

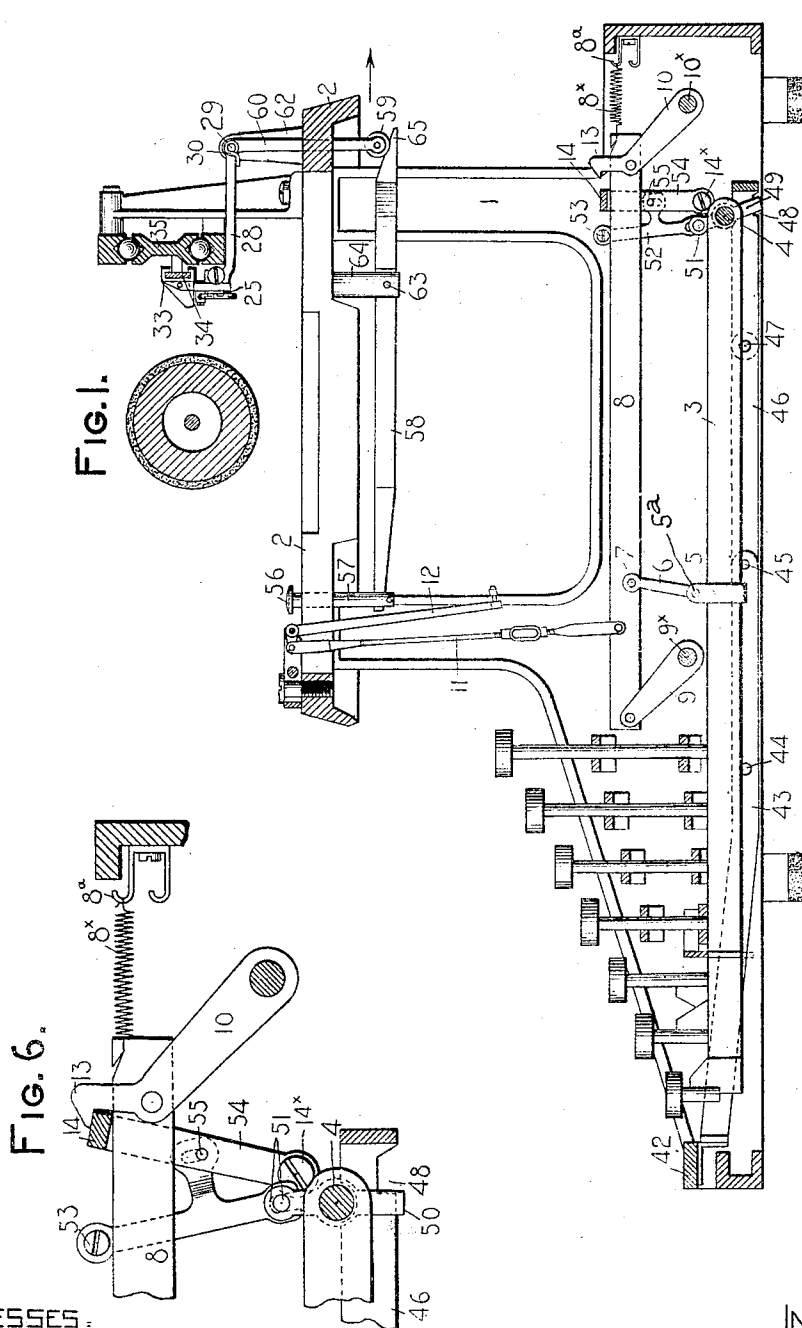
No. 767,528.

PATENTED AUG. 16, 1904.

L. H. PERRY.
TYPE WRITING MACHINE.
APPLICATION FILED SEPT. 26, 1901.

NO MODEL.

5 SHEETS—SHEET 1



WITNESSES:

