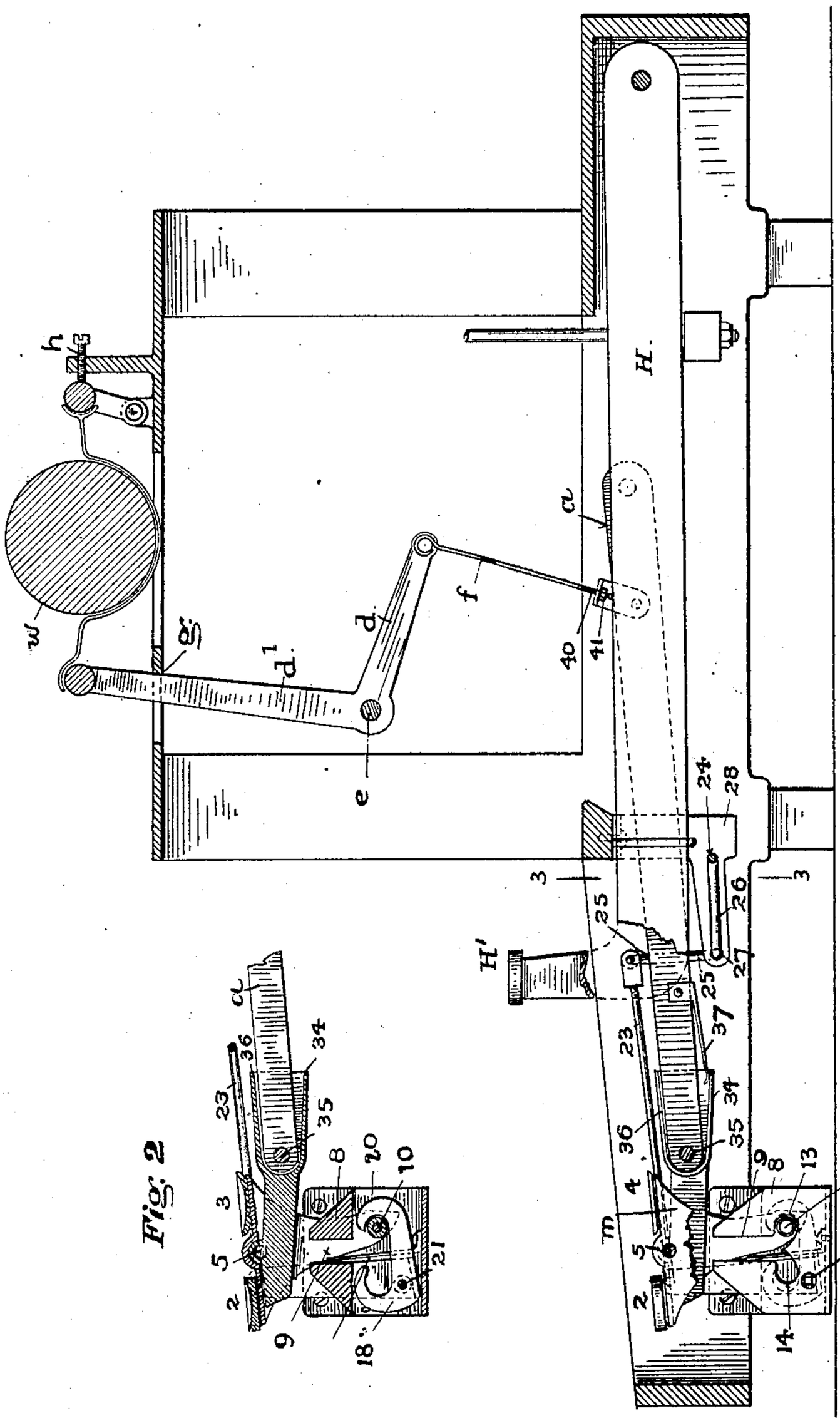


Fig. 2

Witnesses
A. Rob=Braden.
M. Regner.

Inventor
Wesley E. Ingram
by E. E. Osborn
his Attorney

No. 862,638. PATENTED AUG. 6, 1907.

W. E. INGRAM.

CARRIAGE SHIFTING MECHANISM FOR TYPE WRITERS.

