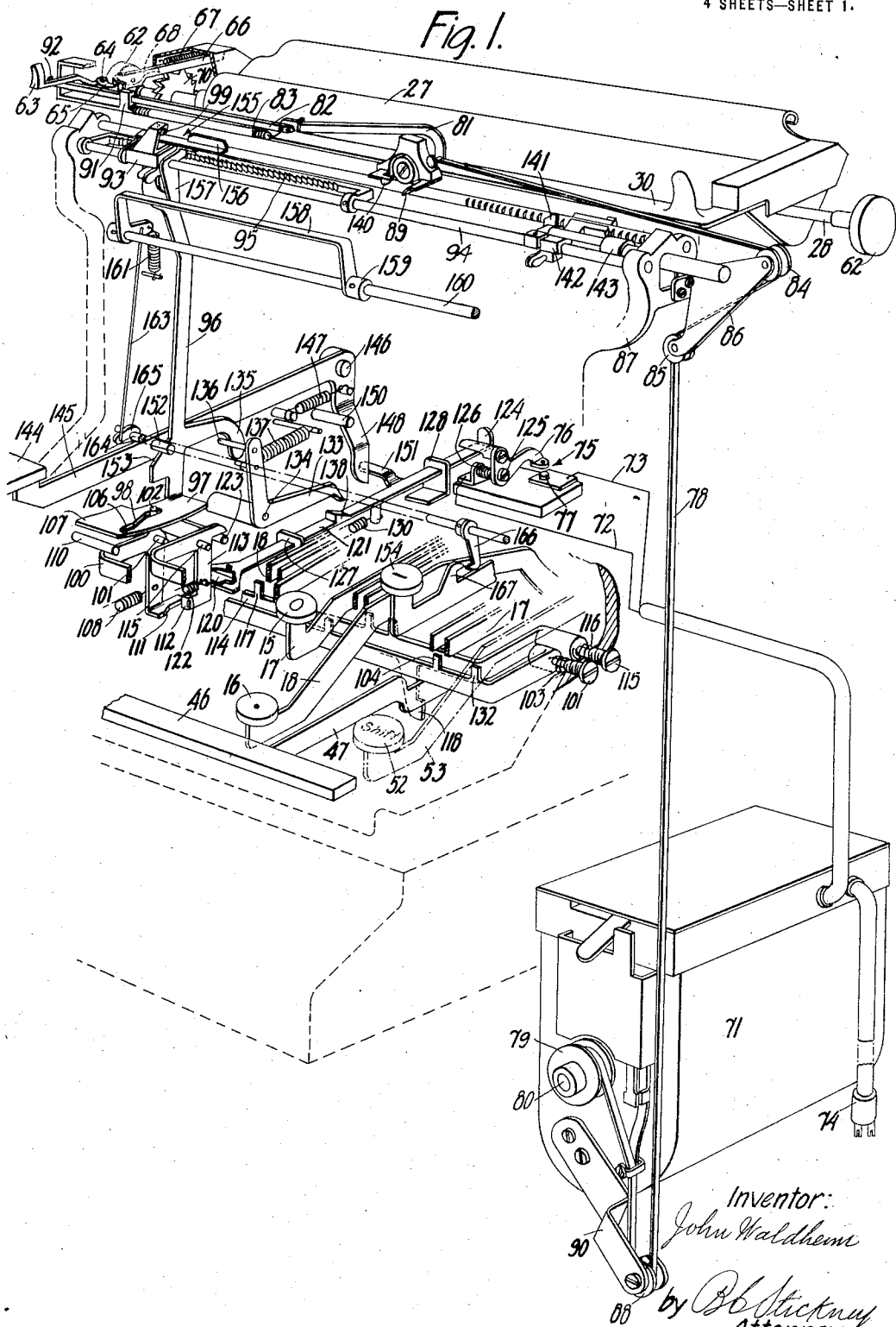


J. WALDHEIM.
TYPEWRITING MACHINE.
APPLICATION FILED MAY 10, 1919.

1,369,066.

Patented Feb. 22, 1921.

4 SHEETS—SHEET 1.

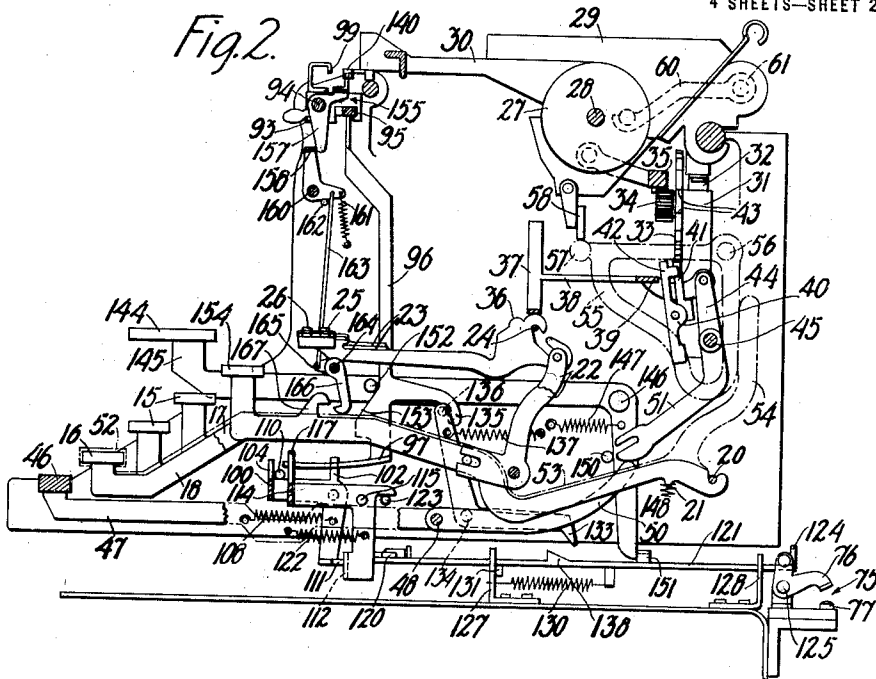
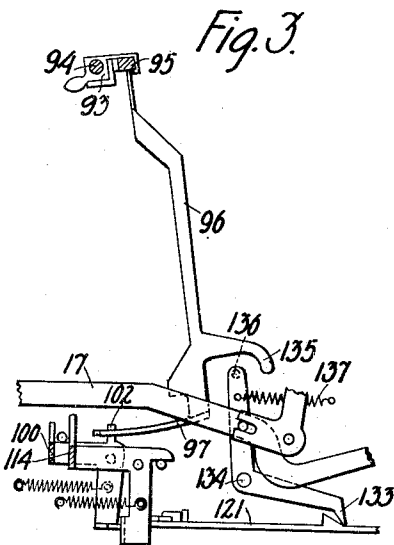
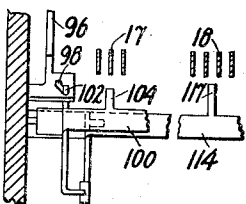
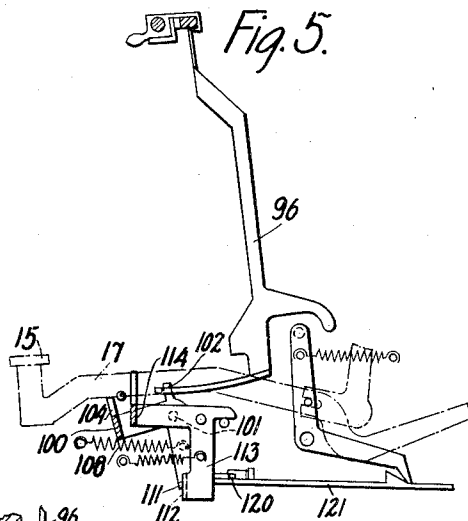
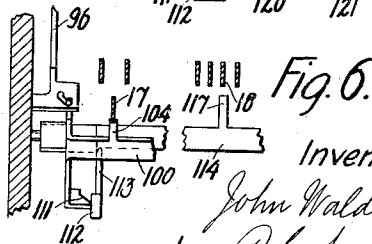


