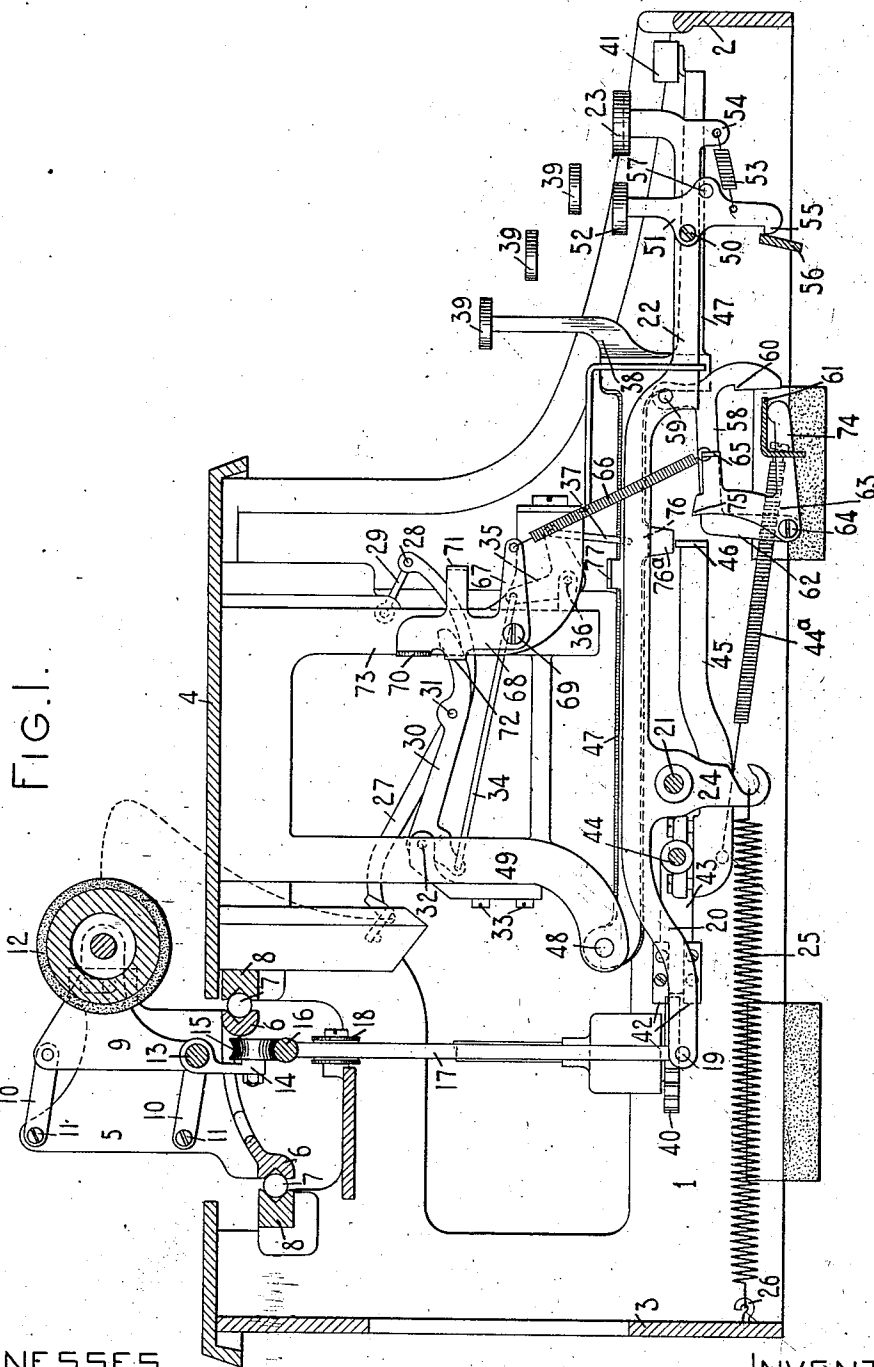


1,015,849.

A. W. SMITH.
TYPE WRITING MACHINE.
APPLICATION FILED DEC. 6, 1910.

Patented Jan. 30, 1912.

3 SHEETS—SHEET 1.



WITNESSES.

