A. T. BROWN.

TYPE WRITING MACHINE.

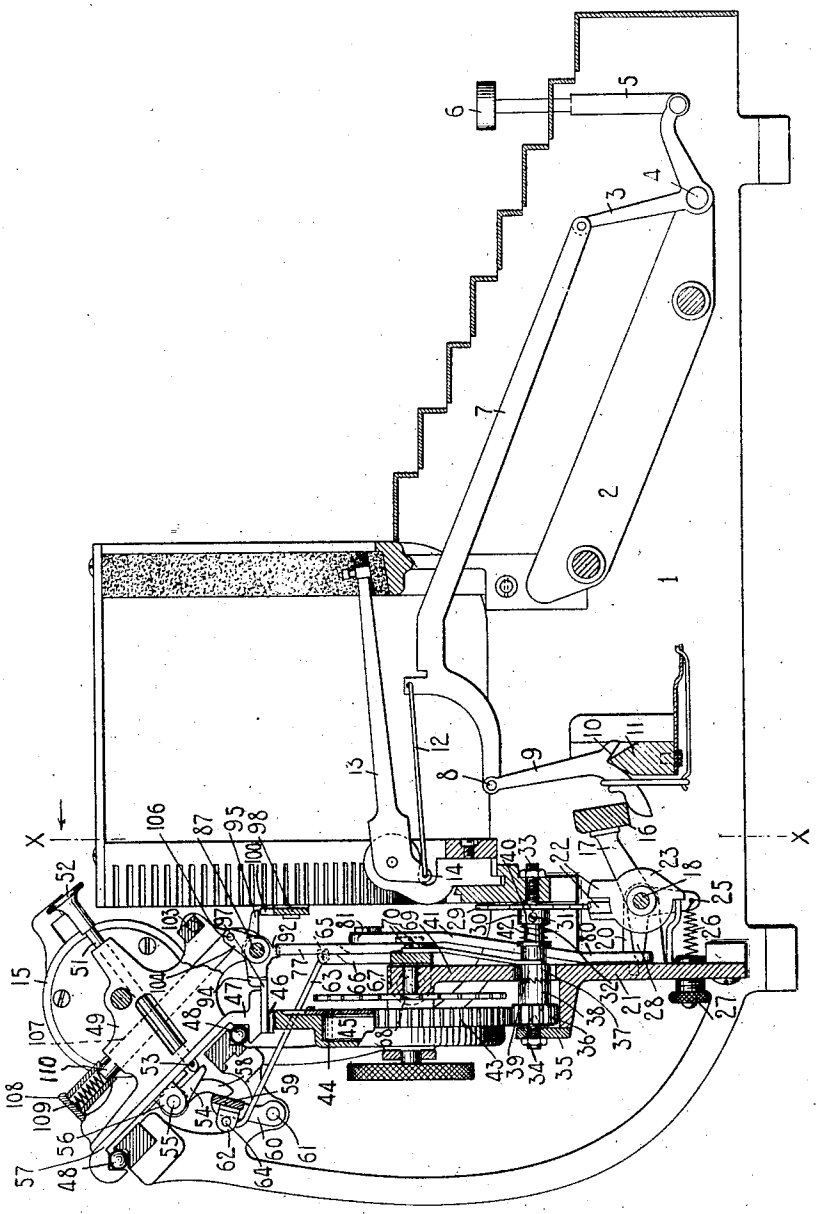
APPLICATION FILED NOV. 24, 1906.

946,912.

Patented Jan. 18, 1910.

3 SHEETS—SHEET 1.

FIG. 1.



WITNESSES.

J. B. Reeves

Charles E. Smith

INVENTOR.

Alexander T. Brown

by Jacob Fabel

HIS ATTORNEY

A. T. BROWN.

TYPE WRITING MACHINE.