APPLICATION FILED SEPT. 28, 1906.

2 SHEETS—SHEET 2.

Fig. 3

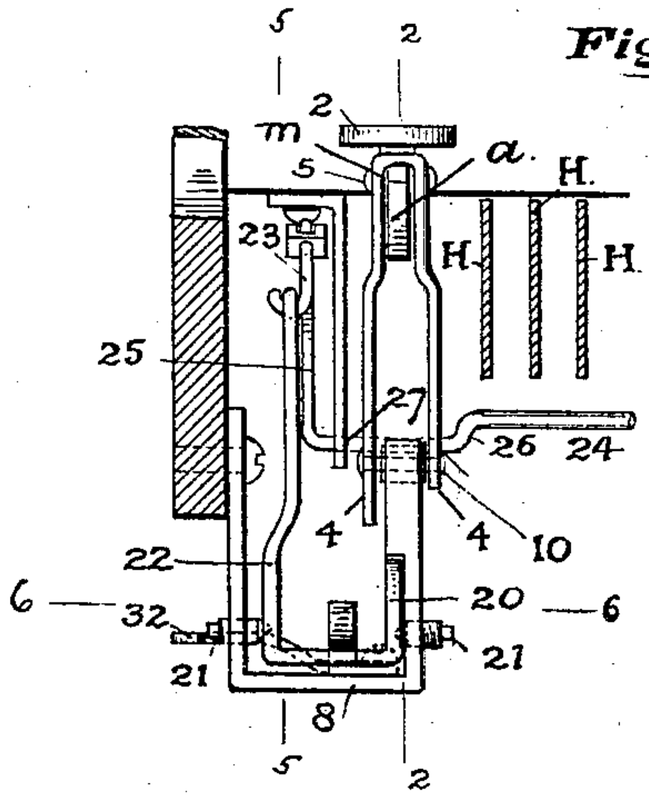


Fig. 5

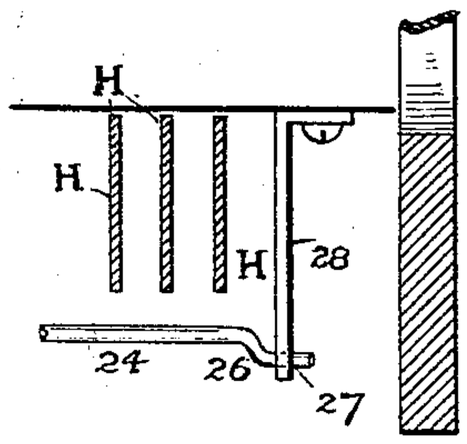
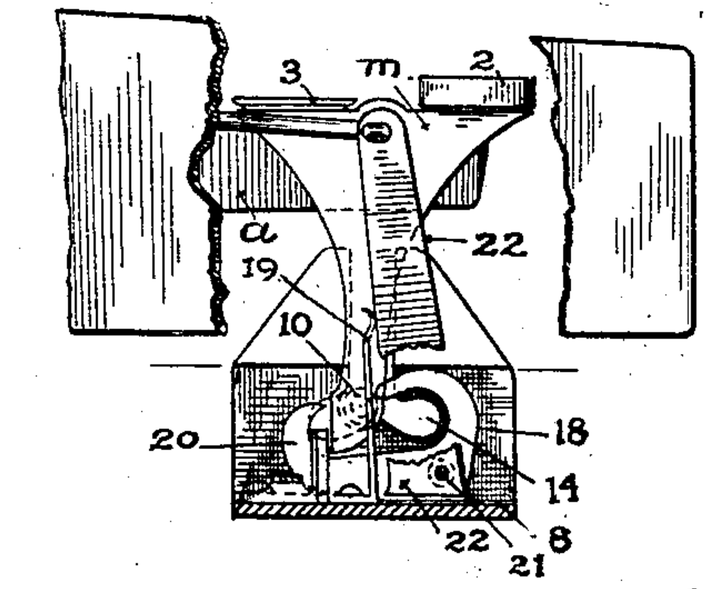
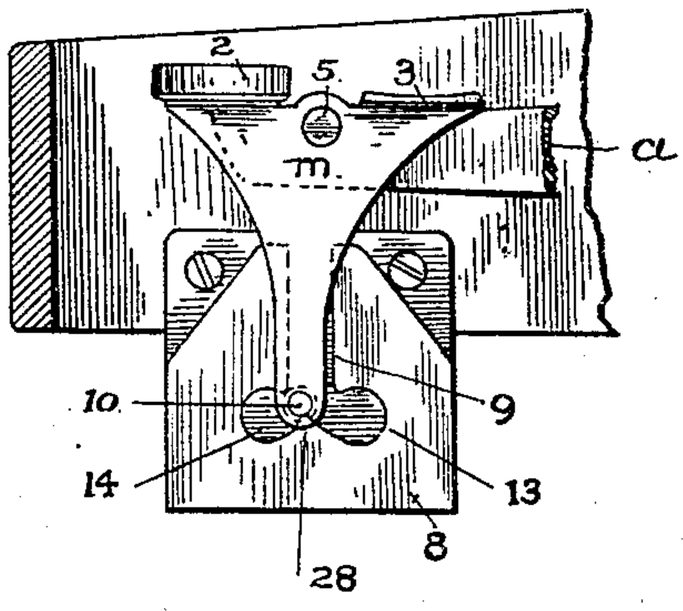