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4 SHEETS—SHEET 2.



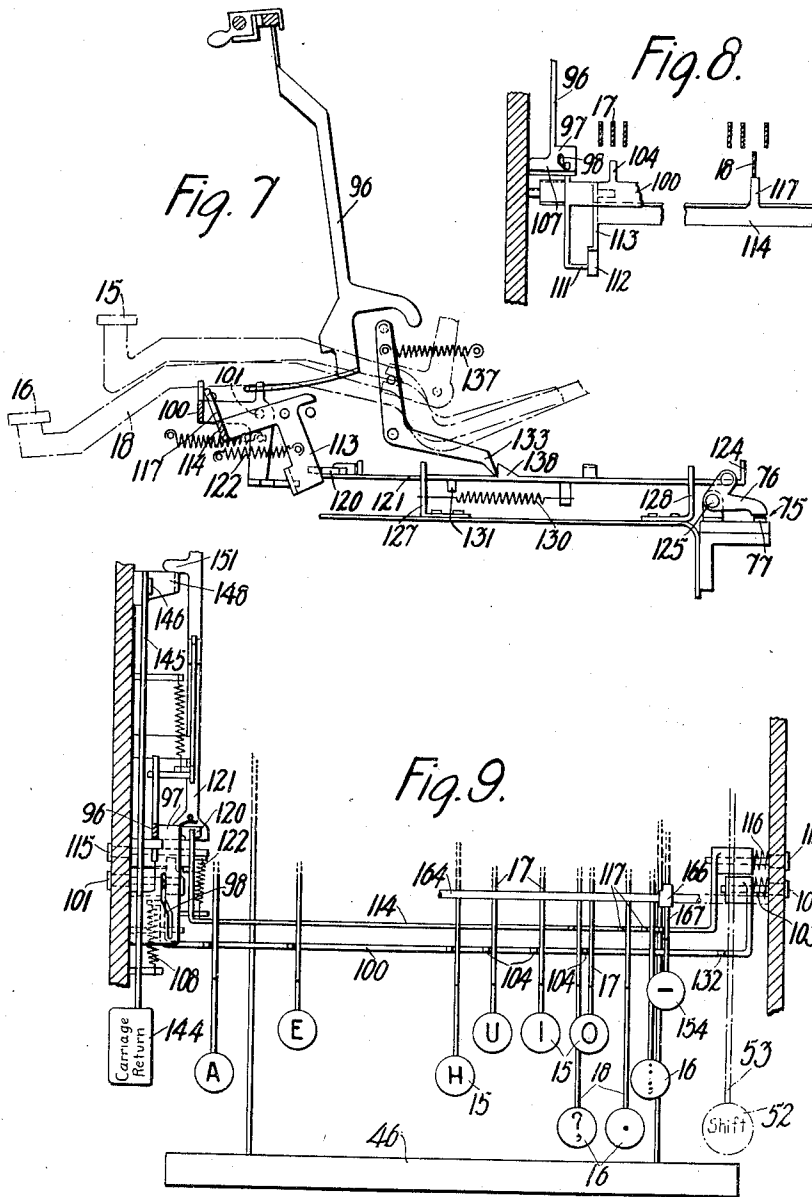
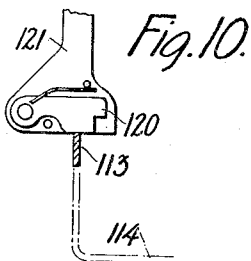
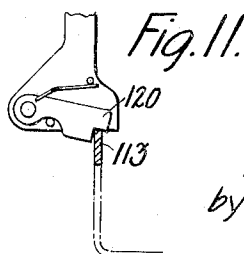
Inventor:
John Waldheim
by *Ob. Stickney*
Attorney.

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4 SHEETS—SHEET 3.