E. M. Wells

Charles Smith

INVENTOR:

Arthur W. Smith

By Jacob F. Felt

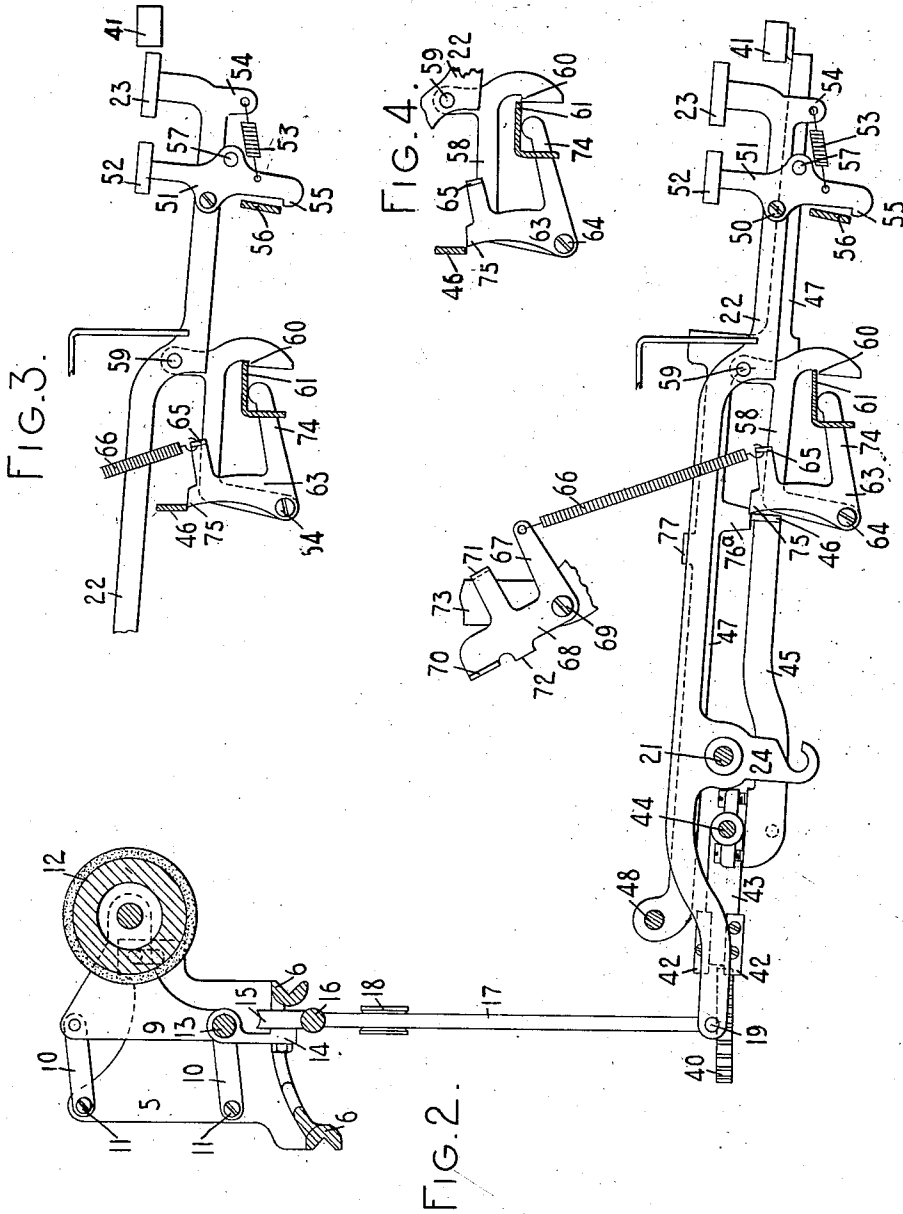
HIS ATTORNEY

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3 SHEETS—SHEET 2.



WITNESSES.

