J. WALDHEIM.

TYPEWRITING MACHINE.

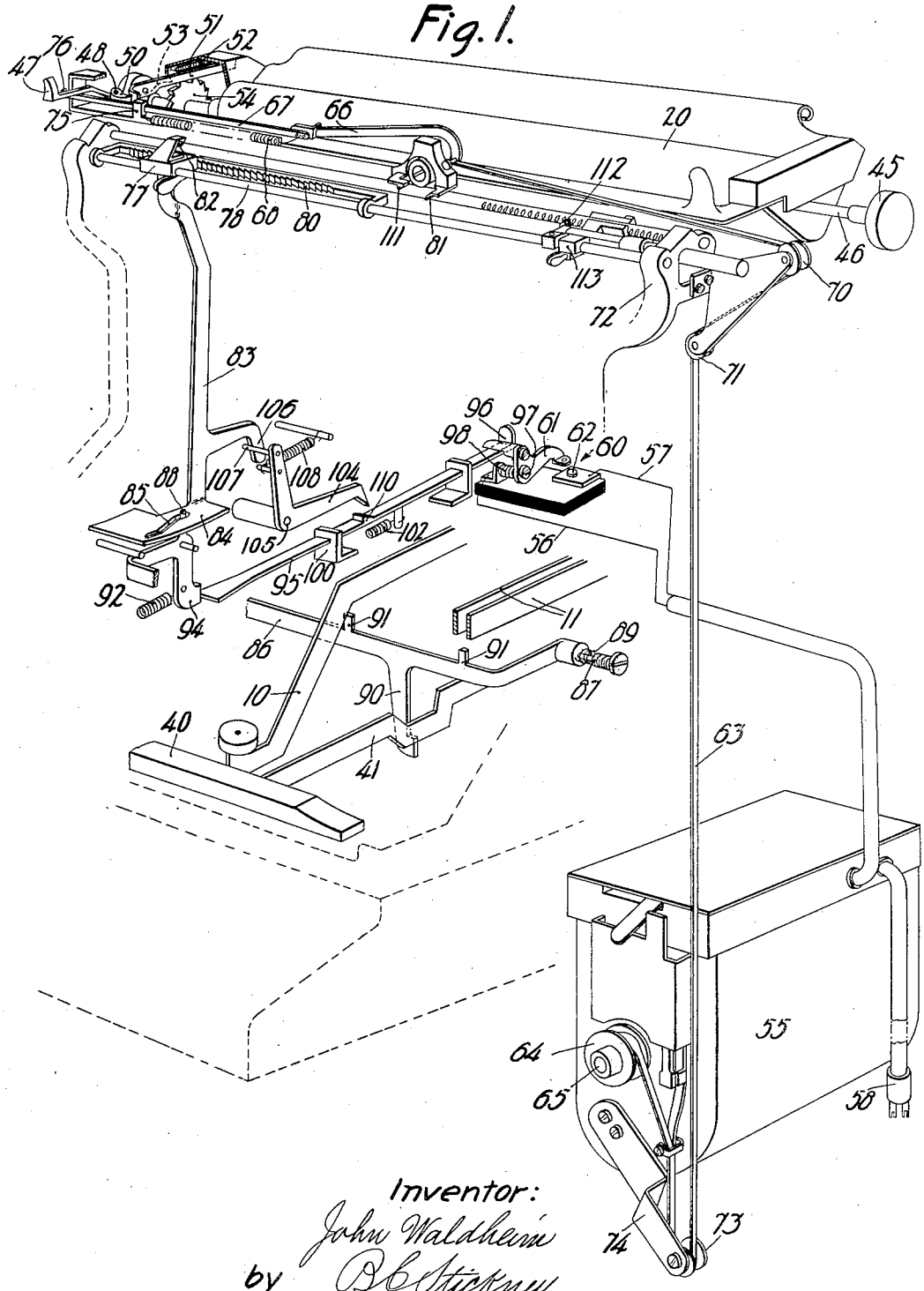
APPLICATION FILED SEPT. 18, 1919.