Fig. 4





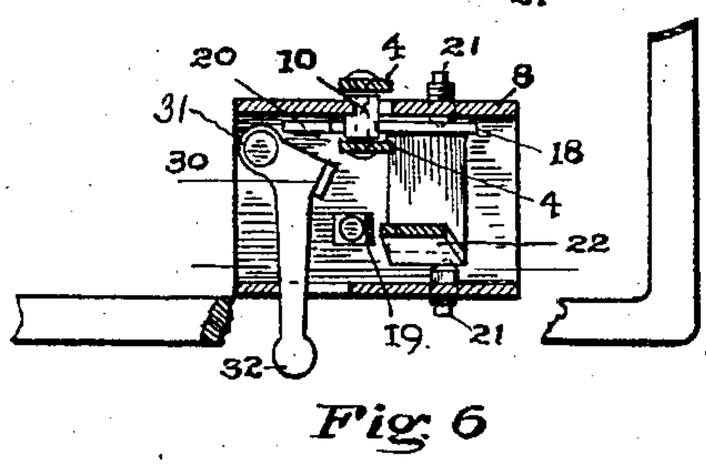


Fig. 6

Witnesses

Wm. F. Drew

H. Polk Braden

Inventor

Wesley E. Ingram.

by E. G. Osborn

his Attorney

UNITED STATES PATENT OFFICE.

WESLEY E. INGRAM, OF TONOPAH, NEVADA.

CARRIAGE-SHIFTING MECHANISM FOR TYPE-WRITERS.

No. 862,638. Specification of Letters Patent. Patented Aug. 6, 1907.

Application filed September 28, 1906. Serial No. 336,654

To all whom it may concern:

Be it known that I, WESLEY E. INGRAM, a citizen of the United States, residing in Tonopah, in the county of Nye and State of Nevada, have invented new and useful Improvements in Carriage-Shifting Mechanism for Type-Writers, of which the following is a specification.

This invention relates to improvements made in the means by which the carriage of a type-writer is shifted with relation to the writing mechanism, to change the writing from lower-case to capital letters, or vice versa.

The invention is applicable to type-writing machines of the Remington type, in which the shifting movement of the carriage takes place in a horizontal plane; but it is capable of being applied also to other shifting-carriage machines in which the movement of the carriage required to change the writing from one style of letter to another takes place in a different direction from what it does in the Remington machine.

The invention has for its object to produce or effect the automatic releasing and restoring of the carriage to its normally operative position, after each change from a lower-case letter to write a capital, by or from the act of depressing the letter key that is struck and, after the impression of the capital letter has been made; thereby relieving the operator from the necessity of twice operating the carriage-shifting key in every change made from a lower-case to a capital letter, and contributing materially to greater rapidity and accuracy in the work.