K. V. Donovan.
Charles E. Smith.

INVENTOR

Lewis H. Perry
by Jacob F. Felt
HIS ATTORNEY

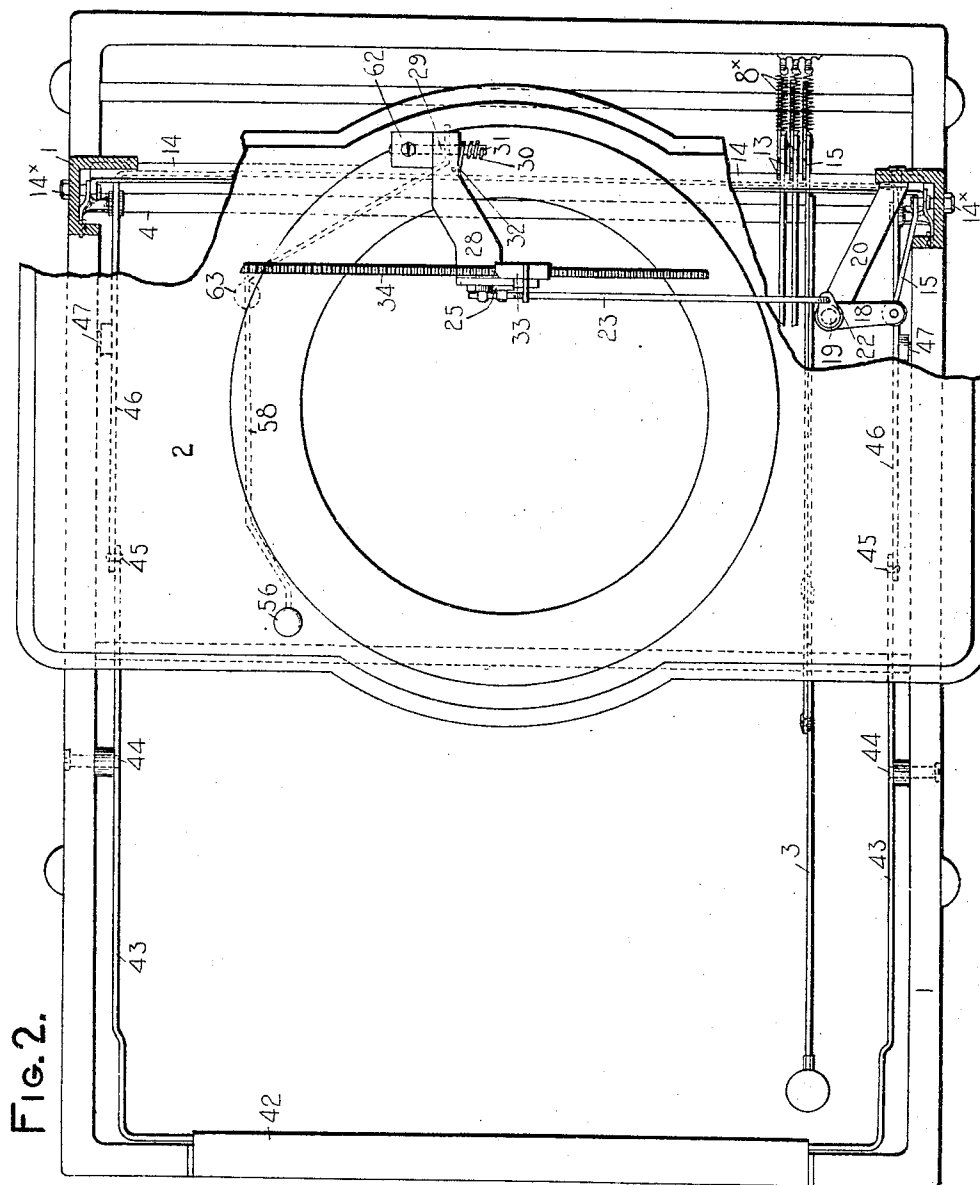
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5 SHEETS—SHEET 2.



WITNESSES:

K. V. Donovan.

Charles E. Smith

INVENTOR

Lewis H. Perry

By *Jacob Felbe*

HIS ATTORNEY

No. 767,528.

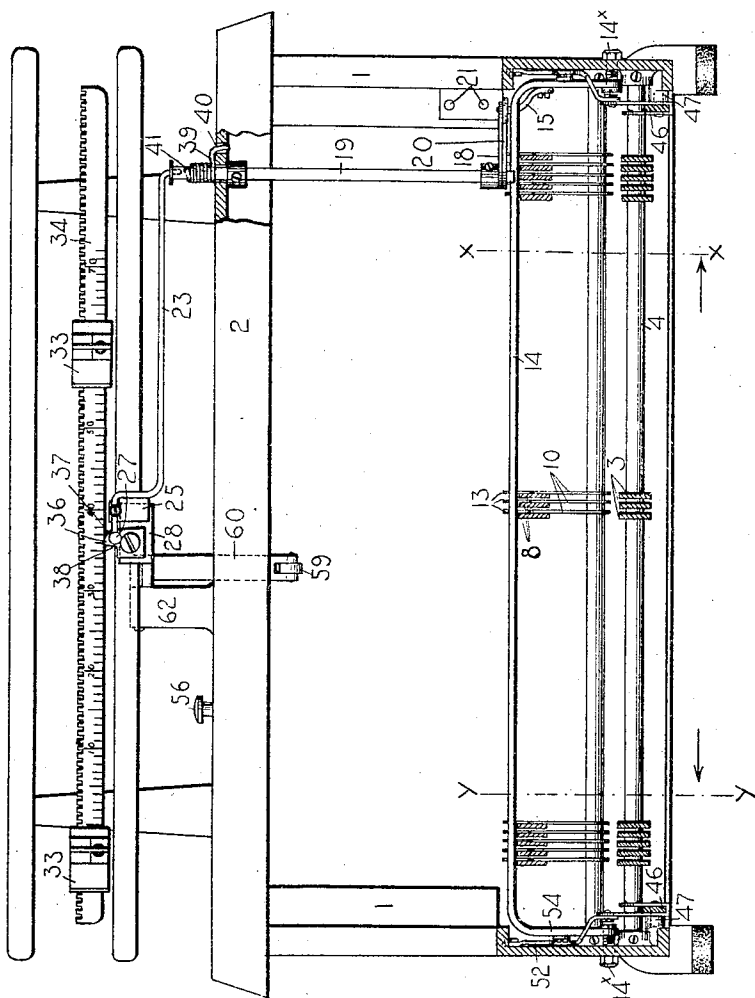
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6 SHEETS—SHEET 3.

FIG. 3.



WITNESSES.

K. V. Donovan.

Charles E. Smith

INVENTOR

Lewis H. Perry

By *Jacob F. Fabel*

HIS ATTORNEY

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5 SHEETS—SHEET 4.