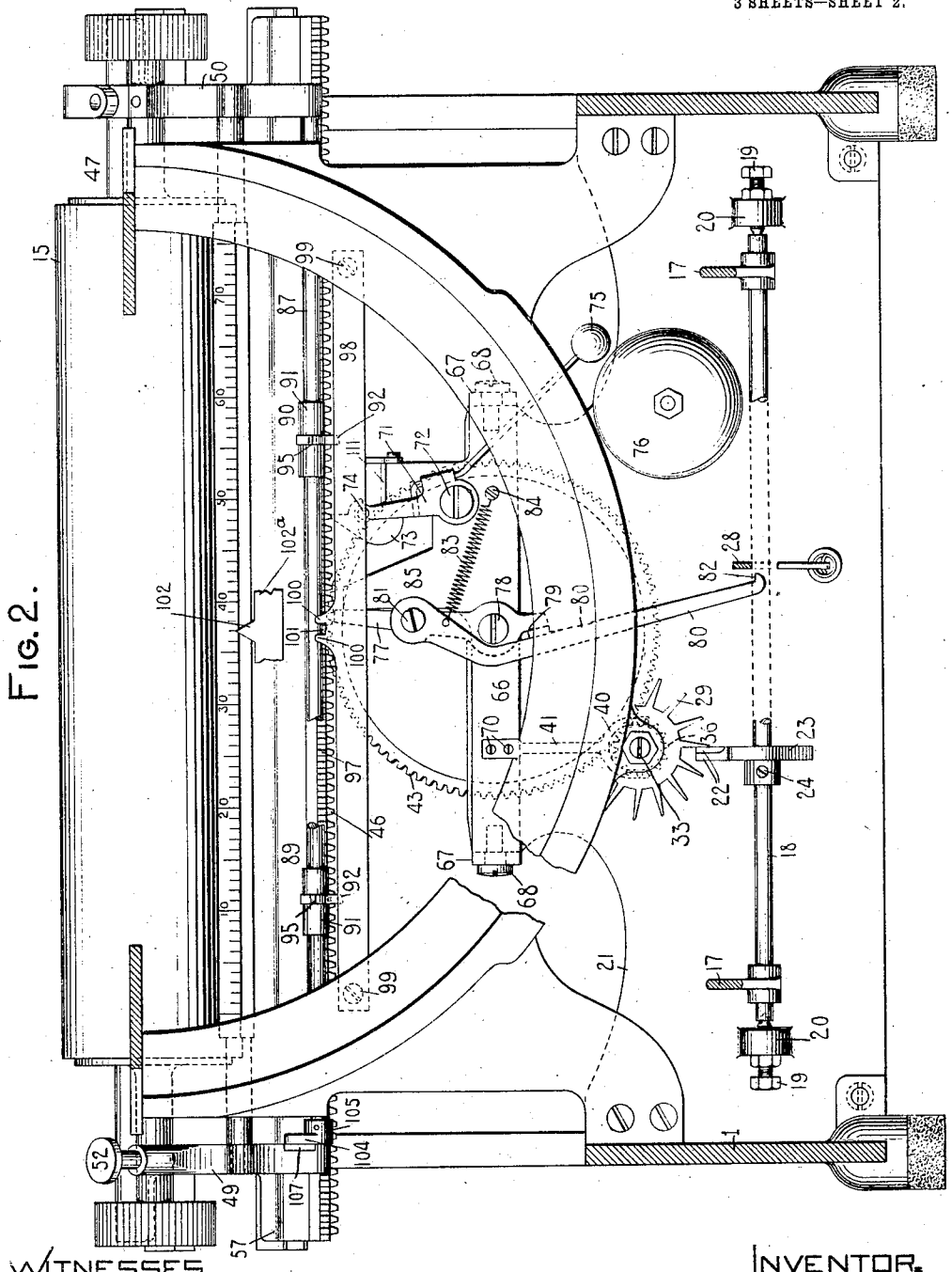
APPLICATION FILED NOV. 24, 1906.

946,912.

Patented Jan. 18, 1910.

3 SHEETS—SHEET 2.

FIG. 2.



WITNESSES.

J. B. Reeves

Walter E. Smith

INVENTOR.

Alexander T. Brown

by Jacob Tabor

HIS ATTORNEY

A. T. BROWN.

TYPE WRITING MACHINE.

APPLICATION FILED NOV. 24, 1906.

946,912.

Patented Jan. 18, 1910.

3 SHEETS—SHEET 3.

FIG. 4.

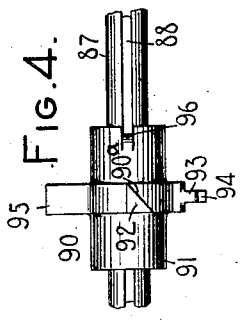


FIG. 5.

