O. WOODWARD.

TYPE WRITING MACHINE.

APPLICATION FILED FEB. 4, 1908.

955,489.

Patented Apr. 19, 1910.

4 SHEETS—SHEET 1.

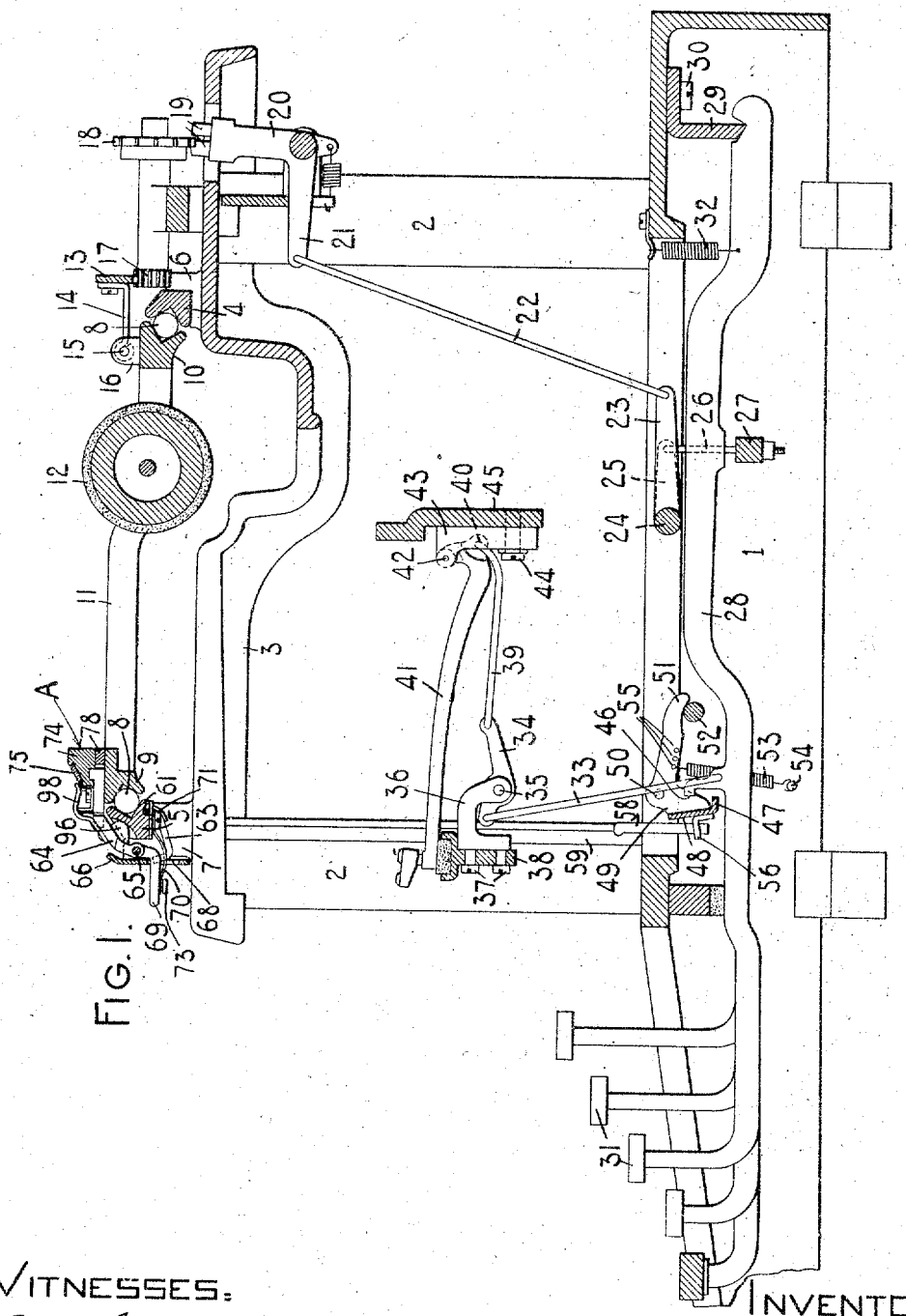

FIG. 1.

WITNESSES:

E. M. Wells

Charles E. Smith

INVENTOR:

Oscar Woodward

By Jacob Felbel

HIS ATTORNEY

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4 SHEETS—SHEET 2.

