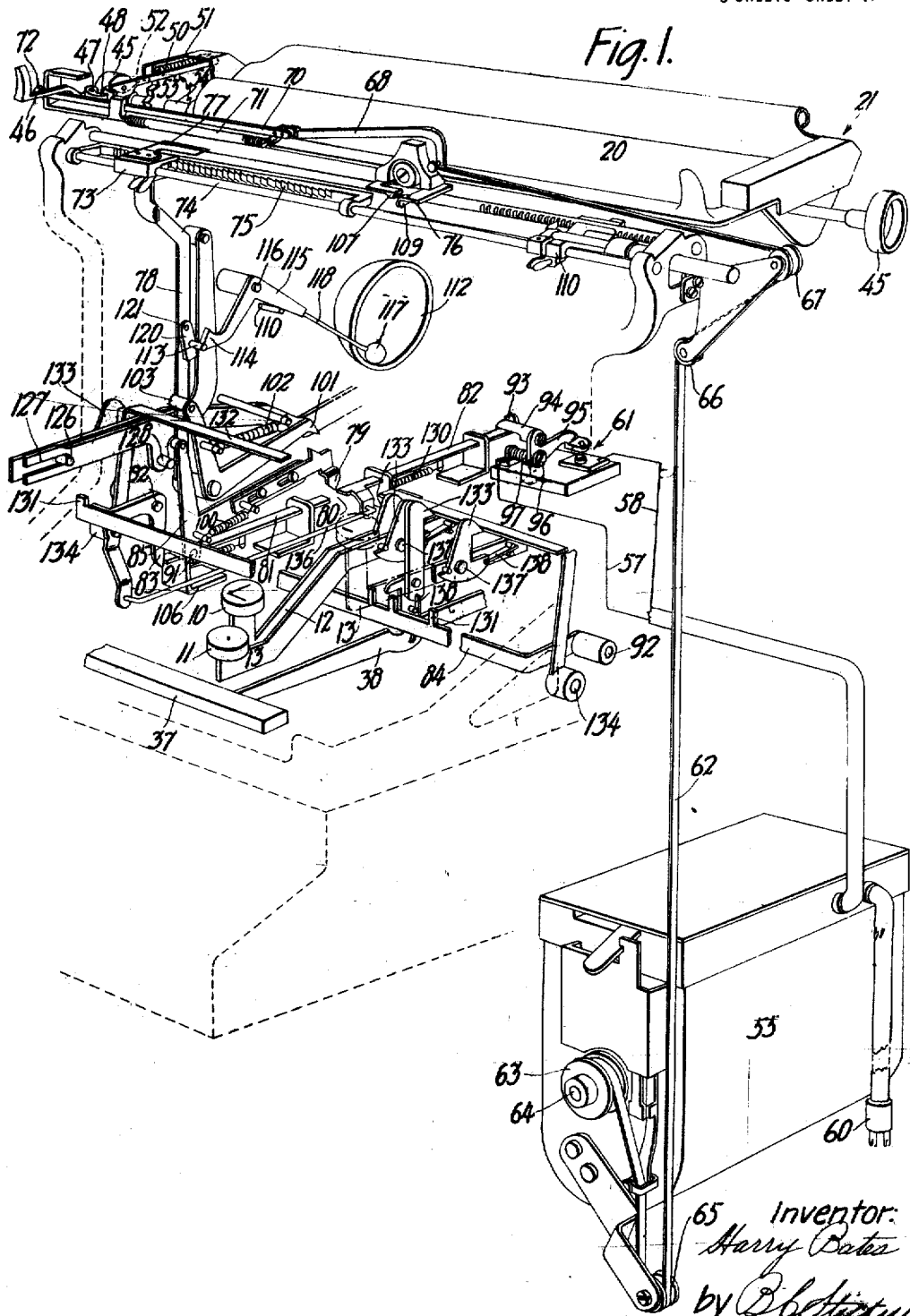


H. BATES.
 TYPEWRITING MACHINE.
 APPLICATION FILED JAN. 29, 1919.

1,368,599.

Patented Feb. 15, 1921.

3 SHEETS—SHEET 1.

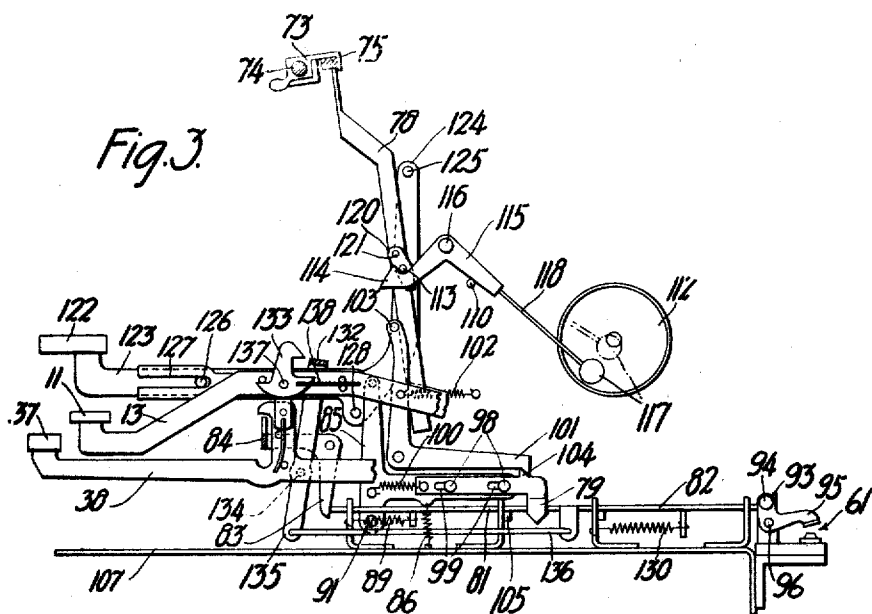
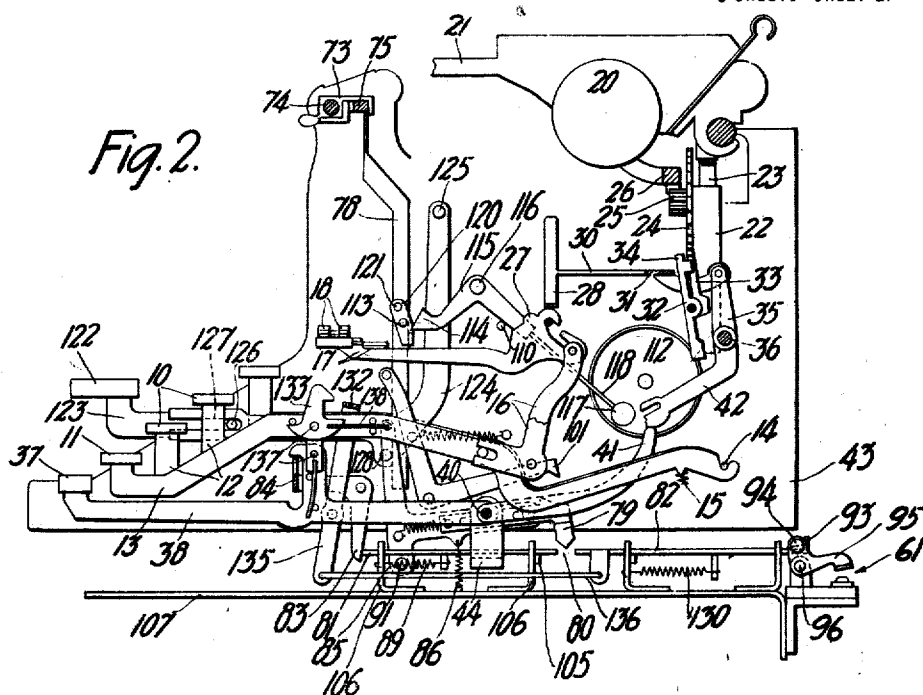


