Dec. 29, 1942. H. L. PITMAN 2,306,564

TYPEWRITING MACHINE

Filed June 18, 1940 3 Sheets-Sheet 1

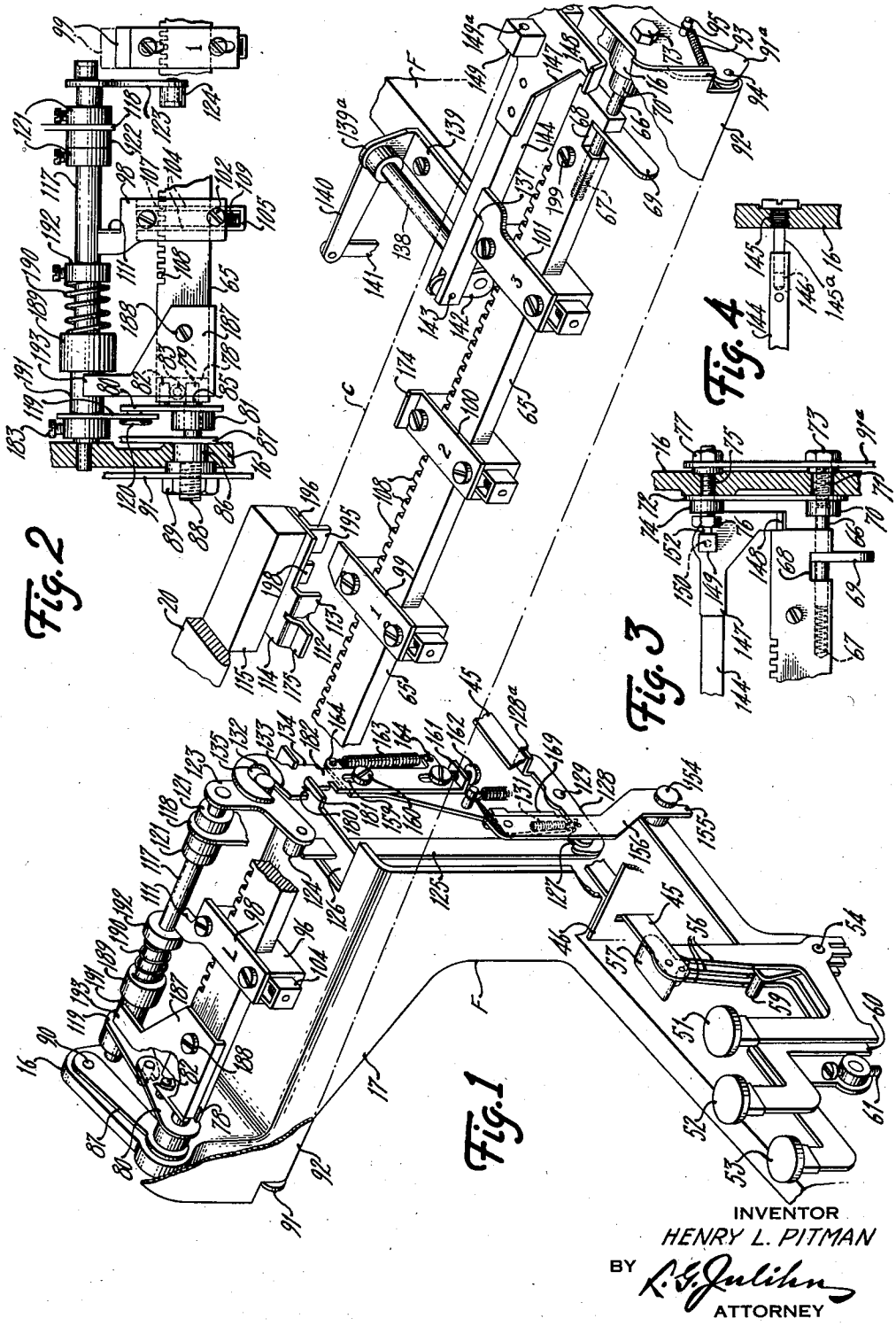


Fig. 1

Fig. 2

Fig. 3

Fig. 4

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TYPEWRITING MACHINE

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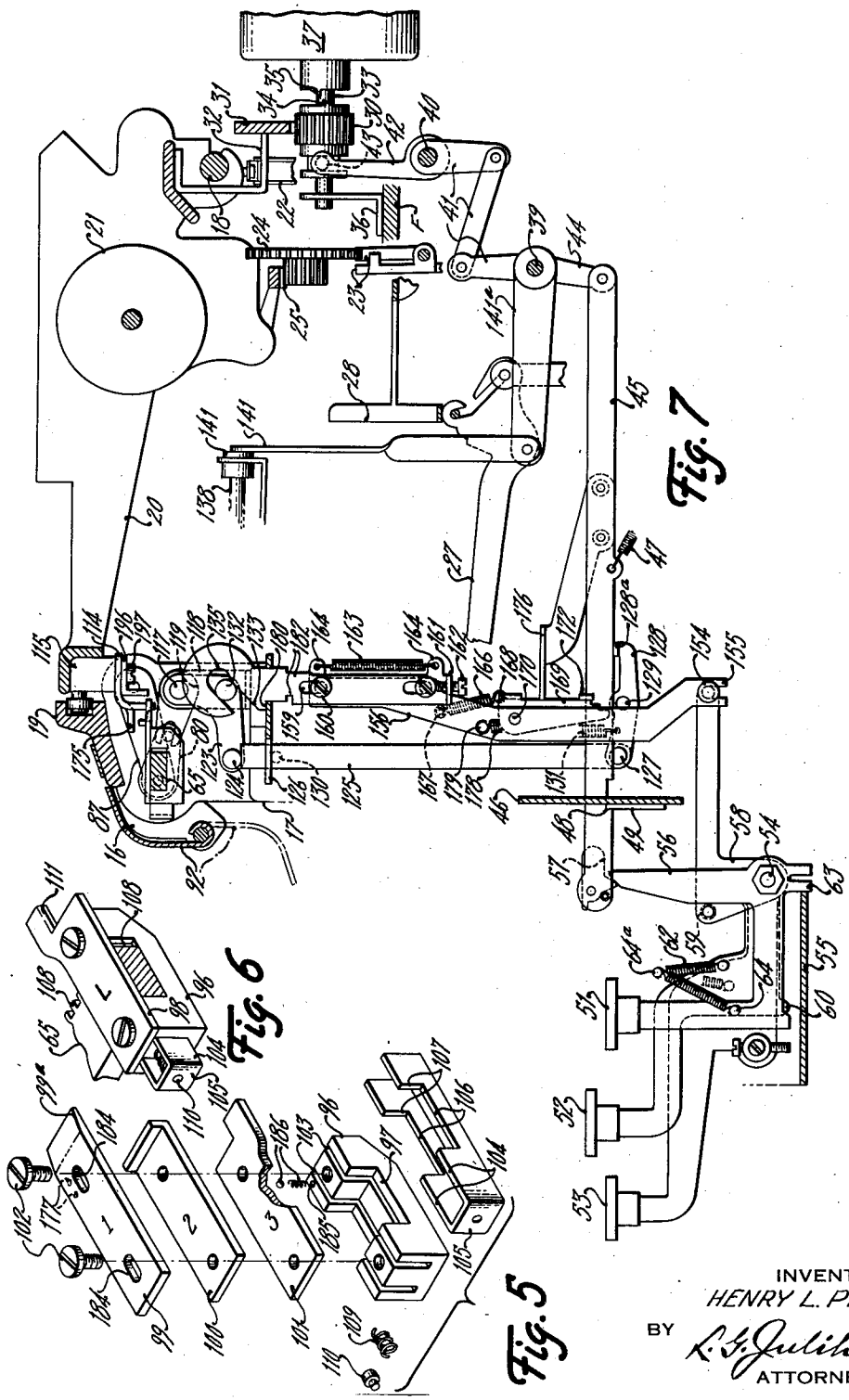