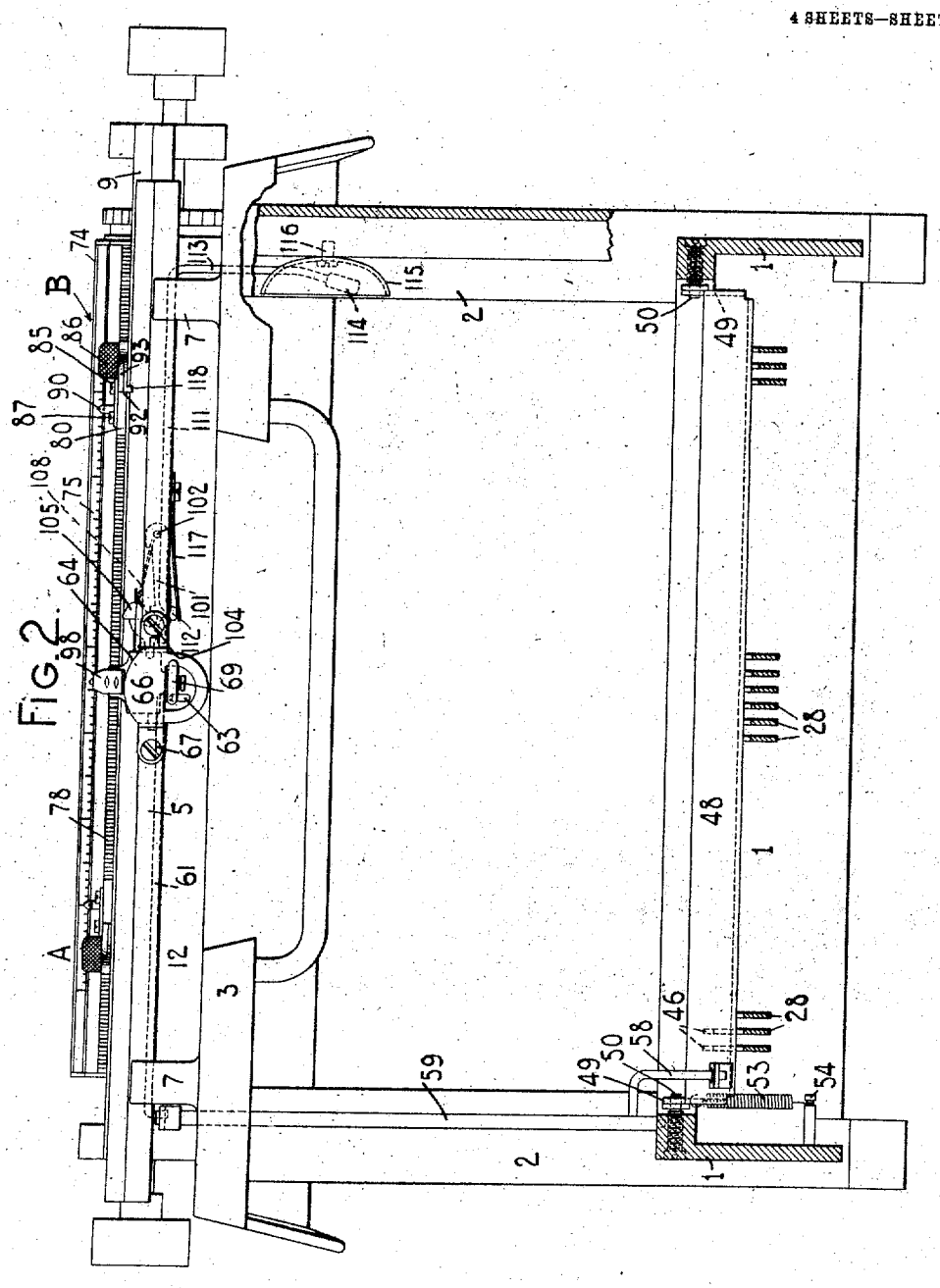

FIG. 2.

WITNESSES:

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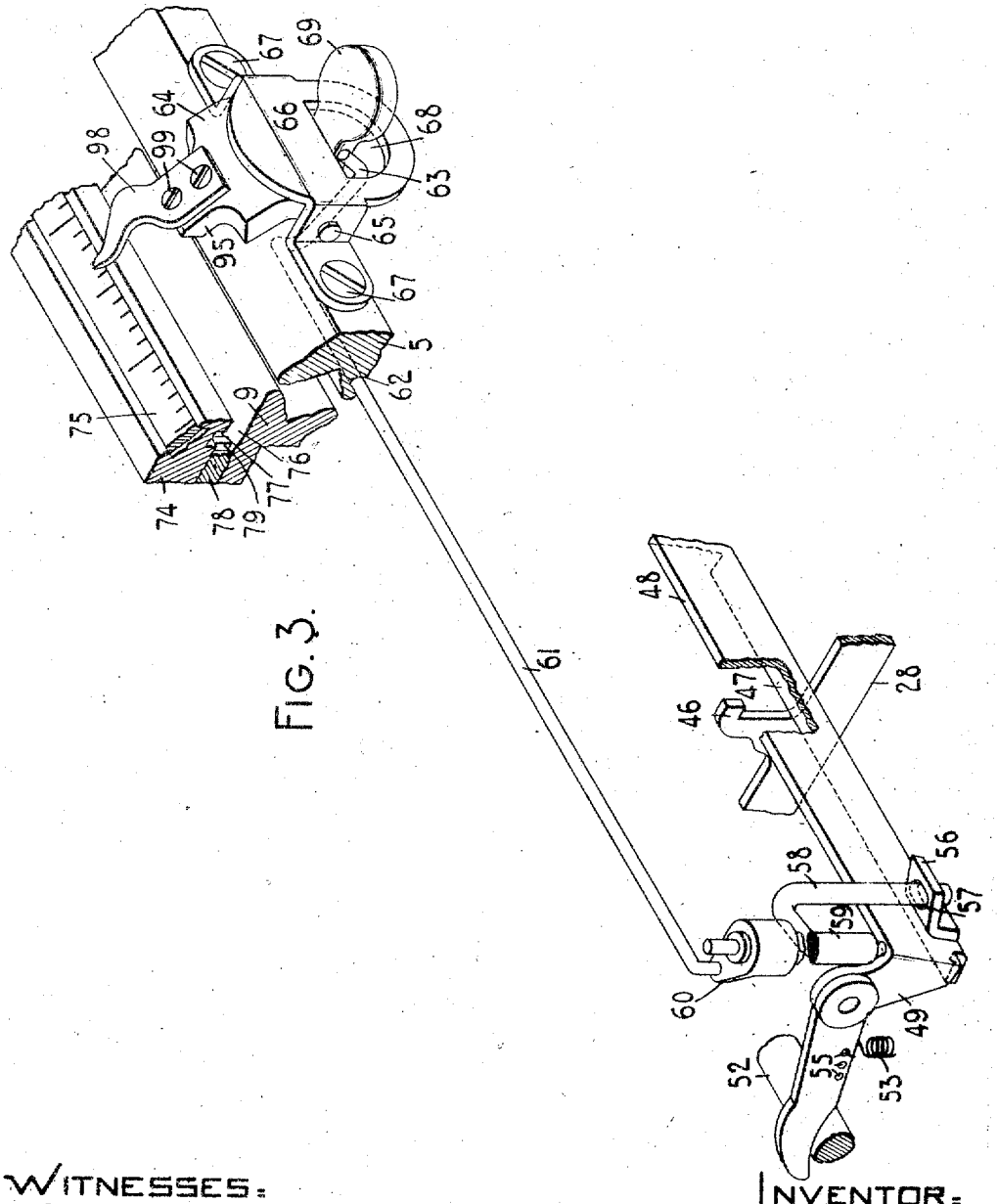

FIG. 3.

WITNESSES:

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O. WOODWARD.

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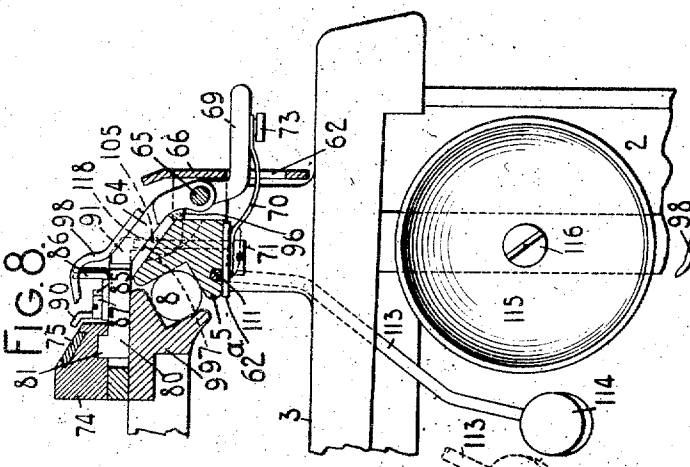

FIG. 8.

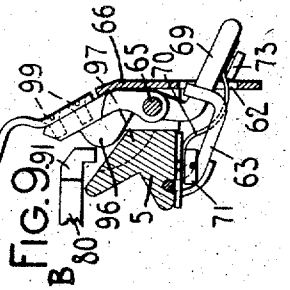

FIG. 9.

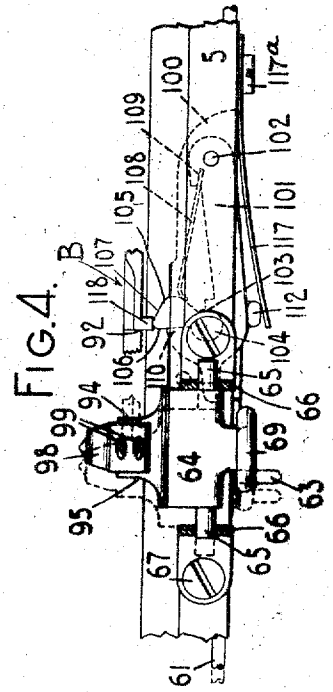

FIG. 4.