To this end, chiefly, the said invention comprises a carriage-shifting key of novel construction, and means actuating the key by or from the writing mechanism, whereby the carriage is reset to write lower-case letters by the act of striking a letter-key and as soon as the capital letter is impressed on the paper.

The invention embraces also certain novel parts and combination of parts, producing an improved carriage-shifting means or device having several advantages over the carriage-shifting key or mechanism generally provided in single key-board typewriters, all as hereinafter described and pointed out in the claims at the end hereof.

The following description explains at length the nature of the invention, and the manner in which I proceed to produce, apply and carry out the said improvements, reference being had to the accompanying drawings forming a part of this specification.

The said drawings represent the application of the invention to a single key-board machine of the Remington type.

Figure 1 is a longitudinal sectional-view of a carriage-shifting device embodying my invention; showing the frame of the machine, the carriage, and one letter-key of the key-board and its lever. Fig. 2 is a sectional-view of the shifting-key and the parts and connections associated with it. This figure is a longitudinal section on the line 2—2, Fig. 3. Fig. 3 is a vertical transverse section through the key-board and frame of the machine, just in front of the carriage-shifting key; the section being taken also on the line 3—3 Fig. 1. Fig. 4 is a side-elevation, on an enlarged scale, of a shifting-key and associated parts showing the position occupied by the key when it is in the act of ascending or returning to place after being depressed to write a capital letter. Fig. 5 is a vertical sectional view on the line 5—5 of Fig. 3. Fig. 6 is a horizontal sectional view on the line 6—6 of Fig. 3.

Referring to Fig. 1, the lever *a* at the left of the key-board shifts or sets the paper-carriage *w* backward, or in the required direction to change the writing from lower-case to capitals, as often as the forward end of the lever is depressed.

The connection between the lever *a* and the carriage *w* is made by a bell-crank *d* movable on its fulcrum-point *e* and connected with the lever *a* through the medium of a link *f*. The throw of the arm d^1 is limited by the stop which is formed by the back of the slot *g* in the frame through which the arm of the lever plays, and the movement of the carriage under the throw of the lever *d* is arrested and properly adjusted with relation to the type-bar by a stop on the frame formed by an adjustable screw *h*, against which the rear cross-bar of the carriage comes in contact.

The lever *a* is actuated and controlled by a locking finger-piece of novel construction, having two keys or fingers-pads 2—3, and a releasing means or device, also of novel character so constructed and arranged that the stroke of any key in the key-board which may be selected and struck to write the required capital letter or "upper case" character, will operate to release or throw off the previously set shift-key, and thereby reset or restore the carriage to position for writing the following lower-case letter or character as soon as the capital letter or upper-case character is written and before another letter-key in the key-board is struck by the operator.

The construction and arrangement of the parts whereby I effect the above-mentioned operation and the automatic release of the carriage-shifting key are as follows:—

The locking-piece *m* on the end of the lever *a* is a saddle-shaped plate having two legs 4—4, extending perpendicularly down on opposite sides of a stationary plate 8 and properly spaced apart to pass clear of the sides of that piece as the plate *m* moves up and down with the lever. Two finger-keys or pads 2—3 on the top of the plate *m*, situated one in front of and the other behind the pivot 5, tilt the piece *m* on its center 5 in one direction or the other, according as the key 2 or the

key 3 is used by the operator to depress the lever *a*. A cross-pin 10 fixed between the legs 4—4 and sliding up and down in the perpendicular slot 9 of the fixed plate 8 acts to hold down the lever *a* whenever the piece *m* is depressed, by engaging one or the other of two recesses or offsets 13—14 at the bottom of the slot. These parts—the tilting-piece *m* and the slotted plate 8—thus lock and hold down the lever *a* when it is depressed by the key 2 on the finger-piece *m*, but instead of having to be released or thrown off by a separate movement of the hand after the capital or upper-case character is written and before the key to write the following lower-case letter is struck, as heretofore, the lever *a* in this mechanism is released and the carriage re-set by the movement of that one of the type-bar actuating levers in the writing mechanism which may be struck to imprint the capital letter or upper-case character.

The operation of releasing the shifting-lever *a* and restoring the carriage *w* to position is thus made automatic to the extent of being effected directly by or from the movements of the keys that actuate the type-bars, and not by a separate or special key, or by an additional or separate motion to be made by the hand of the operator.