1,389,718.

Patented Sept. 6, 1921.

3 SHEETS—SHEET 1.

Fig. 1.



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3 SHEETS—SHEET 2.

Fig. 2.

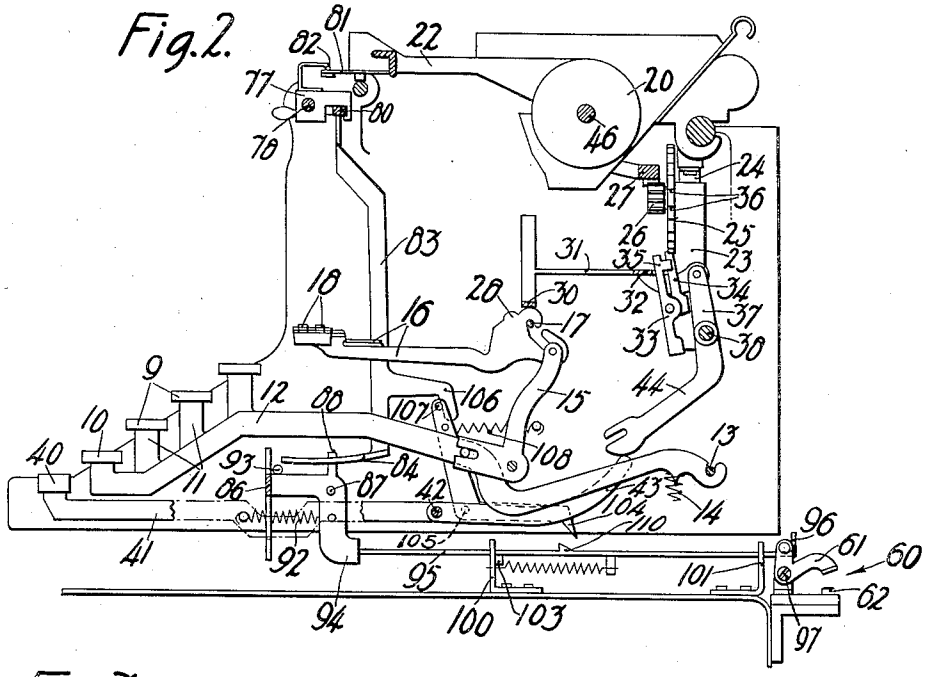


Fig. 3.

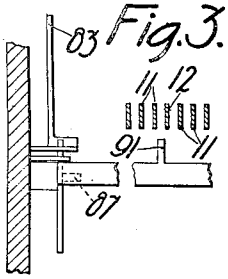


Fig. 4.

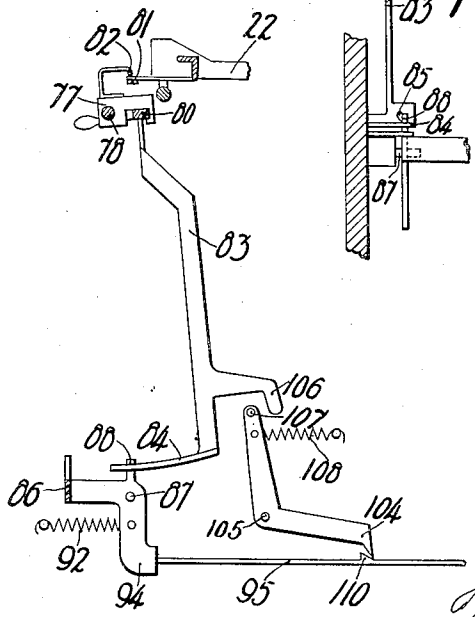
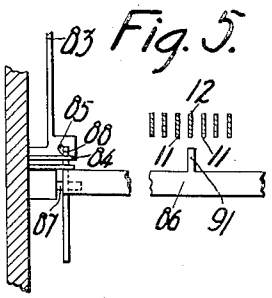


Fig. 5.