Fig. 7

Fig. 6

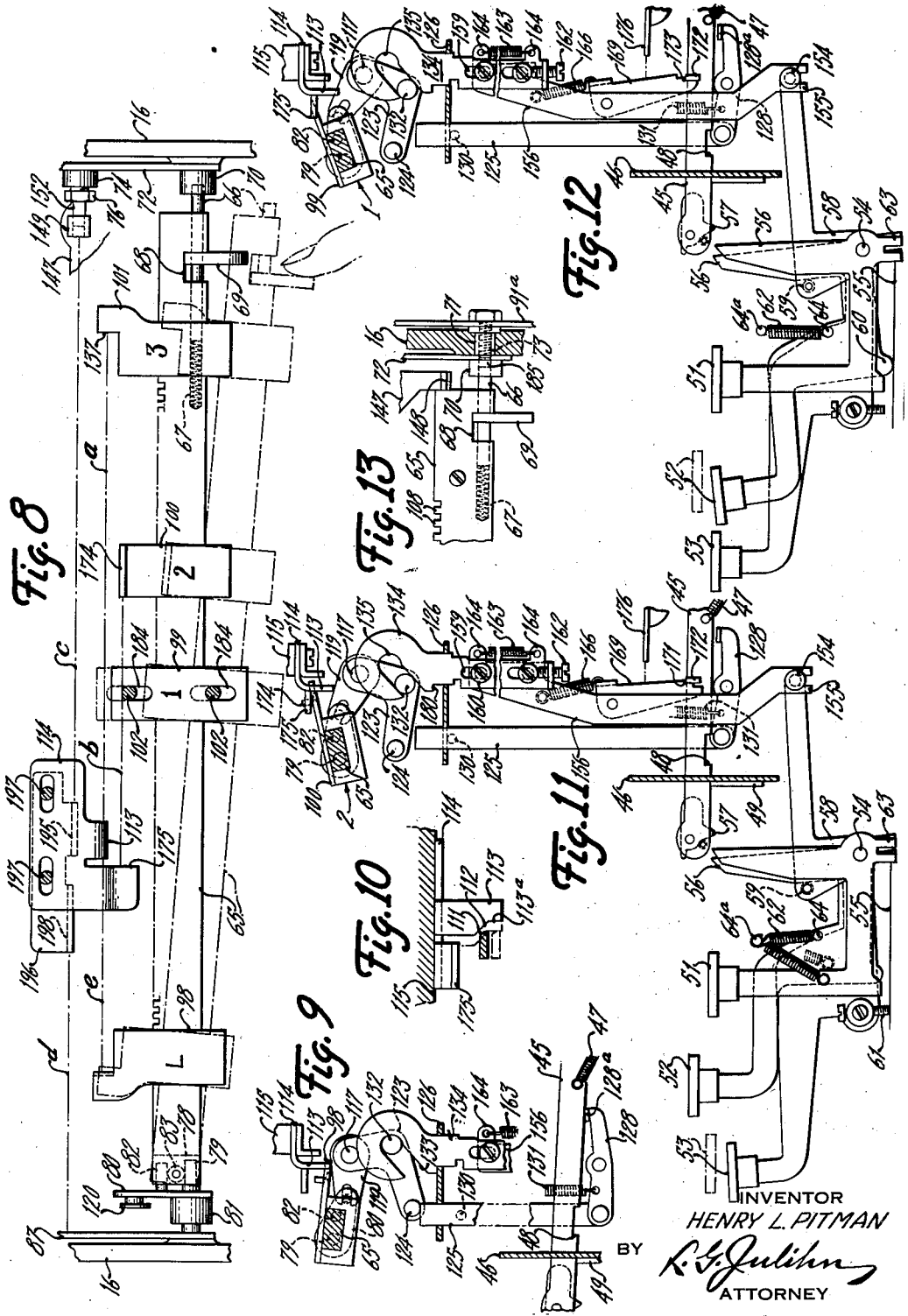
Fig. 5

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TYPEWRITING MACHINE

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Patented Dec. 29, 1942

2,306,564

UNITED STATES PATENT OFFICE

2,306,564

TYPEWRITING MACHINE

Henry L. Pitman, West Hartford, Conn., assignor to Underwood Elliott Fisher Company, New York, N. Y., a corporation of Delaware

Application June 18, 1940, Serial No. 341,167

26 Claims. (Cl. 197—66)

This invention relates to typewriters and deals with margin-stop mechanism associated with the typing carriage.