E. M. Wells
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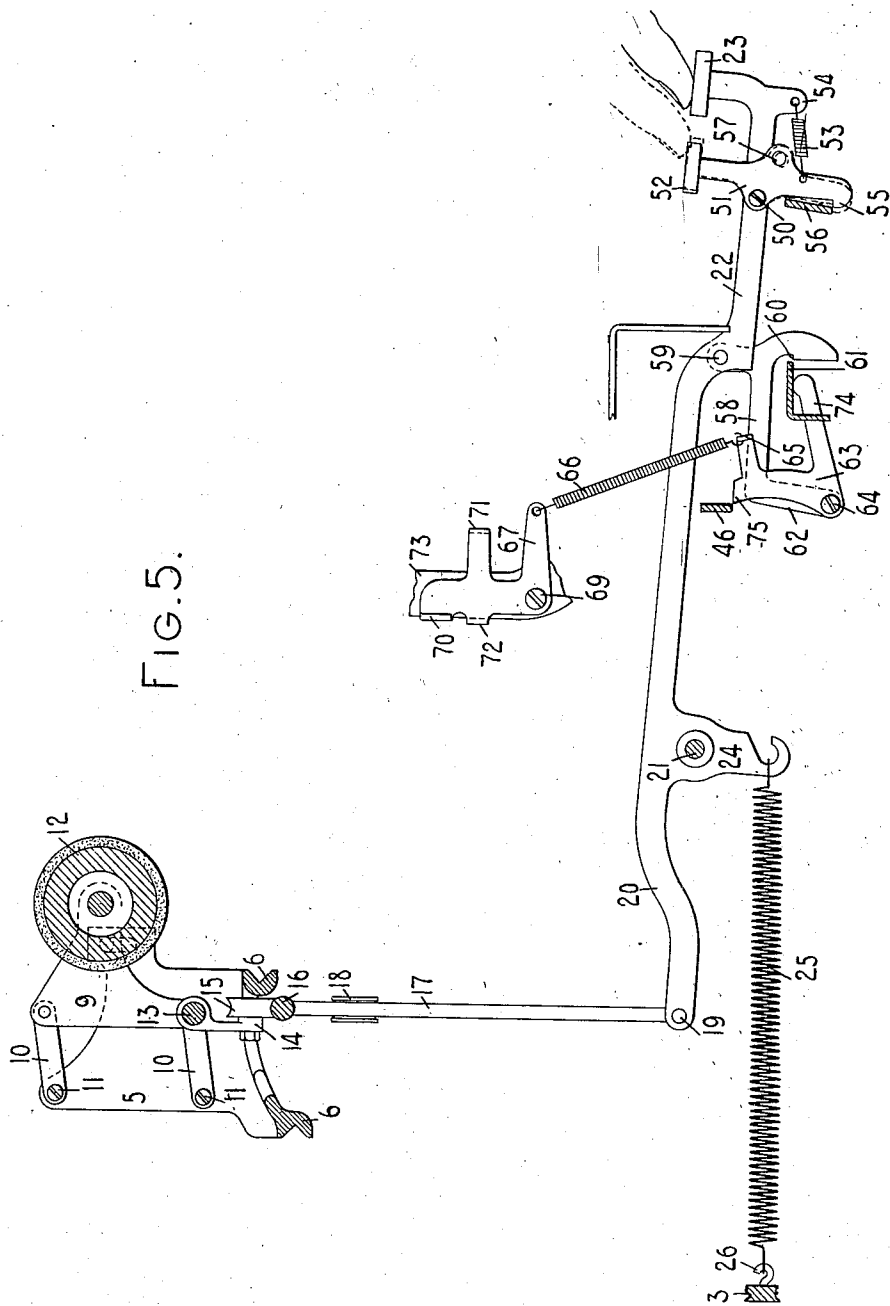
HIS ATTORNEY

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3 SHEETS—SHEET 3.

FIG. 5.



WITNESSES:

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UNITED STATES PATENT OFFICE.

ARTHUR W. SMITH, OF NEW YORK, N. Y., ASSIGNOR TO YOST WRITING MACHINE COMPANY, OF ILION, NEW YORK, A CORPORATION OF NEW YORK.

TYPE-WRITING MACHINE.

1,015,849.

Specification of Letters Patent.

Patented Jan. 30, 1912.

Application filed December 5, 1910. Serial No. 595,625.

To all whom it may concern:

Be it known that I, ARTHUR W. SMITH, 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 shift mechanism by which a relative case shift movement is effected between the platen and the printing instrumentalities.

It has been customary heretofore in order to write a word beginning with a capital letter, to effect a letter space after completing the previously written word, by depressing the usual space key and then depressing the case shift key and holding it depressed with one hand while the capital letter was written with the other hand. This required much time and there was a liability of the imprint being effected at a time when the platen or shifted member was in motion, or before the shift had been completed, or at a time when the shifted member was returning under a relaxation of pressure on the shift key.

The main object of my invention, generally stated, is to provide improved means for overcoming these disadvantages and to provide means whereby a relative case shift movement between the platen and the printing instrumentalities may be effected at the same time that a letter space movement is effected at the end of a word, for instance, and to effect both of these movements by the single operation of a single key.

A further object of my invention, generally stated, is to provide improved case shift mechanism in which the platen or shifted member is automatically locked in its shifted position and is automatically released at the first printing operation or at the first subsequent actuation of the letter spacing key.