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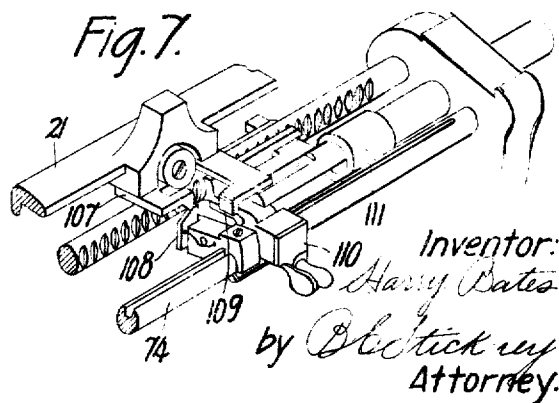
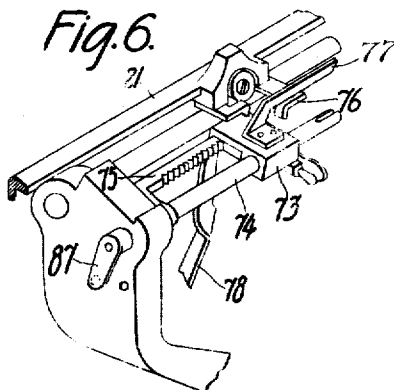
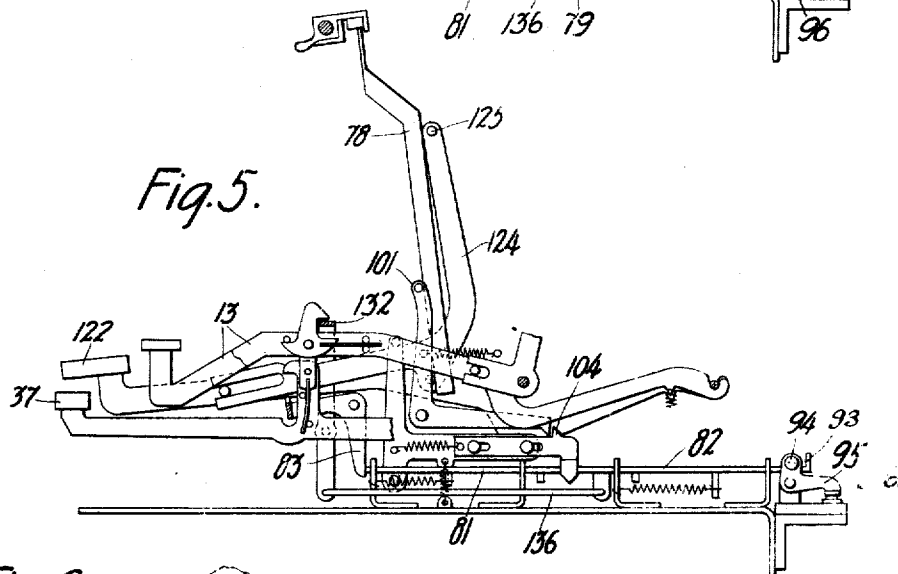
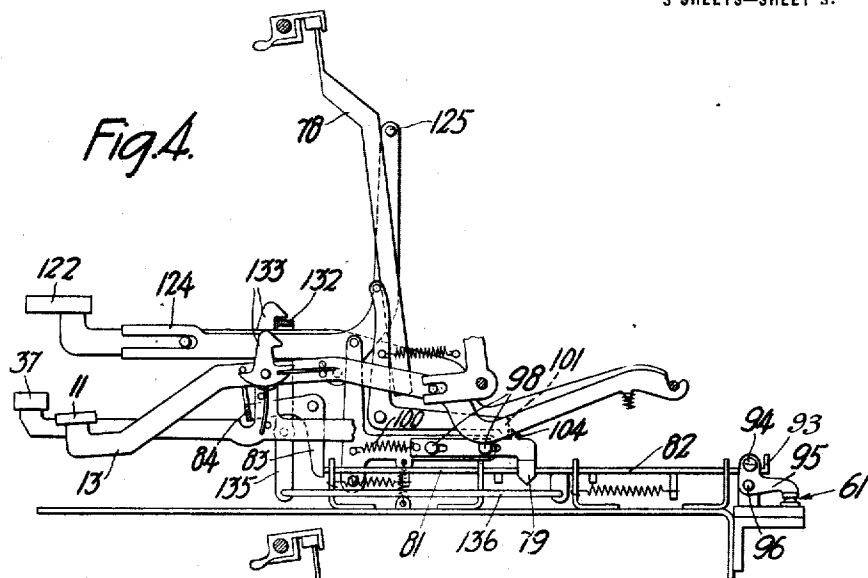
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3 SHEETS—SHEET 2.



Inventor:
Harry Bates
by *O. B. Stickney*
Attorney



UNITED STATES PATENT OFFICE.

HARRY BATES, OF NEW YORK, N. Y., ASSIGNOR TO UNDERWOOD TYPEWRITER COMPANY, OF NEW YORK, N. Y., A CORPORATION OF DELAWARE.

TYPEWRITING MACHINE.

1,368,599.

Specification of Letters Patent.

Patented Feb. 15, 1921.

Application filed January 29, 1919. Serial No. 273,708.

To all whom it may concern:

Be it known that I, HARRY BATES, a citizen of the United States, residing in New York city, in the county of New York and State of New York, have invented certain new and useful Improvements in Typewriting-Machines, of which the following is a specification.

