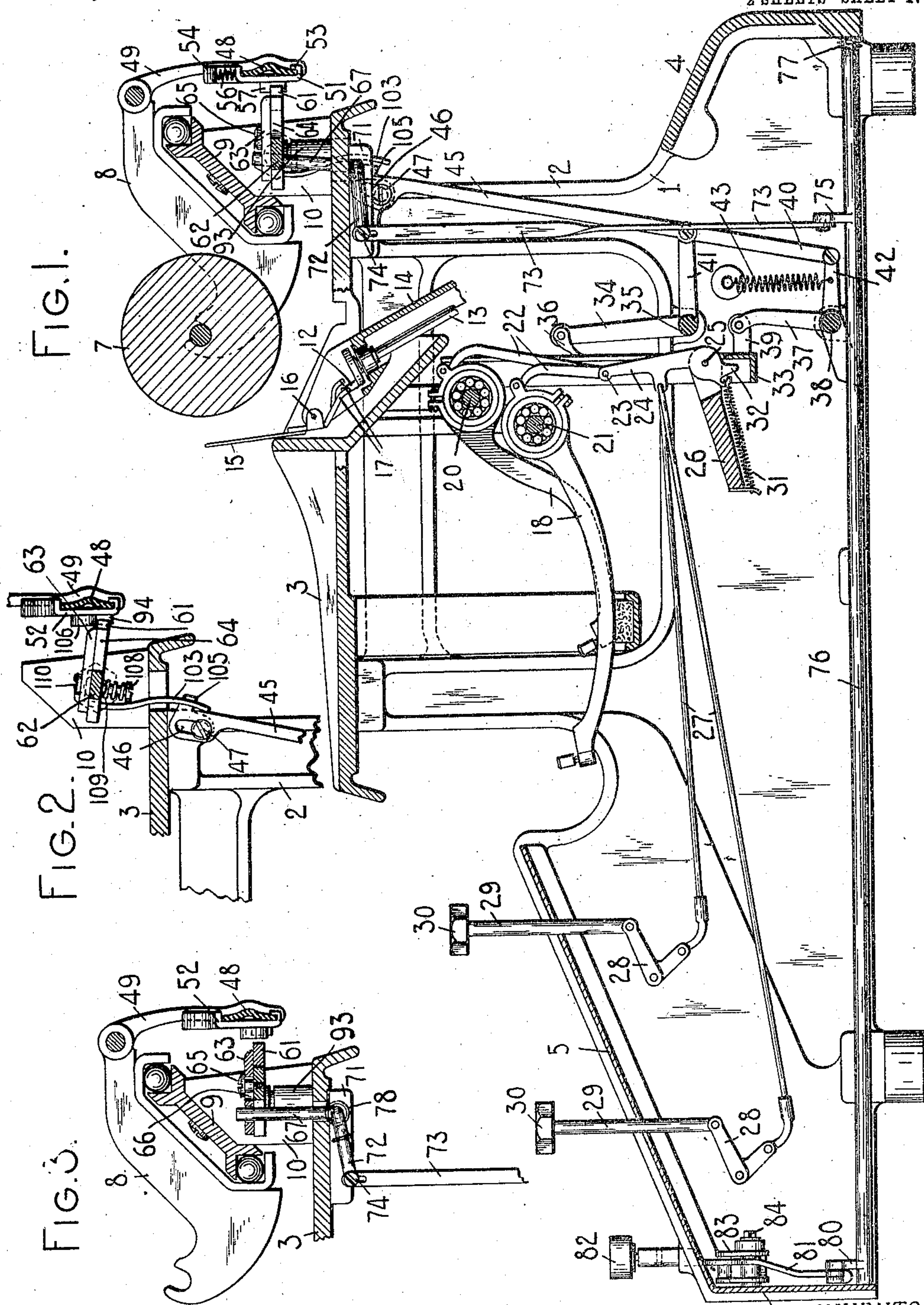


A. J. BRIGGS.
TYPE WRITING MACHINE.
APPLICATION FILED OCT. 12, 1908.

Patented Dec. 21, 1909.

2 SHEETS—SHEET 1.

944,229.