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3 SHEETS—SHEET 3.

Fig. 6.

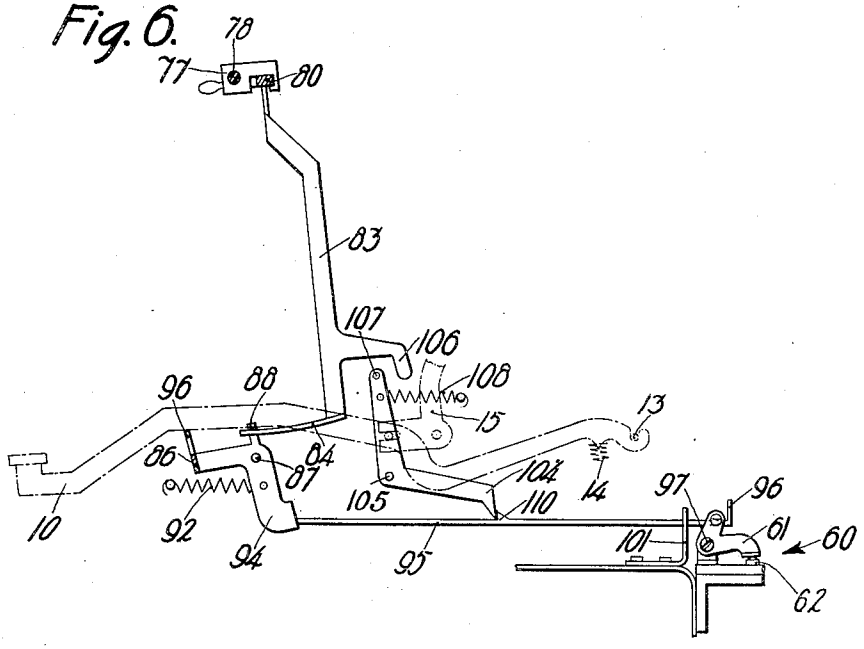


Fig. 7.

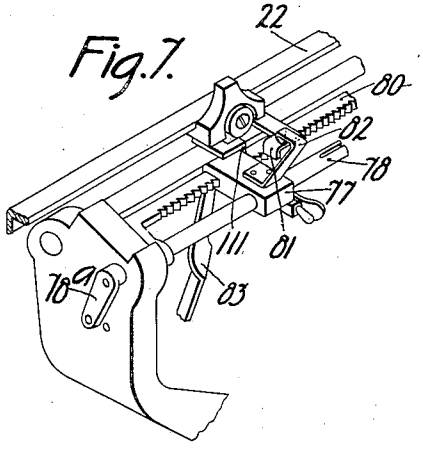
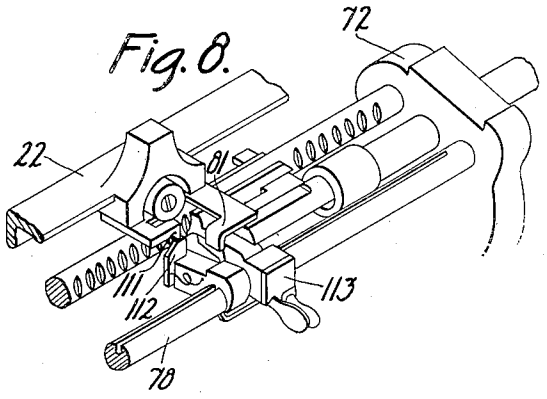


Fig. 8.



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UNITED STATES PATENT OFFICE.

JOHN WALDHEIM, OF ELIZABETH, NEW JERSEY, ASSIGNOR TO UNDERWOOD TYPEWRITER COMPANY, OF NEW YORK, N. Y., A CORPORATION OF DELAWARE.

TYPEWRITING-MACHINE.

