June 13, 1950 C. H. CASTLEBERRY 2,511,045

LOWER MARGIN STOP MECHANISM FOR TYPEWRITERS

Filed Jan. 9, 1948 2 Sheets-Sheet 1

Fig. 1.

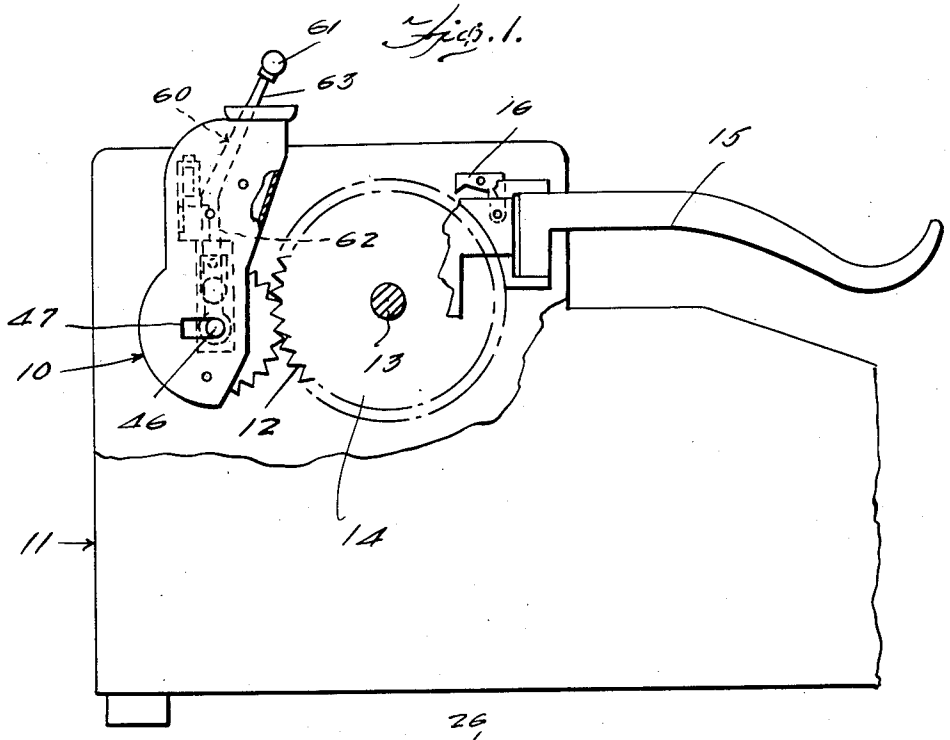
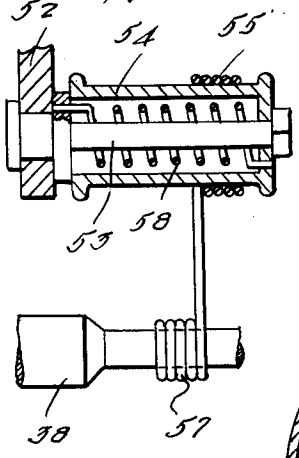


Fig. 5.



