(No Model.)

4 Sheets—Sheet 1.

G. S. HEATH.

TYPE WRITING MACHINE.

No. 560,162. Patented May 12, 1896.

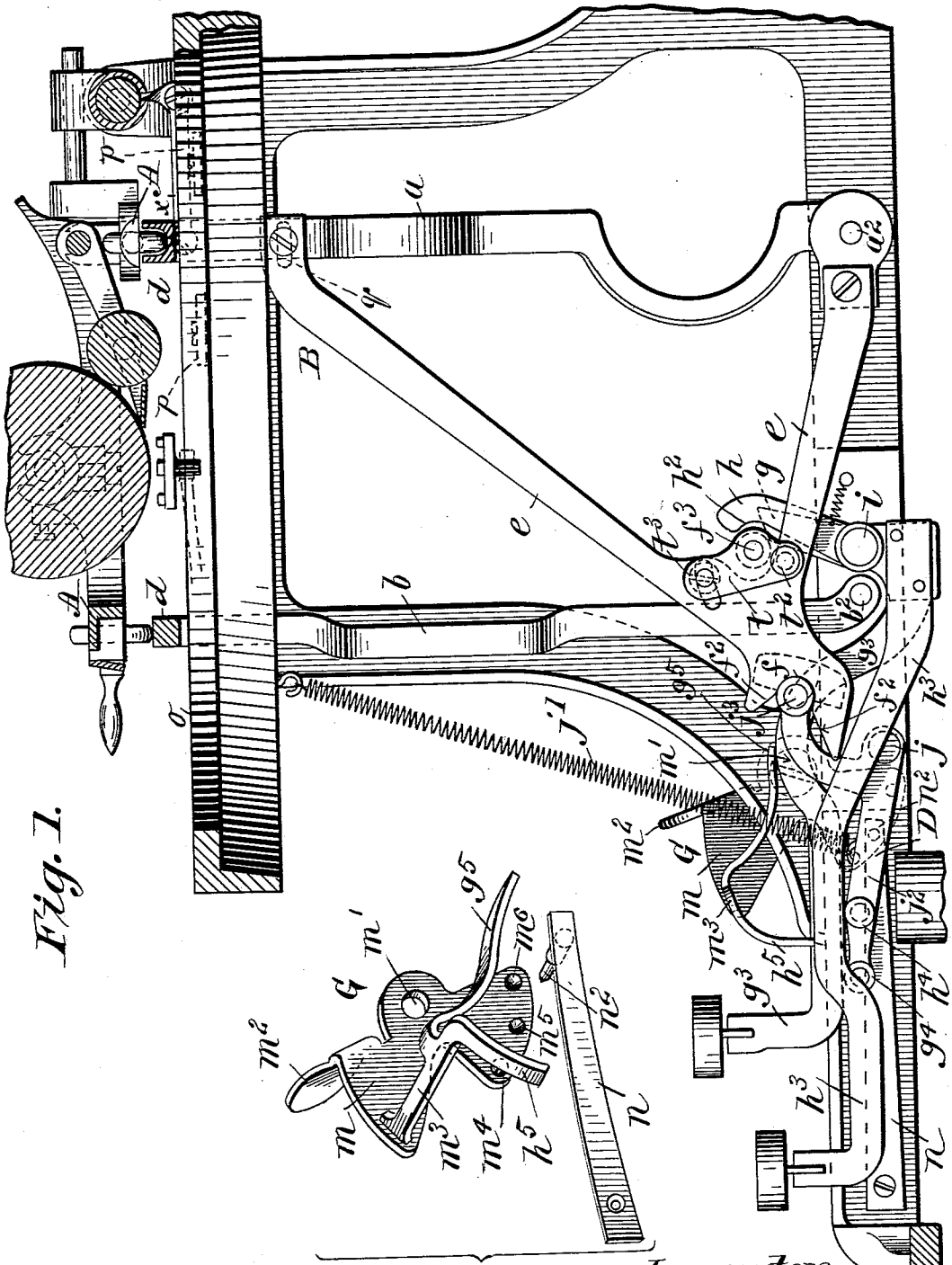

Fig. 1.