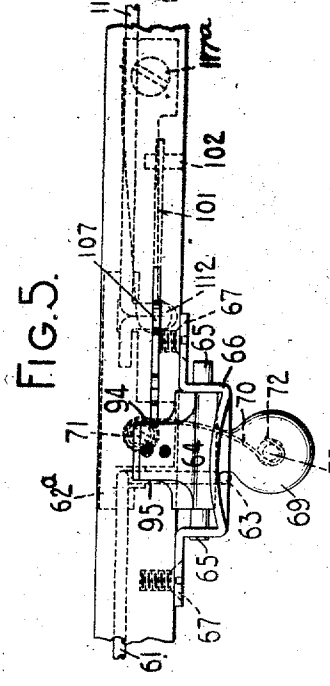

FIG. 5.

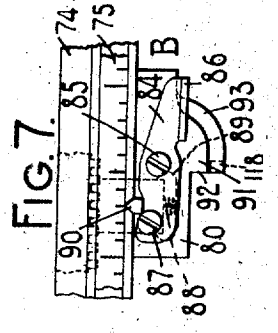

FIG. 7.

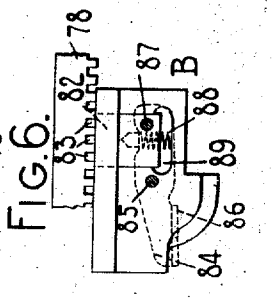

FIG. 6.

WITNESSES:

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INVENTOR:

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By Jacob Tellel

HIS ATTORNEY

UNITED STATES PATENT OFFICE.

OSCAR WOODWARD, OF MONTCLAIR, NEW JERSEY, ASSIGNOR TO WYCKOFF, SEAMANS & BENEDICT, OF ILION, NEW YORK, A CORPORATION OF NEW YORK.

TYPE-WRITING MACHINE.

955,489. Specification of Letters Patent. Patented Apr. 19, 1910.

Application filed February 4, 1908. Serial No. 414,200.

To all whom it may concern:

Be it known that I, OSCAR WOODWARD, citizen of the United States, and resident of Montclair, in the county of Essex and State of New Jersey, 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 line lock and margin stop mechanism and the main object of said invention is to provide simple and efficient mechanism of the character specified which may be readily actuated to effect a release of the line lock or to permit the carriage to pass beyond the position where it is normally arrested on its return movement by the margin stop mechanism.

To the above and other ends which will hereinafter appear, my invention consists of the features of construction, arrangements of parts and combinations of devices to be hereinafter set forth and more particularly pointed out in the appended claims.

In the drawings wherein like reference characters indicate corresponding parts in the various views, Figure 1 is a vertical, front-to-rear, central, sectional view of a typewriting machine embodying my invention. Fig. 2 is a front elevation of the same with parts sectioned and broken away. Fig. 3 is an enlarged detail fragmentary perspective view with parts broken away and in section of the line lock mechanism. Fig. 4 is a fragmentary detail front elevation with parts in section showing portions of the line lock and alarm mechanism. Fig. 5 is a plan view of the same. Fig. 6 is an enlarged detail bottom view of the adjustable margin stop and the parts associated therewith. Fig. 7 is a plan view of the same. Fig. 8 is an enlarged detail sectional view taken transversely through the forward fixed carriage rail or track and showing portions of the line lock and alarm mechanism. Fig. 9 is a transverse sectional view showing the combined line lock and margin stop in the released position.

In the various views parts of the typewriting machine unnecessary to an understanding of my invention have been omitted.

I have shown my invention embodied in the present instance in a front-strike typewriting machine, though it should be understood that the invention is adapted to various styles of typewriting machines.

The frame of the machine comprises a base 1, corner posts 2 and a top plate 3. Fixed grooved guide rails 4 and 5 are supported by risers 6 and 7 respectively, which extend upwardly from the top plate of the machine. Anti-friction balls 8 are received in the grooves of the fixed guide rails and in corresponding grooves in the forward and rear cross bars 9 and 10 respectively of the carriage, said cross bars being united by end bars 11 so as to form a rectangular frame in which a cylindrical platen 12 is mounted to rotate. A feed rack 13 is connected to arms 14 pivoted at 15 to upwardly extending lugs 16 on the carriage. The feed rack 13 engages a feed pinion 17 which is operatively connected to an escapement wheel 18 cooperative with feed dogs 19 carried by a dog rocker 20. A forwardly projecting arm 21 on the dog rocker is connected to a link 22, the lower end of which is in turn connected to a crank arm 23 located centrally of a rock shaft 24 mounted in bearings in the base 1 of the machine. This rock shaft is likewise provided near its ends with crank arms 25 which extend rearwardly from the shaft and are connected at their rear ends with depending links 26 which support a universal bar 27. The universal bar extends transversely beneath the key levers 28 fulcrumed on a fulcrum bar 29 secured by screws 30 to the base of the machine. The key levers are provided with the usual finger keys 31 and with restoring springs 32. Each key lever is connected to an upwardly extending link 33 pivoted to the forward end of a sub-lever 34 pivotally mounted at 35 in a hanger 36 secured by screws 37 to a segment 38. The rear end of each sub-lever 34 is connected to a link 39 pivoted at 40 to a type bar 41 pivoted at its heel as indicated at 42 to a type bar hanger 43 secured by a screw 44 to a type bar segment 45. The type bars are segmentally arranged and are adapted to strike upwardly and rearwardly against the front face of the platen.