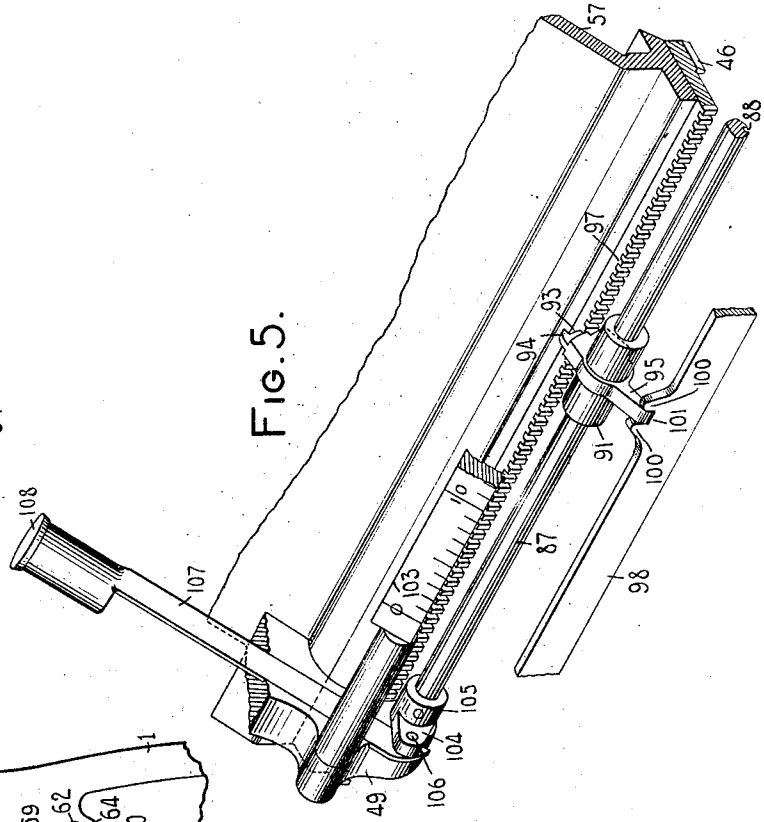
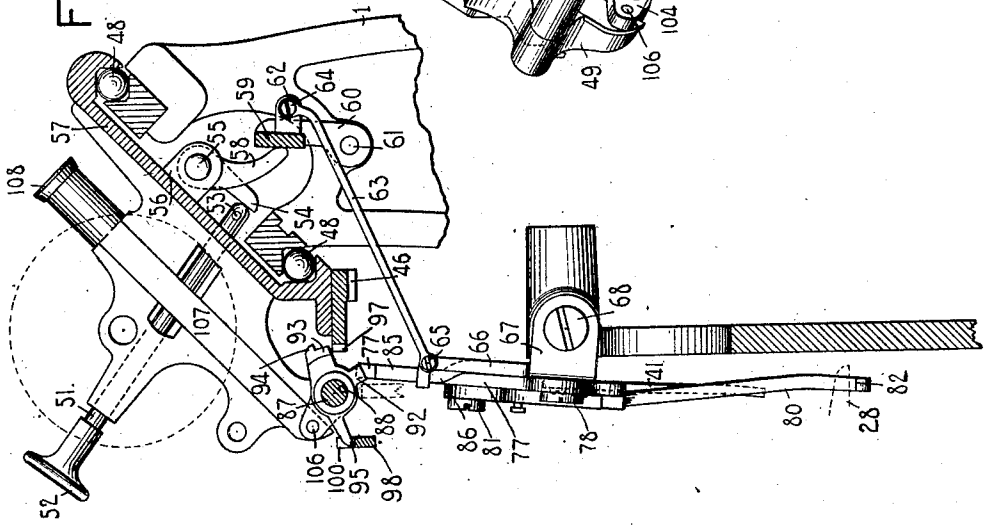


FIG. 3



WITNESSES:

J. B. Reeves

Charles E. Smith

INVENTOR:

Alexander J. Brown

by Jacob Talbot

HIS ATTORNEY

UNITED STATES PATENT OFFICE.

ALEXANDER T. BROWN, OF SYRACUSE, NEW YORK.

TYPE-WRITING MACHINE.

946,912. Specification of Letters Patent. Patented Jan. 18, 1910.

Application filed November 24, 1906. Serial No. 344,930.

To all whom it may concern:

Be it known that I, ALEXANDER T. BROWN, citizen of the United States, and resident of Syracuse, in the county of Onondaga 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 carriage stop and line lock mechanism for typewriting machines.

The main object of the invention is to provide simple and efficient means of the character specified.