Fig. 1a.

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(No Model.)

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G. S. HEATH.

TYPE WRITING MACHINE.

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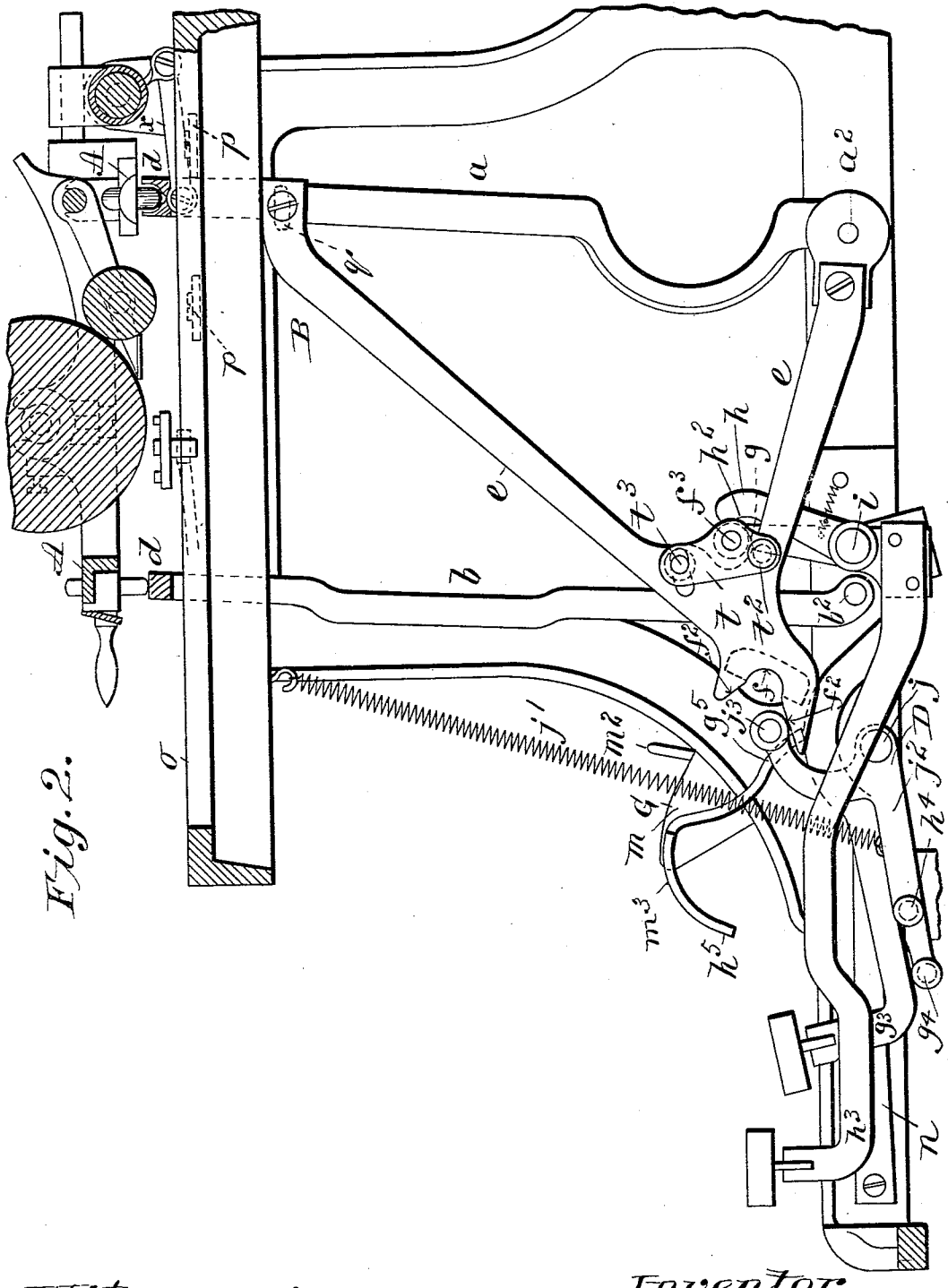

Fig. 2.