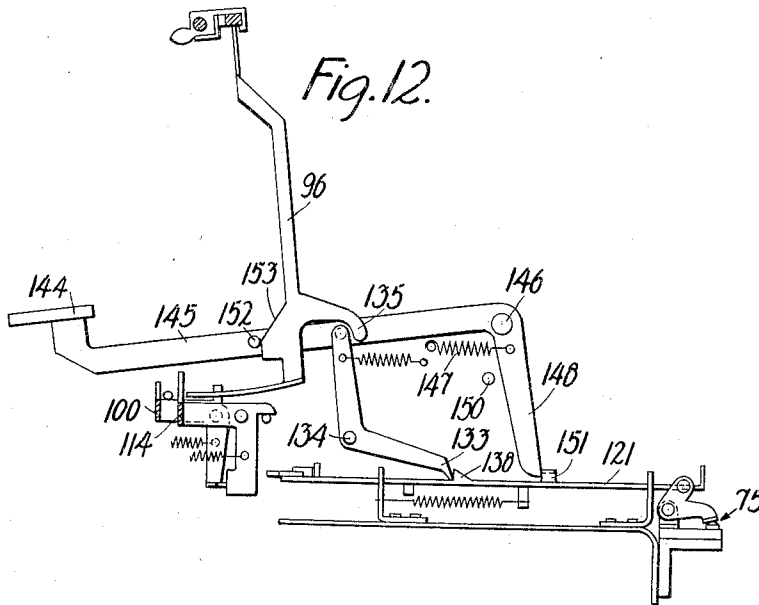
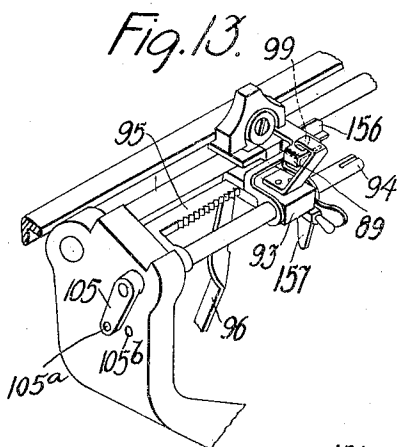
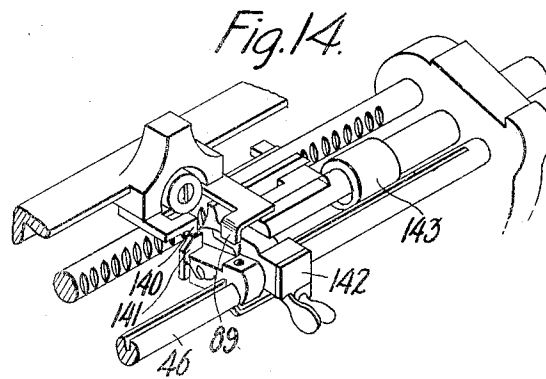
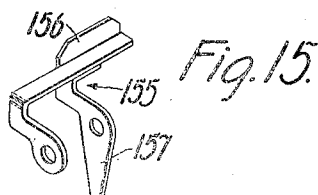
Inventor:
John Waldheim
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Attorney.

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1,369,066.

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4 SHEETS—SHEET 4.



Inventor:
John Waldheim
by B. B. Stickney
Attorney.

UNITED STATES PATENT OFFICE.

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

TYPEWRITING-MACHINE.

1,369,066.

Specification of Letters Patent.

Patented Feb. 22, 1921.

Application filed May 10, 1919. Serial No. 296,058.

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 typewriting machines, and more particularly to means to automatically return the carriage and line-space the platen.

One form of the invention is herein shown as used with mechanism disclosed in the patent to Kupetz, No. 1,186,516, of 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 engages with a 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 in 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-key and the space-bar being dependent for their efficacy to start the motor on the position of the carriage. With such an arrangement, should a punctuation-key or the space-bar be the first to be actuated when the carriage enters the zone, it is immediately returned, thus leaving blank or unused the remaining letter-space positions in the zone.

An object of the present invention is to provide means whereby the number of typed letter-spaces in said zone is increased. For this purpose a condition may be set up in the machine, by the actuation of a vowel-key or the shift-key while the carriage is in the zone; this condition being such that the motor may be started to return the carriage by the actuation of a punctuation-key or the space-bar; the punctuation-key and the space-bar being dependent for their efficacy to start the motor upon the actuation of a vowel-key or the shift-key, and the vowel-type-key and the shift-key being dependent upon the position of the carriage for their efficacy to set up the condition in the machine.

In carrying out the invention, two uni-

versal bars may be provided, one for the vowel-keys and the case-shift-key, and one for the punctuation-keys. These universal bars are normally out of effective relation with the associated keys, but as the carriage enters the zone, it actuates the left-hand margin-gage to move one of the universal bars into effective relation with the vowel-type-keys and the shift-key, so that it may be actuated by any one of them. This universal bar, when actuated, is effective to move the other universal bar into effective relation with the punctuation-type-keys, so that by the actuation of any one of the punctuation-type-keys, the last-mentioned universal bar is actuated to close the switch and start the motor to return the carriage. The carriage, as it approaches the end of its return movement, engages with the right-hand margin-gage to automatically open the switch to stop the motor.

A separate carriage-return-key is also provided, by which the motor may be started, to return the carriage from any letter-space position, irrespective of whether it is in or out of the zone.

Another object of the invention is the provision of means to lock the hyphen-type-key as the carriage approaches the carriage-return zone, so that if an attempt is made to actuate the hyphen-key when the carriage is near the zone, the operator is informed, by the fact that the hyphen-key is locked, that the carriage has not yet entered the zone, and consequently a word, which it was intended to hyphenate, may be completely typed on the same printing line. As soon as the carriage enters the zone, however, the hyphen-key becomes unlocked, so that it may be used if the word being typed is exceptionally long.

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 side view and shows a condition of the parts which is set

up when the carriage enters the carriage-returning zone, at which time a universal bar is moved into effective relation with the vowel-type-keys and the case-shift-key.

5 Fig. 4 is a fragmentary front view of the parts shown in Fig. 3, and shows the universal bar, associated with the vowel-keys, in its effective position.

Fig. 5 is a view similar to Fig. 3, but 10 shows one of the vowel-type-keys depressed, and the universal bar actuated thereby to move a second universal bar into effective relation with the punctuation-type-keys and the space-bar.

15 Fig. 6 is a fragmentary front view of the parts shown in Fig. 5, and shows the second universal bar, moved to its effective position by a cam on the other universal bar.

20 Fig. 7 is a view similar to Fig. 5, but shows a punctuation-type-key depressed and the associated universal bar actuated to close the motor-switch.

Fig. 8 is a fragmentary front view of the 25 parts shown in Fig. 7.

Fig. 9 is a top plan view, showing the vowel-keys, the case-shift-key, the punctuation-keys, the space-bar, the two universal bars associated with said keys and the 30 switch-controlling member, all of the parts being shown in their normal relation. This figure also shows the special key to actuate the switch-controlling member.

Fig. 10 is a detail top view of a latch, 35 carried by the motor-controlling member, and associated with the universal bar of the punctuation-keys.

Fig. 11 is a view similar to Fig. 10, and shows the latch effective, to retain the universal bar after it has been moved into 40 effective relation with the punctuation-keys.

Fig. 12 is a skeleton side view and shows the switch closed by the carriage-return-key.

45 Fig. 13 is a perspective view, showing the parts in position when the carriage is in the carriage-returning zone, and a portion of the carriage engaging with the left-hand margin-gage to actuate the latter, to bring 50 the universal bar into effective relation with the vowel-keys.

Fig. 14 is a perspective view, showing the right-hand margin-gage and a portion of the carriage and a projection thereon engaging with the margin-gage to actuate the 55 latter to open the switch, by means connected to said gage.

Fig. 15 is a detail perspective view of a cam member which may be actuated by 60 means on the carriage to lock the hyphen-key.