1,389,718. Specification of Letters Patent. Patented Sept. 6, 1921.

Application filed September 18, 1919. Serial No. 324,617.

To all whom it may concern:

Be it known that I, JOHN WALDHEIM, a citizen of the United States, residing in Elizabeth, in the county of Union and State of New Jersey, 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.

One form of the invention, herein shown, may be used with mechanism disclosed in the patent to Adolph G. Kupetz, No. 1,186,516, dated June 6, 1916, in which there is provided a left-hand margin gage engageable by the typewriter carriage to close a switch to return the carriage by an electric motor, the carriage engaging the right-hand margin gage during the latter part of its return movement to open the switch to stop the motor.

It has been proposed to return the carriage, from any one of a plurality of letter-space positions of a zone in which all of the writing lines terminate, by the actuation of a punctuation key or a space-bar while the carriage is in the zone; the punctuation keys and the space-bar being adapted to actuate a universal-bar to close the switch when the carriage is in the zone; the universal-bar being actuable at all times by the punctuation keys and the space-bar, irrespective of whether the carriage is in or out of the zone, but is effective to close the switch only when the carriage is in the zone.

An object of the present invention is to provide a universal-bar which is normally out of effective relation with the punctuation-keys and the space-bar, and which is moved into effective relation therewith as the carriage enters the zone, thereby avoiding the actuation of the universal-bar except when necessary.

One form of the invention may include a universal-bar provided with projections, and shiftable axially to bring the projections into effective relation with the keys and the space-bar by which the universal-bar may be actuated.

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 their normal positions.

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

Fig. 3 is a fragmentary front view of some of the parts shown in Fig. 2, and shows the relation between the universal-bar and the keys, when the universal-bar occupies its ineffective position.

Fig. 4 is a fragmentary side view and shows the parts in position after the carriage enters the carriage-returning zone.

Fig. 5 is a fragmentary front view of the parts shown in Fig. 4, and shows the universal-bar shifted to its effective position.

Fig. 6 is a fragmentary side view and shows the universal-bar actuated to close the switch by the depression of a key while the carriage is in the zone.

Fig. 7 is a perspective view, showing the left-hand margin gage engaged by the carriage.

Fig. 8 is a perspective view, showing the right-hand margin gage and a portion of the carriage engaging with said gage to actuate the latter to open the switch.

The invention is herein illustrated as applied to an Underwood machine in which alphabet type-keys 9 and punctuation type-keys 10, when depressed, swing key-levers 11 and 12, respectively, about a fulcrum-rod 13 and against the tension of return springs 14, to rock bell-cranks 15 and swing type-bars 16 about their fulcrum 17, to cause types 18 to print at a common printing point against the front side of a platen 20, rotatably supported on a carriage 22. The carriage 22 may be drawn from right to left of the machine to feed it from one letter-space position to another, during typing operation, by a spring drum 23, connected to the carriage by a strap 24.

The feeding movements of the carriage may be controlled by escapement mechanism comprising an escapement wheel 25 having the usual one-way pawl connection (not shown) with a pinion 26 meshing with a pivoted feed rack 27 on the carriage. As the type-bars 16 approach the printing point, heels 28 thereon engage a universal bar 30 to move a frame 31 rearwardly and cause a cross-bar 32 thereon to move a dog-rocker 33 rearwardly against a return spring (not

shown). This causes a loose dog 34 and a fixed dog 35 on said dog rocker 33 to reciprocate between teeth 36 of the escapement wheel 25 to permit the carriage to feed single letter-space distances at each reciprocation. The rear of the frame 31 is pivotally supported on upwardly-extending arms 37 secured to a rock-shaft 38, suitably supported in the usual escapement bracket (not shown).