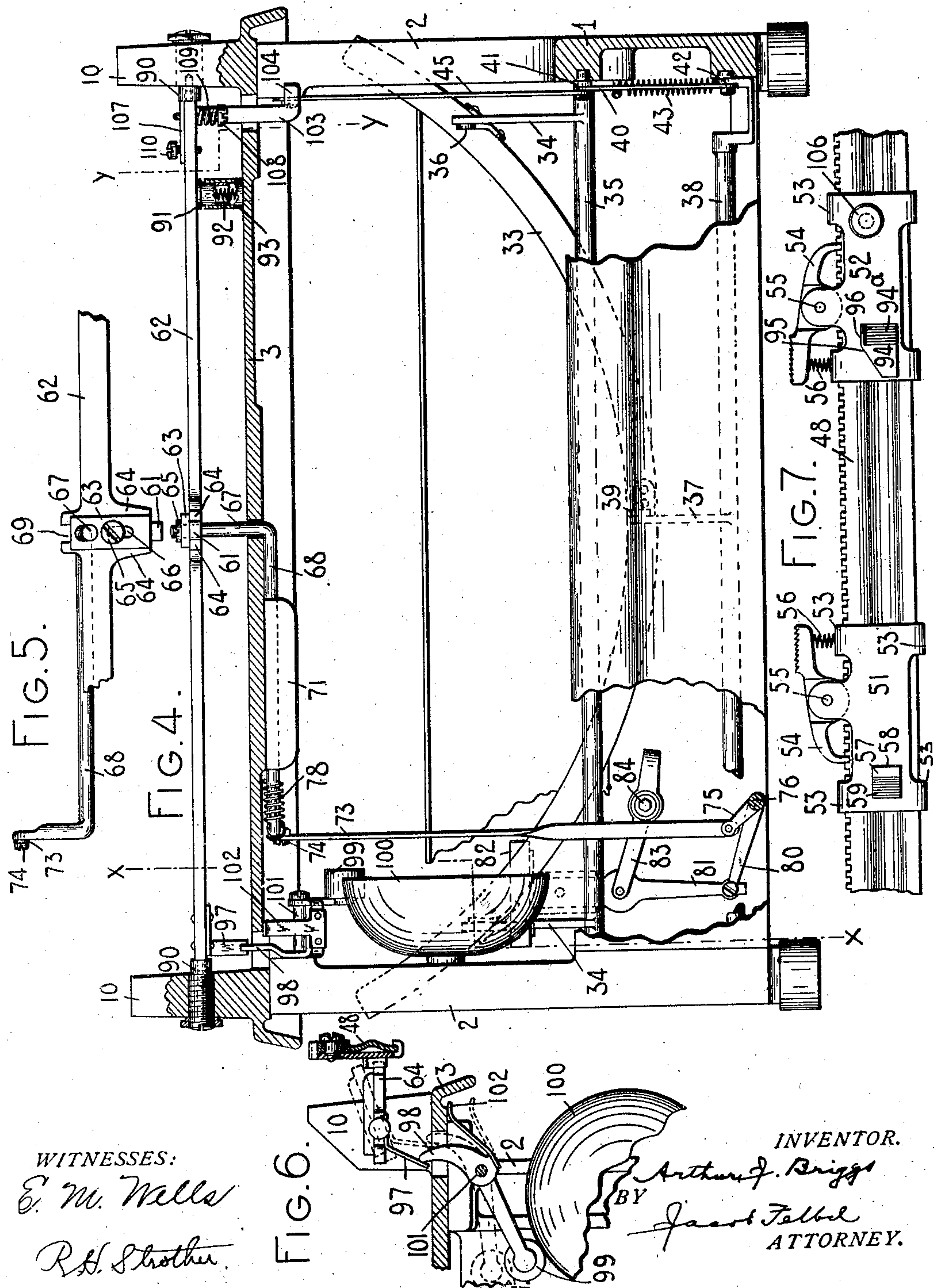
WITNESSES:
E. M. Wells.
R. H. Strother

INVENTOR.
Arthur J. Briggs
BY
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ATTORNEY.

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FIG. 6.

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ARTHUR J. BRIGGS, OF SYRACUSE, NEW YORK, ASSIGNOR TO THE SMITH PREMIER TYPEWRITER COMPANY, OF SYRACUSE, NEW YORK, A CORPORATION OF NEW YORK.

TYPE-WRITING MACHINE.

944,229.

Specification of Letters Patent.

Patented Dec. 21, 1909.

Application filed October 12, 1908. Serial No. 457,401.