The invention may be used on an Underwood machine in which alphabet-type-keys, including vowel-type-keys 15, and punctuation-type-keys 16, when depressed, swing

key-levers 17 and 18, respectively, about their pivot 20 and against the tension of suitable return springs 21, to rock bell-cranks 22 and swing type-bars 23 about their fulcrum 24, to cause lower-case types 25 and upper- 70 case types 26 to print, at a common printing point, against the front side of a platen 27, rotatably supported in a platen-frame 29, on a carriage 30. The carriage 30 may be drawn from right to left of the machine, 75 to feed it from one letter-space position to another during typing operations, by a spring-drum 31 connected to the carriage by a strap 32. These movements of the carriage may be controlled by escapement 80 mechanism comprising an escapement wheel 33, having the usual one-way connection with a pinion 34, which meshes with a pivoted feed-rack 35 on the carriage 30. As the type-bars 23 approach the printing 85 point, heels 36 thereon engage a curved universal bar 37, of a universal frame 38, to move the latter rearwardly and cause a cross-bar 39, on said frame, to move a dog-rocker 40 rearwardly against a suitable 90 spring (not shown), which returns the dog-rocker to normal position. This causes a loose dog 41 and a fixed dog 42 on said dog-rocker to reciprocate between teeth 43 of the escapement wheel 33, to permit the 95 carriage to feed single letter-space distances at each reciprocation. The rear end of the universal frame 38 is pivotally supported on upwardly-extending arms 44 secured to a rock-shaft 45, suitably supported in the 100 usual escapement bracket (not shown).

A space-bar 46 is provided, whereby the carriage 30 may be fed without typing. The space-bar 46 is located in front of the type-keys and is carried by two arms 47 105 extending rearwardly to a rock-shaft 48, upon which they are secured, so that the space-bar when actuated against the tension of a suitable return-spring (not shown), rocks the shaft 48 to cause an arm 110 50, secured near the middle of the rock-shaft 48, to engage with a downwardly-projecting arm 51, on the rock-shaft 45, to actuate the universal frame 38 and the dog-rocker 40 to effect a letter-space movement 115 of the carriage 30.

The platen 27 may be shifted to its upper-case position, so as to enable typing with the upper-case types 26. For this purpose, there is provided a shift-key 52 which, when 120 depressed, swings a shift-key-lever 53 about the fulcrum 20, to cause an upwardly-extending arm 54, on said shift-key-lever, to swing a shift-frame 55 about its pivot 56. The shift-frame is provided with a cross- 125 bar 57 which engages with a roller 58 secured to the platen-frame 29, to move the platen-frame upwardly and shift the platen 27 to its upper-case position. The platen-frame, in its case-shifting movements, may 130

be guided by arms 60 on a rock-shaft 61 supported on the carriage 30, as in the Underwood machine.

The platen 27 may be rotated to feed a work-sheet (not shown), by finger-wheels 62 on the platen-shaft 28 (Fig. 1), or by a line-space-lever 63 (Fig. 1). The line-space-lever 63, when moved rightwardly about its pivot 64, engages, by means of a toe 65 thereon, with a line-space-slide or plunger 66, to move the latter rearwardly against the tension of a return-spring 67. The plunger 66 has pivotally mounted thereon a pawl 68, which engages with a toothed line-space-wheel 70, secured to the platen-shaft 28, to rotate the platen from one line-space position to another.

The platen 27 may be automatically line-spaced, and the carriage returned to a new printing position. For this purpose, there may be used an electric motor 71 connected in a circuit comprising two wires or conductors 72 and 73, extending from a plug 74, which may be connected to a source of electric current. A normally open switch 75 comprising a pivoted member 76 and a fixed contact or terminal 77 may be connected in a motor circuit. The switch may be closed by means, hereinafter described, to start the motor 71, and wind up a strap or band 78, one end of which is connected to a drum 79, secured to the motor-shaft 80. The other end of the strap 78 is connected to a link 81, to move a slide-bar 82 rightwardly, against the tension of a return-spring 83; said strap 78 being guided over rollers 84 and 85 on a bracket 86 secured to the machine frame 87, and a roller 88 on a bracket 90 secured to the motor 71. The slide-bar 82 may be guided in a lug 91, on the carriage 30, and is provided with a projection or hook 92, to engage the line-space lever 63, to actuate the latter to line-space the platen 27, when the slide-bar 82 is moved rightwardly. After the platen has been line-spaced by the motor 71, 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 93 at the left-hand side of the machine, which is slidably mounted on a rock-shaft 94, and adjustable thereon and relatively to a rack-bar 95, rigidly secured to the rock-shaft 94; 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 89 thereon engages with a cam 99 secured to the left-hand margin-gage 93 (Figs. 1 and 13), to rock the shaft 94 and the rack-bar 95 in a counterclockwise direction. The rack-bar 95 has secured thereto

a downwardly-projecting arm 96, provided at its lower end with a flange 97 with a cam-slot 98 therein, which, as the flange moves rearwardly (Fig. 3), shifts a universal bar 100 axially on pivot studs 101 and toward the right-hand side of the machine (Fig. 4), by means of a finger 102 projecting from the universal bar 100 into the cam slot 98. The universal bar 100 is moved into effective relation with the vowel-type-key-levers 17 (Figs. 3 and 4), and against a return-spring 103, which may be of any suitable form, located at the right-hand side of the machine (Figs. 1 and 9). The universal bar is provided with projections 104 which are moved under the vowel-type-key-levers, but normally occupy the spaces between the vowel-type-key-levers 17 and the adjacent key-levers (Fig. 9).

The universal bar 100 is held in its effective position by an arm 105 (Fig. 13), secured to the end of the rock-shaft 94, and provided with a yieldable detent 105^a adapted to ride into and out of shallow depressions 105^b in the machine frame. While the universal bar is so held, through the medium of the arm 96, the finger 102 engages in a dwell 106 (Fig. 1) of the cam-slot 98. Any end thrust, which may be imparted to the downwardly-projecting arm 96 when shifting the universal bar 100, may be taken up by an offset 107 on the flange 97 which may engage with the left-hand wall of the frame 87.

After the carriage has entered the zone, a vowel-key must be actuated before the return of the carriage can be effected by the actuation of one of the punctuation-keys 16 or the space-bar 46. Any one of the vowel-keys, when actuated while the carriage is in the zone, is effective to swing the universal bar 100 in a counterclockwise direction (Fig. 5), against the tension of a return-spring 108, which normally holds the universal bar 100 against a stop-pin 110 (Fig. 1). The universal bar 100 is provided at its left-hand end with a cam 111, which engages with a lip 112, on an arm 113 of a second universal bar 114, to move the latter axially on its pivot studs 115, against the tension of a spring 116, and into effective relation with the punctuation-key-lever 18 (Fig. 6), and the space-bar 46. The dwell 106 of the cam-slot 98 is of such a length as to permit the finger or projection 102 to move freely forward therein during the actuation of the universal bar 100. The universal bar 114 is provided with projections 117 which normally occupy the spaces between the punctuation-key-levers 18 and the adjacent key-levers, and are moved under the punctuation-key-levers when the universal bar 114 is shifted. The universal bar 114 is also

provided with a hook-like projection 118 which is normally out of effective relation with the right-hand arm 47 of the space-bar 46, and which is moved under the arm 47 when the universal bar 114 is shifted to its effective position.