A space-bar 40 is provided whereby the carriage may be fed without typing. Said space-bar is located in front of the type-keys and is carried by two arms 41, extending rearwardly to a rock-shaft 42, to which they are secured, so that the space-bar, when actuated against the tension of a suitable return spring (not shown), rocks the shaft 42 to cause an arm 43, secured near the middle of the rock-shaft 42, to engage a downwardly-projecting arm 44 on the rock-shaft 38, to actuate the frame 31 and the dog-rocker 33, to effect a letter-space movement of the carriage 22.

The platen 20 may be rotated to feed a work-sheet (not shown), by finger-wheels 45 on the platen-shaft 46 (Fig. 1), or by a line-space-lever 47. The line-space-lever 47 when moved rightwardly about its pivot 48, engages, by means of a toe 50 thereon, with a line-space-slide or plunger 51, to move the latter rearwardly against the tension of a return-spring 52. The plunger 51 has pivotally mounted thereon a pawl 53, which engages with a toothed line-space-wheel 54, secured to the platen-shaft 46, to rotate the platen 20 from one line-space position to another.

The platen 20 may be automatically line-spaced, and the carriage returned to a new printing position. For this purpose, there may be used an electric motor 55 connected in a circuit comprising two wires or conductors 56 and 57, extending from a plug 58, which may be connected to a source of electric curent. A normally open switch 60, comprising a pivoted member 61 and a fixed contact or terminal 62, may be connected in the motor circuit. The switch 60 may be closed by means, hereinafter described, to start the motor 55, and wind up a strap or band 63, one end of which is connected to a drum 64, secured to a motor-shaft 65. The other end of the strap is connected to a link 66, to move a slide-bar 67 rightwardly, against the tension of a return-spring 68; said strap being guided over rollers 70 and 71 on a bracket secured to the machine frame 72, and a roller 73 on a bracket 74 secured to the motor 55. The slide-bar 67 may be guided in a lug 75, on the carriage 22, and is provided with a projection or hook 76, to engage the line-space-lever 47, to actuate the latter to line-space the platen 20, when the slide-bar 67 is moved rightwardly. After the platen 20 has been line-spaced by the motor 55, the carriage is drawn rightwardly to the beginning of a new line.

The carriage may be returned from any one of a plurality of letter-space positions within a carriage-return-zone, the breadth of which may be determined by a margin-gage 77, at the left-hand side of the machine, which is slidably mounted on a rock-shaft 78, and adjustable thereon and relatively to a rack-bar 80, rigidly secured to the rock-shaft 78; the zone being at the right-hand side of a work-sheet, and all the writing lines terminating in said zone.

As the carriage enters the zone, a projection 81 thereon engages with a cam 82 secured to the left-hand margin-gage (Figs. 1 and 7), to rock the shaft 78 and the rack-bar 80 in a counter-clockwise direction, a detent 78^a being provided to hold the rock-shaft 78 in normal or operated position. The rack-bar 80 has secured thereto a downwardly-projecting arm 83, provided at its lower end with a flange 84 with a cam-slot 85 therein, which, as the flange 84 moves rearwardly (Fig. 4), shifts a universal bar 86 axially on pivot studs 87 and toward the right-hand side of the machine (Fig. 5), by means of a finger 88 projecting into the cam slot 85 from the universal bar 86. The universal bar 86 when moved into effective relation with the punctuation type-key levers 12 moves against a return spring 89, which may be of any suitable form, located at the right-hand side of the machine (Fig. 1). The universal bar 86 is provided with projections 91 which normally occupy the space between the punctuation type key-levers 12 and the adjacent key-levers 11 (Fig. 3), and are moved under the key-levers 12 when the universal bar is rendered effective. The universal bar is further provided with a projection 90 which is moved into effective relation with one of the arms 41 extending from the space-bar 40.