Each of the key levers 28 is provided forward of the universal bar with an upwardly and forwardly extending hook-like engaging member 46 which is adapted to cooperate with a rearwardly extending flange 47 on a locking bar 48 which extends above the key levers. The bar is bent at its ends to form

ears 49 by which it is pivoted at 50 to the base of the machine, the pivots of the locking bar being arranged above the locking flange 47 and when the latter is in the rearmost or locking position a downward pressure exerted on the locking bar by any of the engaging members 46 on the key levers is resisted by the pivots 50. One of the ears 49 is extended rearwardly to provide a crank arm 51 which, when the parts are in the normal position shown in Fig. 1, bears against a stop pin or shaft 52 which is mounted at its ends in the base of the machine.

A contractile spring 53 is connected at one end to a pin 54 which projects inwardly from the base of the machine, said spring being connected at its other end in any one of the three openings 55 in the crank arm 51. These openings are arranged at different distances from the pivot 50 of the arm 51 so that the pressure of the spring 53 on the locking bar and the parts associated therewith may be varied by changing the point of connection of the spring 53 on the crank arm 51.

From an inspection of Fig. 3 it will be seen that the locking bar is provided with a forwardly extending bracket 56 slotted at 57 for the reception of a crank arm 58 which extends inwardly and downwardly from a rock shaft 59 mounted at its upper end in a bearing opening in the fixed guide rail 5, the lower end of the rock shaft being received in a bearing opening in the base 1 of the machine. The upper end portion of the rock shaft 59 where it extends through an opening in the top plate is provided with a crank arm 60 connected to a link 61 which is received in a cut-out or slot 62 in the bottom of the fixed rail 5 and is supported at one end therein by a plate 62^a (see Figs. 5 and 8). This link extends inwardly to about the center of the machine where it is bent forwardly and upwardly at 63 to provide an engaging arm by which the link may be moved longitudinally in the slot 62 in order to actuate the rock shaft 59. The effect of rocking the shaft from the position shown in Fig. 3 is to move the locking bar 48 so that the locking flange 47 thereof will be moved rearwardly into the paths of the engaging members 46 on the various key levers so as to prevent a depression thereof sufficient to move the type bars to the printing position and sufficient to prevent the escapement mechanism from being actuated. The arm or member 63 on the link 61 projects into the path of a combined line lock and margin stop member 64 which is provided with trunnion-like pinions 65 received in openings in a sheet metal bearing piece or bracket 66 secured by screws 67 to the front face of the fixed guide rail 5. This bracket 66 is apertured at 68 for the passage therethrough of a finger piece 69 on the combined line lock and margin stop member 64. This finger piece is preferably formed as a part of the stop member 64 and the opening 68 in the bracket is sufficient to afford a movement of the member 64 in two directions at substantially right angles to each other. Thus, the member 64 may move axially of its pivots 65 and may also receive a turning movement around its pivots to enable it to clear the line lock and margin stops as will hereinafter appear.

A restoring spring 70 is connected at one end by a screw 71 to the bottom of the fixed guide rail 5, the opposite end of said spring being bent to form a hook-like portion 72 (see Fig. 5), which surrounds the stem of a headed screw 73 on the finger piece of the member 64. This spring 70 acts in a two-fold capacity, *i. e.*, to restore the member 64 to the normal position around its pivotal axis and also to move it axially of its pivots to the normal position shown in Fig. 5 where it is limited in its movement by the bracket 66. The screw 71 in addition to holding one end of the spring 70 also connects the plate 62^a to the rail 5.

It will be seen that the combined line lock and margin stop member 64 is located about centrally of the machine and at the forward portion thereof where it is in a position to be readily actuated by the operator through the finger piece 69 when it is desired to release the line lock mechanism or to enable the carriage to pass to the right beyond the position where it is normally arrested by the margin stop mechanism as will hereinafter more clearly appear.

The adjustable margin stop A (Fig. 2) and adjustable line lock stop B are mounted on the front cross bar 9 of the carriage and the construction of both of these stops is the same except that they are reversed so that the detail description of one of them applies alike to the other.