The universal bar 114, associated with the punctuation-type-keys and the space-bar, may be held in its shifted position, or, in other words, in its effective relation with said keys, so that the actuated vowel-key 15 and the associated universal bar 100 may return to their inactive positions (Fig. 3). For this purpose, there is provided a spring-pressed latch 120, Figs. 1, 5, 10 and 11, pivotally mounted on a motor-controlling member 121. The arm 113 of the universal bar normally occupies the position shown in Figs. 1 and 10, but, as the universal bar is moved to its effective position, the latch 120 snaps in back of said arm 113 to hold the universal bar 114 in its shifted position (Figs. 5 and 11).

If a punctuation-key or the space-bar is actuated after the associated universal bar 114 has been shifted to its effective position, the universal bar 114 is swung in a counterclockwise direction about its pivots 115 and against the tension of a return-spring 122, which tends to hold said universal bar in its normal position against a stop-pin 123. During this movement of said universal bar, the arm 113 thereon moves the motor-controlling member 121 rearwardly, to permit the switch-member 76, engaged by a lip 124 of said controlling member, to be swung about its pivot 125 by a spring 126 (Fig. 1), and against the terminal 77 to close the motor-circuit. The motor then starts rotating to wind up the strap 78, and consequently line-space the platen 27 and return the carriage 30 to a new writing position. The controlling member 121 may be guided in suitable brackets 127 and 128, and is moved against the tension of a return-spring 130, which holds the controlling member in its normal position (Fig. 1), where it is arrested by a pin 131 which bears against the bracket 127.

In any word, one of any three succeeding letters is almost invariably a vowel. From this it will be seen that the machine is set up to return the carriage after the third letter has been written in the carriage-return zone.

It may be desirable at times to write only an abbreviation in the zone, such as "Dr.", "Ct.", or "St.", which do not have a vowel. In such a case the shift-key 52 may be utilized to set up the condition in the machine, so that when the period is typed, the return of the carriage is effected. For this purpose the universal bar 100 is provided with a projection 132 (Figs. 1 and 9), which is normally to one side of the shift-key-lever 53,

but is moved under the shift-key-lever when the universal bar is moved to its effective position, after which the shift-key may be depressed to actuate the universal bar to close the motor-circuit as herein described.

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 133, in the form of a bell-crank, pivoted at 134, which is normally held ineffective (Fig. 2), by a finger 135 on the downwardly-projecting arm 96. The finger 135 engages with a pin 136 on the pawl 133, and as the arm 96 is actuated, the finger 135 moves away from the pin 136, so that the pawl 133 may be swung about its pivot by means of a spring 137. As the controlling member is moved rearwardly, a projection 138 thereon catches in back of said pawl 133 (Fig. 7), to retain the controlling member 121 in its actuated position, thus permitting the switch to remain closed.

To stop the motor 71, the carriage 30 has thereon a projection 140 (Figs. 1 and 14), which engages, during the latter part of its return movement, with a cam-member 141, to actuate the latter, which is adjustable with a right-hand margin-gage 142 (Figs. 1 and 14). The cam-member 141 rocks the shaft 94, to which it is slidably connected, back to its normal position, thus restoring the downwardly-projecting arm 96, supported on the rack-bar 95, to its normal position. During this action, the finger 135 on the arm 96 engages with the pawl 133 to move it out of effective relation with the controlling member 121, to permit the controlling member to return to its normal position under the influence of the spring 130 when the lip 124 engages with the switch-member 76 to swing it about its pivot 125 and open the switch 75, and consequently stop the motor 71.

It will be understood that as the universal bar, associated with the punctuation-keys 16 and the space-bar 46, is restored to its inactive position by its return spring 122, the arm 113 on the universal bar 114 moves out of effective relation with the holding latch 120, and consequently the universal bar may be moved axially back to its normal position by the spring 116. Upon the release of the controlling member 121, the latch 120 resumes the position shown in Fig. 10.

The right-hand margin-gage 142 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.

A shock-absorber or buffer 143 (Figs. 1 and 14) is carried by the margin-gage or

stop, against which the projection 89 on the carriage may engage to absorb the blow of said carriage on its return movement.

A separate carriage-return-key 144 (Fig. 1) is provided to return the carriage from any letter-space position, irrespective of whether the carriage is in or out of the carriage-return zone. This carriage-return-key, when actuated, (Fig. 12), swings a lever 145 about its pivot 146, and against the tension of a spring 147 connected to an arm 148 of said lever; the spring 147 being effective to hold the lever in its normal position against a stop-pin 150. The arm 148 engages with a lateral projection 151 on the switch-controlling member 121 to move it rearwardly to permit the switch 75 to close. During the depression of the carriage-return-key 144, the holding pawl 133 is also rendered effective. This may be accomplished by means of a pin 152 on the lever 145, which engages with a cam 153 on the arm 96 to swing the latter with the rock-shaft 94 about its axis, to move the finger 135 away from the pin 136 on the pawl 133, and permit the latter to be swung to its effective position by the spring 137. This may take place during the early part of the depression of the carriage-return-key 144, after which the controlling member 121 continues to move rearwardly until the pawl 133 snaps in front of the projection 138 on the controlling member. The carriage-return key 144 may now return from its depressed position (Fig. 12) to its normal position; the arm 96 being held in its actuated position by the detent 105 (Fig. 13) as previously described. When the projection 140 on the carriage engages with the cam-member 141 on the right-hand margin-gage 142, the shaft 94 is rocked and the downwardly-projecting arm 96 is swung back to its normal position, thus disengaging the pawl 133 from the switch-controlling member 121, to permit the circuit to be opened, and consequently the motor 71 is stopped.

If the operator should, in order to hyphenate a word, actuate the hyphen-key 154, when the carriage is close to, but not yet in, the zone, the operator being under the impression that the carriage has already entered the zone, it will be seen that the carriage will not be returned by the actuation of the hyphen-key. The carriage may be returned, however, by the actuation of the carriage-return-key 144. In such a case, there would be a number of unused letter-space positions left on the printing line. I have found it advantageous to provide means to lock the hyphen-type-key 154 within a range of several letter-space positions of the carriage, just prior to the entrance of the carriage into the carriage-returning zone, so that if the operator attempts to actuate the hyphen-key to hyphenate a word near the

end of a line, when the carriage has not yet entered the zone, the operator finds that the hyphen-key is locked and is thereby informed of the approximate position of the carriage, and that the word being typed may be completed on the same line without hyphenating it.