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G. S. HEATH.

TYPE WRITING MACHINE.

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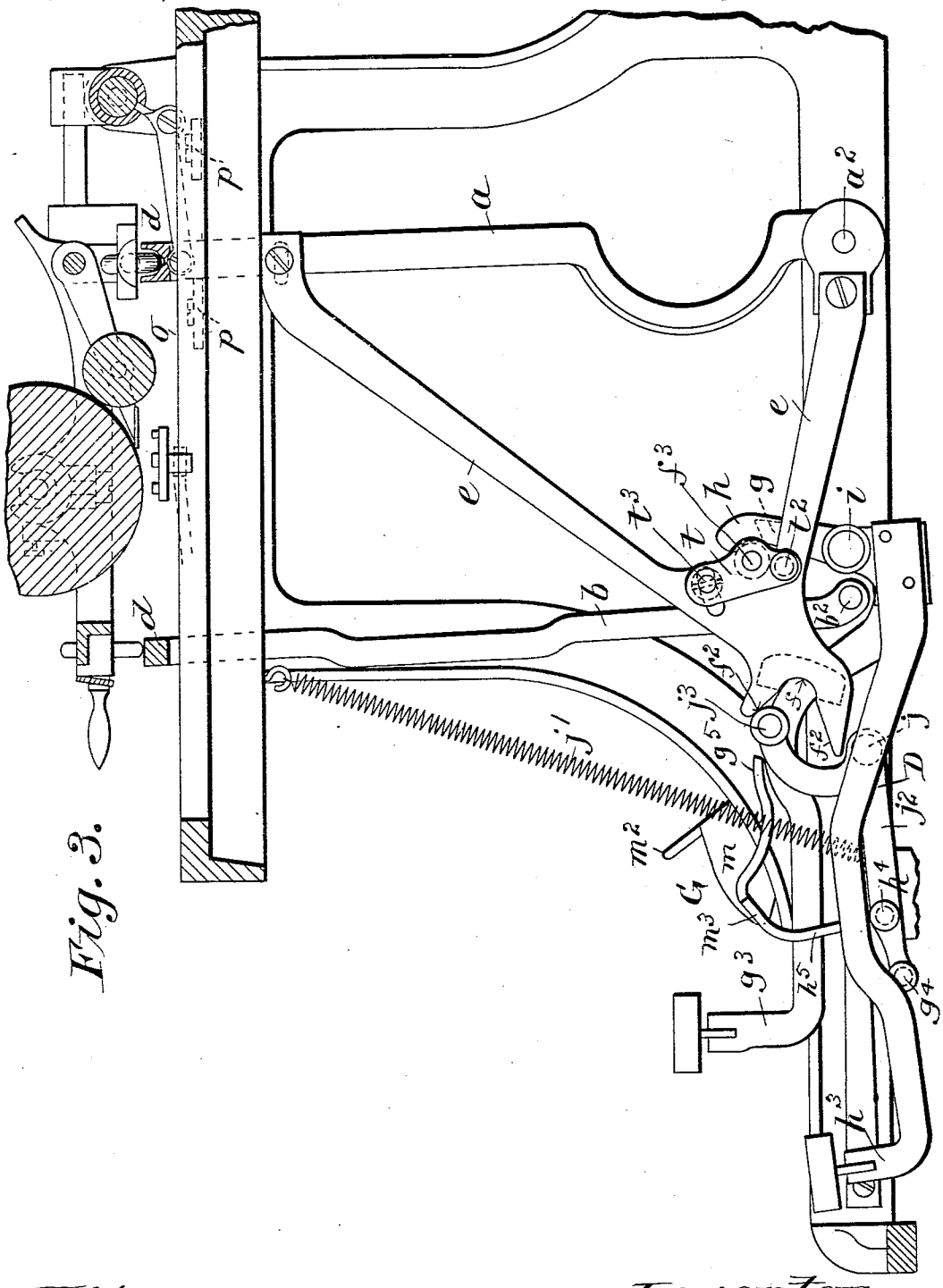

Fig. 3.