A bar 74 which carries the carriage scale 75 is secured to the front cross bar 9 of the carriage in such a manner that a space 76 (Fig. 3) is left between the upper face of the cross bar 9 and the bar 74 at the forward portion of the latter. The underside of the bar 74 contains a longitudinal slot 77 which extends throughout the length thereof and is closed at its ends. An intermediate rack 78 is secured between the cross bar 9 of the carriage and the bar 74, the forwardly projecting tooth 79 on said rack extending into the space 76. The body portion 80 of the line lock stop is formed with an upwardly projecting flange 81 which is received within the slot 77 in the bar 74 as shown in Fig. 8 so as to connect the line lock stop to the carriage in such a manner that it cannot be removed but may be adjusted longitudinally of the bar 74. The body portion 80 of the

stop is slotted transversely for the reception of a sliding locking member 82 provided with teeth 83 which are adapted to engage the openings between the teeth 79 of the fixed rack 78 in order to secure the stop in its adjusted position along the bar 74. A sheet metal releasing device 84 is pivoted to the body portion 80 of the stop by a screw pivot 85 and is provided with a finger piece 86 by which it may be actuated. A screw pivot 87 connects this actuating device to the sliding locking member 82. An expansion spring 88 is received within an opening 89 in the body of the stop and bears at one end against the bottom wall of an opening in the locking member 82 and at its opposite end against the wall of the opening 89 in the stop, thus normally forcing the teeth of the locking member into engagement with the teeth of the rack 78. The releasing device 84 is formed with a pointer 90 which is bent upwardly and rearwardly to register with the indices on the carriage scale 75. The body of the stop has projecting therefrom a portion 91 having a stop face 92 at one side thereof and an inclined or cam face 93 at the opposite side thereof. The arresting or stop face 92 of the line lock stop co-acts with the right-hand face 94 of the combined line lock and margin stop member 64 when said member is in the normal position, whereas the corresponding face of the margin stop A co-acts with the left-hand face 95 of the member 64 when said member is in the normal position. Thus, when the engaging face 92 of the line lock stop engages the face 94 of the member 64, said member is moved to the left against the tension of its spring 70, thus moving the link 61 to the left and effecting an oscillation of the rock shaft 59 which in turn is effective to move the locking bar to operative position where the locking flange 47 thereon extends beneath the engaging members 46 on the key levers to prevent movements of said key levers sufficient to move the type bars to the printing position and sufficient to prevent an actuation of the escapement mechanism. Should the operator desire to release the line lock mechanism in order to add one or more letters or to insert a hyphen, it is merely necessary to depress the finger piece 69, thus moving the engaging portion 94—95 out of the path of the stop B to enable the carriage to free the member 64 from engagement with said stop. As soon as the member 64 is thus freed the spring 70 is effective to move it to the right to the full line position shown in Fig. 4, thus releasing the pressure of the member 64 on the link 61 and the parts controlled thereby. The restoring spring 53 then becomes effective to move the locking bar and the parts associated therewith to normal position so that the key levers at this time are free to be depressed to effect printing operations and the carriage is free to move to the left. If the stop B should move to the left beyond the member 64, a return movement of the carriage is effective to bring the cam 93 on the stop into engagement with the member 64 to turn it on its pivotal center so as to deflect the member 64 out of the path of the stop B. When the carriage is moved to the right the margin stop A is brought into engagement with the contact face 95 on the member 64 and the carriage is arrested, it being understood that the member 64 is normally maintained at the limit of its movement to the right by the spring 70. If, however, the operator should desire to release the margin stop mechanism so as to move the carriage to the right of the position where it is normally arrested, it is merely necessary to depress the finger piece 69, thus moving the member 64 out of the path of the margin stop. In the return movement of the carriage the member 64 is turned on its pivots and deflected out of the path of the margin stop by a cam similar to the cam 93 on the line lock stop.

In order that greater strength and stability may be afforded the member 64 when it receives the impact of the margin stop, said member 64 is provided with a lug 96 which, when the parts are in the normal position, is received in the cut-out 97 in the fixed guide rail 5. This cut-out is so arranged that the lug 96 on the member 64 normally bears against the right-hand end wall of the cut-out so that the impact upon the member 64 is received on the fixed guide rail 5 and will not be taken up wholly by the sheet metal bracket 66. The member 64 is likewise provided with an upwardly and rearwardly extending sheet metal pointer 98 which is secured to the member 64 by screws 99. This pointer overlaps the carriage scale and constitutes a pointer cooperative with the carriage scale to determine the position of the carriage with reference to the printing point.

It will be seen that the relation between the parts 64 and 61—63 is such that virtually a lost motion connection is formed between the two so that the member 64 may be turned on its pivots without affecting the member 61—63 but that an axial movement of the member 64 will be transmitted to the link 61—63.

It will be understood that before the line lock mechanism is actuated an alarm is sounded. This alarm mechanism will now be described.