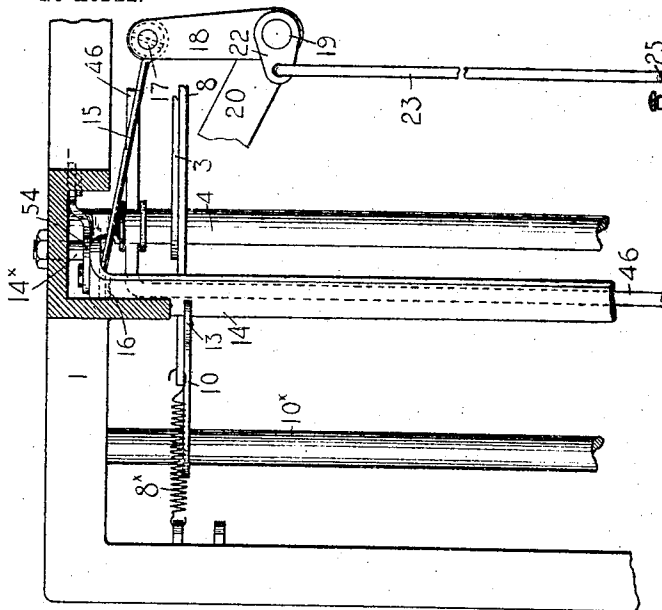


Fig. 4.

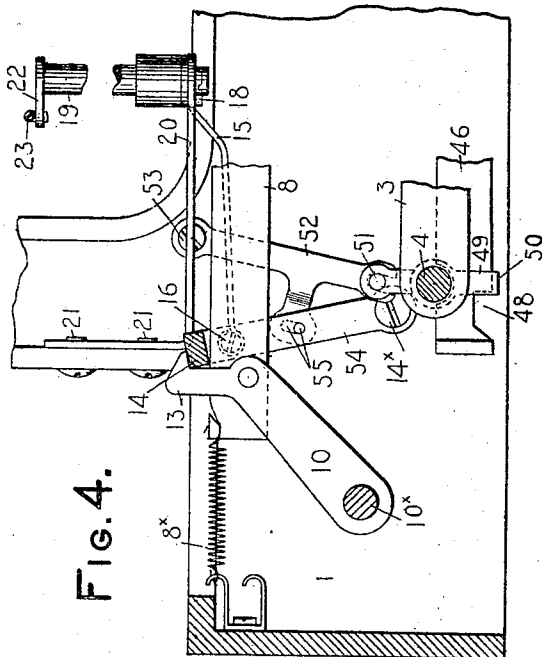


Fig. 5.

WITNESSES:

K. V. Donovan
Charles Smith

INVENTOR

Lewis H. Perry
By Jacob F. Fabel
HIS ATTORNEY

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5 SHEETS—SHEET 5.

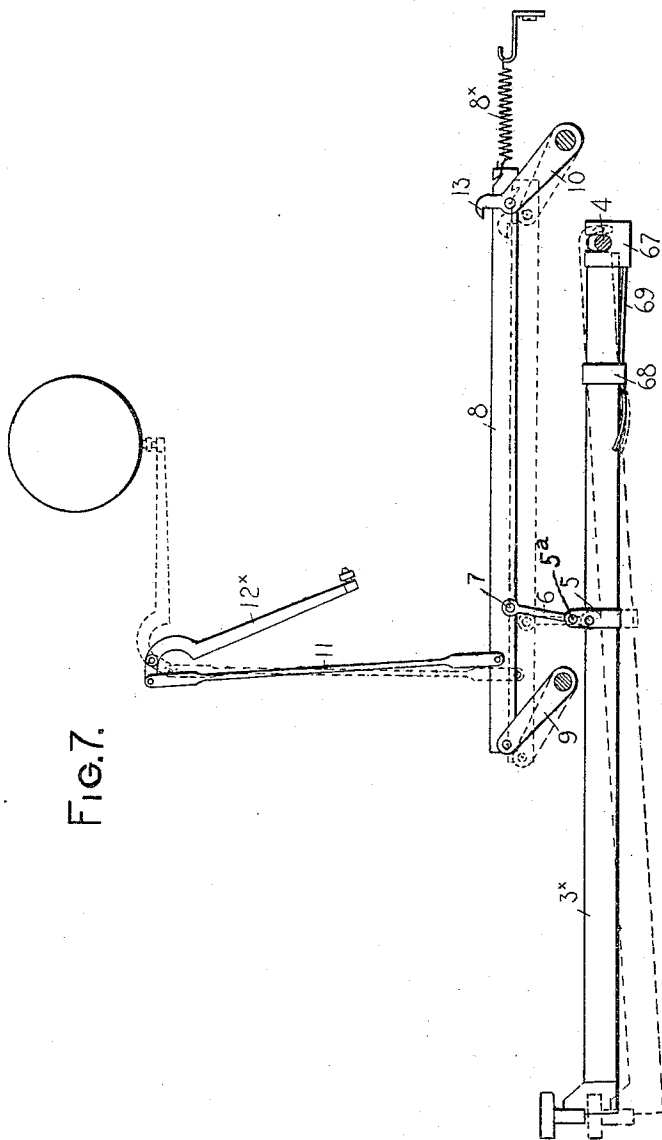


FIG. 7.

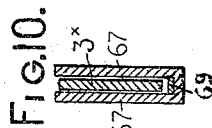


FIG. 10.

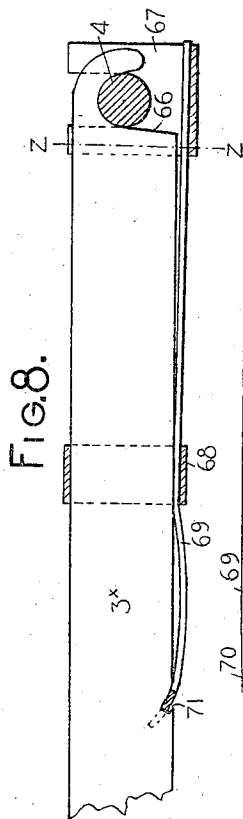


FIG. 8.

FIG. 9.

WITNESSES.