To lock the hyphen-key 154, there may be provided a member 155, pivoted on the rock-shaft 94, which straddles the left-hand margin-gage 93. The member 155 has thereon a cam 156, the length of which determines the range in which the hyphen-key may be locked in the travel of the carriage. The cam 156 (Figs. 13 and 15) bears a definite relation to the cam 99 on the margin-gage 93 and is adjustable therewith. As the carriage approaches the carriage-returning-zone, the projection 140 thereon engages with the cam 156 to swing the member 155 about the rock-shaft to cause a downwardly-projecting arm 157 to engage with a bail 158, which may be pivoted on a rod 160 extending crosswise of the machine, and conveniently supported in the side walls of the frame 87. The bail 158 is substantially as long as the rack-bar 95, so that the arm 157 may engage therewith, irrespective of the adjustment of the margin-gage. The bail may be held in place on the rod by a collar 159, and is adapted to be swung, by the arm 157, against the tension of a spring 161, which normally holds the bail 158 against a stop-pin 162 (Fig. 2). The bail 158, when actuated, pulls upwardly on a link 163 to rock a shaft 164 through the medium of an arm 165 on said shaft, and to which the link is connected. The rock-shaft 164 extends crosswise of the machine and is pivotally supported at its ends in the frame 87. It is provided with a hook-like member 166 arranged above the hyphen-key, so that when the rock-shaft 164 is actuated, the hook-like member 166 is swung under a hook 167 associated with the hyphen-key 154 to lock the latter until the projection 140 on the carriage has moved past the cam 156. The carriage then enters the carriage-returning-zone, and the hook-like member 166 is swung out of locking relation with the hook 167 of the hyphen-key by the spring 161.

From the foregoing, it will be understood that the locking of the hyphen-key takes place within a range of several letter-spaces, or, in other words, a zone the breadth of which is dependent upon the length of the cam 156 on the member 155. Thus the carriage is adapted to traverse two zones, namely, the key-locking zone and the carriage-return-zone. The two zones are adjacent to each other and their positions are determined by the left-hand margin-gage 93.

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:

- 5 1. In a typewriting machine, the combination of a letter-feeding carriage adapted to enter a zone, means settable after the carriage has entered said zone, and means to actuate said settable means to effect the return of said carriage from said zone.
- 10 2. In a typewriting machine, the combination of a letter-feeding carriage, means settable by said carriage, a device settable after the settable means is set, and means to actuate said device after it is set, to effect the return of said carriage.
- 15 3. In a typewriting machine, the combination of a carriage, means comprising an adjustable device adapted to be engaged by said carriage as the latter enters a zone determined by said device, means settable after the carriage has entered said zone, and means to actuate said settable means to return said carriage from said zone.
- 20 4. In a typewriting machine, in combination, a carriage, keys, a carriage-return device, normally ineffective means whereby actuation of one of a certain group of keys may throw said carriage-return device into action, normally ineffective means whereby actuation of one of a second group of keys may render the first-mentioned normally ineffective means effective, and means controlled by the carriage for rendering said second-mentioned normally ineffective means effective.
- 25 5. In a typewriting machine, the combination of a carriage adapted to enter a zone, keys, a universal bar for said keys, means to set said universal bar to an effective relation with said keys, after the carriage has entered said zone, so that said universal bar may be actuated by said keys, and means, controlled by said universal bar, to return said carriage from said zone.
- 30 6. In a typewriting machine, the combination of a carriage, key-levers, a universal bar, projections on said universal bar, said projections being normally out of effective relation with said key-levers, means to set said universal bar to bring said projections into effective relation with said key-levers, so that the universal bar may be actuated by said key-levers, and means under the control of said universal bar to return said carriage.
- 35 7. In a typewriting machine, the combination of a carriage, key-levers, a universal bar, projections on said universal bar, normally to one side of said key-levers, means actuable by said carriage to move said universal bar laterally to bring said projections into effective relation with said key-levers, so that said universal bar may be actuated by said key-levers, and means controlled by said universal bar to return said carriage.
- 40 8. In a typewriting machine, in combination, a traveling carriage, keys comprising two groups, carriage-return means, a device settable by said carriage to be actuated by any one of one of said groups of keys, a second device settable by the first-mentioned device to be actuated by any key of the other group, and means whereby actuation of the second device may cause said carriage-return means to become effective.
- 45 9. In a typewriting machine, in combination, a traveling carriage, carriage-return means, vowel-type-keys, punctuation-type-keys, a device settable by any one of said vowel-type-keys when said carriage is in a predetermined part of its path, and means whereby actuation of a punctuation-type-key, after said device has been set, will effect, through said device, actuation of said carriage-return means.
- 50 10. In a typewriting machine, in combination, a traveling carriage, keys, a carriage-return device, carriage-controlled means, including a member movable to effective position to be actuated by one of a certain group of said keys when the carriage passes a predetermined point, a second member, and means whereby actuation of the first-mentioned member by one of said group of keys will connect said second member to the carriage-return device and position it to be actuated by any one of a second group of keys, so as to render said carriage-return device effective.
- 55 11. In a typewriting machine, the combination of a carriage adapted to enter a zone comprising a plurality of letter-space positions, two sets of type-keys, and means settable by the keys of one set while the carriage is in said zone, so that said means may be actuated by the keys of the other set to effect the return of said carriage.
- 60 12. In a typewriting machine, the combination of a carriage adapted to enter a zone, vowel type-keys, punctuation type-keys, and means settable by the vowel type-keys, when the carriage is in said zone, so that said means may be actuated by the punctuation type-keys to effect the return of said carriage.
- 65 13. In a typewriting machine, in combination, a carriage, a carriage-return device, keys, a bar universal to a certain group of keys, but normally in ineffective relation therewith, a second bar universal to a second group of keys, but normally in ineffective relation therewith, means whereby the carriage, when it passes a predetermined point in its travel, will move the first-mentioned bar into effective relation with the first group of keys, means whereby actuation of a key of the first group will effect, through the consequent actuation of the corresponding universal bar, movement of the second universal bar to effective re-

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lation with respect to the second group of keys, and means whereby actuation of the second-mentioned universal bar by a key of the second group will render said carriage-

5 return device effective.