A line-end margin stop is engageable by the carriage to cause automatically an operation of power-operable carriage-return mechanism. There may be a plurality of carriage-return-limiting or line-start margin stops, including one for limiting an extreme carriage-return and one or more stops for limiting intermediate carriage-returns.

A carriage-return-key mechanism is operable to initiate power-return of the carriage and is also differentially operable to determine which of the several return-limiting margin-stops shall be effective to terminate the power-return.

The broad object of the invention is to provide an improved margin-stop mechanism.

In accounting work, there may be employed different work-sheet forms requiring different settings of the margin stops.

It is a further object of the invention to provide for facilitating the changing of the margin-stop set-up in respect to different work-sheet forms.

Another object is to provide for removing a set-up of margin-stops entirely from the machine so that it may be laid aside and replaced by a different set-up of margin-stops.

Another object is to have the margin-stops individually adjustable to facilitate making a set-up of the stops.

For these and other purposes, a set-up of margin-stops may be arranged on a support adapted to be readily removable from and replaceable in the machine at will; there may be several of such supports and their individual margin-stop set-ups for interchangeable use with the machine.

Another object is to provide that any margin-stop set-up and its support will serve in conjunction with the aforementioned carriage-return-key mechanism, to provide also that the line-end stop of any support may serve to automatically initiate a power carriage-return, and to provide that the carriage-return-limiting stops of any support will serve to terminate the power-return of the carriage.

If the power-carriage-return is initiated automatically by means of the line-end stop, the carriage will ordinarily be returned to the extreme carriage-return-limiting stop. Another object is to adapt one of the intermediate carriage-return-limiting stops so that it may be made to serve, instead of the extreme stop, to limit the automatically initiated carriage-return.

Another object is to embody the invention in simple, durable and efficient form.

Other objects, features and advantages will hereinafter appear.

In the accompanying drawings:

Figure 1 is a perspective of the novel margin-stop structure and associated mechanism,

Figure 2 is a top plan view of parts, partly sectioned, at the left side of the machine, of the margin-stop mechanism,

Figure 3 is a top plan view of parts, partly sectioned, at the right side of the machine, of the margin-stop mechanism,

Figure 4 is a partly sectioned view of details,

Figure 5 is a perspective of separate parts constituting the individual margin-stops,

Figure 6 is a perspective of the line-end margin-stop,

Figure 7 is a partly sectioned side elevation representing typewriter structure, carriage-return mechanism, and the margin-stop mechanism,

Figure 8 is a top plan view of the margin stop support or rack and associated details, and illustrates how the support and stops may be removed and replaced readily at will,

Figure 9 is a side view illustrating operation of parts to automatically initiate a carriage-return,

Figure 10 is a front view of a carriage counter-stop, cam and a cam-controlled part of the line-end margin-stop,

Figures 11 and 12 are partly sectioned side views illustrating the operated positions of the parts involved with the carriage-return-key mechanism for using different intermediate carriage-return-limiting stops, and

Figure 13 is a plan view showing a modification of parts of Figure 3.

A main frame F of the typewriter is partly shown in the drawings and includes right and left standards 16 on lateral extensions 17 of the side walls of the frame; only the extension 17 at the left of the machine is shown in full in Figure 1, the one at the right being similar. Frame F supports a rear rail 18 and standards 16 support a front rail 19. A carriage 20 mounting a platen 21 is reciprocatable laterally on rails 18, 19. A spring-motor 22 drives carriage 20 leftward in letter-feed steps determined by cooperation of escapement dogs 23 with an escapement wheel 24 having a pinion-and-rack connection 25 to the carriage. The escapement mechanism permits free return of the carriage.

Type-bars represented at 27, Figure 7, are pivotally supported in the usual type-bar segment to move to and from platen 21 and have operative

connections to type-keys, not shown, but disposed in conventional keyboard array at the front of the machine. Escapement dogs 23 are operatively connected to type-bars 27 by a universal bar 28.

A carriage-return pinion 30 meshes constantly with a rack 31 attached to carriage 20 by brackets 32. Pinion 30 is slidable transversely of rack 31 along a power-operable drive-shaft 33 to move its clutch-tooth 34 into and out of engagement with a toothed clutch collar 35 fixed to power shaft 33 which is journaled in fixtures 36, 37 on the framework.

Rock-shafts 39, 40 are journaled in the framework and are connected by linkage 41. Rock-shaft 40 has fixed thereto a shifter 42 for pinion 30, said shifter having a pin engaging a circumferential groove of pinion 30 as at 43, Figure 7. Shaft 39 has fixed thereto an arm 44 to which is pivoted a trip link 45 extending horizontally forward through a guide-slot in a plate 46 fixed to the framework. A spring 47 is biased to urge trip-link 45 rearwardly and downwardly. A latch-shoulder 48 of trip-link 45 normally engages a keeper 49 on plate 46 to determine the normal or disengaged position, Figure 7, of pinion 30.

Upon raising the forward end of trip-link 45, by means later described, to disengage its latch-shoulder 48 from keeper 49, spring 47 will move the parts so that pinion 30 is moved rearwardly to engage clutch collar 35 for resulting return movement of carriage 20 by power-shaft 33. Conversely, upon withdrawing pinion 30 from clutch collar 35, by means described later, trip-link 45 will become latched again by keeper 49.

A plurality of carriage-return key-levers 51, 52, 53 are rockable individually about a common fulcrum-stud 54 fixed in an angle plate 55 secured to the framework. Each key-lever has a kicker-arm 56 to engage a one-way pawl 57 on trip-link 45 whenever one of said key-levers is rocked counterclockwise from the Figure 7 position, thereby to lift the forward end of trip-link 45 for its resulting rearward movement by spring 47 to initiate a carriage return.

Also journaled on stud 54 there is an elbow-lever 58 having a pin 59 for engagement by either kicker arm 56 of the carriage return key levers 52, 53. Manual counterclockwise movement or depression of key lever 52 is limited by engagement of its stop 60 with angle plate 55 as at Figure 12. Said key lever 52 thus operated imparts a certain extent of counterclockwise movement to elbow-lever 58. Similarly, a stop 61 on key lever 53 limits its operation or movement so as to impart a different extent of counterclockwise movement to elbow-lever 58, as in Figure 11. Operation of carriage return key lever 51 determines extreme return of the carriage and does not affect elbow-lever 58. Elbow-lever 58 is operated only by key-levers 52, 53 to determine different intermediate extents of return of carriage 20 as will later appear.