If any one of the punctuation-keys 10, or the space-bar 40, is actuated after the universal bar 86 has been shifted to its effective position, the latter is swung in a counter-clockwise direction about its pivots 87 and against the tension of a return-spring 92, which tends to hold said universal bar in its normal position against a stop-pin 93. During this movement of said universal bar, an arm 94 thereon moves a motor-controlling member or slide 95 rearwardly, to permit the switch-member 61, engaged by a lip 96 of said controlling member 95, to be swung about its pivot 97 by a spring 98 (Fig. 1), and against the terminal 62 to close the motor-circuit. The motor then starts rotating to wind up the strap 63, and consequently line-space the platen 20 and return the carriage 22 to a new writing position. The controlling member 95 may be guided in suitable brackets 100 and 101, and is moved against the tension

of a return-spring 102, which holds the controlling member 95 in its normal position (Fig. 2), where it is arrested by a pin 103 which bears against the bracket 100.

It is desirable to keep the motor-circuit closed and the motor running without any attention on the part of the operator, while the carriage is being returned. For this purpose, there is provided a locking pawl 104 in the form of a bell-crank, pivoted at 105 which is normally held ineffective (Figs. 1 and 2) by a finger 106 on the downwardly-projecting arm 83. The finger 106 engages a pin 107 on the pawl, and as the arm 83 is actuated, the finger 106 moves away from the pin 107, so that the pawl 104 may be swung about its pivot, to the position in Fig. 4, by means of a spring 108. As the controlling member is moved rearwardly, a projection 110 thereon catches in back of said pawl 104 (Fig. 6), to retain the controlling member 95 in its actuated position, thus permitting the switch 60 to remain closed.

To stop the motor 55, the carriage 22 has thereon a projection 111 (Figs. 1 and 8) which engages, during the latter part of its return movement, with a cam-member 112 to actuate the latter, which is adjustable with a right-hand margin-gage 113. The cam-member 112 rocks the shaft 78 to which it is slidingly connected, back to its normal position, thus restoring the downwardly-projecting arm supported on the rack-bar 80, to its normal position. During this action, the finger 106 on the arm 83 engages with the pawl 104 to move it out of effective relation with the controlling member 95 to permit the latter to return to its normal position under the influence of the spring 102, the lip 96 engaging with the switch-member 61 to swing it about its pivot to open the switch 60 and consequently stop the motor.

The right-hand margin gage 113 is adjustable lengthwise of the carriage, so that it may be set according to the width of the margin desired at the left-hand side of the work-sheet. In this way, the position at which the switch is opened to stop the motor may be varied.

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, carriage-returning means, type-key-levers, a universal bar having projections thereon normally out of the path of actuation of said key-levers, means actuable by said carriage to render said universal bar effective by moving it laterally to bring the projections into the path of said key-levers, so that said universal bar may be actuated by said key-levers, and means whereby actuation of said universal bar will cause actuation of said carriage-returning means.

2. In a typewriting machine, the combination of a carriage, carriage-returning means, type-key-levers, a universal bar normally out of effective relation with said key-levers, means actuable by said carriage to move said universal bar laterally into effective relation with said key-levers, so that said universal bar may be actuated thereby, and means whereby actuation of said universal bar will cause actuation of said carriage-returning means.

3. In a typewriting machine, the combination of a carriage, a motor to return said carriage, a normally open circuit for said motor, keys to feed said carriage step by step, a universal bar, means controlled by said carriage to move said universal bar into effective relation with said keys, so that it may be actuated by any one of said keys, and means whereby actuation of said universal bar will cause said circuit to be closed.

4. In a typewriting machine, the combination of a carriage, a motor to return said carriage, a switch for said motor, a switch-controlling member in engaging relation with said switch, a universal bar, type-keys, and means to shift said universal bar into effective relation with said keys, so that said controlling member may be actuated by the actuation of any one of said keys to close said switch.

5. In a typewriting machine, the combination of a carriage, keys to feed said carriage step by step, a motor to return said carriage, a normally open circuit, an element actuable by said carriage, a universal bar shiftable by said element into effective relation with said keys, and means rendered effective to close said circuit when said universal bar is actuated by said keys.