14. In a typewriting machine, the combination of a carriage adapted to enter a zone, vowel type-keys, a universal bar actu-
10 said zone, punctuation type-keys, a universal bar therefor, the latter being settable by the first-mentioned universal bar, and means actu-
15 return of said carriage.

15. In a typewriting machine, the combination of a carriage, propelling means to move said carriage in a letter-space direction, carriage-returning means, means set-
20 table after the carriage has passed a predetermined point, in its travel, and means to actuate the settable means to render said carriage-returning means effective.

16. In a typewriting machine, the combination of a carriage, propelling means to move said carriage in a letter-space direction, a motor to return said carriage, means settable after the carriage has passed a predetermined point in its travel, means to
30 actuate the settable means to start said motor, and means to stop said motor.

17. In a typewriting machine, the combination of a carriage, propelling means to move said carriage in a letter-space direction, carriage-returning means, an intermediate element, vowel type-keys, and punctuation type-keys, said intermediate element being settable by said vowel type-keys and actu-
40 ter it is set, to render said carriage-returning means effective.

18. In a typewriting machine, the combination of a carriage, propelling means to move said carriage in a letter-space direction, a motor to return said carriage, a universal bar, vowel type-keys effective to actuate said universal bar after the carriage has passed a predetermined point in its travel, punctuation type-keys to actuate said
50 universal bar to start said motor, and means to stop said motor on the return movement of said carriage.

19. In a typewriting machine, the combination of a carriage, means settable by said carriage, a key, said means being actu-
55 able by said key after it has been set, means settable by said first-mentioned means when the latter is actuated by said key, and a key to actuate the second-mentioned settable
60 means to effect the return of said carriage.

20. In a typewriting machine, the combination of a carriage, adapted to enter a zone comprising a plurality of letter-space positions, means settable by said carriage when
65 it enters said zone, a key, said means being

actuatable by said key after said means has been set, means settable by said first-mentioned means when it is actuated by said key, and a key to actuate the second-mentioned settable means to return said carriage from any position in said zone. 70

21. In a typewriting machine, the combination of a carriage, two sets of keys, carriage-returning means including a motor, mechanism settable by the carriage so as to
75 be actuatable by the keys of one set, and a device settable by said mechanism to be actuatable by the keys of the other set to start the motor to return said carriage.

22. In a typewriting machine, the combination of a carriage, propelling means to move said carriage in a letter-space direction, said carriage being adapted to enter a zone, vowel type-keys, a universal bar settable by said carriage, so that it may be actuated by said vowel type-keys, punctuation type-keys, a universal bar settable by the actuation of said first-mentioned universal bar, so that the second-mentioned universal bar may be actuated by said punctuation type-keys, a motor to return said carriage, means actuatable by said second-mentioned universal bar to start said motor, and means to stop said motor during the latter part of the return movement of said carriage. 80 85 90 95

23. In a typewriting machine, the combination of a carriage, a member settable by said carriage, a set of keys, means settable into effective relation with said keys by said member, a second set of keys, means settable into effective relation with said second set of keys by said first-mentioned means, means comprising an element actu-
100 able by said second-mentioned means to effect the return of said carriage, and holding means for said element, said holding means being under the control of said member. 105

24. In a typewriting machine, the combination of a carriage, a member settable by said carriage, a cam on said member, a set of keys, a universal bar settable by the cam on said member, said universal bar being actuatable by said keys after it has been set, a cam on said universal bar, a second set of keys, a second universal bar, the latter being settable into effective relation with the second set of keys by the cam on said first-mentioned universal bar, and means under the control of said second-mentioned universal bar to return said carriage. 110 115 120

25. In a typewriting machine, the combination of a carriage, a member settable by said carriage, a cam on said member, a set of keys, a universal bar settable by the cam on said member, said universal bar being actuatable by said keys after it has been set, a cam on said universal bar, a second set of keys, a second universal bar, the latter being settable into effective relation with the second set of keys by the cam on said 125 130

first-mentioned universal bar, means comprising an element actuable by said second-mentioned universal bar to effect the return of said carriage, a holding pawl to retain
 5 said element in its effective position, and means to actuate said element to actuate said pawl and release said element during the latter part of the return movement of said carriage.

10 26. In a typewriting machine, the combination of a carriage, means to propel said carriage, means settable after the carriage has passed a predetermined point in its travel, a motor to return said carriage, a
 15 switch member, means connected with said switch member to retain the settable means in its set position, and means to actuate the settable means and the switch member to start said motor to return said carriage.

20 27. In a typewriting machine, the combination of a carriage, means to propel said carriage, a motor to return said carriage, means settable after the carriage has passed a predetermined point in its travel, a latch
 25 to retain the settable means in its set position, means, comprising type-keys, to actuate the settable means, and an element to start said motor to return said carriage, said latch being carried by said element.

30 28. In a typewriting machine, the combination of a carriage, means to propel said carriage, means settable after the carriage has passed a predetermined point in its travel, a motor to return said carriage, a
 35 switch member, means connected with said switch member to retain the settable means in its set position, means to actuate the settable means and the switch member to start said motor to return said carriage, means
 40 to retain said switch member effective, and means to release said switch member.

29. In a typewriting machine, the combination of a carriage, means to propel said carriage, vowel type-keys, a universal bar
 45 settable by said carriage into effective relation with said keys, so that it may be actuated thereby, punctuation type-keys, a universal bar settable by the first-mentioned universal bar into effective relation with
 50 said punctuation type-keys, a motor to return said carriage, a switch-controlling member, a latch on said switch-controlling member, to hold said second-mentioned universal bar in its set position, so that it may
 55 be actuated by the punctuation type-keys to start said motor to return said carriage, a pawl to retain said switch-controlling member effective, and means to release said switch-controlling member during the latter
 60 part of the return movement of said carriage.

30. In a typewriting machine, the combination of a carriage, propelling means therefor, a motor to return said carriage, a switch
 65 for said motor, a controlling member for

said switch, a key to actuate said controlling member, to start said motor, holding means engaging with said controlling member to hold it effective, and means to actuate
 70 said holding means to release said controlling member to stop said motor.

31. In a typewriting machine, the combination of a carriage, propelling means therefor, a motor to return said carriage, a switch
 75 for said motor, a controlling member for said switch, a key, a pawl to hold said controlling member after it has been actuated, said key being effective to render said pawl
 80 effective and actuate said controlling member to start said motor, and means actuable by said carriage, during the latter part of its return movement, to actuate said pawl
 to release said controlling member and stop said motor.

32. In a typewriting machine, the combination with a carriage and a platen thereon,
 85 of line-spacing means for said platen, vowel type-keys, punctuation type-keys, and means under the control of the punctuation type-keys to actuate said line-spacing means,
 90 when a punctuation type-key is actuated after the actuation of a vowel type-key.