K. V. Donovan.
Charles E. Smith

INVENTOR

Lewis H. Perry
by Jacob Fiedel
HIS ATTORNEY

UNITED STATES PATENT OFFICE.

LEWIS H. PERRY, OF NEW YORK, N. Y., ASSIGNOR TO AMERICAN WRITING MACHINE COMPANY, OF ILION, NEW YORK, A CORPORATION OF NEW YORK.

TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 767,528, dated August 16, 1904.

Application filed September 26, 1901. Serial No. 76,671. (No model.)

To all whom it may concern:

Be it known that I, LEWIS H. PERRY, a citizen of the United States, and a 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 type-writing machines; and one of the objects of said invention is to provide simple and efficient line-lock mechanism therefor.

Another object of the invention is to provide means which will tend to prevent certain of the types—such, for instance, as those which have the period, comma, semicolon, &c., formed thereon—from puncturing the paper in the operation of the machine, as is ordinarily the case.

To the above and other ends, which will hereinafter appear, my invention consists in the novel arrangement and combination of parts and to the features of construction hereinafter described and claimed.

In the accompanying drawings, wherein one form or embodiment of my invention is shown and wherein like reference characters indicate like parts in the several views, Figure 1 is a vertical sectional view of a type-writing machine embodying my invention, the section being taken from front to rear of the machine. Fig. 2 is a plan view of the same. Fig. 3 is a front elevation of the machine, partly in section. Fig. 4 is an enlarged detail fragmentary sectional view illustrating a portion of the line-lock mechanism, the section being taken on the line *x x* of Fig. 3 and looking in the direction of the arrow at said line. Fig. 5 is a plan view of the same. Fig. 6 is an enlarged detail fragmentary sectional view of a portion of the line-lock mechanism, the section being taken on the line *y y* of Fig. 3 and looking in an opposite direction from the view shown in Fig. 4. Fig. 7 is a detail side view of one of the type-bar actions which carries a punctuation-mark. Fig. 8 is an enlarged detail side view of a portion of the same. Fig. 9 is a fragmentary top view

of the leaf-spring employed in this action. Fig. 10 is a transverse sectional view taken on the line *z z* of Fig. 8.

In the various figures of the drawings parts have been omitted and broken away to more clearly illustrate other parts of the structure.

I have illustrated my invention in its application to a "New Century Caligraph" machine, although it should be understood that the invention or any one or more of the features thereof may be applied to other type-writing machines, and to this end various changes may be made in the structure.

The main frame of the machine is designated as 1, and this frame is provided with the usual top plate 2, and key-levers 3 are pivoted therein, as indicated at 4. Each key-lever has a strap 5 secured thereto, which strap is pivoted at 5^a to a link 6, that in turn is pivoted at 7 to an actuating-bar 8, which has one end of a contractile restoring-spring 8^x secured thereto, the other end of said spring being attached to a fixed hook 8^a, screwed to the frame of the machine. Each actuating-bar 8 is pivoted to and supported upon parallel links 9 10, which are in turn pivoted to fixed rods 9^x and 10^x, respectively, that are secured to the frame 1, and a link 11 constitutes an intermediate connection between the actuating-bar 8 and the type bar or carrier 12. Each of the links 10 is provided with a locking hook or abutment 13, which swings with the link when a key-lever 3 is depressed, and cooperating with all of the locking hooks or abutments 13 is a locking-bar 14, which extends from side to side of the machine and may be pivoted at 14^x to the frame thereof. Upon reference to Figs. 3, 4, and 5 of the drawings it will be seen that this locking-bar 14 is connected to a link 15, as shown at 16, and the opposite end of this link is attached at 17 to a crank-arm 18, that is secured to a rock-shaft 19, which turns in a suitable bracket 20, attached to the framing of the machine at 21. This rock-shaft 19 is likewise provided with a crank-arm 22, to which is pivoted a longitudinally-extending rod 23. The height of the rock-shaft 19 is such that the upper end

thereof will extend above the top plate 2 of the machine, as represented in Fig. 3, so that the longitudinally-extending bar 23 moves above the top plate and projects through a stud 24, which is carried by a stop 25, and this stop 25 may be rigidly secured to the rod by a screw 26. The free end of the rod 23 likewise projects through a stud 27, that is carried by an arm 28, which is pivoted at 29, as shown in Figs. 1, 2, and 5. This arm 28 is normally maintained in the elevated position by a coiled spring 30, which surrounds an extended end of the pivot 29 and is secured thereto at one end, as shown at 31, and has its opposite end secured to the arm 28, as shown at 32. When the parts are in the normal position, the stop 25 extends into the path of one or more cooperating stops 33, which are adjustable along the supporting rack-bar 34, which is carried by the platen-carriage and a portion of which is represented at 35 in Fig. 1. The arm 28 may likewise be provided with an abutment or stop 36, which extends into the path of the adjustable stop or stops 33, carried by the carriage, and the right-hand side 37 of this stop 36 is beveled, so that when a stop 33 moves from right to left and is permitted to reach contact therewith it will cause the entire arm 28 to be depressed at its free end, thus enabling the carriage to pass freely from right to left beyond the stop 36. When, however, the carriage is moved in an opposite direction, the carriage-stops will contact with the straight face 38 of the relatively fixed stop 36 and will limit the movement of the carriage toward the right, thus providing a margin-stop for the machine. It should be understood that in practice the stop 33 on the right-hand side of the carriage will first cooperate with suitable trip mechanism (not shown) in order to sound the alarm, and the carriage will then be brought into contact with the line-lock stop 25, which will cause it to be moved a short distance to the left or until it reaches contact with the stop 36, mounted on the bracket 28, when the carriage will be arrested, and further movement from right to left will be prevented, all as more fully shown and described in the patent to C. D. Wallace, No. 669,293, dated March 5, 1901. This movement transmitted to the line-lock stop 25 will cause the longitudinally-extending rod 23 to be moved with it, thereby transmitting motion to the rock-shaft 19, which is moved against the tension of its spring 39, that is secured at one end to the top plate of the machine, as indicated at 40, and at its opposite end to the rock-shaft, as shown at 41. This movement of the rock-shaft around its longitudinal axis will transmit a rocking movement to the arm 18, secured thereto, and from the arm 16 to the link 15 and from thence to the locking-bar 14 to cause it to be forced toward the rear of the machine and into the position indicated in Fig. 4, wherein