The fixed rail 5 is cut out at 100 to receive a pivoted actuating lever or device 101 pivoted to the rail at 102. This lever or actuating device has a C-shaped opening 103 therein for the reception of a disk-like portion 104 of a trip or pawl 105, said trip

having a straight or abrupt face 106 at one side thereof and an inclined or cam face 107 at the other side thereof. A leaf spring 108 is secured at one end 109 to the lever 101 and bears at its free end against the trip 105 to normally maintain it in the position shown in Fig. 4 where the abrupt face 106 thereof engages a stop portion 110 of the lever to limit the movement of the trip relatively to said lever in one direction. A wire rock shaft 111 is seated in a groove in the under side of the fixed rail 5 and is bent to form a forwardly projecting crank arm 112 which extends beneath the bell trip lever 101. The left-hand end of the rock shaft is supported in place by the plate 62^a. The right-hand end of this rock shaft 111 is bent downwardly to form a carrying arm 113 for a bell hammer 114 which normally is in the position shown in Fig. 8 and coöperates with a bell 115 secured by a screw 116 to the right-hand forward corner post 2 of the frame of the machine. A leaf spring 117 is secured at one end to the bottom of the fixed rail 5 by a screw 117^a, the free end of the spring extending beneath the crank arm 112 of the rock shaft 111. As the line lock stop B moves with the carriage from right to left the downwardly extending projection 118 on said stop is brought into contact with the inclined face 107 on the bell trip and causes the free end of the lever 101 to be depressed, thereby rocking the rock shaft 111 to move the bell hammer away from the bell. When the projection 118 passes the trip the spring 117 is effective to turn the rock shaft and to lift the lever 101 to its normal position, thus causing the bell hammer to strike the bell 115 to sound the alarm. In the movement of the carriage back to the right a projection 118 bears against the abrupt face 106 on the bell trip and turns it on its pivot 104 without depressing the lever 101 so that the alarm is not sounded in the movement of the carriage to the right past the bell trip. When the projection 118 has passed the bell trip the spring 108 is effective to restore it to its normal position relatively to the lever 101.

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 carriage, a margin stop, a line lock stop, both carried by the carriage at the front of the machine, a coöperative pivoted stop mounted on the frame of the machine at the front thereof and movable to turn on its pivotal axis into and out of coöperative relation with said margin and line lock stops and mounted to receive a movement longitudinally of its pivotal axis, line lock mechanism controlled by the axial movement of said coöperative stop, and a finger piece directly connected to and carried by said coöperative stop to turn it on its pivot.

2. In a typewriting machine, the combination of a carriage, a margin stop, a line lock stop, both carried by the carriage at the front of the machine, a coöperative pivoted stop mounted on the frame of the machine at the front thereof for movement in two directions at substantially right angles to each other, one being a movement on its pivot and the other a movement longitudinally of its pivotal axis, the pivotal movement of the coöperative stop carrying it out of coöperative relation with the margin and line lock stops, and line lock mechanism actuated by the movement of the said coöperative stop longitudinally of its pivotal axis, said line lock mechanism comprising engaging devices on the printing key levers, a locking bar movable into engagement with said engaging devices, and intermediate connections between said coöperative stop and locking bar, the pivotal movement of said coöperative stop out of coöperative relation being effective to release the line lock mechanism.

3. In a typewriting machine, the combination of a carriage, a margin stop, a line lock stop, both carried by the carriage at the front of the machine, a coöperative pivoted stop mounted on the frame of the machine at the front thereof for movement in two directions at substantially right angles to each other, one being a movement on its pivot and the other a movement longitudinally of its pivotal axis, the pivotal movement of the coöperative stop carrying it out of coöperative relation with the margin and line lock stops, line lock mechanism actuated by the movement of said coöperative stop longitudinally of its pivotal axis, said line lock mechanism comprising engaging devices on the printing key levers, a locking bar movable into engagement with said engaging devices, intermediate connections between said coöperative stop and locking bar, the pivotal movement of said coöperative stop out of coöperative relation being effective to release the line lock mechanism, and a finger piece carried directly by said coöperative stop to turn it on its pivot.

4. In a typewriting machine, the combination of a carriage, an adjustable line lock stop carried by the carriage at the front of the machine where it can readily be adjusted, a pivoted coöperative stop mounted on the frame of the machine at the front thereof where it is readily accessible for manipulation, said coöperative stop having a movement in two directions at substantially right angles to each other, one being a pivotal movement and the other a movement longitudinally of its pivotal axis, the

pivotal movement of the coöperative stop taking it out of the path of the line lock stop, line lock mechanism actuated by a movement of said coöperative stop longitudinally of its pivotal axis, said line lock mechanism comprising engaging devices on the printing key levers, a locking bar movable into engagement with said projections, and intermediate connections between said coöperative stop and locking bar which afford a pivotal movement of the coöperative stop without affecting said line lock mechanism, and a finger piece connected directly to and carried by said coöperative stop and by which the coöperative stop is turned on its pivotal axis to take it out of the path of the line lock stop.

5. In a typewriting machine, the combination of a carriage, a line lock stop on the carriage, a coöperative stop on the frame of the machine, said coöperative stop having a pivot on the axis of which said coöperative stop is adapted to turn, the pivot being also mounted for longitudinal movement in its bearing to afford a sliding as well as a pivotal movement of said coöperative stop, a finger piece connected directly to said coöperative stop, and line lock mechanism controlled by the sliding movement of said coöperative stop, a pivotal movement of the coöperative stop being effective to remove it from the path of the line lock stop on the carriage.