Springs 62 keep key-levers 51–53 in normal positions in which tongues 63 of said levers abut angle plate 55, Figure 7. Each spring 62 is attached to its lever 64 and to an anchor pin 64a in the framework.

The described carriage-return-key mechanism is substantially as disclosed in my co-pending application Serial No. 264,377, filed March 27, 1939, now Patent No. 2,258,715, dated October 14, 1941. A trip-link such as 45 and its connections to a carriage-return pinion such as 30 are substantially as shown in my U. S. Patent No. 2,178,702, dated November 7, 1939. The other typewriter features thus far described are conventional and well known as exemplified in the Underwood Standard Typewriter.

I will now describe the novel margin-stop mechanism and its combination with the above-described mechanism.

A margin stop rack 65 is bored at one end to receive slidably a pivot-pin 66. A spring 67 is compressed between the inner end of the bore and the pin 66. Rack 65 has a cut-out 68 for a finger-piece 69 fixed to pin 66 as by a press fit. The inner end of finger-piece 69 may abut the front face of cut-out 68 to keep said finger-piece from turning. By its abutment with the side of cut-out 68, finger-piece 69 may limit the projection of pin 66 beyond the rack 65 and into a fulcrum socket 70 on right hand standard 16 of the framework. Said fulcrum socket 70 and its shank 71 may be fixed to a plate 72. Shank 71 may be received in a bore of standard 16 and may be threaded to receive a headed fastening screw 73. A collar 74 also fixed to plate 72 is threaded to receive a screw 75 having an inner head 76 and passing through a hole in standard 16 to receive an outer fastening nut 77.

Rack 65 has at its other end a transverse slot 78 fitting a fulcrum pin 79 on the left standard 16. Loosely fulcrumed on pin 79 there are an arm 80 and its hub 81. Arm 80 has a pin 82 fitting in slot 78 of rack 65 and therefore rotation of rack 65 about pins 66, 79 will also be attended by rotation of arm 80. A collar 83 is fixed to rack 65 within slot 78 and takes up the space between and abuts pins 79, 82 to prevent transverse displacement of rack 65. Fulcrum pin 79 is shouldered at 85 to limit left-ward displacement of rack 65. Pin 79 may have a collar 86 fixed to a plate 87 and may also have an outer screw shank 88 to receive a fastening nut 89. Standard 16 is bored to receive collar 86.

Plate 87 extends rearwardly to receive a fastening screw 90 whose outer head, not shown, cooperates with nut 89 to secure a hinge-plate 91 to outer side of left standard 16. Similarly, there is a hinge plate 91a at the right standard 16 and secured thereto by nut 77 and screw 73. An angular cover plate 92 is curled around a hinge rod or pintles 94 associated with the hinge plates 91, 91a. Cover plate 92 may be swung forwardly and downwardly from its normal full-line rack-covering position to the dotted-line position, Figure 7, to uncover rack 65; said cover plate 92 spans hinge-plates 91, 91a and in its normal position its rear edge is adjacent the forward edge of front carriage rail 19. To each end of cover plate 92 there is attached a spring 93 anchored to a pin 95 on the companion hinge plate. Springs 93 are biased to throw to either side of the hinge axis to keep the cover plate either in its normal full-line position or in its dotted-line position.

Rack 65 presents, Figures 1 and 8, a line-end margin-stop L, an extreme carriage-return margin-stop 3, and, in the present instance, two intermediate carriage-return margin-stops 1 and 2, Figures 1, 2 and 8.

Each margin-stop includes a body-block 96 which is cut out as at 97 to fit slidably against the bottom, front and rear sides of rack 65, while one of plates 98, 99, 100 and 101 held to the top of block 96 by screws 102 fits slidably against the top side of rack 65. Two laterally spaced slots 103 extending from end to end of body block 96 and below cut-out 97, receive two

catch elements 104 connected by a yoke 105. Each element 104 is cut out as at 106 to form an edge 107 enterable between any two adjacent rack teeth 108 of rack 65. Cut-outs 106 permit rearward displacement of the piece 104, 105, by pushing on yoke 105, to retract edges 107 from the rack teeth so that the margin-stop may be shifted laterally along rack 65 to one or another station. A spring 109 is compressed between yoke 105 and body block 96 to bring back and keep edges 107 between the rack teeth 109 for holding the margin-stop at its desired station. A stud 110 in yoke 105 enters spring 109 to keep the latter in place. Catch-elements 104 fit slidably between one of the overlying plates 98—101 and the bottoms of slots 103. At the cut-outs 106 elements 104 fit slidably between the bottom of rack 65 and the bottoms of slots 103.

Plate 98 is on line-end margin-stop L and presents a cam-edge 111 in the path of *e*, Figure 8, of a cam-edge 112 of a downwardly extending tongue 113 of a stop-plate 114 attached to the underside of boss 115 on the frame of carriage 20. In the letter-feed step in which carriage 20 reaches a line-end, its cam edge 112 engages cam-edge 111 of margin stop L to angularly move rack 65 clockwise about its pivot-pins 66, 79.

A rock-shaft 117 is journaled in left standard 16 and in a bracket 118 fixed to the left frame-extension 17. An arm 119 fixed to shaft 117 is slotted to embrace a headed stud 120 of arm 80. Shaft 117 is retained endwise by shaft collars 121 abutting bracket 118 and its boss 122. Fixed to shaft 117 there is an elbow-lever 123 having a pin or roller 124 overlying a vertical thrust rod 125 slidably guided at its upper end in a plate 126 secured to the left frame-extension 17. The lower end of rod 125 is articulated at 127 to a lever 128 having a fulcrum 129 fixed to the framework. A tab 128ª of lever 128 underlies trip-link 45. A tension-spring 131 is anchored to the framework and is attached to lever 128 to urge the lever clockwise of Figure 7 to keep the parts 125, 128 in normal positions which may be determined by abutment of a pin 130 in rod 125 with plate 126.