it will be observed that the locking-bar is in contact with the upper sides of all of the actuating-bars 8, which afford an additional support for the locking-bar. It will be observed that when the locking-bar is in this position it is in an effective engagement with all of the locking hooks or abutments 13, thus preventing a movement of any of the type-bar actions. When the carriage is moved toward the right and so that the carriage-stop will be moved away from the line-lock stop 25, the spring 39 will be effective to restore the line-lock mechanism to its normal position and to withdraw the locking-bar from engagement with the hooks, and the various type-bar actions are free to be operated.

I have provided a separate line-lock mechanism for the spacing-key, which mechanism is, however, controlled in its movement by the line-lock mechanism for the key-levers of the type-carriers. The spacing-key is shown at 42 and is secured to key-levers 43, which are pivoted to the framing of the machine upon opposite sides at 44. The pivot of each key-lever of the spacing bar or key is intermediate of its ends, and the free end of each key-lever is pivoted at 45 to the free end of a second lever 46, which in turn is pivoted to the frame of the machine at each side thereof, as shown at 47. While I have regarded the parts 43 and 46 in the nature of separate levers, they are, in fact, projecting arms of two oppositely-disposed yokes, each member 46 of the spacing-bar being notched at 48 and adapted to cooperate with a depending yoke 49, which is pivoted at 4. The lower cross-bar 50 of this yoke only extends beneath its lever 46, a separate yoke being provided for each member 46 of the key-lever system of the spacing-bar. Each yoke 49 extends upwardly at both ends beyond its pivot and is united at each end by a pin-and-slot connection 51 to a three-arm link 52, which is in turn pivoted to the framing of the machine, as shown at 53, and the third arm of this lever 52 is united to the depending arms 54 of the locking-bar 14 by a pin-and-slot connection 55.

From the foregoing description and an examination of Fig. 1 it will be observed that when the parts are in the normal position each bar 50, which constitutes a part of what may be termed a "key-lever line-lock," is opposite the notched or indented portion 48 of its lever 46, so that the rear end of said lever may be depressed to effect a feed movement of the carriage. When, however, the locking-bar 14 has been shifted from the position represented in Fig. 1 to that shown in Fig. 6, the space-key line-locks will be moved away from the notched portions 48 in the levers 46 and will cooperate with the under face or edge of the levers to prevent a depression of the rear ends thereof. It will be seen, therefore, that when the key-lever line-lock is operated

to lock the key-levers against movement a like locking movement will be transmitted to the space-key locks to prevent a depression of the space-key and that when the key-lever line-lock is released an unlocking movement will be transmitted to the locking mechanism for the space-key.

It is desirable at times to release the keys after they have been locked by the line-lock mechanism in order to write one or more letters or words on the same line. In order to accomplish this end, I have provided a hand-operated releasing device for releasing the line-locking mechanism from engagement after it has been automatically engaged by the movement of the carriage. This hand-operated releasing mechanism comprises a key or button 56, which extends above the top plate 2 of the machine and is secured to a movable stem 57, which is connected to a lever 58, that extends from the front to the rear of the machine and is bent, as indicated at dotted lines in Fig. 2, so as to project into the path of an antifriction-roller 59, carried by a depending arm 60, that is connected to the arm 28 and moves therewith around the pivot 29, the parts being supported by the stand or bracket 62. The bar 58 is pivoted at 63 to a depending lug or projection 64, secured to the under face of the top plate, and the rear end of this bar or lever 58 is provided with an inclined or beveled face 65, which coöperates with the antifriction-roller 59 referred to. The arms 60 and 28 and the parts carried thereby are maintained in the normal position (represented in Fig. 1 of the drawings) by the spring 30, hereinbefore described, and a depression of the button 56 will cause the rear end of the bar or lever 58 to be elevated, thus moving the lower end of the arm 60 in the direction of the arrow in Fig. 1, thereby causing the forward end of the arm 28 to be depressed, so as to convey the stops 25 and 36, carried thereby, out of the path of the coöperating stops 33 on the platen-carriage. When the stops 25 and 36 have been depressed in the manner described, they no longer afford an obstruction to the free movement of the carriage, and should the stops be in engagement a depression of the line-lock stop will release the line-locking mechanism, and the parts are restored to the normal position by the spring 39, and the machine is free to be operated as before the locking engagement took place, and characters may be added to the line of print.