To all whom it may concern:

Be it known that I, ARTHUR J. BRIGGS, 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 typewriting machines and particularly to the line lock and margin stop mechanism of such machines.

In line locks as heretofore constructed the carriage, when the end of the line is reached, engages a stop which arrests said carriage and which throws into operation a device for locking the printing keys. With mechanism of this character it sometimes happens that the carriage is arrested but the locking device fails to operate immediately, with the result that one letter is written on top of another. Moreover, when the second letter is written, the escapement is operated, but the carriage having been arrested, it does not move a complete letter space. The result is that when the carriage is released after being drawn back to begin a new line, it moves one letter space distance, thus causing the new line to begin one space in advance of the margin and causing the left-hand margin to be irregular.

It is one of the principal objects of the present invention to obviate these difficulties.

My invention also has for its object the improvement of the line locking and margin stop devices in some other respects which will appear hereinafter.

To the above and other ends my invention consists in certain features of construction, and combinations and arrangements of parts all of which will be fully set forth herein and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a front to rear vertical sectional view of a typewriting machine, the main frame being shown in section about on the line $x-x$ of Fig. 4, but parts being shown in central section. Fig. 2 is a sectional view taken about on line $y-y$ of Fig. 4 and showing the line lock in operated position. Fig. 3 is a fragmentary sectional view of part of the mechanism taken centrally through the stationary stop and showing said stationary stop withdrawn out of the path of the cooperating

devices on the carriage. Fig. 4 is a rear elevation of the machine with parts omitted, parts in section and parts broken away. Fig. 5 is a fragmentary top plan view of parts of the mechanism. Fig. 6 is a view, partly in section, showing the bell ringer. Fig. 7 is a fragmentary front elevation showing a bar that is mounted on the carriage and that carries part of the line lock and margin stop mechanism.

For the purpose of illustration I have shown my invention embodied in a front-strike machine known as the Smith Premier No. 10 typewriter. The main frame of this machine comprises side plates 1, having corner posts 2 which support a top plate 3. Said side plates are connected together at the rear by a back base plate 4 and at the front by a keyboard plate 5 which is bent down to form a front plate 6. A cylindrical platen 7 is mounted on a carriage 8 which is mounted by means of ball bearings on a stationary rail 9 supported by standards 10 rising from the top plate 3. The carriage is propelled in letter space direction by a spring drum and certain gearing which are not shown herein but which are shown and described in an application of Alexander T. Brown filed December 10, 1906, Serial No. 347,104. The carriage is controlled in its step by step motion by means of an escapement comprising a tooth 12 mounted on the upper end of a shaft 13 that is geared to the carriage, said shaft being journaled in a bracket 14. A light universal bar 15 normally stands in front of the platen and said universal bar forms part of a frame that is pivoted at 16 to the bracket 14. Said frame also comprises a pair of feed dogs 17 which control the tooth 12. This escapement and carriage feed mechanism is more fully described and is claimed in the application of Alexander T. Brown, above referred to. The universal bar 15 is operated by being struck by type bars 18 which are arranged for a front-strike on the platen, said type bars being mounted on segments 20 and 21 by ball bearings. The type bars are operated by radially disposed links 22 pivoted to the heels of said type bars and at their outer ends pivoted at 23 to radially disposed sub-levers 24 which are pivoted on a pivot wire 25 laid in a sub-lever segment 26. The sub-levers 24 are operated by links 27 that extend toward the front of the machine and are connected at their for-

ward ends to bell crank key levers 28 which are operated by the stems 29 of the printing keys 30. The construction is such that when one of said printing keys is depressed the corresponding link 27 is drawn toward the front of the machine, rocking the sub-lever 24 toward the front of the machine and throwing the type bar to printing position, the type bar in the last part of its motion striking the universal bar 15 and operating the escapement. Each of the sub-levers 24 is provided with a returning spring 31 and each of said sub-levers has an outwardly extending arm 32 that is adapted to operate a universal bar 33. This universal bar consists of a segment made of angled metal and supported near its ends by arms 34 which project upward from a rock shaft 35 and which at their upper ends are pivoted to ears 36 projecting from the universal bar 33. Said universal bar is controlled near its middle by an arm 37 rising from a rock shaft 38 and pivoted at its upper end to a bracket 39 projecting from said universal bar. A link 40 connects an arm 41 of the rock shaft 35 with an arm 42 of the rock shaft 38 and compels these two rock shafts to move together in such a way that all parts of the universal bar 33 have the same motion toward the rear of the machine when a key is operated. Said universal bar is restored to normal position by a spring 43 connected with the arm 42.

