June 26, 1962 T. H. TOEPPEN 3,040,859

MARGIN STOP MECHANISM

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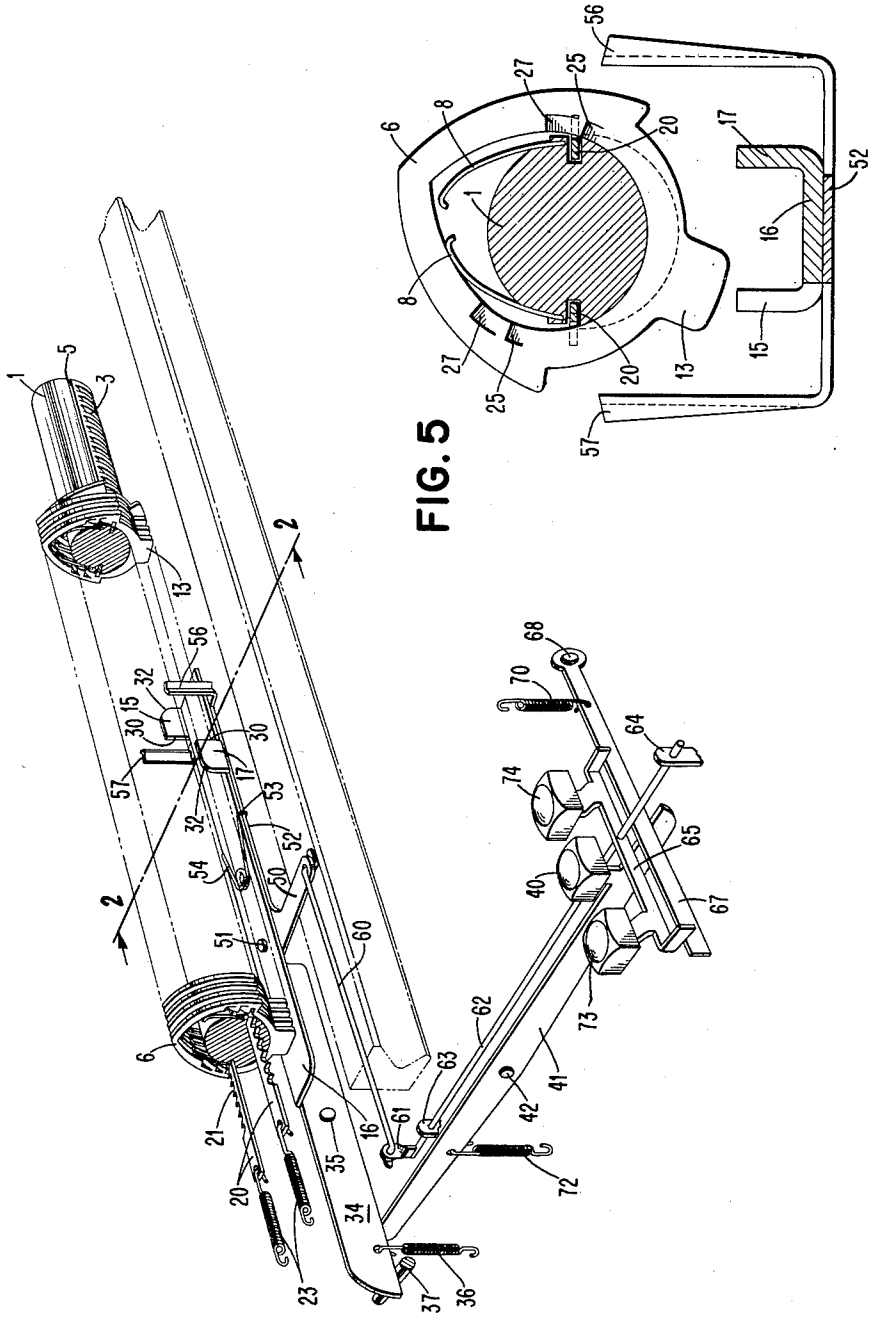