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(No Model.) 4 Sheets—Sheet 4.

G. S. HEATH.

TYPE WRITING MACHINE.

No. 560,162. Patented May 12, 1896.

Fig. 4.

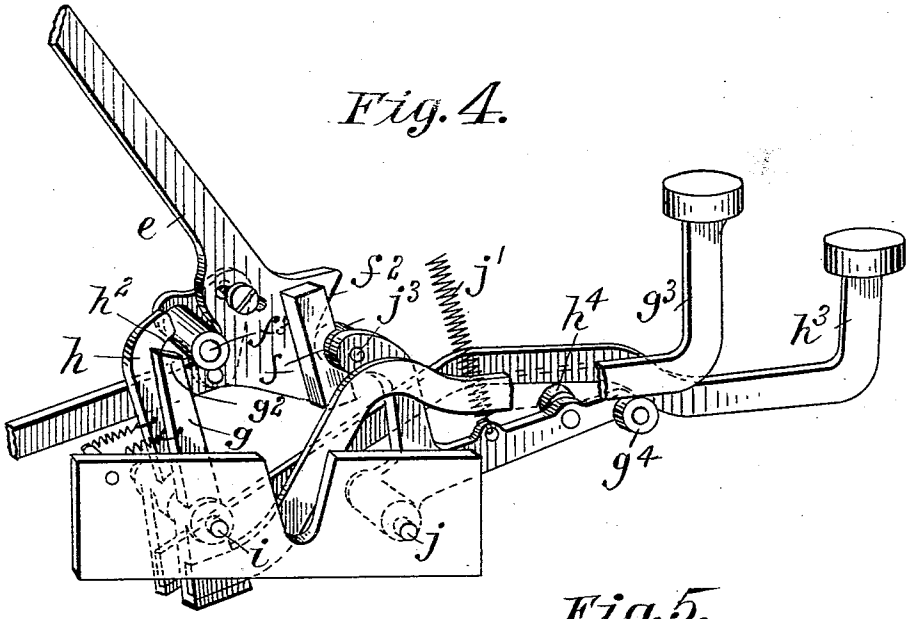
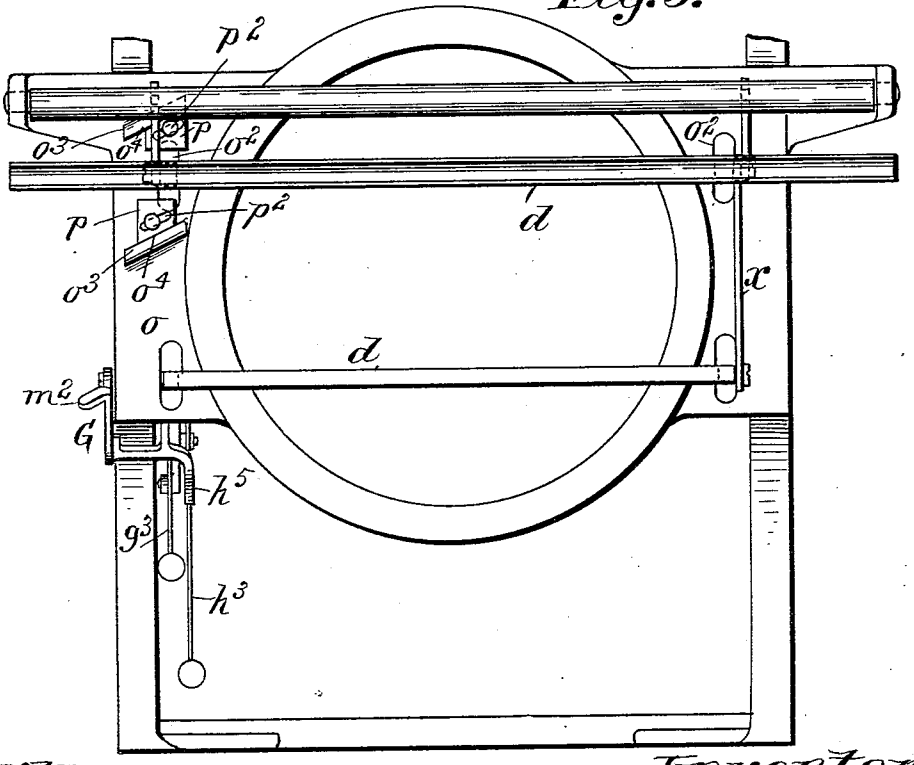