In the Smith Premier No. 10 machine the universal bar 33 is utilized to operate a ribbon vibrator, which vibrator, however, is not shown in the present case; and it is this universal bar 33 that is locked when the carriage reaches the end of a line, from which it will be seen that the line lock does not affect the escapement.

The line lock devices comprise a link 45 which at its lower end is pivoted to the arm 41 and at its upper end is formed with an elongated slot 46 through which there passes loosely a headed screw 47 which is threaded into the rear left-hand post 2. The screw 47 and slot 46 serve to guide the upper end of the link 45 but permit it to move downward when the universal bar 33 is operated.

The margin stop and line lock devices on the carriage comprise a toothed bar 48 which is supported by arms 49 depending from the carriage behind the rail 9. As shown in Fig. 7 this bar is toothed on its upper edge and carries a margin stop piece 51 and a line lock piece 52. Each of these pieces has ears 53 bent over the top and under the bottom edge of the bar 49 and serving to retain said pieces 51 and 52 on the bar but with freedom to slide lengthwise of the bar. These pieces are retained in any position along the bar to which they may be adjusted by latches 54 pivoted at 55 and controlled by springs 56, the free ends of the latches engaging in the

notches of the bar 49, which notches are spaced a letter space distance apart. The margin stop piece 51 has projecting toward the front of the machine therefrom a lug 57 having its right-hand face 58 abrupt and its left-hand face 59 inclined. This lug 57 cooperates with a stationary stop 61 which is mounted on a bar 62 that lies beneath the rail 9 and is supported at its ends by the standards 10.

The stop 61 consists of a part of a plate or block 63 which is mounted on the bar 62 with freedom to slide in a fore-and-aft direction. Said plate 63 lies on top of the bar 62, but the part 61 is depressed into a slot formed between two ears 64 on the bar 62. The plate 63 is held against detachment by means of a shouldered and headed screw 65 threaded into the bar 62, and passing through a slot 66 in the plate 63. At its forward end the plate 63 has a hole there-through, through which passes the upper end of an arm 67 that is bent off from a rock shaft 68, the upper end of the arm passing through a slot 69 formed between ears of the bar 62. The whole construction is such as to guide the plate 63 and stop 61 in their fore-and-aft motion, but to prevent motion of said parts laterally of the machine. The rock shaft 68 is pivoted in a bracket 71 secured to the under side of the top plate 3, and the arm 67 passes upward through a suitable opening in the top plate. At its right-hand end the shaft 68 has a forwardly projecting arm 72 to which is pivoted a link 73 by a pin and slot connection 74. The lower end of the link 73 is pivoted to an arm 75 projecting from a rock shaft 76 that is journaled at its rear end in the back plate 4 and at its forward end in the front plate 6. Said rock shaft is controlled by a returning spring 77 the tension of which is exerted to hold the link 73 in its normal upper position. At its forward end the rock shaft 76 has an arm 80 projecting therefrom to which arm is pivoted the lower end of the stem 81 of the margin and line lock release key 82. The stem 81 is also controlled by a guide link 83 parallel to the arm 80 and pivoted at 84 to the front plate 6. The construction is such that if the key 82 be depressed the rock shaft 68 will be rocked to move the arm 67 and stop 61 toward the front of the machine out of the path of the margin stop 57, as shown in Fig. 3. A spring 78, coiled about the shaft 68, is connected to said shaft for normally holding the stop 61 in its rear position.

When the carriage is drawn toward the right, it is arrested by the abrupt face 58 of the margin stop 57 contacting with the stop 61. If it be desired to write in the margin, this may be done by depressing the key 82 and withdrawing the stop 51 out of the path of the stop 67. When the carriage

moves toward the left out of its marginal position the inclined face 59 of the stop 57 will cam the stop 61 toward the front of the machine without obstructing the motion of the carriage.