FIG. 1

FIG. 5

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FIG. 2

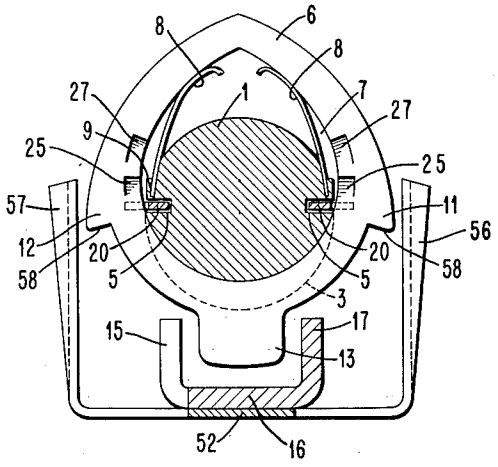


FIG. 3

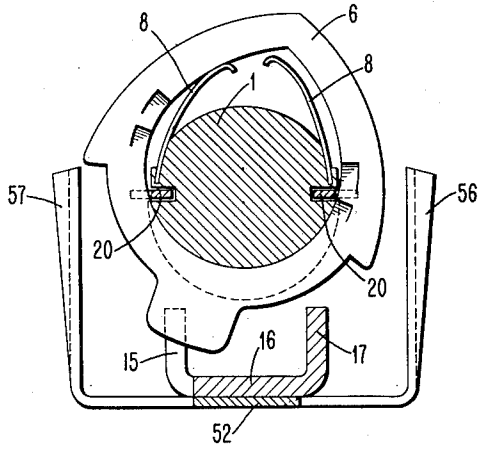
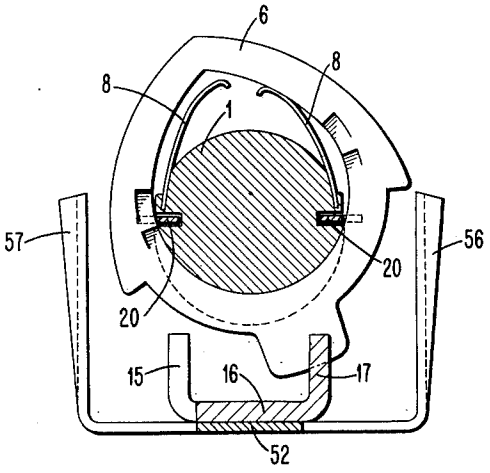


FIG. 4



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FIG. 6

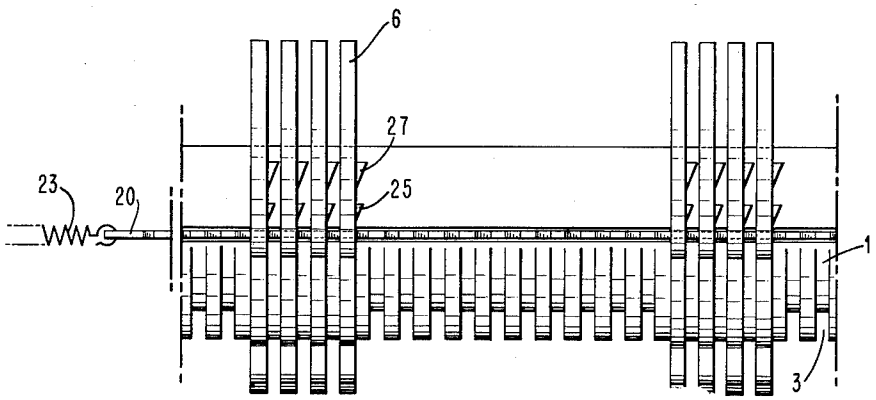
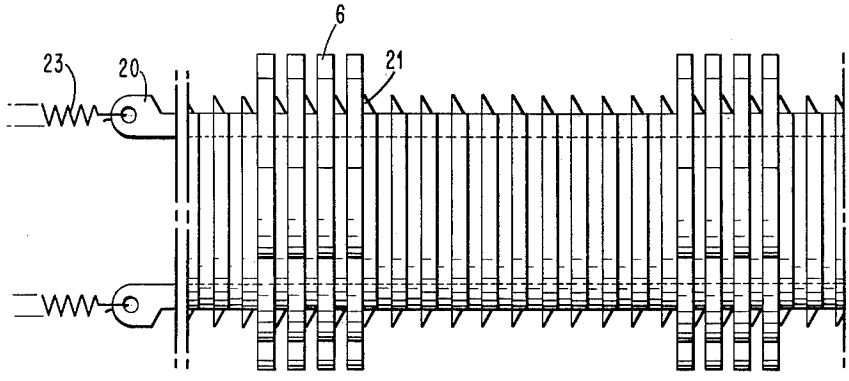


FIG. 7



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MARGIN STOP MECHANISM

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6 Claims. (Cl. 197—63)

This invention relates to typewriting machines, and more particularly to a mechanism for selectively setting margin stops.

It is an object of the present invention to provide an improved mechanism for selectively setting margin stops.

Another object of this invention is to provide an improved margin stop settting mechanism having a plurality of stop members, each one of which may be utilized for either the right hand or the left hand margin stop.

Still another object of this invention is to provide a margin stop setting mechanism wherein a margin set button can be actuated at any time, regardless of the carriage position or motion.