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 corre-

sponding parts in the various views, Figure 1 is a vertical central fore and aft sectional view of one form of typewriting machine embodying my invention, the parts being shown normally disposed in this view. Figs. 2, 3, 4 and 5 are fragmentary diagrammatic side elevations with parts in section, the views showing portions of the case shift mechanism in their different actuated positions.

I have illustrated my invention embodied in the present instance in a Yost visible machine, although it should be understood that the invention may be embodied in various styles of typewriting machines, and that it is immaterial for the purpose of the present invention what the shiftable member controlled by the case shift mechanism is, the platen being shifted in the present instance.

The frame of the machine comprises side plates 1, front and rear cross plates 2 and 3 respectively, and a top plate 4. A carriage 5 is provided with oppositely grooved guide rails 6 which receive anti-friction balls or rollers 7 which are likewise received in oppositely grooved fixed guide rails 8. The carriage is thus mounted to move from side to side of the machine over the top plate. A platen frame 9 is pivoted on parallel links 10 which are in turn pivoted at their rear ends, as at 11, to the carriage, to afford a case shifting movement of the platen frame and the cylindrical platen 12 which is carried thereby. A cross bar 13 unites the end plates of the platen frame and carries a depending bracket arm 14 which supports a roller 15. This roller bears upon a shift rail 16 connected at its ends to depending arms or rods 17, guided in their vertical movements by guide rollers 18. The lower end of each rod 17 is pivoted at 19 to a rearwardly extending lever arm 20 fixedly connected to a rock shaft 21 mounted at its ends in suitable bearings in the frame of the machine. The left-hand lever arm 20 forms a part of a case shift key lever 22 provided at its forward end with a rigidly connected case shift key 23. If desired the lever arm 20 at the right-hand side of the machine may also be extended forwardly beyond the rock shaft 21 to the key board, and it may also, if desired, be provided with a case shift key similar to the key 23 on the shift key lever 22, so that shift keys may be provided at

opposite sides of the key board as now employed in the Yost visible machine. A depending arm 24 is likewise formed on the case shift key lever 20—22 for connection with one end of a contractile spring 25, the opposite end of which is connected to the frame of the machine at 26. Each of the lever arms 20 may be provided with a depending arm 24 for connection with a contractile spring 25 in the manner described. The springs 25 constitute counterbalance springs which counteract the weight of the platen and the case shift mechanism, to afford a movement of the platen to the upper case position by comparatively slight pressure exerted by the case shift key 23. Each printing instrumentality, or type bar proper 27, is pivoted at 28 to a guide link 29. A driver 30 is pivoted at 31 to each type bar and is also pivoted at 32 to a hanger 33. A connecting link 34 is pivoted at one end to a driver 30 and at its opposite end to an actuating bell crank lever 35, pivoted at 36 to a suitable hanger. A downwardly extending link 37 connects each bell crank lever 35 with its associate printing key lever 38, provided with the usual printing key 39. It will be understood that the type bars are segmentally arranged and adapted to strike upwardly and rearwardly against the front face of the platen on the depression of the printing keys 39.

An escapement wheel 40 is connected in the usual or any suitable manner with the carriage, to afford step-by-step letter space movements at the actuation of the printing keys or a space key or bar 41. Feed dogs 42 cooperate with the escapement wheel and these feed dogs are fixed to a dog rocker 43 and are so constructed and arranged as to afford a half-and-half drop of the escapement wheel at the back and forth movements of the dog rocker. The dog rocker 43 is fixed to a shaft 44 mounted to turn in suitable bearings in the base of the machine, the dog rocker being returned to normal position by a spring 44^a. Forwardly extending arms 45 are fixed to the rock shaft 44 near the ends thereof. A universal bar 46 is fixed to the forward ends of the arms 45, and extends transversely across the machine beneath the printing key levers 38 and the levers 47 near each side of the machine on which the space key or bar 41 is mounted. The printing key levers 38 and the space key levers 47 are pivoted at 48 to an auxiliary frame 49 fixed to the main frame of the machine. The construction and arrangement of the parts are such that during the ordinary actuation of the printing keys 39 and the space bar or key 41, the universal bar 46 is depressed, and a letter space movement of the carriage is effected.

The construction and operation of the parts thus far described are the same as in

the Yost visible machine, except as will hereinafter more clearly appear.