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

In the accompanying drawings wherein like reference characters indicate corresponding parts in the various views, Figure 1 is a front to rear central vertical sectional view of a typewriting machine embodying my invention. Fig. 2 is a transverse vertical section of the machine taken on the line x—x of Fig. 1 and looking in the direction of the arrow at said line. Fig. 3 is a detail fragmentary vertical sectional view showing portions of the line lock mechanism. Fig. 4 is a detail view of one of the carriage stops mounted upon its rock shaft as seen from below. Fig. 5 is a fragmentary detail perspective view showing a portion of the carriage stop mechanism.

While I have illustrated my invention applied to a front-strike typewriting machine it should be understood that the invention is applicable generally to typewriting machines.

The framing 1 of the machine shown in the drawings supports an auxiliary frame 2 in which bell crank levers 3 are pivoted at 4, each bell crank being connected to a key stem 5 provided with a finger piece or button 6. The upwardly extending arm of each bell crank lever is connected to a rearwardly extending link 7 which is pivoted at 8 to a vertically disposed lever 9 bifurcated at its lower end as at 10 to coöperate with a fulcrum bar 11. A link 12 is pivotally connected at its forward end to a link 7 and at its rear end to the heel of a type bar 13 as indicated at 14. The type bars are segmentally arranged and adapted to strike upwardly and rearwardly against the front face of a platen 15. Each of the levers 9 is adapted to coöperate with a universal bar 16 connected by arms 17 with a rock shaft 18 supported on pivot screws 19 (Fig. 2) which are threaded through forwardly projecting lugs 20 which extend from the rear cross plate 21 of the frame of the machine. Feed dogs 22 formed integral with their carrier 23 are secured to the rock shaft by a screw 24 which extends through a threaded opening in a hub projecting from the dog carrier. The rock shaft has a depending crank arm 25 to which one end of a coiled spring 26 is connected, the other end of said spring being operatively connected to a screw 27 which is received in a threaded opening in the rear cross plate 21 and by means of which pressure of the spring 26 may be varied. A rearwardly extending crank arm 28 is secured to the rock shaft and is preferably integral with the depending crank arm 25 for coöperation with the line lock mechanism as will hereinafter appear.

The feed dogs 22 coöperate with an escapement wheel 29, the hub 30 of said wheel being secured by a screw 31 to a shaft 32. This shaft is supported by pivot screws 33, 34, the screw 33 extending through a threaded opening in the type bar segment and the screw 34 extending through a threaded opening in a plate or arm 35 secured to the rear cross plate 21. The shaft 32 has a pinion 36 loosely mounted thereon. A sleeve 37 surrounds the shaft 32 and is splined thereto to turn with the shaft but to receive a movement independently of the shaft in the direction of its length. This sleeve 37 is provided at its outer edge with ratchet-like clutch teeth which are adapted to engage like teeth formed on a sleeve 38 connected with the pinion 36. A circumferential groove 39 is formed in the clutch member 37 for coöperation with the fork-like end 40 of a carriage releasing device 41. An expansion spring 42 is coiled around the shaft 32 and bears at one end against the forward end of the clutch member 37 and at its opposite end against the hub 30 of the escapement wheel. The pressure of the spring 42 tends therefore to force the clutch member 37 into clutching engagement with its companion clutch member which is rigid with the pinion 36. The

pinion 36 coöperates with a gear 43 which is formed as a part of a drum 44, the carriage spring 45 being contained within said drum. The gear 43 meshes with a feed rack 46 secured to a carriage 47. The carriage is mounted upon anti-friction balls 48 and is adapted to travel from side to side of the machine, the feed rack 46 being constantly maintained in mesh with the gear 43.

From the foregoing description it will be understood that each depression of the finger key 6 will cause the associated type bar 13 to be moved to the printing point and the universal bar will be elevated to effect an actuation of the feed dogs. When the finger key is released the spring 45 acting on the carriage and on the escapement wheel will effect a letter space movement of the carriage. When the clutch member 37 is moved forwardly on the shaft 32 in a manner to be hereinafter described the escapement wheel will be disconnected from the pinion 36 so that the carriage is free to be moved in either direction independently of its escapement mechanism.