Yet another object of this invention is to provide a margin stop setting mechanism which does not require a separate release and set operation but has them combined into one. The foregoing and other objects, features and advantages of the invention will be apparent from the more particular description of a preferred embodiment of the invention, as illustrated in the accompanying drawings.

In the drawings:

FIG. 1 is a perspective view of an improved mechanism for setting and releasing margin stops on a typewriter.

FIG. 2 is an enlarged cross sectional view of the stop setting mechanism taken on the line 2—2 in FIG. 1 and showing a stop member in its non-active or normal position.

FIG. 3 is a view similar to that of FIG. 2 but showing the stop member in a left hand margin stop position.

FIG. 4 is a view similar to that of FIG. 2 but showing the stop member in a right hand margin stop position.

FIG. 5 is a view similar to that of FIG. 2 but showing the margin release lever in its activated position.

FIG. 6 is an enlarged front elevation view of the margin rack, bail and stop members shown in FIG. 1.

FIG. 7 is an enlarged top view of the margin rack, bails and stop members shown in FIG. 1.

There is shown in FIGS. 1 and 2 a circular margin bar 1 which forms part of a typewriter carriage and moves bodily therewith during typing operations. Margin bar 1 has a plurality of equidistantly spaced transverse, eccentric grooves 3 formed in its lower portion at each position where a margin stop is required. Extending longitudinally in a horizontal plane along the surface of bar 1 are two diametrically opposite slots 5. Carried in each groove 3 is a substantially annular stop member 6 which is capable of being positioned selectively to act as either a right hand or left hand margin stop. Each member 6 has an opening 7 sufficiently large to permit the member 6 to slide longitudinally along the bar 1 to any one of the grooves 3. Each stop is normally maintained in a non-active or normal position by the balanced pressure of spring fingers 8 which are fastened at one end in slots 9 at each side of bar 1. The spring fingers 8 are engageable with the inside surface of the member 6, as shown in FIG. 2, for lifting it relative to the bar 1 into the groove 3 and maintaining it normally in an inactive position. It can thus be seen that the combined pressure of the fingers 8 serves to keep the member 6 seated in its groove 3.

Formed on each stop member 6 are radially symmetrical shoulders 11 and 12 which are selectively engageable by a means to be described later, for rocking said member 6 around the bar 1 in either direction. Extending from the lower end of each stop member 6 is a flange 13 which is movable into positions, on rotation of the member 6, to act as either a right hand or left hand margin stop. Referring to FIGS. 2 and 3, clockwise rotation of the member 6 places the flange 13 in a position to engage a stop lug 15 on a plate member 16 to determine the left hand margin position of the carriage. Counterclockwise rotation of the member 6 places the flange 13 in a position to engage a stop lug 17 on the plate member 16 to determine the right hand margin position of the carriage.

Extending longitudinally through and slidable in the slots 5 are members 20 having teeth 21 spaced from each other a distance equal to the spacing of the grooves 3. Springs 23 are attached to the members 20 to urge the latter in a direction to hold the teeth 21 against the sides of the stop members 6. Formed symmetrically on each of the members 6 at opposite sides of bar 1 are tooth portions 25 projecting from the side of the member adjacent the tooth 21 engaging it. As shown herein, the tooth portions are stamped directly from each member and are so located that one or the other latches against the side of a tooth 21 when the member 6 is rocked in either direction from its neutral position. It can be seen from FIG. 2 that rotation of any stop member 6 in either direction will engage one of its tooth portions 25 with a tooth 21 to displace its respective member 20 in opposition to one of the springs 23. When the high point on the tooth portion 25 passes below the tooth 21, the member 20 returns to its normal position enabling tooth 21 to latch the member 6 in a set position.

Whenever a stop member 6 is set in the above manner, it is also necessary to unlatch any previously set stop member 6. To accomplish this, there is formed symmetrically on each member 6 at opposite sides of bar 1 and just above each tooth portion 25, a cam projection 27 which is shaped like the tooth portion but which extends out further from the side of the member 6 (see FIG. 6). When a stop member 6 is rocked a suitable degree in either direction, projection 27 cams the member 20 in an unlatching direction a sufficient distance to assure the release of any member 6 that may be latched. The member 6 being set is then permitted to rock back towards its normal position until its tooth portion 25 is latched behind the tooth 21 associated therewith.