This invention relates to carriage-return mechanisms for typewriting machines, and more particularly to automatic returns. In embodying the invention in one form, there may be used mechanism shown in the patent to Kupetz, No. 1,186,516 of June 6, 1916.

In said Kupetz patent there is provided an electric motor to line-space and return the carriage. Left and right-hand margin-gages are used to close and open a switch, respectively, in the motor circuit. When the carriage has reached the end of its leftward travel, it engages with the left-hand margin-gage and thereby closes the motor circuit, to return the carriage and line-space the platen. The carriage is arrested by the right-hand margin-gage, which opens the motor circuit.

An object of this invention is to provide means to permit the carriage to be automatically returned from any one of a plurality of letter-space positions. To this end, the left-hand margin-gage may be set to determine a carriage-return zone. The carriage is caused to set up a condition in the machine so that a motor switch may be closed upon the operation of any punctuation key (including the period and the hyphen), or of the space-bar; in other words, all keys which are apt to be used at the end of a line.

For this purpose, there is provided a special universal bar, which may be actuated by any one of the punctuation keys or the space-bar, and which, under ordinary conditions, is ineffective to close the switch; but when the carriage enters said carriage-return zone, the left-hand margin-gage is thereby actuated to operate an interponent, for coöperation with said universal bar and said switch, whereupon if any one of the punctuation keys or the space-bar is actuated, it will be effective to close the switch, thus starting the motor.

Provision is preferably made to lock said switch-actuating mechanism in its effective position during the return movement of the

carriage, thus permitting the actuated type-key to return to its normal position without interrupting the return of the carriage. This lock may be released by the right-hand margin-gage when struck by the returning carriage.

A special key may also be provided, by which the carriage may be put under the control of the motor and returned from any letter-space position.

It is further preferable to prevent the depression of all the keys (including those which may start the return of the carriage), during the return movement of the carriage. This may be done by a locking bar adapted to engage with said keys which may be connected to the switch-actuating connection; the construction being such that said bar may be operated or set only when the carriage is in the carriage-returning zone; and the keys may be automatically unlocked at the conclusion of the return stroke of the carriage.

A bell may also be provided to inform the operator when the carriage enters the carriage-return zone.

Other features and advantages will hereinafter appear.

In the accompanying drawings,

Figure 1 is a skeleton perspective view of an Underwood typewriting machine, showing the invention applied thereto, with the parts in normal positions.

Fig. 2 is a sectional-side elevation of the machine, showing the parts in normal positions and the carriage outside of the carriage-returning zone.

Fig. 3 is a similar view, showing the condition set up so that the switch may be closed by the depression of any one of the punctuation keys or the space-bar.

Fig. 4 is a similar view, showing one of the punctuation keys actuated, the switch closed, and the interponent locked in its effective position.

Fig. 5 is a view, showing the switch closed by means of the special key.

Fig. 6 is a perspective view, showing the carriage in the returning zone, and engaging with the margin-stop which has been swung thereby to render the switch connection effective.

Fig. 7 is a perspective view of the right-

hand margin-gage, and shows the means for opening the switch.

Alphabet keys 10 and punctuation keys 11, when depressed, swing key-levers 12 and 13, respectively, about their pivot 14 and against the tension of suitable return springs 15, to rock bell-cranks 16 and swing type-bars 17 about their fulcrum, to cause types 18 to print against the front side of a rotatable platen 20, supported in a carriage 21, adapted to be drawn from right to left of the machine for carriage-feeding movements during typing operations, by a spring drum 22 connected to said carriage by means of a strap 23. These movements may be controlled by escapement mechanism comprising an escapement wheel 24, having the usual one-way engaging pinion 25 connected thereto, with which a rack 26, pivoted on the carriage, meshes. As the type-bar approaches the printing point, a heel 27 thereon is adapted to thrust a curved bar 28 of a universal frame 30 rearwardly, and, by means of a cross-bar 31, move a dog rocker 32 rearwardly against a suitable return spring, not shown, to cause a loose dog 33 and a fixed dog 34 on said dog rocker 32 to reciprocate between teeth of the escapement wheel 24, thereby causing the carriage to feed a single letter-space distance. The rear end of the universal frame 30 is pivotally supported on upwardly-extending arms 35 secured to a rock-shaft 36 suitably supported in the usual escapement bracket, not shown. A space-bar 37 is provided whereby the carriage may be fed along without printing. Said space-bar extends across the machine and lies in front of the keys, and is carried by the two arms 38 near the opposite sides of the machine, said arms extending forwardly from and being secured to a shaft 40, which is rocked against a suitable return spring (not shown), during the depression of said space-bar. Said shaft has secured thereto, near the middle thereof, a rearwardly-projecting arm 41, which, when said shaft is rocked, engages with a downwardly-projecting arm 42 on the rock-shaft 36 to actuate said universal frame 30, and consequently reciprocate the dog rocker, thus causing the carriage to feed the one letter-space distance. The rock-shaft 40 is supported by the sides of the main frame 43; the left-hand end of said rock-shaft being preferably supported by a bracket 44 secured to the frame 43; said bracket being V-shaped and extending downwardly and laterally from said frame (to clear some mechanism which will hereinafter be described), and then upwardly to form a support for the rock-shaft 40.

The platen may be rotated by the usual finger-wheels 45, or by means of the usual line-space-lever 46, Fig. 1. The line-space lever may be moved rightwardly about its

pivot 47, and, by means of a toe 48 thereon, moves a line-space-slide or plunger 50 rearwardly against the tension of a suitable return spring 51. Said line-space-slide has pivotally mounted thereon a pawl 52, which is adapted to engage a toothed line-space-wheel 53 suitably secured to the platen shaft 54, and thus rotate the platen from one line-space position to another.

An electric motor 55 is provided, which is used to automatically line-space the platen 20 and return the carriage 21 to the initial printing position of a new line. The motor may be connected in a circuit comprising two wires or conductors 57 and 58 extending from a plug 60, which may be connected to a source of current. A switch 61, which is normally open, is also connected in the motor circuit, which is closed at a certain time (by means which will hereinafter be described), to start the motor and wind up a strap or band 62, one end of which is connected to a drum 63, secured to the motor shaft 64; said strap being guided over suitable rollers 65, 66 and 67, the other end thereof being connected to a link 68 adapted to draw a slide-bar 70 rightwardly against the tension of a suitable return spring 71 connected thereto. The slide-bar 70 is suitably supported and guided on the carriage 21 and has a projection or hook 72 which engages with the line-space-lever 46 to actuate the latter, and thus cause the platen to be line-spaced. The carriage is then drawn rightwardly to the beginning of a new line.