The shift key lever 22 at one side of the machine has pivoted thereto at 50 a locking lever or latch 51. This lever is provided with a finger key 52 offset forwardly of the pivot 50, so that pressure exerted upon this key will tend to turn the locking lever 51 on its pivot as indicated in dotted lines in Fig. 5 as well as to depress the shift lever 22. This turning of the lever 51 is exerted against the pressure of a contractile spring 53 connected at one end to the locking lever and at its opposite end to a depending ear 54 on the shift key lever. The effect of the turning movement of the member 51 is to throw a locking nose or catch 55 thereon into contact with the forward inclined face of a fixed locking device 56, and when the shift key lever reaches the lowermost position said locking nose will be forced beneath the lower edge of the fixed locking device 56 to maintain the platen in its shifted position indefinitely. The return movement of the locking lever 51, around its pivot 50, is limited by a laterally projecting stop pin 57 on the locking lever engaging the lower edge of the shift key lever. This construction is similar to that employed in the Yost visible machine, and it will be understood that when pressure is exerted on the key 52 it is effective to shift the platen and lock it in its shifted position, whereas pressure on the shift key 23 shifts the platen, and the platen in the Yost machine is allowed to resume its normal or lower case position when pressure is released upon the temporary shift key 23. In the present instance, however, I have provided means whereby pressure exerted upon the shift key 23 is effective to automatically lock the platen in its shifted position, means being provided for automatically releasing the locking means after the first imprint has been effected. Thus the shift key lever 22 has a substantially U-shaped locking latch or device 58 pivoted thereto at 59. A depending arm of this locking latch is provided with an engaging nose or hook 60 which is adapted to be projected beneath the horizontally disposed arm of a fixed locking device 61, as shown in Fig. 3, to lock the shift key lever in its depressed position. A second depending arm 62 on the locking latch has a controlling member 63 pivoted thereto at 64. The controlling member is provided with an offset ear 65 to which one end of a contractile spring 66 is connected, the opposite end of said spring being connected to an arm 67 of an adjustable device 68. The device 68 is pivoted to the fixed auxiliary frame at 69 and is in the nature of a spring plate. A laterally projecting finger piece 70 accessible from one side of the machine is provided on the de-

vice or member 68 for shifting it from the position shown in Fig. 2 to that indicated in Fig. 5, or vice versa. Laterally projecting stop members 71 and 72 extend from the device 68 and cooperate with the auxiliary frame to limit the movements of the device 68 in opposite directions. There is sufficient friction between the device 68 and the part 73 of the auxiliary frame on which it is mounted, to maintain the device 68 against accidental displacement from either of the two positions to which it may be moved by hand, the spring plate-like body portion of the member 68 bearing against the part 73 to hold the member 68 in place. The purpose of the device 68 is to render the automatically actuated case shift lock mechanism either operative or inoperative as may be desired, as will hereinafter more clearly appear.

If the device 68 be adjusted to the position shown in Fig. 5 then the force of the spring 66 is relaxed upon the controlling member 63, and at this time the automatically actuated locking means is rendered inoperative, whereas if the device 68 be adjusted to the position shown in Fig. 2, then force is exerted by the spring 66 on the controlling member 63, and the automatically actuated case shift lock mechanism then becomes operative. Thus the controlling member 63 is provided with a forwardly extending arm 74 which extends through a slot in the member 61 and is adapted to bear against and fulcrum on the under side of a horizontal portion thereof, as shown in Fig. 2. The controlling member is also provided with an engaging nose 75 which is adapted to cooperate with the universal bar 46 as will presently appear. When the device 68 is positioned as indicated in Fig. 2, and a case shift key 23 is depressed, as indicated in Fig. 3, by a direct pressure thereon the spring 66, acting through the controlling member 63, will cause the latch 58 to receive a slight movement on its pivot 59 to bring the locking or engaging nose 60 on the latch beneath the companion locking member 61; this engagement taking place at the termination of the depression of the shift key 23, thus locking the shift key lever in the depressed position. The controlling member 63 is normally maintained in such position that the engaging nose 75 will bear with a light pressure exerted by the spring 66, against the forward face of the universal bar which at this time remains in the elevated position, as indicated in Fig. 3, so that at the termination of the down stroke or depression of the shift key 23 said engaging nose 75 will be forced beneath the universal bar as represented in Fig. 3. The parts are thus disposed while the shift key lever is maintained or locked in the depressed position and after the same has been depressed