With a stop member 6 set in the position of FIG. 3 and the carriage moving to the right, the flange portion 13 of the stop member 6 eventually engages a flat surface 30 on the stop lug 15 and stops the carriage, thereby determining the left hand margin on a sheet to be typed. If another stop member is set in the position shown in FIG. 4, its flange portion 13 will engage a flat surface 30 on the stop lug 17 to determine the right hand margin. While the stop members 6 are set in positions of FIGS. 3 and 4, it may sometimes be desirable that the carriage be moved to positions beyond those normally permitted by the stop lugs. This may be accomplished by moving the stop lugs 15 and 17 out of the paths of the flanges 13 or releasing them therefrom.

Margin Release

As shown in FIGS. 1 and 2, the stop lugs 15 and 17 are normally in a position to be engaged selectively by a flange 13 depending on which direction the member 6 is rocked. If the member 6 is in its normal position, lugs 15 and 17 will not be engaged by flange 13. The stop lugs 15 and 17 are formed on opposite sides of the plate member 16 and have flat abutment surfaces 30 facing in opposite directions and engageable by the flange 13 to

bring the carriage to a stop. The edge of each lug opposite the flat surface 30 is rounded at 32 to produce a camming action when engaged by the flange portion 13 of a stop member 6.

The plate member 16 is formed on a lever 34 which is arranged to swing vertically about a stationary pivot 35 mounted on a fixed part of the machine. At the left hand end of the lever 34 is a spring 36 which operates to hold the lever against a fixed pin 37 for maintaining the stop lugs 15 and 17 in a normal engagement position as shown in FIG. 2. A margin release button 40 is mounted on a release lever 41 supported by a stationary pivot 42 and extending underneath lever 34 as shown in FIG. 1.

With the parts in the positions shown in FIG. 1, depression of the margin release button 40 results in a rocking of the levers 41 and 34 in a clockwise direction for moving the stop lugs 15 and 17 downwardly out of the path of the flange 13. The relationship of the stop lugs 15 and 17 to the flange 13 and the stop member 6 is best shown in FIGURE 5. The carriage may be moved, while the button 40 is held depressed, either right or left to positions beyond those in which it is normally stopped by engagement of any set member 6 with a stop lug. As soon as the carriage has been moved to a point in which a set stop member 6 is beyond the surface 30 on its associated lug, the button 40 may be released to permit a movement of the lugs to their normal positions. Movement of the carriage in the opposite direction will result in engagement between the flange 13 on the stop member and the rounded edge 32 on the lug, causing the lever 34 to rock until the lug passes under the flange. After the flange passes over the lug, the lever 34 is rocked by the spring 36 for returning the lugs to active positions.

Stop Setting Mechanism

There is provided, as shown in FIG. 1, a mechanism for setting any one of the stop members 6 in an active position. This mechanism comprises a bell crank 50 loosely mounted on a pivot pin 51 on the bottom side of the plate member 16. An arm 52 of bell crank 50 rocks either way from a central position beneath the plate member 16 but is normally centered with respect to the latter by the spring arms 53 of a forked spring 54. The arm 52 has formed on its free end at points spaced from opposite sides of the plate member 16, two vertically extending L-shaped setting fingers 56 and 57 which lie in a plane between the two stop lugs 15 and 17. The height of each finger is such that it extends beyond flat engaging surfaces 58 on shoulders 11 and 12 a slightly shorter distance than the downward rocking distance of plate member 16. The top surfaces of the fingers 56 and 57 are shaped to provide proper cooperation with the surfaces 58.

Another arm 59 of the bell crank 50 is connected by a link 60 to an arm 61 fixed to a rod 62 which is rotatably supported by members 63 and 64 rigidly attached to the typewriter frame (not shown). The arm 61 is made from spring steel or any other material capable of providing a small amount of spring relief motion. Rod 62 extends through an opening in a cross bar 65 and is attached to the latter in any suitable manner. The end portions of the cross bar 65 are bent at right angles, as shown, and rest upon a cross lever 67 which is supported at one end by a stationary pivot pin 68. The lever 67 extends over the front end of the lever 41 and is urged upwardly by a spring 70 against the ends of the cross bar 65. A spring 72 acts on the lever 41 for holding the forward end of the latter in engagement with the cross lever 67. Fixed to the cross bar 65 at opposite sides of the rod 62 are two key buttons 73 and 74, the button 73 being operable to set a stop member for determining the left hand margin and the button 74 determining the right hand margin.