The carriage 21 may be automatically returned from any one of a plurality of letter-space positions within a zone which may previously be determined, and into which the carriage may pass. To determine this zone, a margin-gage 73, at the left-hand side of the machine, may be used, which is slidably mounted on a rock-shaft 74, and may be adjusted thereon and relatively to a rack-bar 75, rigidly secured to the rock-shaft 74; all of the writing lines terminating within said zone.

To start the return of the carriage from any position in the carriage-return zone, a condition may be set up in the machine so that if any one of the punctuation keys (including the hyphen and the period keys), is actuated, the switch 61 is closed, and thus the motor started to return the carriage. To set up this condition in the machine, the carriage may be provided with a projection 76, Figs. 1 and 6, which, as the carriage enters said zone, engages with a cam 77 secured to the left-hand margin-gage 73 to rock said gage with the shaft 74 upon which it is mounted, in a counterclockwise direction in Figs. 1 to 5 of the drawings. This causes the rack-bar 75, which is secured to said rock-shaft, to swing also, and cause the lower end of a downwardly-projecting arm

78 thereon to move and permit an inter-
 ponent 79, controlled thereby, to be intro-
 duced into a gap 80 and take up a lost-
 motion between two slide-bars 81 and 82,
 5 comprising a connection extending between
 the switch 61 and an actuating arm 83 of a
 universal bar 84 which may be actuated only
 by the punctuation keys and the space-bar
 and also a special key, which will herein-
 10 after be described, to move the slide 81 rear-
 wardly. It will be seen that the inter-
 ponent 79 is carried by a bell-crank-lever 85,
 and is normally held out of the gap between
 the two slides by said arm 78, which engages
 15 with the upper end of said lever, said lever
 being held in this position against the ten-
 sion of a spring 86, Fig. 2, by the arm 78;
 the latter being held by means of a detent
 87, Fig. 6, which is effective to hold said
 20 arm 78 in either its normal or its operated
 position. If a punctuation key is operated
 while the carriage is outside of the carriage-
 return zone, the universal bar 84 and the
 slide 81 will move idly against the tension of
 25 a return spring 88, connected to said slide;
 and consequently the switch 61 will not be
 closed. As the carriage enters the carriage-
 return zone, however, the arm 78 is actuated,
 and the interponent 79 introduced into the
 30 gap 80 by means of the spring 86 connected
 to the bell-crank 85 pivoted at 91 on the
 main frame 43.

If a punctuation key 11 is now actuated
 (the interponent 79 being introduced into
 35 the gap 80 between the two slides 81 and
 82), the universal bar 84 is swung about its
 pivots 92, and the downwardly-projecting
 arm 83 thereon moves the slide 81, the inter-
 ponent 79 and the slide 82 rearwardly, thus
 40 moving a hook or projection 93 on said slide
 82 away from a pin 94 on a bell-crank mem-
 ber 95 of the switch 61. The bell-crank
 member 95 is then moved in a clockwise
 direction about its pivot 96 by a suitable
 45 spring 97 to close the switch 61. Thus the
 motor is started and consequently the car-
 riage returned to its initial writing position.
 To permit the interponent 79 to move rear-
 wardly with the slide 81 during a switch-
 50 closing action, it is slidably mounted on the
 bell-crank 85 by headed studs 98 which fit
 in slots 99 of said interponent; a suitable
 spring 100 being provided to return said in-
 terponent 79 on said bell-crank 85.

55 It is desirable to keep the switch closed,
 so as to keep the motor running until the
 carriage is restored to its initial writing
 position without any attention on the part
 of the operator. To do this, means is pro-
 60 vided whereby the switch may be kept closed
 and permit the actuated key to return to
 normal position. For this purpose, the in-
 terponent 79 is preferably locked in its actu-
 ated position, Fig. 4, by means of a pawl
 65 101, in the form of a bell-crank, which is

normally ineffective, Fig. 2, and is rendered
 effective by a spring 102 when the arm 78
 is swung to its effective position; engage-
 ment being had between the arm 78 and the
 bell-crank-pawl 101 by a pin 103 on said 70
 pawl. Thus, it will be seen that as the in-
 terponent 79 is moved rearwardly by the
 actuation of a punctuation key, as hereto-
 fore described, a tooth 104 thereon snaps in
 back of the pawl 101 to retain the slide and 75
 the switch in their actuated positions, Fig.
 4, thus permitting the punctuation key, the
 universal bar 84 and the slide 81 to be re-
 turned to their normal positions where the
 slide 81 may be arrested by a suitable stop 80
 105 engaging with one of a pair of guide-
 brackets 106 provided for said slide; said
 brackets being secured to a suitable base
 plate 107. It will be remembered that the
 actuating arm 78 is held in its actuated posi- 85
 tion, while the carriage is returning, by the
 detent 87.

To stop the motor when the carriage has
 been fully restored to its initial writing posi-
 tion, the switch 61 is automatically opened. 90
 This is preferably done by the carriage
 which has a projection 109 thereon adapted
 to engage a cam member 108 adjustable with
 a right-hand margin-gage 110, Figs. 1 and 7,
 (as in the Kupetz patent, herein mentioned), 95
 and swingable relatively thereto to rock the
 shaft 74 in a clockwise direction, at Figs.
 1 to 5, and swing the actuating arm 78
 therewith to its normal position. The first 100
 part of the return movement of this arm
 is effective to swing the pawl 101 out of en-
 gagement with the interponent 79, thus per-
 mitting the latter to be drawn by the spring
 100 to its normal position on the bell-crank 105
 85. The arm 78 then engages with the bell-
 crank 85 to swing it back to its normal posi-
 tion against the tension of the spring 86 to
 withdraw the interponent 79 from the gap
 80, thus rendering the switch-actuating
 means (comprising the slides 81 and 82) in- 110
 effective.

The right-hand margin-gage 110 is ad-
 justable lengthwise of the carriage, so that
 it may be set according to the width of mar-
 gin desired at the left-hand side of the 115
 work-sheet, thereby changing the position of
 the point at which the switch is opened, in
 the return movement of the carriage, to
 stop the motor.

A shock-absorber or buffer 111, which 120
 may be like that shown in said patent to
 Kupetz, is carried by the margin-gage or
 stop 110 and adjustable therewith, and
 against this a lip 109^a on the projection 78
 on the carriage strikes to arrest the latter 125
 in its initial writing position.