Fig. 5.



Witnesses:
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UNITED STATES PATENT OFFICE.

GEORGE S. HEATH, OF SPRINGFIELD, MASSACHUSETTS, ASSIGNOR TO CHARLES F. HOWE, OF BOSTON, MASSACHUSETTS.

TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 560,162, dated May 12, 1896.

Application filed October 4, 1893. Serial No. 487,203. (No model.)

To all whom it may concern:

Be it known that I, GEORGE S. HEATH, a citizen of the United States, residing at Springfield, in the county of Hampden and State of Massachusetts, have invented new and useful Improvements in Type-Writing Machines, of which the following is a specification.

This invention relates to improvements in that class of type-writing machines having a carriage-support which is shiftable from its normal position either forward or rearward, or both forward and rearward from said normal position, so that the platen or paper thereagainst will be, as desired, in position to receive the impact thereupon of any one of two or three types carried by a single type-bar.

The invention more particularly pertains to improvements in the means for securing the shift movements of the carriage; to improvements in the means for locking at pleasure the carriage in either of its shifted positions; to improvements in the means for restoring the carriage which has been shifted, but while not locked in its shifted position, to its normal position and for retaining it in its normal position, and to improvements in the means for limiting to a nicety the extent of fore-and-aft shifting movements of the carriage; and to these ends the invention consists in arrangements and combinations of parts and the construction of certain of the parts, all substantially as will hereinafter appear and be covered in and by the claims.

In the accompanying drawings the improvements are shown as applied on a "double-shift" type-writing machine—that is, one in which the type-bars have three types arranged in a line transversely of the length of the platen, the carriage having its normal position so that the platen receives the impact of the middle type and on being shifted rearward it brings the platen to position to receive the impact of the rear type of the type-bar, while when the carriage is shifted forward the platen is brought to the position to receive the impact of the front type of the type-bar. Nevertheless many features of the invention are applicable to a "single-shift" machine, as will be apparent from an understanding of the mechanisms to be hereinafter fully and particularly described.

In the drawings, Figure 1 is a sectional elevation, taken from front to rear, of the type-writing machine with the parts in their normal positions, or positions which they assume when unshifted, so that the platen is in position to receive the impact of the middle type-bar. Fig. 1ª is a perspective view of the device for locking down the parts in either of their shifted positions. Fig. 2 is a view similar to Fig. 1, but showing the parts as moved for rearwardly shifting the carriage and also as locked down in such shift-retaining position. Fig. 3 is a view similar to the other sectional elevations, but showing the parts as moved for forwardly shifting the carriage and also as locked down in such shift-retaining position. Fig. 4 is a perspective view for more clearly showing the device for shifting the carriage-support forward and rearward and the device for restoring and retaining the carriage-support to and in its normal position. Fig. 5 is a plan view, on a smaller scale, showing the improved stops for limiting the shifting movements of the carriage-support.