by a direct pressure exerted on the key 23. It follows, therefore, that if at this time a printing key 39 or the space key 41 be actuated, the former through downward projections 76 and the latter through downward projections 76^a, the universal bar 46 will be depressed, thereby carrying the controlling member 63 down with it, thus causing the latch 58 to be turned on its pivot 59 to disengage said latch from the locking member 61. The parts are shown disposed in Fig. 4 in the positions which they assume at the instant when this disengagement of the latch takes place. From this view it will also be seen that a slight pivotal movement of the controlling member 63 on its pivot 64 has taken place to remove the engaging nose 75 from beneath the universal bar, thus freeing the controlling member and the locking latch 58 so that the platen is free to return to lower case or normal position. It will therefore be understood that at the first printing operation, the automatically actuated locking means for the case shift mechanism is automatically released and that such release may also be effected at the first depression of a space key.

If the device 68 be turned to the position shown in Fig. 5 then there is no appreciable pull exerted by the spring 66 on the controlling member 63 and on the latch 58, in the normal positions of the parts. A depression of the shift key 23 at this time is merely effective to move the latch 58 down with the key without throwing the latch into engagement with the companion locking device 61, and without throwing the engaging nose 75 beneath the universal bar. It follows therefore that as soon as pressure on the shift key 23 is released by the operator it will return to normal position and the platen will return to its lower case position.

Should the operator desire to retain the platen in the upper case position to write continuously upper case characters it is merely necessary to depress the permanent shift key 52. This effects an engagement between the locking device or latch 51 and the cooperating fixed locking device 56. At this time the member 68 is preferably adjusted to the position shown in Fig. 5 so that the automatic locking means for the case shift mechanism is rendered inoperative. A release of the permanent locking device 51 is effected by exerting a slight downward pressure on the shift key 23 which relieves the locking device 51 of the pressure exerted against it by the case shift mechanism and enables the spring 53 to withdraw the locking nose 55 out of engagement with the fixed locking device 56.

Case shift mechanism is more generally used to begin a word with a capital letter, it seldom occurring that capital letters are used entirely. In order that the platen, or

shiftable member, may receive a case shifting movement and a letter space movement of the carriage may likewise be effected by a single operation at the completion of a word, and when it is desired to begin the next word with a capital letter, I have provided means whereby a case shift movement of the platen may be effected through an actuation of the letter space key 41. Thus the space key levers 47, which are adjacent to the shift levers 22 are provided with laterally extending projections 77 which extend inwardly therefrom and over the adjacent shift key levers 22 as shown in Fig. 1. It will be observed that these projections 77, in the normal disposition of the parts, extend above and out of contact with the shift key levers. The construction is such that when the shift key is depressed the usual extent to effect a letter space movement of the carriage, the overlapping projections 77 will be brought into contact with the adjacent shift key levers without actuating them. A further downward movement of the space key to the position shown in Fig. 2, and under the exertion of a greater pressure, is effective, nevertheless, to depress the shift key levers 22 to produce a case shift movement of the platen, and an automatic actuation of the automatic shift lock mechanism in the manner hereinbefore described. The further downward movement of the space key has no effect on the escapement mechanism as one of the dogs is merely carried slightly farther through the teeth of the escapement wheel without releasing it. The depression of the space key as described above is effective to carry down the universal bar 46 before the nose 75 has had an opportunity to be moved beneath the universal bar, as indicated in Fig. 2. As soon as pressure is released on the letter space key 41 it will be restored to normal position by the usual restoring spring (not shown). The return movement of the space key affords a return movement of the universal bar to the position shown in Fig. 3 and the nose 75 will snap beneath the universal bar as shown in said figure. These return movements of the space key and universal bar are effected independently of the case shift levers which at this time are locked in the depressed positions. When the space key returns to normal position a complete letter space movement of the carriage will have been effected and the same depression of the space key has been effective to shift the platen and to lock it in its shifted position, so that a printing key may be immediately struck to cause an imprint of the capital letter which is to begin the next word. It will be understood that the first subsequent depression of the space key, or of a printing key to print the capital letter, as just described, is effective to carry the

universal bar down and with it the member 63, as shown in Fig. 4, thereby automatically releasing the lock 58 to enable the platen to be restored to the normal or lower case position after the imprint of a single upper case character. Moreover, by locking the platen, or shiftable member, in its shifted position even when only a single upper case character is to be written, I insure a proper and effective maintenance of the platen against vibration in its shifted position, which vibration would result in a blurred or imperfect imprint. It will also be understood that there is no liability of the imprint of a character being effected during the shift of the platen, since the platen is shifted to the upper case position when the carriage is being spaced after writing the last letter of the previously written word, and the platen is automatically returned instantly after the capital letter is written and not before and there is no necessity for depending on the judgment of the operator in timing the shifting and printing movements relatively to each other. I have also provided means whereby the automatically actuated case shift lock may be rendered inoperative at will, if desired, by merely adjusting the member 68 to the position shown in Fig. 5. I have also provided means by which the platen may be maintained indefinitely in its shifted position through the control of the shift key 52.