It will be seen now that when rack 65 is rocked clockwise by engagement of the carriage with the line-end margin-stop L, that arm 80 is similarly rocked and in turn rocks arm 119 and its shaft 117 counterclockwise to depress rod 125 to rock lever 128 counterclockwise and thereby raise the forward end of trip-link 45 to initiate a power-return of the carriage.

Immediately at the start of the return movement of the carriage, the latter's cam-edge 112 recedes from line-end margin-stop L. This permits spring 131 to return the parts immediately to normal positions, Figure 7, determined by the aforementioned pin 130, and also, as to rack 65, by abutment of a pin 132 on elbow-lever 123 with the side of a cam-slot 133 in an upright bar 134. Bar 134 has a further function which will be described later. Said cam-slot 133 has its inner part 135 shaped to permit pin 132 to move freely with shaft 117 counterclockwise independently of said bar 134 and thereby permit rack 65 to be moved clockwise for initiating a carriage-return.

In the normal position, Figure 7, of rack 65, an edge 137 of plate 101 on the extreme carriage-return-stop 3 is in the path *a*, Figure 8, of the right side edge of tongue 113 on the returning carriage. As carriage-tongue 113 encounters said edge 137, it results that rack 65 is displaced endwise rightwardly but is not rocked angularly. This endwise displacement of rack 65 terminates the power-return of the carriage by the following means.

A rock shaft 138 is journaled in up-turned front and rear ears 139ª of a bracket 139 fixed to the right side wall of the framework F. A rear arm 140 fixed to said shaft 138 is connected by a link 141 to an arm 141ª, Figure 7, fixed to rock shaft 39. Another arm 142, Figure 1, fixed to shaft 138 is pivotally articulated as at 143 to a bar 144 paralleling rack 65. A stud 145ª on the end of a headed screw 145 threaded and seated in the right frame standard 16, Figure 4, loosely fits a bore 146 in the right-hand end of bar 144. A plate 147 is shown riveted to the top of bar 144 to present a finger 148 adjacent the right end of rack 65. A block 149 surmounts plate 147 and has a rivet shank 150, Figure 3, for fixing it to plate 147 and bar 144. Said block 149 may have a bore 149ª, Figure 1, to fit loosely a stud 152, Figure 3, projecting from screw-head 76 to cooperate with stud 145ª to support and guide bar 144 at its right end.

It will be seen now that the rightward endwise displacement of rack 65 resulting from encounter of tongue 113 of the returning carriage with the extreme line start stop 3 will similarly displace bar 144 and thereby rock shaft 138 clockwise of Figure 1. It will further be seen that this rocking of shaft 138 is transmitted to rock shafts 39, 40 to move carriage return pinion 30 from clutch collar 35 of power shaft 33; at the same time, trip-link 45 is moved forwardly again to its normal position, Figure 7, in which it becomes latched over keeper 49. The rightward endwise displacement of rack 65 and bar 144 is limited by abutment of block 149 with head 76 of screw 75 and adjustment of the limit of displacement may be effected by turning screw 75.

The elbow-lever 58 of the carriage-return-key-lever mechanism has a stud 154 grooved for articulation with the slotted lower end 155 of an extension 156 of bar 134. Bar 134 has slots 159 to receive headed studs 160 fixed in the adjacent portion of extension 156. A lateral tab 161 of bar 134 has a screw 162 abutting lower stud 160 under the urge of a tension spring 163 connected between ears 164 of bar 134 and extension 156. By turning screw 162, the length of the composite bar 134, 156 may be adjusted to provide for proper relative disposition of its lower end and the upper cam-slot 133.

A tension spring 166 is connected at 167 to extension 156 and at 168 to a latch 169 pivoted at 170 to extension 156.

By depressing carriage-return key-lever 53 to the Figure 11 position, elbow-lever 58 is rocked counterclockwise and composite bar 134, 156 is raised to such extent that an upper step 171 of latch 169 will become caught over a fixed stop 172 suitably supported by the framework. Through such raising of bar 134, its oblique upper cam-slot 133 rocks shaft 117 clockwise and rack 65 counterclockwise to the Figure 11 positions to render the intermediate carriage return limiting stop 2 effective. By depressing carriage-return key lever 52, instead of key lever 53, bar 134, 156 will be raised higher so that a lower step 173 of latch 169 will become caught over stop 172 thereby causing rack 65 to become angularly moved to the Figure 12 position to render the intermediate carriage return limiting stop 1 effective.

When margin stop 2 is effective, through the lesser angular movement of rack 65, an up-turned end 174 of its plate 100 is in the path *b*, Figure 8, of a horizontal counterstop-forming tongue 175 of stop plate 114 on the carriage. Similarly, margin stop 1 is effective, through the greater angular movement of rack 65 to present the rear end of its plate 99 in path *b* of tongue 175. Said rear end of plate 99 and the up-turned end 174 of plate 100 forms stops angularly spaced about the pivot axis of rack 65. For such angular spacing the top side of the rear end of plate 99 may be beveled as at 99a, Figure 5. The intermediate carriage return stops 1 and 2 are normally out of the path *b* of the stop 175 on the carriage.

Should a key lever 52 or 53 be operated when plate 99 or 100 of stops 1 and 2 is under carriage stop 175, the spring 163 will yield to permit extension 156 to rise to become latched by stop 172.

The operation of either key lever, 52 or 53, has tripped trip link 45 to cause pinion 30 to be connected to power shaft 33 to initiate the resulting return of the carriage. When tongue 175 of the returning carriage encounters margin stop 1 or 2, whichever is effective, rack 65 and bar 144, are displaced endwise to the right to rock shaft 138 to unclutch pinion 30 from power shaft 33 and at the same time restore trip-link 45 forwardly to latched position. By forward restoration of trip link 45, a member 176 thereon strikes and disengages latch 169 from stop 172. This results in downward movement of bar 134, 156 by a spring 178 attached to extension 156 at 179 and to a suitable anchor, not shown, fixed to the framework. A shoulder 180 of bar 134 abuts the top of guide plate 126 to limit the downward restoration of bar 134, 156. Said guide plate has an open T-slot 181 to guide bar 134. A reduced neck 182 of bar 134 permits insertion of the latter into T-slot 181. With shoulder 180 of bar 134 stopping normally on plate 126 and thus normally holding rockshaft 117 fixed, the rack-bar 65 may nevertheless be adjusted angularly to its normal Figure 7 position. By loosening a screw 183, Figure 2, that fixes arm 119 to shaft 117, the rack 65 may be angularly adjusted whereupon screw 183 is tightened again.