Figs. 1 and 3 illustrate the means employed in the present construction to release the shifting-lever by or from the movement of the letter-writing keys; it should be understood, however, the same may be varied, or changed to produce the same result without departing from the spirit of the present invention. The parts therein shown are formed and combined to operate as follows:—On one side of the slotted plate 8 and in close relation to the recesses 13—14 at the bottom of the slot 9, is a latch-piece composed of two hook-shaped members 18—20 turned inwards so as to face in the same plane, having a limited movement on pivots 21. An arm 22 extending upwards from the hook-shaped piece and forming a rigid member thereof is connected by a rod 23 with an arm 25 on the end of a cranked rod 24 situated beneath the type-bar actuating levers H. The part 24 termed the cranked-rod has a bend or offset 26 at each end, for which bearings 27 are provided in fixed brackets 28 on the frame that supports the rod under and in close working relation to the key-actuated levers H, and the arm 25 on the outer end of the cranked-rod is connected with the upright arm 22 of the latch-piece by the rod 23. The result of this arrangement is to produce a limited rocking movement of the latch-piece on its pivots whenever a letter-key in the key-board is struck by the operator, whereby the point of the hook 18 is thrown against the cross-pin 10 as the latch-piece is rocked on its pivots 21, with the effect to arrest the cross-pin and hold it from traveling upward in the slot after it is pushed out of the recess 13. In that position the latch-piece will hold the shift-lever *a* down until the impression of the capital letter is made. But on the rise of the letter-key after the impression, the latch-piece returns to its original position, which movement is produced by a spring 19 placed behind the arm 22 and acting to throw it forward as soon as the finger is removed from the letter-key. The cross-pin 10 being fitted loosely in the slot 9 will enter the rear recess 13 when key 2 is pressed, or the front recess 14 by using the other key 3; a frog or projection 28 being arranged at the bottom of the slot between the recesses to guide the cross-pin 10 into one or the other of the recesses according to the direction in which the piece *m* is tilted when it is being pressed down. As thus constructed the shifting-lever *a* will be held down by the locking-mechanism when a capital letter is to be written, and will be released and the carriage *w* restored to position for writing lower-case letters after the capital, without calling for any attention on the part of the operator to the shifting-key; in which operation the locking is effected simply by the act of pressing the key 2. On the other hand, when it is desired to write all capitals, the locking-piece *m* is depressed by using the rear key 3, which by tilting the piece *m* in the opposite direction causes the cross-pin 10 to ride against the front edge of the slot 9 and enter the locking recess 14, in which the cross-piece will be caught and held until it is released by the operator pressing the front key 2. In this function of locking the shifting-lever *a*, therefore, the tilting-piece *m* is released directly by the operator touching the shifting-key 2, and not from the operation of the letter-keys. But as a much greater proportion of matter is written in lower-case letters and characters than in capitals, the automatic feature of my carriage-shifting mechanism is of advantage in contributing to greater speed and accuracy on the part of the operator.

Provision is made for throwing the automatic releasing-mechanism temporarily out of action, whenever it may be desirable or more convenient for any reason to release the shifting-key by hand after writing a capital. For that purpose a stop-lever 30, pivoted at 31 on the bracket 8 and provided with a handle 32. is located in such position back of the recess 13 that when the handle is set forward the stop 30 will prevent the cross-pin 10 from entering the recess 13 when the key 2 is pressed, and the shifting-key must then be held down by the operator until after the capital is written.

At some point between the rocking-piece *m* and the lever *d* is interposed a yielding or elastic connection, that allows the shifting-lever *a* to move after the arm of the lever d^1 is arrested by the stop *g* when the key (2 or 3) is pressed. Such yielding connection is made, in one way, by making a joint in the lever *a* at a point behind the key, and limiting the movement of the jointed portion 33 by placing two stops 34—36, one situated under and the other above the main lever *a*, with a flat spring 37 so arranged as to keep the jointed front portion normally in line with the main-lever *a* while allowing it to yield under the pressure of the finger on the key, and thus permit the additional extent of movement required to set the cross-pin into the recess at the bottom of the slot 9 after the downward movement of the lever *a* has been arrested by the arm d^1 striking the stop *g*.