6. In a typewriting machine, the combination of a carriage, carriage-returning means, type-key-levers, a universal bar having projections thereon normally out of the path of actuation of said key-levers, means actuable by said carriage to render said universal bar effective by moving it laterally to bring the projections into the path of said key-levers, so that said universal bar may be actuated by said key-levers, means controllable by said universal bar to start said carriage-returning means, means to retain said carriage-returning means effective during the return of said carriage, and means to render said carriage-returning means ineffective.

7. In a typewriting machine, the combination of a carriage, a motor to return said carriage, a normally open circuit for said motor, keys to feed said carriage step by step, a universal bar, means controlled by

said carriage to move said universal bar into effective relation with said keys, so that it may be actuated by any one of said keys, means controllable by said universal bar to close the circuit, means to retain the circuit closed during the return of said carriage, and means to automatically render the retaining means ineffective and thereby effect the opening of said circuit.

8. In a typewriting machine, the combination of a carriage, keys to feed said carriage step by step, a motor to return said carriage, a normally open circuit, an element actuable by said carriage, a universal bar shiftable into effective relation with said keys by said element, means controllable by said universal bar to close said circuit when said universal bar is actuated by said keys, and means to retain said circuit closed during the return of said carriage, said means being under the control of said element.

9. In a typewriting machine, the combination of a carriage, carriage-returning means, type-key-levers including a set through which the carriage-returning means may be made effective, a bar universal to the levers of said set and provided with projections to coöperate therewith, each of said projections being normally out of the path of actuation of the corresponding lever, means actuable by said carriage to move said universal bar to bring the projections thereon into the paths of the corresponding key-levers, and means whereby actuation of said universal bar will cause actuation of said carriage-returning means.

10. In a typewriting machine, the combination of a carriage, carriage-returning means, type-key-levers including punctuation-key-levers, a space-lever, a bar normally in ineffective relation with respect to said punctuation-key-levers and said space-lever, means actuable by said carriage to bring said bar into effective relation with said punctuation-key-levers and said space-lever to be actuable thereby, and means whereby actuation of said bar will cause actuation of said carriage-returning means.

11. In a typewriting machine, the combination of a carriage, carriage-returning means, key-levers including punctuation-key-levers, a bar universal to said punctuation-key-levers normally out of effective relation therewith, means actuable by said carriage to move said universal bar into effective relation with respect to said punctuation-key-levers, so as to be actuable thereby, and means whereby actuation of said universal bar will cause actuation of said carriage-returning means.

12. In a typewriting machine, in combination, a carriage, carriage-returning means including a motor, a normally open circuit for said motor, punctuation-key-levers, a device universal to said punctuation-key-levers normally out of effective relation therewith, means actuable by said carriage to move said universal device into effective relation with said punctuation-key-levers to be actuable thereby, and means whereby actuation of said universal device will cause said circuit to be closed.

13. In a typewriting machine, in combination, a carriage, carriage-returning means including a motor, a normally open circuit for said motor, punctuation-key-levers, a space-lever, a device universal to said levers normally out of effective relation with respect thereto, means controlled by said carriage to move said universal device into effective relation with all of said levers to be actuable thereby, and means whereby actuation of said universal device will cause said circuit to be closed.

14. In a typewriting machine, in combination, a carriage, a carriage-returning means, a space-bar lever, a device actuable by said space-bar lever but normally out of effective relation therewith, means actuable by said carriage to move said device into effective relation with said space-bar lever to be actuable thereby, and means whereby actuation of said device will cause actuation of said carriage-returning means.

15. In a typewriting machine, in combination, a carriage, carriage-returning means including a motor, a normally open circuit to said motor, a space-bar lever, a device actuable by said space-bar lever but normally out of effective relation therewith, carriage-controlled means to move said device into effective relation with said space-bar lever, and means whereby actuation of said device will cause said circuit to be closed.

JOHN WALDHEIM.

Witnesses:
CATHERINE A. NEWELL,
JENNIE P. THORNE.