Plate 99 of margin stop 1 may have slots 184 for the screws 102 in order to permit shift of said plate between the full-line normal position and the dotted-line position, Figure 2. Screws 102, for margin stop 1, may be shouldered to seat upon body block 96 to prevent their heads from binding plate 99. Said block 96 may be drilled at 185 to receive a ball and spring detent 186 cooperative with spots 177 on the underside of plate 99 to detent the latter in either of its positions. In the dotted-line position, Figure 8, plate 99 is in path *a* of tongue 113 to limit carriage-return, automatically initiated by engagement of the cam edge 112 with the line-end margin-stop L. That is to say, margin-stop 1, with its plate 99 in the dotted-line position, will be effective, instead of margin-stop 3, to terminate an automatically initiated return of the carriage. It will be understood that margin-stop 1, with its plate 99 in its rearwardly projected dotted-line position, will be effective without angularly moving rack 65 from its normal Figure 7 position; but if plate 99 is in its normal forwardly retracted or full-line position, rack 65 must be angularly moved by means of key lever 52, as in Figure 12, to render margin-stop 1 effective.

When rack 65 is positioned toward the left, as in Figures 2 and 3, its pivot-pin 66 may be closely adjacent the end of screw 73. Therefore, when rack 65 is displaced toward the right by the returning carriage, it will move relatively to pin 66, which is arrested by screw 73, and thereby compress spring 67, while block 149 on the rack-moved bar 144 reaches stop 76. When the carriage subsequently moves leftwardly again, spring 67 will tend to move rack 65 leftwardly toward the positions of Figures 2 and 3.

Alternatively, screw 73 may be shortened so that there may be a space 185, Figure 13, between the ends of pin 66 and screw 73 when the rack is in its leftwardly placed position of Figures 2 and 3. In that case, leftward movement of the carriage, following the rightward displacement of rack 65, will not be attended by leftward movement of said rack 65 until carriage tongue 113 reaches cam-edge 111 of line-end-margin stop L to return rack 65 leftwardly to the Figures 2 and 3 positions and rock rack 65 clockwise to initiate automatically a carriage return. If one of the carriage return key levers 51, 53 is operated before the carriage reaches line-end margin-stop L, the resulting leftward placement of bar 144 will move rack leftwardly to the Figures 2 and 3 positions.

A plate 187 is fixed to rack 65 by screws 188. A collar 189 is slidably loose on shaft 117, Figures 1 and 2, and is urged leftwardly by spring 190 but is stopped by a spacer 191 abutting shaft arm 119. Spring 190 reacts against a collar 192 fixed to shaft 117. When rack has become displaced rightwardly by the returning carriage, tongue 193 of plate 187 overlies collar 189 so that the latter blocks untimely clockwise movement of rack 65. But when carriage tongue 113 reaches line-end margin-stop L again and restores rack 65 leftwardly, carriage tongue 193 is moved leftwardly off collar 189 to the Figure 2 position to permit the final carriage-return-initiating clockwise angular movement of rack 65. If rack 65 should happen to be turned while the carriage is encountering one of the margin-stops 1, 2 or 3 so that the left side of collar 189 opposes tongue 193, it would merely result that the rightward movement of rack 65 would temporarily displace collar 189 in opposition to spring 190 in order to avoid damage to the parts.

Figure 8 illustrates how rack 65, with its set up of margin-stops, may be removed readily at will from the machine. Finger-piece 69 is first moved manually leftwardly to retract pin 66 from socket 70. Rack 65 may then be turned about its left end to the dotted-line position, Figure 8, preparatory to withdrawing said left end from pins 78, 82 by moving rack 65 rightwardly. In a converse manner, rack 65, or a similar substitute rack, may be replaced in the machine.

Should one of the carriage return key levers 51—53 be operated in the absence of rack 65 from the machine, the resulting carriage return movement will be arrested by encounter of a carriage tongue 195, moving in path *c*, Figure 8, with block 149 to move bar 144 rightwardly and rock shaft 138 clockwise to shut off the carriage-return mechanism. Tongue 195 is on a plate 196 which, together with plate 114 is fixed to carriage boss 115 by screws 197. Plate 196 also has a tongue 198 moving in path *d* to engage the side of plate 87 to arrest leftward carriage movement in the absence of rack 65 from the machine.

Tongue 113 of plate 114 may have a vertical edge 113a, Figure 10, to stop against the right side of cam-edge 111 of line-end margin-stop L in order to limit positively leftward movement of the carriage.

A stop-screw 199 in rack 65 limits rightward shifts of the margin stops on the rack 65; plate 187 similarly limits leftward shifts of the margin stops.

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

What is claimed is:

1. A typewriter having a frame and a carriage thereon, power operable carriage return mechanism, a member on the frame movable to operated position to initiate a carriage return operation of said mechanism, a line-end stop, a support on which said stop is stationed, means mounting said support on said frame and permitting movement of said support in response to engagement of said stop by the carriage at a line end, and an operative connection enabling said support in its said movement to move said return initiating member to operated position, said mounting means having associated therewith a manually operable releaser and said operative connection being constructed to make it feasible to release and remove quickly and to replace quickly such stop support by hand at will.

2. A typewriter having a frame and a carriage thereon, power-operable carriage-return mechanism engageable to return the carriage, a carriage-return stop, a support on which said stop is stationed, means mounting said support on said frame and permitting movement of said support in response to engagement of said stop by the returning carriage, and an operative connection enabling said support in its said movement to disengage said carriage-return mechanism, said mounting means having associated therewith a manually operable releaser and said operative connection being constructed to make it feasible to release and remove quickly and to replace quickly such stop support by hand at will.