Means is provided to inform the opera-
 tor when the carriage enters the carriage-
 returning zone. This means preferably
 comprises a bell 112 which may be sounded 130

when the carriage enters said zone. For this purpose, the actuating arm 78 has a pin 113, projecting laterally therefrom, which engages with a cam 114 on one end of a bell-crank member 115 to swing the latter about its pivot 116 to raise a hammer 117. When the high point of the cam 114 is passed, the bell-crank 115 drops back against the stop 119, against which it normally rests, and, due to the yielding of the arm 118, by which the hammer 117 is mounted on the bell-crank, the hammer strikes the bell 112 a glancing blow. If desired a spring may be used to assist the return of the bell-crank 115. The pin 113 is secured to a member 120, pivoted at 121 on said actuating arm 78, so that it may move idly over the cam 114 on the return stroke of the actuating arm 78.

It is sometimes desirable to return the carriage, by said motor, from letter space positions outside of the carriage-returning zone. To do this, there is provided a special carriage-return key 122, which, when actuated, swings its lever 123 about the fulcrum rod 14 to swing an L-shaped lever 124 about its pivot 125 by means of a pin 126 projecting from the key-lever 123 into a slot 127 formed in the free end of said L-shaped lever 124. During this movement of said L-shaped lever 124, a pin 128 thereon engages with the actuating arm 78 to swing the latter to its effective position (Fig. 5), thus rendering the interponent 79 and the locking the pawl 101 effective, as heretofore described. After the interponent 79 and the locking pawl 101 have been rendered effective, the key-lever 123 engages the universal bar 84 to actuate the latter, and thus moves the slides 81 and 82 to close the switch 61, by permitting the bell-crank 95 of said switch to be swung to its effective position by the spring 97. This starts the motor and the carriage 21 is returned to the initial writing position. When this position is reached, the cam 108 on the right-hand margin-gage 110 is again actuated to restore the actuating arm 78, and consequently the locking pawl 101 and the interponent 79 to their normal ineffective positions, whereupon a return spring 130 becomes effective to restore the slide 82, and consequently swing the bell-crank 95 and open the switch 61.

The universal bar 84, which is actuated to close the switch 61, is so constructed that it can be actuated only by the punctuation keys 11, the space-bar 37 and the special key 122. For this purpose, the universal bar 84 is provided with upstanding projections 131, so that it may be engaged by the respective key-levers; the body portion of said universal bar being low enough to clear the alphabet key-levers 12 in their actuated positions. The punctuation keys 11, the space-bar 37 and the carriage-return key 122 have

different extents of movement. Provision is made, however, by having different extents of lost-motion between the keys and the universal bar 84, to move the universal bar through the same distance by any one of said keys.

It is desirable to prevent the depression of any key while the carriage is being returned to its initial writing position by the motor. This may be done by a locking bar 132 extending crosswise of all of the key-levers, so that it may be thrown into effective locking relation with hooks 133 on said key-levers, Figs. 1, 2 and 4, when one of the punctuation keys 11, the space-bar 37 or the special key 122 is actuated. For this purpose, the locking bar may be pivoted at 134, so that it may be swung by means of a downwardly-projecting arm 135, connected by a link 136 to the slide 82 which controls the switch 61. It will be seen that as the slide 82 moves to close the switch, the link 136 is drawn rearwardly to swing the locking bar 132 to its locking position under the hooks 133, Fig. 4.

The hooks 133 on the alphabet key-levers 12 are integral. The hooks 133 on the punctuation keys, the space-bar and the special key, however, are pivotally mounted thereon at 137, and are held by suitable springs 138, so that they may yield and permit the key-levers to be returned to their normal positions when the locking bar is effective. It will be seen that with this construction, when the actuated key has returned to its normal position, it also becomes locked by said locking bar, and is thus prevented from being actuated until the carriage has been restored to its initial writing position and the switch opened.

Variations may be resorted to within the scope of the invention, and portions of the improvements may be used without others.

Having thus described my invention, I claim:

1. In a typewriting machine, the combination of a carriage, a plurality of keys, a device adapted to select a zone comprising a plurality of letter-space positions, and means ineffective at the operation of certain of said keys, adapted to automatically return said carriage from a plurality of letter-space positions within said zone at the operation of any other of said keys.

2. In a typewriting machine, the combination of a carriage, type-keys, a normally ineffective universal bar associated with said type-keys, means to render said universal bar effective, and means, under the control of said universal bar, to return said carriage.

3. In a typewriting machine, the combination of a carriage adapted to enter a zone comprising a plurality of letter-space positions, a plurality of type-keys, a space bar, 136

and means to automatically effect the return of said carriage from a plurality of letter-space positions within said zone by the actuation of any one of said type-keys or said

5 space-bar.

4. In a typewriting machine, the combination with a carriage comprising a platen, of two propelling devices, one to propel said carriage in a letter-feed direction, and the other to propel said carriage in a reverse letter-feed direction, a type-key to permit said carriage to be moved by the first-mentioned propelling device, and means settable, at a predetermined point in the travel of said carriage, to render said key effective to permit said carriage to be moved by the second-mentioned propelling device, from any letter-space position following the predetermined point in the travel of said carriage.

5. In a typewriting machine, the combination with a carriage comprising a platen, of a spring drum to propel said carriage in a letter-feed direction, an electric motor to propel said carriage in a reverse letter-feed direction, type-keys and a space-bar to permit said carriage to be moved by the spring drum, and means settable by said carriage to render the type-keys and the space-bar effective to permit said carriage to be moved in a reverse letter-feed direction by the electric motor, from any letter-space position after the settable means has been engaged by said carriage.

6. In a typewriting machine, the combination with a carriage comprising a platen, of a key, a device to move said carriage in a letter-feed direction by the actuation of said key, said carriage being adapted to enter a zone comprising a plurality of letter-spaces, and a device which may be rendered effective by the actuation of said key, when the carriage is in said zone, to return said carriage to its initial writing position from any letter-space position within said zone.

7. In a typewriting machine, the combination with a carriage comprising a platen, of two propelling devices, one to propel said carriage in a letter-feed direction, and the other to propel said carriage in a reverse letter-feed direction, a punctuation key and a space-bar to permit said carriage to be moved in a letter-feed direction, a normally ineffective connection, and means to render said connection effective to permit the carriage to be moved by the second-mentioned propelling device by the actuation of said punctuation key or said space-bar.

8. In a typewriting machine, the combination of a carriage adapted to enter a zone comprising a plurality of letter-space positions, a plurality of punctuation type-keys, and means automatically settable, so that when a punctuation key is actuated, said

carriage may be automatically returned from any one of a plurality of letter-space positions within said zone.

9. In a typewriting machine, the combination of a carriage comprising a platen, carriage-returning means, key-levers, a starting connection for said returning means, a universal bar engageable by said key-levers, said connection being normally ineffective, and means controlled by said carriage to render said connection effective, so that it may be actuated by any one of said key-levers to start said carriage-returning means.