Various changes may be made without departing from the spirit and scope of my invention.

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

1. In a typewriting machine, the combination of a platen, printing instrumentalities, printing keys, case shift mechanism for effecting a relative case shift movement between the platen and printing instrumentalities, means for automatically locking the case shifted member in its shifted position, means controlled by an actuation of any of the printing keys for releasing the locked case shift mechanism, and means operable at will for rendering said automatically operating locking means inoperative.

2. In a typewriting machine, the combination of a platen, printing instrumentalities, case shift mechanism for effecting a relative case shift movement between the platen and printing instrumentalities, a letter spacing key, means by which said spacing key is rendered effective to actuate the said shift mechanism, automatically operating means for locking the case shifted member in its shifted position, a universal bar for the letter spacing mechanism, and means whereby said universal bar is rendered effective to release said locking means.

3. In a typewriting machine, the combination of a platen, printing instrumentalities,

case shift mechanism for effecting a relative case shift movement between the platen and printing instrumentalities, automatically operating means for locking the shiftable member in its shifted position, a universal bar for the letter space mechanism, means whereby said universal bar is rendered effective to release said locking means, and means for rendering said locking means inoperative.

4. In a typewriting machine, the combination of a platen, printing instrumentalities, a case shift key lever, means controlled thereby for effecting a relative case shift movement between the platen and printing instrumentalities, an automatically operating latch carried by said key lever, a printing key, means controlled thereby for releasing said latch, and means for rendering said latch inoperative.

5. In a typewriting machine, the combination of a platen, printing instrumentalities, a case shift key lever, means controlled thereby for effecting a relative case shift movement between the platen and printing instrumentalities, an automatically operating latch carried by said case shift key lever, a printing key, means controlled thereby for releasing said latch, and a separate independently controlled locking latch operable at will to lock and maintain the case shift key lever depressed indefinitely.

6. In a typewriting machine, the combination of a platen, printing instrumentalities, a case shift key lever, means controlled thereby for effecting a relative case shift movement between the platen and printing instrumentalities, an automatically operating latch carried by said case shift key lever, a printing key, means controlled thereby for releasing said latch, means for rendering said latch inoperative, and a separate independently controlled locking latch operable at will to lock and maintain the case shift key lever depressed indefinitely.

7. In a typewriting machine, the combination of a platen, printing instrumentalities, case shift mechanism for effecting a relative case shift movement between the platen and printing instrumentalities, a letter spacing key, means controlled by said letter spacing key for actuating said case shift mechanism, means for locking the case shifted member in its shifted position, a printing key, means controlled by said printing key for releasing said locking means, and separate independently controlled locking means operable at will to lock and maintain the shiftable member indefinitely in its shifted position.

8. In a typewriting machine, the combination of a platen, printing instrumentalities, case shift mechanism for effecting a relative case shift movement between the platen and printing instrumentalities, a letter spacing key, letter spacing mechanism controlled thereby, means by which said letter space

mechanism alone is actuated by the dip of the spacing key a given extent, means by which a further dip of said letter spacing key is effective to actuate said case shift mechanism, locking means for said case shift mechanism, means for automatically releasing said locking means, and separate independently controlled locking means operable at will to lock and maintain the case shifted member indefinitely in its shifted position.

9. In a typewriting machine, the combination of a platen, printing instrumentalities, case shift mechanism for effecting a relative case shift movement between the platen and printing instrumentalities, a letter spacing key, letter space mechanism controlled thereby, means by which said letter space mechanism alone is actuated by the dip of the space key a given extent, means by which a further dip of said letter space key is effective to actuate said case shift mechanism, locking means for said case shift mechanism, a printing key, means controlled by an actuation of said printing key for releasing said locking means, and separate independently controlled locking means operable at will to lock and maintain the case shifted member indefinitely in its shifted position.

10. In a typewriting machine, the combination of a platen, printing instrumentalities, key controlled case shift mechanism for effecting a relative case shift movement between the platen and printing instrumentalities, means for locking the case shifted member in its shifted position, means for automatically releasing said locking means, means operable at will for rendering said locking means inoperative, and separate independently controlled locking means operable at will to lock and maintain the case shifted member indefinitely in its shifted position.