For the purpose of ringing the bell and of locking the printing instrumentalities at the end of a line the bar 62 is pivoted at its ends. Each end of said bar is formed with a trunnion which trunnions enter suitable axial bearings formed in screws 90 threaded through the brackets 10 so that the bar is free to rock in either direction but cannot move endwise. The position of the stop 61 may be adjusted by means of these screws 90. The bar 62 is controlled by a flat topped puppet or plunger 91 which is pressed upward against the flat underside of the bar 62 by a spring 92. Said puppet 91 is seated in a suitable tube or socket piece 93 secured to the top plate 3 and the spring 92 is seated in the puppet 91, which is made hollow for the purpose. If the bar 62 be rocked in either direction, it will depress the puppet against the tension of the spring 92 and said spring will restore the bar 62 to its normal position when said bar is released. In order to ring the bell the piece 52 has formed on its forward side a projection or lug 94 having its left-hand upper corner beveled off as shown at 95, said bevel terminating in a flat upper surface 96. When the carriage approaches the end of a line the bevel 95 rides under the stop 61 and cams said stop upward, thus rocking the bar 62 toward the front of the machine. The bar is retained in this rocked position until the stop 61 drops off of the right-hand end of the flat part 96. Said bar 62 has an arm 97 depending therefrom near its right-hand end and said arm is adapted to contact with the arm 98 of the bell clapper 99 which is adapted to strike the bell 100, which is mounted on one of the corner posts 2. The arm 98 of the bell clapper constitutes parts of a yoke shaped frame which is pivoted on a pin or screw 101 projecting from the post 2. Said yoke-frame has an elastic arm 102 that normally contacts with the underside of the top plate 3 and holds the clapper slightly out of contact with the bell. When the bar 62 is rocked in the manner above described by the lug 94 the arm 97 raises the bell clapper, moving the parts to the dotted line position of Fig. 6, and when the stop 61 escapes from the lug 94 and the parts drop back to normal position the clapper strikes the bell, slightly bending the arm 102. The right-hand part 94^a of the lug 94, is beveled so that, when the carriage is moved toward the right, this bevel cams the stop 61 forward which permits the lug 94 to pass said stop.

The line lock comprises an arm 103, depending from the bar 62 near the left-hand

end thereof, said arm 103 projecting downward through a suitable opening in the top plate and having a hook 104 formed on its lower end and projecting to the rear of the link 45, which as has been explained, is connected with the universal bar 33. Said link 45 at its upper end is formed with a rearward extending hook 105. The construction is such that if the bar 62 be rocked by depressing the stop 61 the arm 103 will be rocked toward the front of the machine, throwing the hook 104 under the hook 105 and locking the link 45 against operation, with the result that the universal bar 33 is also locked against operation. The bar 62 is rocked to operate the line lock by means of a roller 106 journaled on the forward face of the piece 52 and having its center a little above the upper surface of the stop 61 so that when, in the motion of the carriage toward the left, said roller engages said stop, it will depress the stop and rock the bar 62 in a direction the opposite of that in which it is rocked by the lug 94. It will be seen that the bell is operated by rocking the bar 62 in one direction and that the line lock is operated by rocking said bar in the opposite direction; and it will also be seen that the roller 106 does not act as a stop to arrest the motion of the carriage. In case the keys are being operated very rapidly it may happen that when the hook 104 is first moved forward by the devices that have been described, the link 45 will already be in a depressed position so that said hook will not be able to move forward under the hook 105. If the carriage were arrested by the roller 106 this would result in one letter being written on another but with the present construction no such effect will be produced as the escapement will be operated and the carriage will step as usual until the link 45 does return to normal position when the hook 104 will snap in under the hook 105 and lock the keys.

It will be perceived that it is advantageous to have the arm 103 connected with the bar 62 by a yielding connection so that said bar 62 may be rocked by the motion of the carriage, even though the arm 103 cannot move forward at that moment under the hook 105. To this end the arm 103 is not rigidly mounted on the bar 62 but said arm at its upper end is bent over the top of the bar 62, the device comprising a horizontally disposed branch 107 of the arm 103. A screw 108 passes upward loosely through a suitable hole in the bar 62 and is threaded into the part 107, and a spring 109 is coiled about said screw beneath the bar 62 and is compressed between said bar and the head of the screw. The construction is such that this spring normally holds the part 107 pressed down flat against the upper surface of the bar 62 but said part 107 and the arm 103

may be rocked on the bar 62 by slightly compressing the spring 109. The part 107 is additionally guided by a screw 110 which passes loosely through an opening in the part 107 and is threaded into the bar 62. If the bar 62 is rocked at a time when the link 42 is in a depressed position the arm 103 moves forward until the hook 104 presses against the rear face of the hook 105, the bar 62 continuing to rock against the tension of the spring 109. When the link 45 returns to normal position the hook 104 is snapped in under the hook 105 by said spring 109.