3. In a typing machine, the combination with a frame, and a reciprocatable carriage on said frame, of power-operable carriage-return mechanism, a support presenting line-end and carriage-return stops, means mounting said support on said frame and permitting movement of said support in response to engagement of the carriage with said stops, said support having operative connection to said carriage-return mechanism whereby the latter is controlled in response to said support movement, said mounting means having associated therewith a manually operable releaser and said operative connection being constructed to make it feasible to release and remove quickly and to replace quickly such stop support by hand at will.

4. In a typing machine, the combination with a frame and a reciprocatable carriage on said frame, of a power-operable carriage return mechanism, a rack-bar, line-end and carriage-return stops stationed on said rack-bar, means mounting said rack-bar on said frame and permitting movement of said rack-bar in response to engagement of the carriage with said stops, said rack-bar having operative connection to said carriage-return mechanism whereby the latter is controlled in response to said rack-bar movement, said mounting-means having associated therewith a manually operable releaser and said operative connection being constructed to make it feasible to release and remove quickly and to replace quickly such rack-bar by hand at will.

5. In a typing machine, the combination with a frame and a reciprocatable carriage on said frame, of a power-operable carriage return mechanism, a rack-bar, line-end and carriage-return stops stationed on said rack-bar, means mounting said rack bar on said frame for pivotal movement about a longitudinal axis and for endwise movement, and operative connections from said rack-bar to said carriage-return mechanism whereby the latter is controlled in response to said rack-bar movements, said mounting means having associated therewith a manually operable releaser and said operative connections being constructed to make it feasible to release and remove quickly and to replace quickly such rack-bar by hand at will.

6. In a typewriter, the combination with a frame and a reciprocatable carriage thereon, of a rack having a line-end stop and a line-start stop engageable by said carriage, carriage-return mechanism, means operable to initiate carriage-return actuation of said mechanism, means operable to terminate said actuation, structure mounting said rack on said frame for angular displacement about a longitudinal axis in response to engagement of the line-end stop by the carriage and for endwise displacement in response to engagement of the line-start stop by the carriage, and operative connections enabling the angular and endwise displacements of the rack to operate respectively the carriage-return-initiating means and the carriage-return-terminating means.

7. In a typewriter, the combination with a frame and a reciprocatable carriage thereon, of a rack having a line-end stop and also having an extreme line-start stop and an intermediate line-start stop, a counterstop on the carriage, the intermediate line-start stop being normally out of the path of the counterstop, power-operable carriage-return mechanism, means operable to initiate carriage-return actuation of said return mechanism, means operable to terminate said actuation, structure mounting said rack on said frame for transverse displacement in response to engagement of the line-end stop by the carriage and for endwise displacement in response to engagement of the line-start stop by the carriage, operative connections enabling the transverse and endwise displacements of the rack to operate respectively the carriage-return-initiating means and the carriage-return terminating means, a key operable for operating the carriage return initiating means, and an operative connection from said key to said rack to transversely displace said rack to place the intermediate line-start stop in the path of said counterstop, the carriage return-initiating and the intermediate-stop-placing transverse displacements of the rack being in opposite directions.

8. In a typing machine having a reciprocatable carriage, the combination of a margin-stop rack associated with said carriage, end supporting means for said rack, and means connecting said rack to said supporting means so as to permit rocking movement of said rack about a longitudinal axis and also to permit endwise movement of the rack, said connecting means having associated therewith a device manually operable for quickly disconnecting and connecting the rack and supporting means for quickly removing and replacing the rack from and in the machine at will.

9. A margin-stop rack-bar, for a typing carriage, rockable about a longitudinal axis, a pivot element defining said axis and supported on the rack for axial movement, and a finger-piece connected to said element and by which said element is manually retractable and projectable axially to provide for ready removal and replacement of the rack from and in a machine.

10. A margin-stop rack-bar, for a typing carriage, rockable about a longitudinal axis, supporting means, said rack-bar including means at each end for pivotally engaging said supporting means, one of said engaging means being a pin, said rack having means to slidably retain said pin for projecting the latter to engage said supporting means or for retracting said pin from said supporting means, the other engaging means being freely disengageable from or reengageable with said supporting means upon the retraction of said pin, whereby said rack may be removed from or replaced on said supporting means at will.

11. The combination with a frame, a reciprocatable typing carriage thereon, and power-operable carriage-return mechanism, of a rack, a carriage-return-limiting stop securable to said rack at different stations, a counterstop on the carriage, means mounting the rack on said frame for endwise movement, and for movement transversely of the carriage path to bring the stop into the path of the counterstop, said rack being normally positioned with said stop out of said counterstop path, a carriage return key, means enabling said key to initiate operation of the carriage return mechanism to return the carriage, means operatively connecting said key to said rack and enabling said key to move said rack transversely to bring said rack stop into the path of the counterstop, and means operatively connected to said rack and responsive to the endwise rack displacement occurring upon encounter of said stop and counterstop to terminate the carriage-returning operation of said carriage-return mechanism.

12. The combination with a frame, a reciprocatable typing carriage thereon, and power-operable carriage-return mechanism, of a rack, a carriage-return-limiting stop securable to said rack at different stations, a counterstop on the carriage, means mounting the rack on said frame for endwise movement, and for movement transversely of the carriage path to bring the stop into the path of the counterstop, said rack being normally positioned with said stop out of said counterstop path, a carriage return key, means enabling said key to initiate operation of the carriage return mechanism to return the carriage, means operatively connecting said key to said rack and enabling said key to move said rack transversely to bring said rack stop into the path of the counterstop, and means operatively connected to said rack and responsive to the endwise rack dipslacement occurring upon encounter of said stop and counterstop to terminate the carriage-returning operation of said carriage-return mechanism, said rack-mounting means having associated therewith a manually operable releaser and said last two means, that are operatively connected to said rack, being arranged to provide for quick removal and replacement of said rack at will.

13. The combination with a frame, a reciprocatable typing carriage thereon, and power-operable carriage return mechanism, of a margin stop rack, means pivoting said rack at its ends to said frame for angular movement about a longitudinal axis, said pivoting means being adapted to permit endwise movement of the rack, and means whereby said movements occur consonantly with effecting the return of the carriage by said return mechanism, said pivoting means having associated therewith a manually operable releaser to release and permit said rack to be removed quickly from and replaced on said frame by manipulation.