11. In a typewriting machine, the combination of a platen; printing instrumentalities; case shifting mechanism for effecting a relative case shift movement between the platen and printing instrumentalities, said case shifting mechanism comprising a case shift key lever; a spring-pressed locking latch pivoted on said case shift key lever; a companion locking device carried by a fixed portion of the machine and with which said locking latch engages when the shift key lever is depressed; means for automatically releasing said locking latch at the first printing operation to enable the case shifted member to be automatically returned to normal position; an independent locking latch pivoted on said case shift key lever; a separate key for controlling said independent locking latch; and a fixed device cooperative with said independent locking latch to maintain said shift key lever depressed indefinitely.

12. In a typewriting machine, the combination of a platen; printing instrumentalities; a letter spacing key lever which extends fore and aft of the machine; case shift mechanism for effecting a relative case shift between the platen and the printing instrumentalities, said case shift mechanism including a case shift key lever parallel with and adjacent to said letter spacing key lever; and a projection extending laterally from said letter spacing key lever and over said case shift key lever so that the spacing key lever is operative to actuate the shift key lever.

13. In a typewriting machine, the combination of a platen; printing instrumentalities; a letter spacing key lever which extends fore and aft of the machine; case shift mechanism for effecting a relative case shift between the platen and the printing instrumentalities, said case shift mechanism including a case shift key lever parallel with and adjacent to said letter spacing key lever; and a projection extending laterally from said letter spacing key lever and over said case shift key lever so that the spacing key lever is operative to actuate the shift key lever, said projection being located normally above the shift key lever so that a part of the movement of the space key lever may be effected independently of the shift key lever.

14. In a typewriting machine, the combination of a platen; printing instrumentalities; a letter spacing key lever which extends fore and aft of the machine; case shift mechanism for effecting a relative case shift between the platen and the printing instrumentalities, said case shift mechanism including a case shift key lever parallel with and adjacent to said letter spacing key lever, a projection extending laterally from said letter spacing key lever and over said case shift key lever so that the spacing key lever is operative to actuate the shift key lever, automatically actuated means for locking the shift key lever depressed, a printing key, and means controlled thereby for automatically releasing said locking means.

15. In a typewriting machine, the combination of a platen; printing instrumentalities; a letter spacing key lever which extends fore and aft of the machine; case shift mechanism for effecting a relative case shift between the platen and the printing instrumentalities, said case shift mechanism including a case shift key lever parallel with and adjacent to said letter spacing key lever, a projection extending laterally from said letter spacing key lever and over said

case shift key lever so that the spacing key lever is operative to actuate the shift key lever; automatically actuated means for locking the shift key lever depressed, said automatically actuated means comprising a latch pivoted to said shift key lever, and a cooperative member carried by a fixed part of the machine; a printing key; and means controlled thereby for automatically releasing said latch.

16. In a typewriting machine, the combination of a platen; printing instrumentalities; case shift mechanism for effecting a relative case shifting movement between said platen and printing instrumentalities, said case shift mechanism including a case shift lever; automatically actuated means for locking the case shift lever in its shifted position, said means comprising a latch pivoted to said shift key lever, and a device on the frame of the machine with which said latch cooperates; printing keys; a universal bar for the letter space mechanism; and automatically actuated releasing means controlled by said printing keys for releasing said locking means, said releasing means comprising a controlling member pivoted to said latch and actuated by said universal bar.

17. In a typewriting machine, the combination of a platen; printing instrumentalities; case shift mechanism for effecting relative case shifting movement between said platen and printing instrumentalities, said case shift mechanism including a case shift lever; automatically actuated means for locking the case shift lever in its shifted position, said means comprising a latch pivoted to said shift key lever, and a device on the frame of the machine with which said latch cooperates; printing keys; a universal bar for the letter space mechanism; automatically actuated releasing means controlled by said printing keys for releasing said locking means, said releasing means comprising a controlling member pivoted to said latch and actuated by said universal bar; a spring connected to said controlling member; and an adjustable device for varying the pressure of the spring on said controlling member to render the automatically actuated locking means operative or inoperative as may be desired.

Signed at the borough of Manhattan, city of New York, in the county of New York and State of New York this 3rd day of December, A. D. 1910.

ARTHUR W. SMITH.

Witnesses:

M. F. HANNWEBER,
CHARLES E. SMITH.