Another feature of my invention relates to means for preventing the types carrying the punctuation-marks and other sharp characters from puncturing the paper in the operation of the machine. This mechanism is illustrated in detail in Figs. 7, 8, 9, and 10, wherein it will be seen that the key-levers 3^x, of which one is employed for the period type-bar 12^x, for instance, are key-levers of the second order, and each consists, preferably, of a single

piece like the key-levers 3. By "single piece" I mean a key-lever which is rigid throughout its length, and with this in mind the key-levers 3^x may be made up of several pieces. Instead of being fixed to oscillate upon the pivotal rod 4, each key-lever 3^x is cut away at 66 to form an open-mouthed bearing that extends down from the pivotal rod or fixed fulcrum, so that the key-lever may ride up on its pivot 4, as illustrated in dotted lines in Fig. 7, under certain contingencies which will be described. On each side of each of these key-levers is mounted a guiding-plate 67 to prevent the key-lever from being displaced laterally and to guide it in its movement from the full-line to the dotted-line position. (Represented in Fig. 7 of the drawings.) Each of these key-levers is provided with a strap 68, which surrounds it and unites a leaf-spring 69 thereto, and this leaf-spring is secured at one end to a fixed portion of the machine, whereas its opposite end is bifurcated, as represented at 70, for coöperation with a notch 71 in the key-lever 3^x. The strap 68 may be adjusted along the key-lever 3^x to vary the tension of the spring 69 in operation and in order to regulate the "touch" to accommodate the machine to different operators. Thus if the strap is moved toward the rear of the machine it will shorten the effective portion of the spring between the strap and the fixed bearing of the spring, and a stiffer spring will be provided to accommodate an operator with a quick, sharp, and heavy stroke. A movement of the strap in the opposite direction will reverse the effect. The other elements of each of these actions for the punctuation-marks are connected in the same manner as the other type-carriers hereinbefore described. Thus a strap 5 is secured to the key-lever 3^x, and pivoted to this strap is a link 6, which in turn is pivoted at 7 to a spring-restored actuating-bar 8, that is supported upon links 9 and 10, the latter of which is provided with a locking hook or abutment 13, which is adapted to coöperate with the locking-bar 14 in the same manner as the locking-abutments on the other type actions, and between the actuating-bar 8 and the type-bar 12^x is a link 11. In operation a depression of a key-lever 3^x will cause the coöperating type-bar to be moved to the printing position. (Indicated in dotted lines in Fig. 7.) Any undue pressure or sharp stroke exerted upon the key will cause the rear end of the key-lever to be elevated and the key-lever itself to be depressed against the tension of the spring 69, and the resilient resistance thus afforded to the key will take up a portion of the force applied to the key and will enable it to be depressed in the same manner and with the same force as the other keys without, however, transmitting the force to a like extent to the type-bar, thereby preventing the type from puncturing the paper and at the same time providing a type-bar action that is

easy and elastic in operation and which will not shock or jar the fingers of the operator.

While the results generally stated above will be attained under various conditions, the operation differs somewhat in accordance with the peculiarities of touch and stroke of different operators. Thus, for instance, if the operator has a slow and long following stroke the key-lever may move around its fixed fulcrum 4 until the type-bar reaches the paper, when any further pressure on the key will cause the inner or rear end of the key-lever to ride up on the fulcrum 4 and against the tension of the spring 69. This is due to the fact that the platen acts as a positive resistance at this time to further movement of the type-bar, and hence the key-lever will turn on its pivotal connection 5^a with the link 6 of the type-action and the lever will rock away from its fixed fulcrum 4. If, on the other hand, the operator has a quick sharp touch, the tension of the spring 69 may be overcome before the resistance due to the weight of the type-bar can be overcome, in which event the key-lever will move away from its fixed fulcrum 4 at the initial portion of the stroke, and as the type-bar moves and the resistance thereof to the downward movement of the key-lever decreases the lever will be reseated on its fulcrum 4 by the spring 69.

From the foregoing it will be understood that each key-lever of the actions which carry the punctuation-marks has in a sense two fulcrum-points—viz., one, the pivot 4, which is effective during a portion of the downstroke of the key-lever and another around the pivot 5^a—and both of which may become effective during the movement of the type-bar to the printing-point, depending on the character of the operator's touch. In practice this movement of the key-lever around different fulcrum-points may not be apparent. Thus during the rapid operation of the machine and when a punctuation-key is depressed with considerable force the upward movement of the inner end of the lever and the movement of the lever around the pivot 5^a may be substantially simultaneous. In any event, however, undue pressure exerted on the finger-key will not be transmitted to the type, and puncturing is avoided and an elastic touch afforded.

While I have shown and described one form or embodiment of my invention, it should be understood that various changes in the structure may be made without departing from the spirit of my invention and that any one of the various features of invention may be used without the others.

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

1. In a type-writing machine, the combination of a carriage, type-carriers, key-levers therefor, intermediate connections between each of said key-levers and said type-carriers, said connections each including a swinging

link, a locking-abutment on said link, a locking-bar which is adapted to move into locking engagement with all of the abutments on said links, and means controlled by the carriage for moving said bar into such locking engagement to lock the type-actions out of operation.

2. In a type-writing machine, the combination of a carriage, type-carriers, key-levers therefor, intermediate connections between said key-levers and said type-carriers, said connections each including a swinging link, a locking-abutment on said link, a locking-bar which is adapted to swing into locking engagement with all of the abutments on said links, means controlled by the carriage for swinging said bar into such locking engagement to lock the type-actions out of operation, and hand-operated means for freeing the parts from locking engagement.

3. In a type-writing machine, the combination of a carriage, type-carriers, key-levers therefor, intermediate connections between said key-levers and said type-carriers, said connections each including a pair of swinging parallel links and a spring-pressed actuating-bar uniting said links, an abutment on one of each pair of said links, a locking-bar which is adapted to swing into locking engagement with all of the abutments on the links, and means controlled by the carriage for swinging said bar into such locking engagement to lock the type-actions out of operation.