The same characters of reference indicate corresponding parts in all of the views.

In the drawings, A represents the carriage, and B the shiftable carriage-support, which comprises the two horizontal parallel longitudinal rails d d and the upright swing-bars a b, pivoted at their bottoms, as at a^2 b^2, and supporting said rails at their upper ends linked together, as at x, (see Fig. 5,) for parallel movements. The rear bar has the forward extension comprised in the angular plate or frame e, the forward extremity of which has the niche f and the forwardly-diverging jaws with inclined edges f^2 f^2. The said extension also has the stud f^3, preferably provided with a cam-roll, extended laterally relative to its plane of swinging movements.

g and h represent two levers pivotally mounted, as seen at i, on the side framing of the machine under and adjacent the said stud f^3, the one, g, having its upper terminal just to the rear and under the stud, the cam-formed surface g^2 thereof inclining rearwardly and upwardly, so that as this lever is forwardly swung it will in its impingement against the stud-roller f^3 swing the extension member e upwardly, rocking the carriage-support rear-

wardly. The other lever, h, has its upper extremity to the rear and rising above the stud of bowed form, the forward curved surface h^2 thereof on the forward swing of such lever having a cam impingement on the said roller-stud to swing the carriage-support forward. Both of the said levers have the members which are the farther from the cam-formed members forwardly and generally horizontally extended to form the shift-keys g^3 and h^3.

D represents a lever pivoted to a stationary support, as indicated at j, and having the laterally-extended roller-studs g^4 h^4 on the arm j^2, which is forwardly extended, which studs extend at opposite sides from the arm under the key-levers h^3 g^3 and across the planes of swinging movements thereof. The spring j' is applied to the said lever D to keep it up in the position seen in Figs. 1 and 4, and the rearwardly and upwardly curved arm j^2 has the stud or projection j, preferably with a roller thereon, which by said spring is normally held in the said niche f of the said extension e of the shiftable carriage-support. The keys g^3 h^3 are to be used for shifting the carriage rearward or forward when but one or a few characters on the front or the rear, as the case may be, of the type-bars are to be struck, it being plain that the key which is depressed in striking against the stud g^4 or h^4 of the arm j swings the lever D, so that the detent member thereof (at j^3) is freed from the restraining engagement with the shift-support extension e to permit such support to be swung as insured by the cam impingement of the parts g or h, which may be regarded as rear members of the keys. Now it will be explained that after the carriage-support has been shifted by the key and as soon as the pressure has been released therefrom the spring insures the return of the lever D to normal position, whereupon the roller-stud, in its impingement against the one or the other of the inclined edges f^2 of the extension e, according as to whether the support is to be returned forwardly or rearwardly to normal position, insures the forcing of the carriage-support back to its normal intermediate position, the roller-stud thereupon resuming its detent engagement within the throat. Means (seen at G) are also provided for insuring the shift in either direction of the carriage-support, and the holding of the carriage-support locked in its so-shifted position until it may be desired to release it to return to normal position, and the same will be now described. This shifting and locking device G comprises the plate m, which at m' is pivoted on the framing or on any suitable stationary support, and it has the outwardly-extended earpiece m^2 to constitute a convenient means for swinging it on its pivot. This plate has formed on or attached to it at its inner side an inwardly-extended bar m^3, with the angularly-extended members g^5 and h^5, one of which is in the plane of the key g^3 and the other in the plane of the key h^3. The arrangement of these members g^5 h^5 is such that in a given intermediate position of the plate m the edges of the said members will be in proximity or contact with the upper edges of the shift-keys when the latter are in their normal positions. Now it will be plain that on swinging the plate rearwardly the key g^3 will be swung downwardly, insuring the results heretofore set forth, the leaving of said plate in its so-swung position moreover insuring the locking of the parts in their shifted positions; and of course the swinging of the plate forwardly is with effect on the other shift-key h^3 for the corresponding effecting of the shift in the other direction and the locking of such shift.