33. In a typewriting machine, the combination with a carriage and a platen thereon,
 95 of line-spacing means for said platen, a set of keys, means settable by said keys, a second set of keys, and means to actuate said line-spacing means upon the actuation of one of the last-mentioned keys after one of
 100 the first-mentioned keys has been actuated.

34. In a typewriting machine, the combination with a carriage and a platen thereon,
 105 adapted to travel into a zone, of line-spacing means for said platen, punctuation type-keys, vowel type-keys, a motor, means settable by said punctuation type-keys, and means actuable to start said motor to actuate the line-spacing means and return said carriage, by the depression of one of said
 110 punctuation type-keys after a vowel type-key has been actuated while the carriage is in said zone.

35. In a typewriting machine, the combination of a carriage, a platen thereon, line-spacing mechanism for said platen, printing
 115 devices, case-shifting means, and means settable by said case-shifting means, so that the settable means may be actuated by one of said printing devices, after the carriage has passed a predetermined point in its travel, to
 120 effect the line-spacing of said platen.

36. In a typewriting machine, the combination of a carriage, printing devices, case-shifting means, and means settable by
 125 the case-shifting means, so that the settable means may be actuated by one of said printing devices, after the carriage has passed a predetermined point in its travel, to effect the return of said carriage.

37. In a typewriting machine, the combination 130

nation of a carriage adapted to enter a zone, punctuation type-keys, case-shifting means, and means, comprising a universal bar, settable by the case-shifting means, so that the universal bar may be actuated by one of said punctuation type-keys after the carriage has entered the zone, to effect the return of said carriage.

38. In a typewriting machine, the combination of a carriage, adapted to enter a zone, a vowel type-key, means settable by said key when said carriage is in said zone, and a key to actuate said means, after it has been set, to effect the return of said carriage from the zone.

39. In a typewriting machine, the combination of a carriage, adapted to enter a zone, a case-shift key, means settable by said key when said carriage is in said zone, and a key to actuate said means, after it has been set, to effect the return of said carriage from the zone.

40. In a typewriting machine, the combination of a carriage, adapted to enter a zone, a case-shift key, means settable by said key when said carriage is in said zone, and punctuation type-keys to actuate said means, after it has been set, to effect the return of said carriage from the zone.

41. In a typewriting machine, the combination of a carriage, adapted to enter a zone, vowel type-keys and a shift-key, a universal bar settable by any one of said keys when said carriage is in said zone, and punctuation keys to actuate said universal bar, after it has been set, to effect the return of said carriage from the zone.

42. In a typewriting machine, the combination of a carriage, a key to effect the return of said carriage, after the latter has passed a predetermined point in its travel, and means to render said key ineffective as the carriage approaches the predetermined point.

43. In a typewriting machine, the combination of a carriage adapted to travel into a zone, a key to effect the return of said carriage from said zone, and means to lock said key immediately prior to the entrance of the carriage into said zone.

44. In a typewriting machine, the combination of a carriage adapted to travel into a zone, type-key to effect the return of said carriage from said zone, and means comprising an adjustable member with which said carriage may engage, to lock said key immediately prior to the entrance of the carriage into said zone.

45. In a typewriting machine, the combination of a carriage adapted to travel into a zone, a hyphen type-key to effect the return of said carriage from said zone, and means to lock said hyphen type-key as the carriage approaches the carriage-returning zone.

46. In a typewriting machine, the combination of a carriage adapted to travel into a zone, a hyphen type-key to effect the return of said carriage from said zone, an adjustable element to determine the location of said zone, and means comprising a member adjustable with said adjustable element, to lock said hyphen type-key as the carriage approaches the carriage-returning zone.

47. In a typewriting machine, the combination of a carriage adapted to travel into a zone, a key to effect a return movement of said carriage from said zone, and mechanism to lock said key as the carriage approaches said zone; said mechanism comprising a member adjustable to various positions and engageable by said carriage, an element actuable by said member in any one of its adjusted positions, and a locking member connected with said element.

48. In a typewriting machine, the combination of a carriage adapted to travel into a zone, a hyphen-key to effect a return movement of said carriage from said zone, and mechanism to lock said key as the carriage approaches said zone; said mechanism comprising a cam member adjustable to various positions and engageable by said carriage, a pivoted bail actuable by said cam member in any one of its adjusted positions, a rock-shaft extending crosswise of the machine, said rock-shaft being connected to said bail, and an arm on said rock-shaft to engage with said hyphen-key.

49. In a typewriting machine, the combination of a carriage adapted to traverse a zone, a hyphen-key, and means to render said key ineffective as the carriage traverses said zone.

50. In a typewriting machine, the combination of a carriage adapted to enter a zone, a hyphen-key, locking means for said key, and means to render said locking means ineffective as the carriage enters said zone.

51. In a typewriting machine, the combination of a carriage adapted to traverse two zones, a type-key, means to render said key ineffective when the carriage enters the first zone, and means actuable by said key to effect the return of said carriage after it has entered the second zone.

52. In a typewriting machine, the combination of a carriage adapted to traverse two zones, settable devices to determine said zones, a type-key, means on said carriage to engage with one of said devices to render said key ineffective when the carriage enters the first zone, an element actuable by said key, and means on said carriage to engage with the other device to set the element actuable by said key, as the carriage enters the second zone, so that its return may be effected by the actuation of said key in the second zone.

53. In a typewriting machine, the combination of a carriage adapted to travel into a zone, a hyphen type-key to effect the return of said carriage from said zone, an adjustable element to determine the location of said zone, and means comprising a member adjustable with said adjustable element, to lock said hyphen type-key as the carriage approaches the carriage-returning zone.

nation of a carriage adapted to traverse two zones, devices to determine said zones, a type-key, means on said carriage to engage with one of said devices to render said key
5 ineffective when the carriage enters the first zone, an element actuable by said key, and means on said carriage to engage with the other device to set the element actuable by said key, as the carriage enters the second
10 zone, so that the return of said carriage may be effected by the actuation of said key in said zone, the zone-determining devices being connected with each other and settable lengthwise of said carriage.
15 54. In a typewriting machine, the combi-

nation of a carriage, type-keys, a universal bar, a pivoted member comprising an arm with a cam thereon, an element adjustable relatively to said pivoted member and said carriage, means on said carriage to engage
20 the adjustable element to actuate said arm, said universal bar being shiftable into effective relation with said keys by the cam on said arm, and means actuable by said universal bar.

JOHN WALDHEIM.

Witnesses:

ROSE GERSTEIN,
CATHERINE A. NEWELL.