4. In a type-writing machine, the combination of a carriage, type-carriers, key-levers therefor, intermediate connections between said key-levers and said type-carriers, said connections each including a pair of swinging parallel links and a spring-pressed actuating-bar uniting said links, an abutment on one of each pair of the links, a locking-bar which is adapted to swing into locking engagement with all of the abutments on the links, means controlled by the carriage for swinging said bar into such locking engagement to lock the type-actions out of operation, and hand-operated means for freeing the parts from locking engagement.

5. In a type-writing machine, the combination of a carriage, a type-carrier, a key-lever therefor, an actuating-bar connected to said key-lever, intermediate connections between said bar and the type-carrier, swinging links on which said actuating-bar moves, a hook on one of said links, a locking-bar which is adapted to swing beneath said hook, and means controlled by the carriage for swinging the locking-bar into engagement with the hook.

6. In a type-writing machine, the combination of a carriage, a type-carrier, a pivoted key-lever therefor, an actuating-bar connected to said key-lever, intermediate connections between said actuating-bar and type-carrier, swinging parallel links each pivoted at one end to the framing of the machine, and at the

other end to the actuating-bar, a locking-hook carried by one of said swinging links, a swinging locking-bar which is adapted to swing into the path of said locking-hook, a stop carried by the carriage, and means controlled by said stop and operatively connected to the locking-bar to move said bar into locking engagement with said hook when the end of the line is reached.

7. In a type-writing machine, the combination of a carriage, a type-bar, a pivoted key-lever therefor, an actuating-bar connected to said key-lever, a spring connected at one end to the actuating-bar and at the other to a fixed portion of the machine to restore the actuating-bar and the parts connected thereto to the normal position, intermediate connections between said actuating-bar and type-carrier, swinging parallel links each pivoted at one end to the framing of the machine and at the other end to the actuating-bar, a locking-hook carried by one of said swinging links, a swinging locking-bar which is adapted to swing into the path of said locking-hook, an adjustable stop carried by the carriage, and means controlled by said stop and operatively connected to the locking-bar to move said locking-bar into locking engagement when the end of a line is reached as predetermined by said adjustable stop.

8. In a type-writing machine, the combination of a carriage, a type-bar, a pivoted key-lever therefor, an actuating-bar connected to said key-lever, a spring connected to one end of the actuating-bar and at the other end to a fixed portion of the machine to restore the actuating-bar and the parts connected thereto to the normal position, intermediate connections between said actuating-bar and type-bar, swinging parallel links each pivoted at one end to the framing of the machine and at the other end to the actuating-bar, a locking-hook carried by one of said swinging links, a swinging locking-bar which is adapted to swing into the path of said locking-hook, an adjustable stop carried by the carriage, means controlled by said stop and operatively connected to the locking-bar to move said locking-bar into locking engagement when the end of a line is reached as predetermined by said adjustable stop, and hand-operated means for releasing said parts from locking engagement.

9. In a type-writing machine, the combination of a carriage, type-carriers, key-levers therefor, intermediate connections between said key-levers and said type-carriers, said connections each including a swinging link provided with an abutment, a locking-bar which is adapted to swing into locking engagement with all of the abutments on said links, an adjustable stop carried by the carriage, a movable abutment, as 25, carried by the framing of the machine, and intermediate connections between the movable abutment and the

locking-bar for moving said locking-bar into locking engagement.

10. In a type-writing machine, the combination of a carriage, type-carriers, key-levers therefor, intermediate connections between said key-levers and said type-carriers, said connections each including a swinging link, an abutment on each link, a locking-bar which is adapted to swing into locking engagement with all of the abutments on said links, means controlled by the carriage for swinging said bar into such locking engagement to lock the type-actions out of operation, a spacing-key, an independent lock for said spacing-key and means controlled by said locking-bar for moving said independent lock into and out of locking engagement.

11. In a type-writing machine, the combination of a carriage, type-carriers, key-levers therefor, intermediate connections between said key-levers and said type-carriers, said connections each including a swinging link, an abutment on said link, a locking-bar which is adapted to swing into locking engagement with all of the abutments on said links, means controlled by the carriage for swinging said bar into such locking engagement to lock the type-actions out of operation, a spacing-key, a notched key-lever therefor, an independent pivoted space-key lock, and means controlled by the locking-bar for moving the space-key lock into and out of cooperative relation with the notched portion of the space-key lever.

12. In a type-writing machine, the combination of a type-carrier, horizontally-disposed actuating-bars operatively connected to each of said carriers, a link operatively connected to each of said bars and extending above the actuating-bars, a locking-bar which is above the actuating-bars and which is adapted to engage all of the links to lock the type-carriers against movement, and means which are controlled by the carriage for moving said locking-bar into engagement.

13. In a type-writing machine, the combination of type-carriers, key-levers, a key actuated downwardly, movable actuating-bar for each type-carrier, a locking-abutment which extends above and moves with each of the said bars, a locking-bar which cooperates with all of the locking-abutments and carriage-controlled means for actuating said locking-bar.

14. In a type-writing machine, the combination of a carriage, type-carriers, key-actuated mechanism therefor, a spacing-key, line-lock mechanism controlled by said carriage for locking said type-carriers out of operation and a separate line-lock mechanism which cooperates with the space-key and is controlled by the line-lock mechanism of the type-carriers.

15. In a type-writing machine, the combination of a carriage, key-actuated mechanism therefor, a spacing-key, a line-locking device to lock the type-carriers out of action, a separate line-locking device for the spacing-key

and means controlled by the carriage for actuating both of said line-locking devices.

16. In a type-writing machine, the combination of a type-carrier, a single-piece key-lever operatively connected thereto, a fixed pivot on which the key-lever is adapted to turn, and means for permitting the key-lever to yield at its pivotal bearing during the movement of the carrier to the printing position, so that the full force of the pressure applied to the key-lever will not be transmitted to the type-carrier.