6. In a typewriting machine, the combination of a carriage, an adjustable line lock stop carried by the carriage at the front of the machine where it can readily be adjusted, a pivoted coöperative stop mounted on the frame of the machine at the front thereof where it is readily accessible for manipulation, said coöperative stop having a movement in two directions at substantially right angles to each other, one being a pivotal movement and the other a movement longitudinally of its pivotal axis, the pivotal movement of the coöperative stop taking it out of the path of the line lock stop, and line lock mechanism actuated by a movement of said coöperative stop longitudinally of its pivotal axis, said line lock mechanism comprising engaging devices on the printing key levers, a locking bar movable into engagement with said projections, and intermediate connections between said coöperative stop and locking bar, the pivotal movement of said coöperative stop out of coöperative relation being effective to release the line lock mechanism.

7. In a typewriting machine, the combination of a carriage, an adjustable line lock stop carried by the carriage at the front of the machine where it can readily be adjusted, a pivoted coöperative stop mounted on the frame of th machine at the front thereof where it is readily accessible for manipulation, said pivoted coöperative stop having a movement in two directions at substantially right angles to each other, one being a pivotal movement and the other a movement longitudinally of its pivotal axis, the pivotal movement of the coöperative stop taking it out of the path of the line lock stop, and line lock mechanism actuated by a movement of said coöperative stop longitudinally of its pivotal axis, said line lock mechanism comprising engaging devices on the printing key levers, a locking bar movable into engagement with said projections, and intermediate connections between said coöperative stop and locking bar which afford a pivotal movement of the coöperative stop without affecting said line lock mechanism, the pivotal movement of said coöperative stop out of coöperative relation being effective to release the line lock mechanism.

8. In a typewriting machine, the combination of a carriage, an adjustable line lock stop carried by the carriage at the front of the machine where it can readily be adjusted, a coöperative stop movably mounted on the frame of the machine at the front thereof where it is readily accessible for manipulation, said coöperative stop having a movement in two directions at substantially right angles to each other, the movement of the coöperative stop in one direction taking it out of the path of the line lock stop, and line lock mechanism actuated by a movement of said coöperative stop in the other direction, said line lock mechanism comprising engaging devices on the printing key levers, a locking bar movable into engagement with said devices, an upright rock shaft operatively connected to said locking bar, and a link connected to said rock shaft and operatively connected by a lost motion connection to said coöperative stop.

9. In a typewriting machine, the combination of a carriage, a line lock stop on the carriage, a coöperative stop on the frame of the machine, said coöperative stop having pivots on the axis of which said coöperative stop is adapted to turn, the pivots being also mounted for longitudinal movement in their bearings to afford a sliding as well as a pivotal movement of said coöperative stop, a link operatively connected with said coöperative stop, a rock shaft to which said link is connected, a line locking bar controlled by said rock shaft, key levers adapted to be engaged by said locking bar, said link, rock shaft and locking bar being controlled by a sliding movement of said coöperative stop, a pivotal movement of said coöperative stop around its pivots being effective to remove it from the path of the line lock stop on the carriage, and a finger piece directly connected to said coöperative stop.

10. In a typewriting machine, the combination of a carriage, a line lock stop on the

carriage, a coöperative stop on the frame of the machine and mounted for movement thereon in two directions at substantially right angles to each other, the movement of the coöperative stop in one direction carrying it out of the path of said line lock stop, an upright rock shaft, a link between said rock shaft and coöperative stop and which affords a movement of the coöperative stop in one direction without affecting said link, and line lock devices controlled by said rock shaft.

11. In a typewriting machine, the combination of a carriage, a line lock stop on the carriage, a coöperative stop on the frame of the machine and mounted for movement thereon in two directions at substantially right angles to each other, the movement of the coöperative stop in one direction carrying it out of the path of said line lock stop, an upright rock shaft, a link between said rock shaft and coöperative stop which affords a movement of the coöperative stop in one direction without affecting said link, printing key levers with engaging projections thereon, a locking bar movable into and out of engagement with said projections, and a crank arm on said rock shaft which coöperates with said locking bar.

12. In a typewriting machine, the combination of a carriage, a stop, and alarm mechanism actuated thereby, said alarm mechanism comprising a horizontally disposed bell trip lever comprising the lever proper and a spring pressed pawl pivoted thereto and having an independent movement thereon in one direction, and a bell hammer having a rock shaft with a crank arm with which said bell trip lever coöperates.

13. In a typewriting machine, the combination of a carriage, a stop, and alarm mechanism actuated thereby, said alarm mechanism including a bell trip lever comprising the lever proper having a substantially C-shaped opening therein in which a pawl is mounted to turn, said pawl being spring-pressed to normally bear a fixed relation to said lever and having a cam face on one side thereof, and a bell hammer actuated by said lever.

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 February, A. D. 1908.

OSCAR WOODWARD.

Witnesses:

CHARLES E. SMITH,

J. B. DEEVES.