The carriage 47 comprises end plates 49 and 50. The left-hand end plate 49 is provided with bearing openings for a spindle or push rod 51 provided with a finger piece or button 52 by which it may be actuated. The lower end of the spindle is provided with a stop pin 53 which limits its outward movement. The lower end of the spindle bears against a crank arm 54 which projects downwardly from a rock shaft 55 mounted in bearing lugs 56 which project from the lower face of the base plate 57 of the carriage. This rock shaft 55 is also provided with a crank arm 58 which bears at its free end against a swinging bail 59 connected at its ends to arms 60 pivoted to the side plates of the frame of the machine at 61. This bail 59 extends throughout the width of the machine and has a rearwardly extending arm 62 to which a link 63 is pivoted at 64. The forward end of the link 63 is pivoted at 65 to a member or yoke 66. This member 66 has rearwardly projecting ears 67 apertured for the reception of headed screws 68 which are received at their ends in threaded openings in the upwardly extending central portion 69 of the cross plate 21. The screws 68 therefore pivotally connect the member 66 to the framing of the machine so that it is adapted to receive a swinging movement fore and aft of the machine. The platen releasing device 41 hereinbefore referred to is secured to the member 66 by screws 70 as shown in Fig. 2.

From the foregoing description it will be understood that a depression of the key or finger piece 52 will cause the bail 59 to be moved rearwardly, thus swinging the member 66 on its pivot 68, and moving the carriage releasing device 41 forwardly. The forward movement of the device 41 is effective to disengage the clutch member 37, thus releasing the carriage from its escapement mechanism.

The bell ringer or alarm mechanism comprises a device 71 pivoted to the member 66 by a headed screw 72. This pivoted device 71 carries a trip 73 pivoted thereto at 74. The lower depending portion of the trip 73 abuts against the member 71 as shown in Fig. 2 so that pressure applied from right to left on the trip is effective to turn the device 71 with it, whereas pressure applied to the upper end of the trip 73 from left to right merely results in turning the trip on its pivot 74 without affecting the member 71. A bell hammer 75 is connected to the device 71 and coöperates with a bell 76.

A combined margin stop and line lock device 77 which is in the nature of a lever is pivoted to the member 66 by a headed screw 78, the axes of the pivots of the lever 77 and member 66 extending at substantially right angles to each other. A laterally projecting lug 79 is formed as a part of the stop and line lock lever 77 for coöperation with a depending line lock lever 80, pivoted at 81 to the lever 77 and provided with a hook-like line locking projection 82 at the lower end thereof which is adapted to be projected beneath the arm 28 to lock the machine out of printing operation. A contractile spring 83 is connected at one of its ends to the line lock lever 80 and at its opposite end to a screw 84 projecting from the front face of the member 66. From an inspection of Figs. 2 and 3 it will be seen that an upwardly extending stop projection 85 projects from the pivot member 66 and is bent forwardly at 86 as shown in Fig. 3, in order to bring said stop projection 85 into the path of the lever 77, so as to arrest said lever in its movement to the right as indicated in Fig. 2. The spring 83 normally holds the device 77 against the stop projection 85, and also holds the lever 80 against the lug 79. A rock shaft 87 is mounted at its ends in bearings formed in the end plates 49 and 50 of the carriage, said rock shaft being provided with a spline groove 88 extending throughout the length thereof. A margin stop 89 and a line lock stop 90 are mounted on said rock shaft 87. Both of the stops in question are constructed in a like manner except as to certain bevels thereon and with this exception the description of one applies to the other. The line lock stop 90, for instance, is provided with a hub 91, with a depending stop member 92, with a rearwardly extending tooth 93, an arresting abutment 94 and a forwardly extending finger 95. The hub 91 is provided with a spline 96 which takes within the spline groove 88 in the rock shaft and causes the stop to turn with the rock shaft but enables the shaft to

be moved lengthwise relatively thereto. A forwardly extending rack 97 is formed as a part of the carriage feed rack 46. This rack 97 is provided for coöperation with the tooth 93 formed on the line lock stop and with the like tooth formed on the margin stop as shown in Fig. 1.

Extending transversely of the machine and forward of and parallel with the rock shaft 87 is a bar 98 secured at its ends by screws 99 to the type bar segment as shown in Figs. 1 and 2. This bar 98 has two upwardly extending lugs 100 forming a depression 101 between them in the plane of the printing point. This depression is located about coincident with a suitably mounted pointer 102 which in the present instance is carried by or formed as a part of a bar 102ª secured at its ends to the type bar segment like the bar 98. This pointer cooperates with a carriage scale on a bar 103 fixed at its ends to the end plates 49 and 50 of the carriage.