The construction of the line lock mechanism so that it does not act as a stop to arrest the carriage, has an important result in preventing irregularity in the left-hand margin of the writing. If the carriage were brought to rest by coming against a stop and the line lock did not come into play immediately, as often happens in rapid operation, the escapement tooth 12 would be released from the dogs 17 by the operation of the type bars but said tooth would not make a rotation on account of the fact that the carriage was arrested by the stop. The result would be that when the carriage was drawn back to begin a new line the tooth 12, which corresponds to an ordinary escapement wheel, would have already begun a rotation and this rotation would be completed when the carriage was restored to the control of the escapement at the beginning of the line. The carriage would thus step one space before the first letter of the line was written and this particular line would begin one letter space distance to the right of the general margin of the page. This trouble, which is present in typewriters generally as at present constructed, is obviated by dispensing with the stop. If the line lock does not come into play at the first key stroke after the stop 61 is cammed down by the roller 57, the carriage, nevertheless, continues to space until said lock does come into play and any operation of the escapement will be completed. When the present line lock is employed therefore the left-hand margin of the writing is made uniform. If, when the line lock is operated, it be desired to write a few more letters to complete a word or syllable, the line lock may be released by depressing the key 82, thus withdrawing the stop 61 from the roller 106 and permitting the spring plunger 91 to rock the bar 62 back to normal position.

Various changes may be made without departing from 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, escapement mechanism for controlling said carriage, a universal bar for said escapement mechanism, a separate universal bar, line lock mechanism for lock-

ing said separate universal bar without affecting the first named universal bar, and means on the carriage for operating said locking mechanism, said means not being adapted to arrest the carriage.

2. In a typewriting machine, the combination of a carriage, printing instrumentalities, a universal bar for said printing instrumentalities, a lock for said universal bar, means moved by the carriage at the end of a line for operating said lock, said means not being adapted for arresting the carriage, and a spring connection between said means and said locking device to enable said means to be operated when the universal bar is out of normal position.

3. In a typewriting machine, the combination of a carriage, a cam mounted on said carriage, a rocking bar mounted on the main frame and adapted to be rocked by said cam, a line lock operated by such rocking of said bar, and a yielding connection between said line lock and said bar to enable said bar to be operated in case a key is in depressed position when said bar is operated.

4. In a typewriting machine, the combination of a margin stop, a cooperating stop, a rocking bar on which said cooperating stop is slidably mounted, a key in the keyboard of the machine, and means operated by said key for sliding said stop on said rocking bar out of the path of said margin stop.

5. In a typewriting machine, the combination of a line lock device 103, a rocking device 62 on which said device 103 is mounted, a screw or pin 108 in one of said devices, and a spring 109 acting on said pin or screw and normally maintaining said devices in fixed relation.

6. In a typewriting machine, the combination of a margin stop 61, a rocking support on which said stop is slidably mounted, an arm passing through said stop in such a manner as not to interfere with the rocking of said support, and a release key connected with said arm.

7. In a typewriting machine, the combination of a carriage, an operating device 94 mounted on said carriage, a cooperating device 61 and a bell ringer operated by said device 61, said device 94 being beveled in two directions, one bevel moving the device 61 in one direction to ring the bell and the other bevel moving the device 61 in another direction at right angles to the first on the return of the carriage, to permit said device 94 to pass said device 61.

8. In a typewriting machine, the combination of a carriage, printing keys, a part that is moved at each operation of a printing key, a rocking bar, means for rocking said bar at the end of a line of writing, a hook operated by the rocking of said bar and adapted to engage said movable part to

prevent the operation of the printing keys, and a spring connection between said rocking bar and said hook, said spring being placed under tension by the rocking of said bar when said movable part is out of normal position.

9. In a typewriting machine, the combination of a carriage, printing keys, a universal bar operated by said printing keys, a link connected with and movable by said universal bar, a rocking bar, means for rock-

ing said bar at the end of a line of writing, and a hook mounted on said rocking bar and adapted to engage said link to lock said universal bar.

Signed at Syracuse, in the county of Onondaga, and State of New York, this 8th day of Oct. A. D. 1908.

ARTHUR J. BRIGGS.

Witnesses:

E. E. CORY,

H. I. SEDDON.