14. The combination with a frame, a reciprocatable typing carriage thereon, a carriage-return key, a power-operable carriage-return mechanism responsive to operation of said key, a rack removably mounted on said frame and having a stop engageable by the carriage at a predetermined limit of carriage-return to move said rack, means responsive to said rack movement to shut off said carriage return mechanism and operatively connected to said rack to permit ready removal of the rack, and means enabling the carriage at a predetermined limit of return movement to directly operate the shut-off means if said rack has been removed.

15. The combination with a reciprocatable typing-machine carriage, of a margin-stop rack, a support adjacent each end of the rack, and means connecting the rack to the supports so as to permit the rack to function by movement of the rack relatively to the supports, said connecting means being arranged to permit quick removal from and replacement of the rack on the supports at will and having associated therewith a finger piece instantly shiftable manually between two positions to break and remake the connecting means for said rack removal and replacement.

16. In a typing machine having a reciprocatable carriage, the combination with a rack, margin-stops secured to said rack to determine their stations, mechanism extraneous to but co-operable with the rack, a support adjacent each end of the rack, an operative connection, including a lever, between said rack and mechanism, said lever being disposed adjacent the rack on one of the supports, means connecting the rack to the support for movement of the rack, consonantly with the cooperation of said rack and mechanism, and means operatively connecting said lever and rack for joint movement, said last two means including devices readily manipulatable for removing and replacing the rack alone at will.

17. A stop rack, for a typing carriage, provided at one end with mutually facing spacially separated elements, a support adjacent said rack end, a pivot stud on said support embraced by said elements, a support to which the other end of the rack is connected detachably and so as to permit angular movement of the rack co-axially with said stud, and a mechanism operable in accordance with the angular movements of the rack, said mechanism having an operative connection to said rack including a stud embraced by said rack elements and radially spaced from the first stud.

18. In a typing machine having a carriage; a margin-stop rack associated with said carriage, supports about which said rack is rockable about a longitudinal axis, said rack having at least at one end a fulcrum pin supported on the rack for endwise movement to engage the companion support, and a finger piece operatively connected to said pin for moving the pin endwise to engage it with or disengage it from said support to provide for removal and replacement of the rack, the

other end of the rack being also detachably and pivotally connected to its companion support.

19. The combination with a frame, a reciprocatable typing carriage on said frame, and counterstop means on said carriage, of a rack supported on said frame for movement transverse to the carriage travel, an extreme stop on said rack, said rack having in respect to said movement a normal position in which it presents the extreme stop in the path of said counterstop means, and an intermediate stop on said rack, including an element shiftable between two positions, said element in one position being out of the path of the counterstop means but being movable into said path by transversely moving the rack, said element in its other position being in said path when the rack is in normal position.

20. The combination with a reciprocatable typing carriage having stop engaging means, a margin-stop rack, and power-operable carriage-return mechanism, of means mounting said rack for transverse displacement and for endwise displacement, said rack having a stop engageable by the stop engaging means on the carriage at a line-end to displace transversely the rack, means operated by the transverse displacement of the rack to determine actuation of the carriage-return mechanism, said rack having a stop engageable by the stop engaging means on the returning carriage to displace the rack endwise, means operated by the endwise displacement of the rack to determine shut-off of the carriage-return mechanism, and means preventing the transverse displacement of the rack when the latter is displaced endwise.

21. A typewriter having a main frame, a carriage reciprocatable on said frame, said frame including right and left front standards surmounted by a carriage-guiding rail, a margin-stop rack supported by said frame and disposed between said standards and below said rail, and a mask hinged to and spanning said standards to mask the margin-stop rack, said mask having a transverse edge normally adjacent said rail and being swingable about its hinge axis to expose said rack, said hinge axis being below said rack.

22. In a typewriter, the combination with a frame, and a carriage thereon, of a rack having a line-end stop and a line-start stop engageable by the carriage, carriage-return mechanism, means operable to initiate and terminate carriage-return actuation of said mechanism, structure mounting said rack on said frame for displacement transversely to the carriage path and for endwise displacement, one displacement being made by the carriage displacing the line-end stop, and the other displacement being made by the carriage displacing the line-start stop, and operative connection means enabling the rack by one of said displacements to operate the means to initiate carriage-return actuation and by the other displacement to operate the means to terminate said actuation.

23. A margin-stop rack for a typing machine carriage, a support opposite one end of the rack, a member movably supported on the support and detachably connected with the rack for joint movement of the member and rack in a direction transverse to the carriage path, a support to which the other end of the rack is connected detachably and so as to permit the transverse movement of the rack, and a mechanism operatively connected to and operable by said member in accordance with the transverse movement of the rack.

24. A typewriter having a typing carriage, a main frame, a carriage guiding rail on said frame, a margin-stop-rack supported by said frame and disposed below said rail, and a mask supported on said frame in position normally to mask said rack and to be movable out of the way to give access to said rack.

25. In a typewriter, the combination with a typing carriage having counterstop means, of a margin-stop rack having a line-end stop and stops for extreme and intermediate line-start positions, means supporting said rack for movements from a normal position in opposite directions transversely to the carriage travel, and for endwise movement, the intermediate line-start stop being out of line with the counterstop means when the rack is in said normal position, the line-end stop being engageable by the counterstop means to move the rack in one transverse direction, means operable alternatively before the line-end stop is engaged for moving the rack in the opposite transverse direction and placing it to interpose the intermediate stop in line with the counterstop means, a power-operable carriage-return mechanism, means operable jointly with the moving of the rack in either transverse direction to enable said mechanism to return the carriage, the intermediate or the extreme line-start stop being engageable by the counterstop means on the returning carriage to move the rack endwise, and means effective through the endwise rack movement to disengage the carriage-return mechanism.

26. In a typewriter, the combination with a typing carriage, of a rack having a margin stop, a counterstop on the carriage, said rack-stop and counterstop being normally out of line, means supporting said rack for transverse movement to bring its stop and the counterstop in line, said rack being detachable from said supporting means, means to which the rack is operatively connected detachably, said last-named means being movable to an operated position to move the rack transversely to bring the rack-stop and counterstop in line, and a detent to engage and hold said last-named means in operated position.

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