From an inspection of Fig. 5 it will be seen that the rock shaft 87 hereinbefore referred to is provided near its left-hand end with a crank arm 104 having a hub 105 secured to the rock shaft. This crank arm is pivoted at 106 to a sliding member 107 which is received within a groove or recess in the inner face of the end plate 49 of the carriage. The upper end of the member 107 is provided with a hollow finger piece or button 108 by which it may be depressed. A coiled spring 109 is contained within the cylindrical head 108 and bears at one end against the head and at its other end against a cylindrical projection 110 which extends from the end plate and is received within the head 108 to guide it and the member 107 in their movement as shown in Fig. 1. The projection 92 on each of the stops 89 and 90 is situated so that it will contact with the line lock lever and stop 77 as the carriage travels from side to side of the machine. Thus, as the carriage travels from right to left the stop 90 will first be brought into contact with the trip 73, turning said trip and the member 71 together around the pivot 72, thus elevating the bell hammer 75 until the trip is freed from the stop 90. The trip 73 being released, the weight of the bell hammer will carry the parts back to normal position where the member 71 is arrested by a stop 111, the overthrow of the hammer causing it to contact with the bell and sound the alarm. A further movement of the carriage to the left will bring the stop 90 into contact with the upper end of the lever 77, thereby turning it around the pivot 78. The spring 83 normally maintains a fixed relation between the levers 77 and 80 so that when the lever 77 is turned by its stop the lever 80 turns with it and the hook-like end 82 is moved beneath the projection or crank arm 28 on the rock shaft 18 of the universal bar and feed dogs, thus locking said arm against downward movement and preventing the rock shaft from being turned. This results in the universal bar being locked against upward movement which prevents an actuation of any of the type actions so that the machine is locked out of printing operation. If it should happen that the arm 28 has not returned to the uppermost or normal position before the lever 80 is moved, no blocking of the parts or injurious results can follow since the levers 77 and 80 are pivotally connected and maintained in a fixed relation only by the spring 83 in the manner described, and the construction will allow the lever 77 to move with the carriage independently of the lever 80 until the carriage has completed its letter space movement. During this interval the pressure of the spring 83 is maintained on the lever 80 which bears against the side of the arm 28 and when the arm 28 has completed its upward movement the hook 82 will be forced beneath the arm and the machine will be locked against actuation. If, in the event just referred to, the arrest of the arm 80 also stopped the arm 77 and the carriage, it might result in one letter being written over another, which is the very thing the line-lock is designed to prevent. Should the operator desire to release the line lock mechanism in order to insert one or more letters to complete a word or to insert a hyphen, it is merely necessary to depress the finger piece or button 52 of the carriage releasing mechanism part way, thereby swinging the member 66 together with the line lock levers 77 and 80 from the normal position shown in Fig. 1 to a position where the lever 77 is out of the path of the line lock stop. As soon as the lever 77 clears the line lock stop 90 the tension of the spring 83 is exerted to restore the levers 77 and 80 to the normal position shown in Figs. 1 and 2, thus withdrawing the hook-like end 82 of the lever 80 from beneath the arm 28 so that the escapement mechanism and type actions are free to be actuated. By reason of the lost motion of the releasing member 40 in the groove 39 the partial depression of the finger key 52 to release the line lock is insufficient to effect a release of the carriage. In the return movement of the carriage a bevel 90ª on the right-hand face of the contact portion 92 of the line lock stop engages the lever 77 and causes the levers 77 and 80 and the swinging member 66 on which they are carried, to be turned around the pivots 68 so that the stop 90 may pass and not be obstructed by the lever 77 and so that the upper end of the lever 77 will not arrest the carriage in its return movement.

The margin stop 89, as heretofore stated, is constructed like the stop 90, except that the bevel on the contact portion of the mar-

gin stop is on the left-hand side thereof instead of on the right-hand as is the case with the line lock stop. The movement of the carriage from left to right will bring the contact portion 92 on the margin stop into contact with the upper end of the lever 77. This lever being normally in contact with the upward extension 85 on the member 66, is prevented from moving to the right so that an arrest of the carirage will be effected without moving the levers 77 or 80. Should the operator desire to write within the margin it is merely necessary to depress the finger key or button 52 less than the full extent of its movement, effecting a swinging movement of the member 66 so as to carry the upper end of the lever 77 out of the path of the margin stop but not far enough to release the carriage, and the carriage may be moved any desired extent to the right, the margin stop passing the lever 77 in such movement. During the mo ement of the carriage from this position toward the left, the bevel on the left-hand face of the margin stop will contact with the upper end of the lever 77, camming said lever rearwardly when the carriage will be free to pass to the left.