The link *f* is provided with a screw-threaded portion 40 at its lower end to be engaged by a nut 41 for connecting the said link with the shifting lever *a*.

It will be noted that in my construction, the locking mechanism for the shifting lever is located entirely outside of and away from the operating mechanism of the typewriter, and at the front end of the machine directly below the outer end of the shift lever. This arrangement is advantageous, for the reason that it is not only simple in construction, but may be easily reached

for repairs or replacements without dismantling the typewriter mechanism or in any way affecting the adjustment of its parts.

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

1. In a typewriter shift mechanism, the combination with the typewriter mechanism and the character keys thereof, of a lever for shifting the carriage of the typewriter mechanism from lower to upper case, a locking piece connected to the said lever, a pair of keys carried by the locking piece, means for locking the shift lever in the upper case position by the depression of one of the keys, means for releasing the locking means by the depression of a character key, and means for permanently locking the shift lever in the upper case position by the depression of the other key.

2. In a shift mechanism for a typewriter, the combination with the typewriter mechanism and set of character keys, of a shift lever and connections for throwing the typewriter mechanism into upper case position, a locking piece pivoted to the outer end of the lever, a finger key carried by the locking piece located to one side its pivot, means for holding the locking piece by the depression of said finger key, and means for releasing the same by the depression of a character key.

3. In a shift mechanism for a typewriter, the combination with the typewriter mechanism and set of character keys, of a shift lever and connections for throwing the typewriter mechanism into upper case position, a locking piece pivoted to the outer end of the lever, a finger key carried by the locking piece located to one side its pivot, means for holding the locking piece by the depression of said finger key, means for releasing the same by the depression of a character key, and means for permanently throwing out of operation the said holding means, whereby the shift lever returns to normal position without being locked after the depression of the said key.

4. In a shift key lock mechanism, the combination with the shifting lever, of a locking piece pivoted thereto, and a pair of finger keys carried by the locking piece on opposite sides of its pivot, a pin carried by the locking piece, a plate provided with two recesses, and means for guiding the said pin into one or the other of said recesses accordingly as one or the other of the said finger keys is depressed.

5. In a type-writing machine, a carriage-shifting lever, a tilting-piece thereon, a cross-pin carried by said tilting-piece, a fixed plate having locking recesses with which the cross-pin is adapted to engage in the downward movement of the tilting-piece and thereby hold down the shifting-lever, and means actuated from the movement of any selected one of the letter or character keys following the depression of the shifting-lever operating to release the tilting-piece from the locking-recess and allowing the shifting-lever to return as soon as the pressure is removed from said key.

6. In combination, in a type-writing machine, a carriage-shifting key, a tilting-piece therein provided with two finger-keys situated one in front of and the other behind its tilting-point, a pin on said tilting-piece, a fixed plate having locking-recesses with which said pin is adapted to engage for holding down the shifting-key, a rocking latch-piece having hooked-shaped members arranged to engage the said pin and by their movement to set it out of the locking-recess with which it may be engaged, and means operatively connecting said hooked-shaped latch-piece with the letter and character keys of the key-board for actuating said latch-piece from the movement of any selected one of the keys, to throw off the lock and thereby return the shifting-lever to its normal position after the letter or character has been written.

7. In a type-writing machine, in combination a carriage-shifting lever, a tilting locking-piece thereon provided with finger-keys for depressing the lever and tilting said piece on its pivot, a fixed plate having a locking-recess with which said tilting-piece is adapted to engage and thereby hold down the shifting-lever, a rocking latch-piece having hook-shaped members, means operatively connecting said latch-piece with the letter and character keys of the key-board for partially disengaging the said tilting-piece from the fixed plate in the downward movement of the selected and operated letter or character key without affecting the position of the carriage, and afterwards entirely disengaging said tilting-piece and releasing the shifting-key as soon as pressure is taken off the key by which the letter or character has been written.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WESLEY E. INGRAM.

Witnesses:
H. S. CROCKETT,
E. B. CUSHMAN.