The plate has on its inner face three depressions m^4, m^5, and m^6, with one or the other of which automatically engages, according to the position of the plate, the stud n^2 on the free end of the spring-strip n, the other end of which is understood as having a supporting connection on the side of the framing. This serves as a simple and effective catch for holding with certainty the shift-lock G either in its intermediate or the one or the other of its shifted positions, so that there will be no change from such position except as purposed.

In Fig. 5 are illustrated the improved adjustable stops for limiting the movement of the shifting carriage-support.

The upright swinging arms a a and b b in their extension above the top o of the machine-frame pass through slots in said frame, as seen at o^2. To the front and rear of one of the slots for one of the pair of arms the frame-top is provided with the lugs o^3 o^3, the edges thereof which are toward the ends of the slot being on an incline, as seen at o^4, relative to the length of the carriage-support d. The adjustable stops are constituted by the metallic blocks p p, which have edges inclined to lie against the said lugs, and have the slots also on a corresponding incline. Each block is held in place on the top of the framing by the set-screw p^2. By loosening the set-screws and forcing the blocks endwise they will have transverse adjusting movements to shorten or permit increased fore-and-aft movements of one of the bars a, and consequently of the carriage-support. The aforesaid angular plate or extension e is adjustable on one of the rear swinging bars a by having a pivotal connection at the lower end and by having an adjustable connection by slot and set-screw, as seen at q, at its rear upper part on said bar a. By this means the inclines f^2 f^2 and catch-recess f may be brought to position for accurate coöperation with the parts D, g, and h. Furthermore, to increase the capability of adjustment for accurate coöperation of the parts the roller-stud f^3 is adjustable on the part e. Thus the roller-stud is permanently mounted on a block or plate t, which at its lower end is piv-

otally secured, as at t^2, to the extension-plate e, just back of the niche f, while the block at its upper part has a slot-and-set-screw connection with its extension-plate, as seen at t^3. The adjustment herein is also insured by temporarily loosening the set-screw and properly moving the block t by its slotted end.

I claim—

1. In a type-writing machine the combination with the carriage mounted for shifting movement forward and backward from its intermediate and normal position, two movable cam members one engaging a member of the shiftable carriage-support for moving it backward and another for engaging a member of the carriage-support for shifting it forward, and keys for operating said cam-formed members, and a detent device for automatically engaging a part of the shifting device for maintaining it in its normal position and a device movable in one direction to depress and hold locked down one of said shift-keys, and movable in another direction to depress, and hold locked down, the other of said shift-keys, substantially as described.

2. In a type-writing machine, in combination the shiftable carriage-support, a shift-key, a swinging part for depressing the shift-key and holding it locked in such position, the device comprising a detent member adapted to hold the support in its normal position, and having a member for exerting a cam action, through the impulse of a spring which is applied thereto, for returning the carriage-support after having been shifted and released to return to its normal position, substantially as described.

3. In a type-writing machine the combination with the cam-carrying members, of the shiftable support engaged thereby, and the pivoted device movable in one direction to depress and hold down one of the cam-carrying members and movable in the other direction to depress and hold down the other cam-carrying member, substantially as described.

4. In a type-writing machine the combination with a shiftable carriage-support, substantially as described, of a lug on the carriage-frame with an inclined edge, and a stop-block next to said lug, having an inclined slot and a set-screw for confining it in its adjusted position, substantially as described.

5. In a type-writing machine a shiftable carriage-support substantially as described having the bar a provided with the extension e pivotally secured to the bar at one end and a set-screw-and-slot connection with the bar at its other end substantially for the purpose set forth.

6. In a type-writing machine the combination with the cam member $h\,g$, and the shiftable carriage-support having the extension e, of the block having an adjustable connection on the said extension near said cam members and provided with the stud, substantially as described.

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