When the button 73 is depressed, the cross bar 65 rocks in a counterclockwise direction and causes the rod 62 to rock with it. The left end of the bar 65 acts on the lever 67 to swing the latter downwardly against the action of its spring 70. This causes the lever 41 to operate in a manner to swing the lever 34 in a clockwise direction far enough to bring the upper ends of the setting fingers 56 and 57 below the shoulders 11 and 12 on the stop members 6. Rotation of the rod 62 effects a swinging of the bellcrank 50 in a clockwise direction so the finger 57 moves under the shoulder 12 as soon as it has been lowered far enough. A release of the button 73 then results in a swinging of the lever 34 in a direction to bring the finger 57 against the shoulder 12 for rotating the stop member 6 in a clockwise direction. The bellcrank 50 tends to return to its normal position under the action of the spring 54 but the surface 58 on the shoulder 12 slopes downwardly and holds the finger 57 in place until the stop member is rotated to the position shown in FIG. 3. This stop member is then in a position to engage the lug 15 on movement of the carriage and determine the left hand margin. The projecting tooth portion 25 on the stop member engages a tooth 21 on its associated member 20 and is latched in operative position until another stop member is rotated to a similar position.

A depression of the key button 74 results in an operation like that described above except that the bellcrank 50 is rotated in a counterclockwise direction to bring the finger 56 under the shoulder 11 for rotating the stop member to the position shown in FIG. 4.

It will be appreciated that the button 73 or 74 may be operated in any position of the carriage to set a stop member to either control position. When a stop member is moved to either of its operative positions, any stop member previously set in that position is automatically released so it returns to its home position shown in FIG. 2.

While the invention has been particularly shown and described with reference to a preferred embodiment thereof, it will be understood by those skilled in the art that various changes in form and details may be made therein without departing from the spirit and scope of the invention.

What is claimed is:

1. The combination with a typewriter carriage of a margin stop mechanism for said carriage comprising, in combination, a bar forming a part of said carriage and movable therewith, stop members mounted on said bar, means for holding said stop members against movement longitudinally of said bar but permitting angular movement relative thereto between inactive and active positions, toothed members slidably mounted on said bar for movement longitudinally thereof, the teeth on said members engageable with one side of each of said stop members, means for yieldingly urging said toothed members in a direction to maintain engagement between said teeth and said stop members, tooth portions on said stop members spaced angularly equal distances in opposite directions from said toothed members when said stop members are in their inactive positions, means for yieldingly holding said stop members in said inactive positions, said tooth portions engageable with said teeth on said toothed members when said stop members are rotated in either direction from inactive positions for effecting a latching of said stop members in active positions, a pair of stop lugs spaced laterally from the axis of said bar, a flange portion on each of said stop members normally lying between said lugs but movable into the path of either one of said lugs on rotation of a stop member in either direction to an active position, and means for rotating any one of said stop members selectively in either direction to an active position.

2. The combination with a typewriter carriage of a mechanism for stopping said carriage comprising, in combination, a bar forming a part of said carriage, a plurality of stop members mounted on said bar, means for yieldably supporting said mem-

bers in a normal or inactive position on said bar but permitting angular movement thereon, key actuated means for selectively rocking said stop members in either of two directions to active positions, means for latching any one of said stop members after it has been rocked to either of its two active positions, means for releasing previously set stop members, and a pair of stop lugs for stopping said carriage in either a right hand margin position or a left hand margin position after said stop member is latched in its active positions.

3. The combination of claim 1 wherein each of said stop members consists of a body portion having an opening to accommodate said bar, a pair of radially symmetrical shoulders on said body portion, and key actuated means cooperating with said shoulders for rocking said stop members individually and selectively in either direction to an active position.

4. The combination of claim 3 in which said key actuated means comprises a pivoted member carrying a pair of setting fingers, a pair of manually actuated keys, means operating on selective actuation of said keys for engaging said fingers selectively with said shoulders to effect a rocking of a selected one of said stop members in one direction or another to an active position.

5. The combination with a typewriter carriage of a mechanism for stopping said carriage at right and left hand margin points separated from each other any desired distance comprising, in combination, a margin bar forming a part of said carriage, a pair of toothed members slidably mounted in said bar for longitudinal movement therein, a plurality of stop members mounted on said bar, each said member having a pair of diametrically spaced radial shoulders in a horizontal plane and an abutment portion lying between said shoulders, means yieldably supporting said member in a normal or inactive position, but permitting finite angular movement in either direction to active positions, a pivot member, a pair of fingers formed on said pivot member selectively engageable with said shoulders, manually operable means for selectively positioning said fingers below said shoulders, spring means acting on said fingers for rocking said stop members to either of their active positions, means for latching said stop members after said finite movement, and means operating upon said movement to return all previously latched stop members to their inactive position.

6. The combination of claim 2 including a margin release mechanism comprising a manually operable key member, means operating upon depression of said key member for rocking said stop lugs downwardly out of the path of said activated stop member, and springs means for returning said stop lugs to their normal position.

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