10. In a typewriting machine, the combination of a carriage comprising a platen, carriage-returning means, keys normally ineffective, starting means for said returning means, said starting means being actuable by said keys, and means controlled by said carriage to render said starting means effective, so that it may be actuated by any one of said keys to start said carriage-returning means.

11. In a typewriting machine, the combination with a carriage comprising a platen, of two propelling devices, one to propel said carriage in a letter-feed direction, and the other to propel said carriage in a reverse letter-feed direction, alphabet keys, and punctuation keys, all of said keys being effective to permit said carriage to be moved by said first-mentioned propelling device, said carriage being effective to establish a connection when so moved, and said punctuation keys being effective after said connection is established, to permit said carriage to be moved from any one of a plurality of letter-space positions by the second-mentioned propelling device.

12. In a typewriting machine, the combination with a carriage comprising a platen, of means to feed the carriage in a letter-feed direction, a motor to return said carriage, punctuation keys, normally ineffective actuating means actuable by said keys to start said motor to return said carriage, and means to render said second-mentioned means effective at a predetermined position in the travel of said carriage so that said motor may be rendered effective by said punctuation keys.

13. In a typewriting machine, the combination with a carriage comprising a platen, of means to feed said carriage in a letter-feed direction, a motor to return said carriage, keys, means actuable by said keys to start said motor, and means to render said last-mentioned means effective; and when said carriage passes a predetermined point in its travel, so that it may be returned from any letter-space position beyond said point.

14. In a typewriting machine, the combination with a carriage comprising a platen, of means to feed said carriage in a letter-

feed direction, an electric motor to return said carriage, a switch for said motor, keys, means actuated by said keys to actuate said switch, and means actuatable by said carriage to render effective the means actuatable by said keys, so that the switch may be closed by said keys.

15. In a typewriting machine, the combination of a carriage, comprising a platen, type-keys, a motor to return said carriage to the beginning of a new line, a switch for said motor, and means settable by said carriage to render said switch under the control of said keys.

16. In a typewriting machine, the combination of a carriage comprising a platen, a motor to return said carriage, keys, normally ineffective starting means, a switch for said motor, a connection extending from said keys, said connection being normally ineffective, an interponent, and means controlled by said carriage to introduce said interponent into said connection to render said starting means effective, so that it may be actuated by any one of said keys to close said switch and start said motor.

17. In a typewriting machine, the combination with a carriage comprising a platen, of a spring drum to propel said carriage in a letter-feed direction, an electric motor to propel said carriage in a reverse letter-feed direction, a switch for the electric motor, and a type-key to permit said carriage to be moved by said spring drum, said carriage, when so moved, being effective when it has reached a predetermined point in its travel, to establish a connection by which said switch may be closed by the actuation of said key to move the carriage in a reverse letter-feed direction by said motor.

18. In a typewriting machine, the combination with a carriage comprising a platen, of means to feed the carriage in a letter-feed direction, an electric motor to return said carriage, keys, a switch for said motor, a universal bar actuatable by said keys, connecting means between said universal bar and said switch to close the latter to start the motor, and holding means for said switch.

19. In a typewriting machine, the combination with a carriage comprising a platen, of means to feed the carriage in a letter-feed direction, an electric motor to return said carriage, keys, a switch for said motor, a universal bar actuatable by said keys, connecting means between said universal bar and said switch to close the latter to start the motor, holding means for said switch, and means to release said holding means.

20. In a typewriting machine, the combination with a carriage comprising a platen, of means to feed said carriage in a letter-feed direction, a motor to return said carriage, a switch, keys to close said switch to

start said motor, and means to keep said switch closed until the carriage has been returned to its initial writing position by said motor, said last-mentioned means being controlled by said carriage.

21. In a typewriting machine, the combination with a carriage comprising a platen, of a spring drum to propel said carriage in a letter-feed direction, an electric motor to propel said carriage in a reverse letter-feed direction, a switch for the electric motor, a type-key to permit said carriage to be moved by said spring drum, said carriage, when so moved, being effective, when it has reached a predetermined point in its travel, to establish a connection by which said switch may be closed, upon the actuation of said key, to move the carriage in a reverse letter-feed direction by said motor, means to keep the switch closed when the carriage is being moved by said electric motor, and means to open said switch at a predetermined point in the reverse letter-feed travel of said carriage.

22. In a typewriting machine, the combination of a carriage, an adjustable member to determine a zone into which said carriage may pass, said zone comprising a plurality of letter-space positions, said adjustable member being actuatable by said carriage, means settable by the actuation of said adjustable member, and a plurality of keys adapted to actuate said settable means, to automatically return said carriage from said zone.

23. In a typewriting machine, the combination of a carriage, a margin-gage to determine a zone into which said carriage may pass, said zone comprising a plurality of letter-space positions, said margin-gage being actuatable by said carriage, a plurality of type-keys, a motor, and means to automatically start said motor to return said carriage from a plurality of letter-space positions within said zone by the depression of any one of said type-keys.

24. In a typewriting machine, the combination with a carriage comprising a platen, of a margin-gage adapted to be engaged by said carriage, a motor to return said carriage, a switch for said motor, type-keys, a universal bar for said type-keys, a connection extending between said universal bar and said switch, said connection being normally effective, and means to render said connection effective when the carriage engages said margin-gage, said switch being adapted to close when said connection is actuated by one of said keys.

25. In a typewriting machine, the combination with a carriage comprising a platen, of a left-hand margin-gage adapted to be engaged by said carriage, a motor to return said carriage, a switch for said motor, punctuation type-keys, a universal bar for

said type-keys, a connection extending between said universal bar and said switch, said connection being normally ineffective, means to render said connection effective when the carriage engages the left-hand margin-gage, so that said switch may be closed when said connection is actuated by one of said keys, and a right-hand margin-gage adapted to be engaged by said carriage to open said switch when said carriage reaches its initial writing position.

26. In a typewriting machine, the combination with a carriage comprising a platen, of two propelling devices, one to propel said carriage in a letter-feed direction, and the other to propel said carriage in a reverse letter-feed direction, a punctuation key and a space-bar each adapted to permit said carriage to be moved by either propelling device, and a separate key to permit the carriage to be returned from any letter-space position to its initial writing position.

27. In a typewriting machine, the combination of a carriage comprising a platen, punctuation type-keys, a motor to return said carriage to the beginning of a new line, a switch for said motor, means settable by said carriage to render said switch under the control of said keys, and a separate key to close said switch to return said carriage.