In the normal position of the parts the tooth 93 on each of the margin and line lock stops engages between the teeth of the rack 97 as shown in Fig. 1, the abutment 94 upon each tooth resting on the upper face of the rack so as to limit the downward movement of the tooth 93 relatively to the rack. The parts being disposed in this manner the stops extend into the path of the line lock and stop lever 77. In order to adjust the line lock or margin stop relatively to the carriage the carriage is moved to a position where the finger 95 on the stop to be adjusted registers with the notch 101 in the bar 98. In other words, the stop may be moved until it is in alinement with the printing point indicator 102 which is in alinement with the notch. The finger piece 108 may then be depressed to turn the rock shaft 87, thereby disengaging the tooth 93 of the stop from its rack 97 and causing the finger 95 on the stop to be seated within the recess or depression 101 in the fixed bar 98. The carriage may then be moved until the point on the carriage scale where it is desired to set the stop, registers with the pointer 102. The operator may then release the finger piece 108 and the spring 109 contained within the head 108 forces the parts back to normal position thereby effecting a reëngagement of the tooth 93 on the stop with its cooperating rack 97, thus locking the stop to travel with the carriage, the movement of the rock shaft back to normal position effecting a disengagement of the finger 95 from its locking recess 101 as well as effecting a reëngagement of the tooth 93 with its rack. Both the line lock and margin stops may be adjusted in the same manner.

From the foregoing description it will be seen that I have provided key actuated means operable at will to connect either the margin or line lock stop with the frame of the machine or with the carriage and to effect a relative adjustment between said stop and the carriage by such means.

The carriage mounting and construction herein shown and described is claimed in my application Serial No. 305,053, filed March 9th, 1906; the type action herein shown and described is claimed in my application Serial No. 127,536, filed October 16, 1902 and the escapement mechanism shown and described herein is fully disclosed and claimed in part in my Patent No. 779,407, dated January 19th, 1905 and a more elaborate description of these parts in the present case is deemed unnecessary.

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 stop carried by and adjustable on the carriage, engaging means on the carriage with which said stop coöperates, engaging means on the frame of the machine, and means for effecting a disengagement between the stop and the engaging means on the carriage and for effecting an engagement between the stop and the engaging means on the frame of the machine.

2. In a typewriting machine, the combination of a carriage, engaging means on the frame of the machine, engaging means on the carriage, and a stop coöperative at will with either engaging means to connect the stop with the frame or with the carriage as may be desired.

3. In a typewriting machine, the combination of a carriage, engaging means on the frame of the machine, engaging means on the carriage, a stop coöperative at will with either engaging means to connect the stop with the frame or with the carriage as may be desired, and key actuated means for controlling the engagement and disengagement of said stop.

4. In a typewriting machine, the combination of a carriage, a carriage stop, a rock shaft with which said stop rotates and along which it may be adjusted, means on the frame of the machine with which said stop may be connected by rocking said shaft in one direction and means on the carriage with which said stop may be engaged by a rocking of said shaft in the opposite direction.

5. In a typewriting machine, the combination of a carriage, line lock and margin stops, a rock shaft with which said stops rotate and along which they may be adjusted,

means on the frame of the machine with which either of said stops may be connected by rocking said shaft in one direction and means on the carriage with which either of said stops may be engaged by a rocking of said shaft in the opposite direction.

6. In a typewriting machine, the combination of a carriage, a line lock stop, means for connecting said stop at will either with the frame of the machine or with the carriage, line lock devices with which said stop coöperates, and means for moving the line lock devices out of the path of the stop at will.

7. In a typewriting machine, the combination of a carriage, a line lock stop carried by the carriage, a margin stop carried by the carriage, a coöperating line lock and stop lever carried by the frame of the machine and mounted to move in two directions at right angles to each other and normally resting against an abutment to prevent movement of the lever to the right from its normal position, said lever being free however to move to the left, line lock devices with which said lever coöperates and which are actuated by the movement of the lever to the left, and means for moving said lever in a direction at right angles to its right and left-hand movement to free the lever from the margin and line lock stops carried by the carriage.

8. In a typewriting machine, the combination of a carriage, a line lock stop carried by the carriage, a margin stop carried by the carriage, a coöperating combined line lock and margin stop lever mounted on the frame of the machine to move in two directions at right angles to each other and normally resting against an abutment to prevent movement of the lever when the margin stop on the carriage co-acts therewith, said lever being free however to move in an opposite direction, line lock devices with which said lever coöperates, and hand actuated means operable at will to move said lever at right angles to its line locking movement, the construction and arrangement of the parts being such that the margin stop will coöperate with said lever to arrest the carriage in its movement in one direction and the line lock stop will co-act with the lever to move it and to effect an actuation of the line lock devices when the carriage is moved in an opposite direction and an actuation of said hand actuated means will move the lever to free it from the line lock and margin stops.