17. In a type-writing machine, the combination of a type-carrier, a single-piece key-lever operatively connected thereto, means for permitting the key-lever to yield at its bearing during a movement of the carrier to the printing position, and adjustable means for regulating the extent of yielding resistance of the key-lever.

18. In a type-writing machine, the combination of a type-carrier, a key-lever operatively connected thereto, and means for causing the key-lever to ride at its bearing and away from its fulcrum-point during the movement of the carrier to the printing position so that undue force will not be applied to the carrier.

19. In a type-writing machine, the combination of a type-carrier, a pivoted key-lever operatively connected thereto and means for permitting the key-lever to move freely away from its pivotal center when the carrier moves toward the printing position.

20. In a type-writing machine, the combination of a type-carrier, a key-lever operatively connected thereto, a fixed pivot upon which said key-lever moves and a slot-bearing formed in the key-lever for coöperation with the fixed pivot, whereby when the type-carrier moves toward the printing-point the key-lever may ride in its slotted bearing upon said pivot.

21. In a type-writing machine, the combination of a type-carrier, a key-lever operatively connected thereto, a fixed pivot upon which said key-lever moves, an open slot-bearing formed in the key-lever for coöperation with the fixed pivot, whereby when the type-carrier moves toward the printing-point the key-lever may ride at its slotted bearing upon said pivot and a spring for restoring the key to its normal position.

22. In a type-writing machine, the combination of a type-carrier, a key-lever operatively connected thereto, a fixed pivot upon which said key-lever moves, an open slot-bearing formed in the key-lever for coöperation with the fixed pivot whereby, when the type-carrier moves toward the printing-point, the key-lever may ride at its slotted bearing upon said pivot, a spring for restoring the key to its normal position, and means for adjusting the tension of said spring.

23. In a type-writing machine, the combina-

tion of a type-carrier, a key-lever operatively connected thereto, a fixed pivot upon which said key-lever moves, an open slot-bearing formed in the key-lever for coöperation with the fixed pivot, whereby when the type-carrier moves toward the printing-point the key-lever may ride at its slotted bearing upon said pivot, a leaf-spring connected at one end to a fixed portion of the machine and means for connecting the spring to the key-lever for restoring the key-lever to its normal position and for properly seating it on its pivot.

24. In a type-writing machine, the combination of a type-carrier, a key-lever operatively connected thereto, a fixed pivot upon which said key-lever moves, an open slot-bearing formed in the key-lever for coöperation with the fixed pivot, whereby when the type-carrier moves toward the printing-point the key-lever may ride at its slotted bearing upon said pivot, a leaf-spring connected at one end to a fixed portion of the machine, and means for connecting the spring to the key-lever at any one of several points in the length of said lever, for restoring the key-lever to its normal position and for properly seating it on its pivot and for providing an adjustment of the tension of said spring.

25. In a type-writing machine, the combination of a type-carrier, a key-lever operatively connected thereto, a fixed pivot upon which said key-lever moves, an open slot-bearing formed in the key-lever for coöperation with the fixed pivot, whereby when the type-carrier moves toward the printing-point the key-lever may ride at its slotted bearing upon said pivot, a leaf-spring connected at one end to a fixed portion of the machine, and a strap which connects said spring and key-lever and which is longitudinally adjustable along the key-lever to vary the tension of the spring and to restore the key-lever to its normal position and to seat it on its pivot.

26. An action for type-writing machines comprising a single-piece key-lever which has separate fulcrum-points around which it moves during a depression of the key-lever, a type-carrier, and intermediate connection between said type-carrier and key-lever, substantially as and for the purposes specified.

27. An action for type-writing machines comprising a type-carrier and an operatively-connected single-piece key-lever which has separate fulcrum-points around which it moves during a depression of the key-lever, the key-lever moving around one fulcrum-point during one portion of the movement of the carrier to the printing-point and around another fulcrum-point during another portion of the movement of the carrier toward the printing-point.

28. An action for type-writing machines comprising a single-piece key-lever which has separate fulcrum-points around which it

moves during a depression of the key-lever, one of said fulcrum-points being fixed and another resilient.

29. The combination of a type-carrier, a 5 key-lever of the second order, having a fixed fulcrum, and means for affording a free movement of the key-lever away from said fulcrum during a depression of the key-lever, so that the full force of the power applied to the 10 key-lever may not be transmitted to the type-carrier when said free movement takes place.

30. The combination of a type-carrier, a key-lever fulcrum, and a key-lever which has a bearing portion and an opening that extends 15 downwardly from the bearing portion and permits a movement of key-lever away from the fulcrum during a depression of the key-lever.

31. The combination of a type-carrier, and a key-lever which has two fulcrum-points, the 20 parts being constructed and arranged so that the key-lever will turn on one or the other of said fulcrum-points in accordance with the amount of force exerted upon said key-lever.

32. The combination of a type-carrier, a key-lever which has two fulcrum-points on 25 one of which primarily it turns during the depression of the key-lever, and means which permit the key-lever to turn on the other of said fulcrum-points after the type-carrier has been moved to the printing position. 30

33. In a type-writing machine, the combination of a type-carrier, a key-lever operatively connected thereto, means for permitting the key-lever to yield at its bearing during a movement of the carrier to printing position, 35 and means for regulating the extent of resistance of the key-lever.

Signed at borough of Manhattan, city of New York, in the county of New York and State of New York, this 10th day of September, A. D. 1901. 40

LEWIS H. PERRY.

Witnesses:

K. V. DONOVAN,
E. M. WELLS.