28. In a typewriting machine, the combination with a carriage comprising a platen, of means to feed the carriage in a letter-feed direction, a motor to return said carriage, punctuation keys, a space-bar, a connection comprising normally ineffective actuating means actuable by said keys and said space-bar, to start said motor to return said carriage, means controlled by said carriage, to render said second-mentioned means effective at a predetermined position in the travel of said carriage, and a special key to permit the carriage to be returned from any letter-space position, said key being effective during the initial part of its movement to render said connection effective.

29. In a typewriting machine, the combination with a carriage and a platen thereon, of line-spacing means for the platen, a plurality of type-keys, means for selecting a zone in the carriage travel, and means ineffective at the operation of certain of said keys, but effective at the operation of any of the others of said keys, to actuate said line-spacing means when the carriage is in said zone.

30. In a typewriting machine, the combination with a carriage comprising a platen, of a spring drum to propel said carriage in a letter-feed direction, an electric motor to propel said carriage in a reverse letter-feed direction, a switch for the electric motor, keys including a type-key to permit said carriage to be moved by said spring drum, said carriage, when so moved, being effective,

when it has reached a predetermined point in its travel, to establish a connection by which said switch may be closed by the actuation of said key, to move the carriage in a reverse letter-feed direction by said motor, and a key to effect the return of said carriage from any letter-space position, said key being effective to establish said connection and actuate it to start said motor.

31. In a typewriting machine, the combination with a carriage comprising a platen, of means to feed said carriage in a letter-feed direction, a motor to return said carriage, type-keys including a plurality of keys always ineffective to start the motor and a key normally ineffective to start the motor but adapted to start said motor to return the carriage from any letter-space position in a limited zone of carriage travel, and means actuable by said latter key to lock all of the keys against actuation while the carriage is being returned.

32. In a typewriting machine, the combination with a carriage comprising a platen, of two propelling devices, one to propel said carriage in a letter-feed direction, and the other to propel said carriage in a reverse letter-feed direction, type-keys adapted to cause said carriage to be moved by either propelling device, type-keys ineffective to reverse the carriage, and means to lock all of said keys when the carriage is being moved by said second-mentioned propelling device.

33. In a typewriting machine, the combination with a carriage comprising a platen, of means to feed said carriage in a letter-feed direction, a motor to return said carriage, type-keys adapted to feed the carriage into a selected zone but ineffective on the motor, other type-keys adapted to operate the motor in said zone, and means to render all of said keys ineffective while said carriage is being returned by said motor.

34. In a typewriting machine, the combination with a carriage and a platen thereon, of line-spacing means for said platen, punctuation type-keys, a motor, and means whereby said punctuation type-keys may be made effective to start said motor to actuate the line-spacing means and return said carriage.

35. In a typewriting machine, the combination with a carriage comprising a platen, of means to feed said carriage in a letter-feed direction, an electric motor to return said carriage, a switch for said motor, keys, a normally idle universal bar for said keys, means between said keys and said switch through which the switch may be actuated by said bar, and means to lock said keys while said carriage is being returned by said motor, said key-locking means being connected to operate with the switch-actuating means.

36. In a typewriting machine, the combination with a carriage comprising a platen, of means to feed the carriage in a letter-feed direction, an electric motor to return said carriage, keys, a switch for said motor, a universal bar actuable by said keys, means comprising a slide-bar between said universal bar and said switch to close the latter to start the motor, and locking means for said keys, said locking means being connected to said slide-bar to lock said keys while said switch is closed.

37. In a typewriting machine, the combination with a carriage comprising a platen, of means to feed said carriage in a letter-feed direction, a motor to return said carriage, alphabet keys ineffective on the motor, punctuation keys and a space-bar adapted to make the motor effective in a predetermined zone, a special key to start said motor, and means to render all of said alphabet and punctuation keys and said space-bar ineffective while said carriage is being returned by said motor.

38. In a typewriting machine, the combination with a carriage comprising a platen, of means to feed said carriage in a letter-feed direction, keys, a motor to return said carriage, a motor-control, comprising a switch and a switch-controlling element, said controlling element being actuable by said keys to close said switch, and means to lock said keys while said carriage is being returned by said motor, said key-locking means being connected to said switch-controlling element.

39. In a typewriting machine, the combination with a carriage comprising a platen, of a left-hand margin-gage adapted to be engaged by said carriage, a motor to return said carriage, a switch for said motor, punctuation type-keys, a universal bar for said type-keys, a connection extending between said universal bar and said switch, said connection being normally ineffective, means to render said connection effective when the carriage engages the left-hand margin-gage, so that said switch may be closed when said connection is actuated by one of said keys, to start the motor and return said carriage, means to lock said keys when the carriage is being returned by said motor, and a right-hand margin-gage adapted to be engaged by said carriage to open said switch and unlock said keys when said carriage reaches its initial starting position.

40. In a typewriting machine, the combination with a carriage comprising a platen, of means to feed said carriage in a letter-feed direction, carriage-return means including a motor for actuating the same, type-keys, means whereby certain of said type-keys may be made effective to start said motor, means whereby all of said keys may be locked while the carriage is being

returned by said motor, and means to hold said locking means effective while the carriage is being returned to its initial writing position by said motor.

41. In a typewriting machine, the combination of a carriage adapted to enter a zone comprising a plurality of letter-space positions, a plurality of punctuation type-keys, means automatically settable by said carriage, so that when a punctuation key is actuated, said carriage may be automatically returned from any one of a plurality of letter-space positions within said zone, at the depression of any one of said type-keys, a separate key by which said carriage may be returned from any letter-space position, and means to prevent the depression of any one of said keys during the return movement of said carriage.

42. In a typewriting machine, the combination with a carriage comprising a platen, of means to feed said carriage in a letter-feed direction, carriage-return means including a motor to actuate the same, type-keys, means whereby certain of said type-keys may be rendered effective to start said motor, means to lock all of said keys while the carriage is being returned by said motor, means to hold said locking means effective while the carriage is being returned to its initial writing position by said motor, and means to release said holding means.

43. In a typewriting machine, the combination with a carriage comprising a platen, of means to feed said carriage in a letter-feed direction, carriage-return means including a motor to actuate the same, type-keys, means whereby certain of said type-keys may be rendered effective to start said motor, means to lock all of said keys while the carriage is being returned by said motor, means to hold said locking means effective while the carriage is being returned to its initial writing position by said motor, and means controlled by the carriage to release said holding means when said carriage reaches its initial writing position.

44. In a typewriting machine, the combination with a carriage comprising a platen, of means to feed said carriage in a letter-feed direction, carriage-return means including a motor to actuate the same, a switch, type-keys, means whereby certain of said type-keys may be rendered effective to close said switch to start said motor, means to lock all of said keys while the carriage is being returned by said motor, and means to hold said key-locking means effective and said switch closed while the carriage is being returned to its initial writing position by said motor.