9. In a typewriting machine, the combination of a carriage, a margin stop carried by the carriage, a line lock stop also carried by the carriage, both of said stops traveling in the same line, a swinging frame pivoted to the frame of the machine, a lever pivoted to said frame to swing therewith and to swing independently of the frame, such independent swinging movement being effected when the line lock stop co-acts therewith, line lock devices controlled by said lever, an abutment carried by the swinging frame and with which abutment the swinging lever coöperates, and hand actuated means for swinging said frame to release the line lock mechanism.

10. In a typewriting machine, the combination of a carriage, a line lock stop, a margin stop, line lock mechanism including a combined line lock and margin stop lever pivoted to swing in two directions at substantially right angles to each other and normally in position to coöperate with said stops, an abutment against which the lever bears, said line lock stop operating to swing said lever in one of said directions away from said abutment to lock the line lock mechanism, and a hand actuated means for swinging said lever in the other of said directions to move said lever out of the path of said stops to release the line lock mechanism and to enable the margin stop and lever to pass one another and whereby when the parts are in normal relation the margin stop and said lever may co-act with said abutment to arrest the carriage in its movement to the right.

11. In a typewriting machine, the combination of a carriage, and line lock mechanism, said line lock mechanism comprising two line lock levers, one carried by and pivoted to the other, means associated with said levers for preventing a relative movement between said levers in one direction and to assist in maintaining a fixed relation between the levers, a spring coöperating with said last mentioned means for normally maintaining such fixed relation between the levers, means for automatically actuating both of said levers when an end of a line is reached, and line locking means co-acting with said levers.

12. In a typewriting machine, the combination of a carriage, a margin stop carried by the carriage, a line lock stop also carried by the carriage, both of said stops traveling in the same line, a swinging frame pivoted to the frame of the machine, a lever with which the margin and line lock stops both coöperate, said lever being pivoted to said swinging frame to swing therewith and to swing independently of the frame, such independent swinging movement of the lever being effected when the line lock stop co-acts therewith, line lock devices controlled by said lever, an abutment carried by the swinging frame and with which abutment the swinging lever coöperates to resist the movement of the lever when the margin stop co-acts with said lever, and hand actuated means for swinging said frame to release the line lock mechanism.

13. In a typewriting machine, the combination of a carriage, and line lock and margin stop mechanism comprising a swinging frame, a combined line lock and margin stop lever pivoted thereto, a line lock stop for shifting said lever on its frame when an end of a line is reached, line lock means coöperating with said lever to lock the machine out of printing operation when said lever is shifted at an end of a line, a margin stop co-acting with said lever to arrest the carriage when said carriage is moved to the right, and hand actuated means for swinging said frame to release the line lock mechanism and to allow the lever to clear the margin stop.

14. In a typewriting machine, the combination of a carriage, and line lock and margin stop mechanism comprising a swinging frame, a combined line lock and stop lever pivoted thereto, a second lever pivoted to and carried by said line lock and stop lever, a line lock stop for shifting said levers when an end of a line is reached, line lock means coöperating with said second lever to lock the machine out of printing operation when said levers are shifted at an end of a line, a margin stop co-acting with said combined line lock and stop lever to arrest the carriage when it is moved to the right, and hand actuated means for swinging said frame to release the line lock mechanism and to allow the combined line lock and stop lever to clear the margin stop.

15. In a typewriting machine, the combination of a carriage, a pair of levers which are normally held in fixed relation with each other by spring pressure, line locking means coöperative with one of said levers to lock the machine out of printing operation, and a line lock stop coöperative with the other of said levers.

16. In a typewriting machine, the combination of a carriage, a swinging frame pivoted to the frame of the machine, a pair of levers carried by said swinging frame and which are normally held in fixed relation with each other by spring pressure, line locking devices coöperative with one of said levers to lock the machine out of printing operation, a line lock stop coöperative with the other of said levers, and key actuated means for controlling said swinging frame to move the lever with which the stop co-acts out of coöperation with said stop to effect a release of the line lock.

Signed at Syracuse, in the county of Onondaga, and State of New York this 20 day of Nov. A. D. 1906.

ALEXANDER T. BROWN.

Witnesses:
C. E. TOMLINSON,
LINWOOD A. MURRAY.