45. In a typewriting machine, the combination with a carriage comprising a

platen, of means to feed said carriage in a letter-feed direction, carriage-return means including a motor to actuate the same, a switch, type-keys, means whereby certain
 5 of said type-keys may be rendered effective to close said switch to start said motor, means to lock all of said keys when the carriage is being returned by said motor, means to hold said key-locking means effective and said switch closed while the carriage is being returned to its initial writing position by said motor, and means to release said key-locking means and said switch when the carriage reaches its initial
 10 writing position.

46. In a typewriting machine, the combination of a carriage adapted to enter a zone comprising a plurality of letter-space positions, means to inform the operator
 20 when the carriage passes into said zone, a plurality of punctuation type-keys, and means settable when the carriage enters said zone, so that when a punctuation key is actuated, said carriage may be returned from any one of a plurality of letter-space positions within said zone.

47. In a typewriting machine, the combination of a carriage adapted to enter a zone comprising a plurality of letter-space positions, means to inform the operator
 30 when the carriage passes into said zone, type-keys ineffective to return the carriage, another type-key, and means to automatically return said carriage from a plurality of letter-space positions within said zone at the depression of said latter key.

48. In a typewriting machine, the combination with a carriage comprising a platen, of two propelling devices, one to
 40 propel said carriage in a letter-feed direction, and the other to propel said carriage in a reverse letter-feed direction, keys to permit said carriage to move in a letter-feed direction, said carriage being effective, when it has reached a predetermined point in its travel, to establish a connection through the intermediary of which said keys may permit said carriage to be moved by said second-mentioned propelling device, and means to inform the operator when the carriage passes said predetermined point.

49. In a typewriting machine, the combination with a carriage comprising a platen, of propelling means to move the carriage in a letter-feed direction, propelling means to move said carriage in a reverse letter-feed direction, a key to permit said carriage to move in the letter-feed direction, an adjustable device engageable by said carriage at a predetermined point in its letter-feed travel, means settable by said device to establish a connection which may be operated by said key, to render the second-mentioned propelling means effective to
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move said carriage, and a second adjustable device with which said carriage may engage to render said last-mentioned propelling means ineffective at a predetermined point in the reverse letter-feed travel of said carriage.

50. In a typewriting machine, the combination with a carriage comprising a platen, of propelling means to move the carriage in a letter-feed direction, propelling means to move said carriage in a reverse letter-feed direction, keys to permit said carriage to move in the letter-feed direction, an adjustable device engageable by said carriage at a predetermined point in its letter-feed travel, means settable by said device to establish a connection which may be operated by said keys to render the second-mentioned propelling means effective to move said carriage, locking means for said keys, effective while said carriage is being moved by the second-mentioned propelling means, and a second adjustable device with which said carriage may engage to render said last-mentioned propelling means ineffective at a predetermined point in the reverse letter-feed travel of said carriage, and to render said locking means ineffective.

51. In a typewriting machine, the combination of a carriage, a spring drum to feed said carriage in a letter-feed direction, keys to effect the feeding movements of said carriage, a motor to return said carriage, a switch for said motor, a universal bar actuable by said keys, a normally ineffective connection extending between said universal bar and said switch, an adjustable device actuable by said carriage to render said connection effective, so that the switch may be closed by an actuation of one of said keys, to start said motor and return said carriage, locking means to prevent the actuation of any one of said keys while said carriage is returning, holding means to keep the switch closed and the key-locking means effective while said carriage is returning, and a second adjustable device with which said carriage may engage, when it reaches its initial writing position, to render said holding means ineffective, thus permitting the switch to open and the key-locking means to become ineffective.

52. In a typewriting machine, the combination of a carriage, a spring drum to feed said carriage in a letter-feed direction, keys to effect the feeding movements of said carriage, a motor to return said carriage, a switch for said motor, a universal bar actuable by said keys, a normally ineffective connection, comprising two slides, extending between said universal bar and said switch, a margin-gage actuable by said carriage, an interponent which is interposed between said slides by the actuation of said margin-gage, to render said connection

effective, so that the switch may be closed by means of said connection, by an actuation of one of said keys to start said motor and return said carriage, locking means to prevent the actuation of any one of said keys while said carriage is returning, said locking means being connected to one of said slides, holding means cooperating with said interponent to keep the switch closed and the key-locking means effective while said carriage is returning, and a second margin-gage with which said carriage may engage, when it reaches its initial writing position, to render said holding means ineffective, thus permitting the switch to open and the key-locking means to become ineffective.

53. In a typewriting machine, the combination with a traveling carriage and type-keys, of a motor for returning said carriage, a bar universal to certain of said keys but normally idle, a zone-selecting device adapted to be positioned along the travel of the carriage, and a normally ineffective interponent adapted to be made effective by said zone device to enable said universal bar to make the motor effective.

54. In a typewriting machine, the combination with a traveling carriage and type-keys, of a motor and a normally open circuit therefor, a bar universal to certain of said keys but normally idle, a zone-selecting device adapted to be positioned along the travel of the carriage, a closing member for said motor, an interponent normally ineffective, and means operated by said device to move said interponent to effective position between the universal bar and member to enable the actuation of said certain keys to close the circuit.

55. In a typewriting machine, the combination with a carriage, of means for automatically determining a certain zone in the travel of the carriage, and type-key-oper-

ated means effective only in said zone for causing the carriage to return to position to begin a new line of writing.

56. In a typewriting machine, the combination with a carriage and a system of types and keys therefor, including terminal-characters, of means effective only in an automatically predetermined zone for cooperating with certain of said terminal-character-type-keys, for causing the carriage to return to position to begin a new line of writing.

57. In a typewriting machine, the combination with a carriage and a system of types and keys therefor, including certain terminal-characters and a space-key, of means effective only in an automatically predetermined zone for cooperating with any of said terminal-character-type-keys or said space-key, for causing the carriage to return to position to begin a new line of writing.

58. The combination of a carriage, means controllable thereby for determining a certain zone, a set of type-keys including certain terminal-character-keys, a space-key, and means controllable by any of said terminal-keys or said space-key only when the carriage is in said zone, for causing the carriage to return to position to begin a new line of writing.

59. The combination of a carriage, means controllable thereby for determining a certain zone, said controlling means including a member adjustable along the run of the carriage, a set of type-keys including certain terminal-character-keys, a space-key, and means controllable by any of said terminal-keys or said space-key only when the carriage is in said zone, for causing the carriage to return to position to begin a new line of writing.

HARRY BATES.

Witnesses:

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