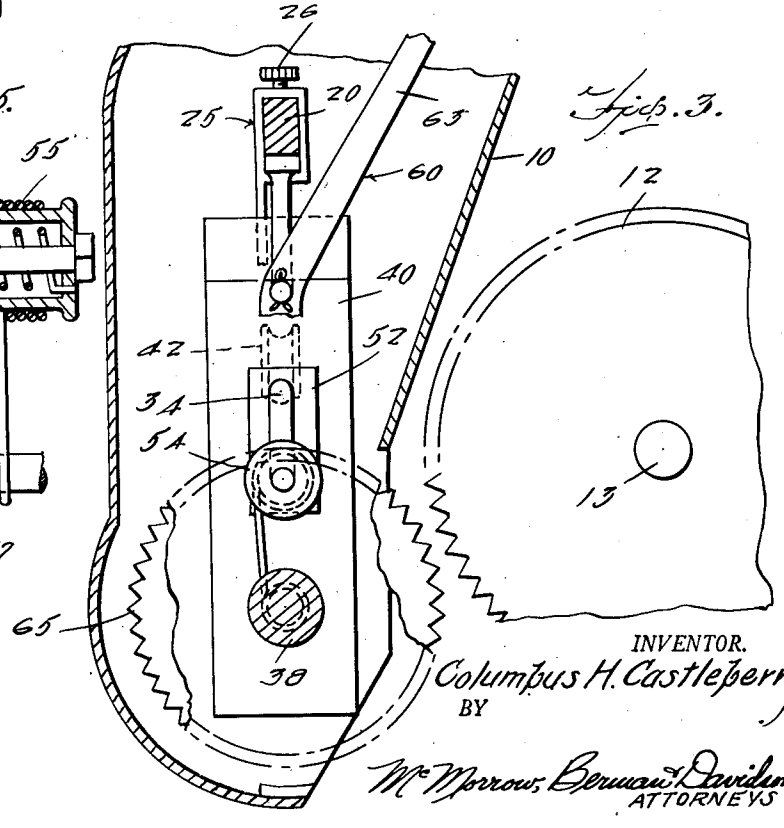


Fig. 3.

INVENTOR.
Columbus H. Castleberry
BY
McMorrow, Berman & Davidson
ATTORNEYS

June 13, 1950 C. H. CASTLEBERRY 2,511,045

LOWER MARGIN STOP MECHANISM FOR TYPEWRITERS

Filed Jan. 9, 1948 2 Sheets-Sheet 2

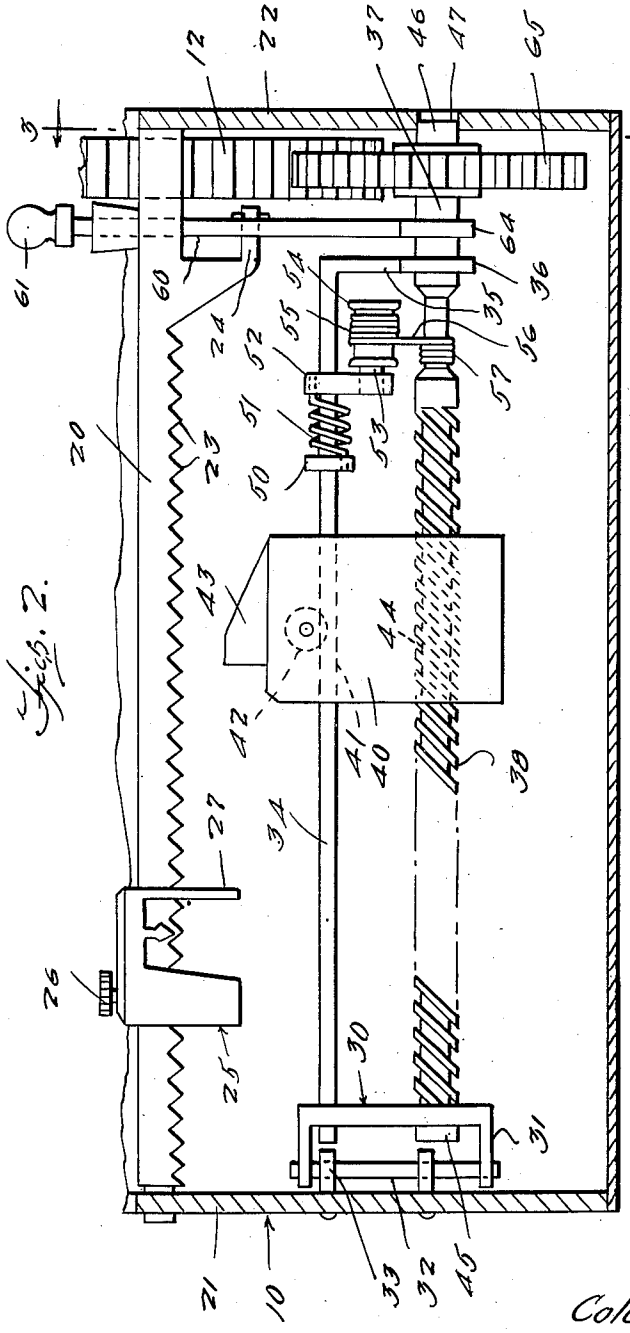


Fig. 2.

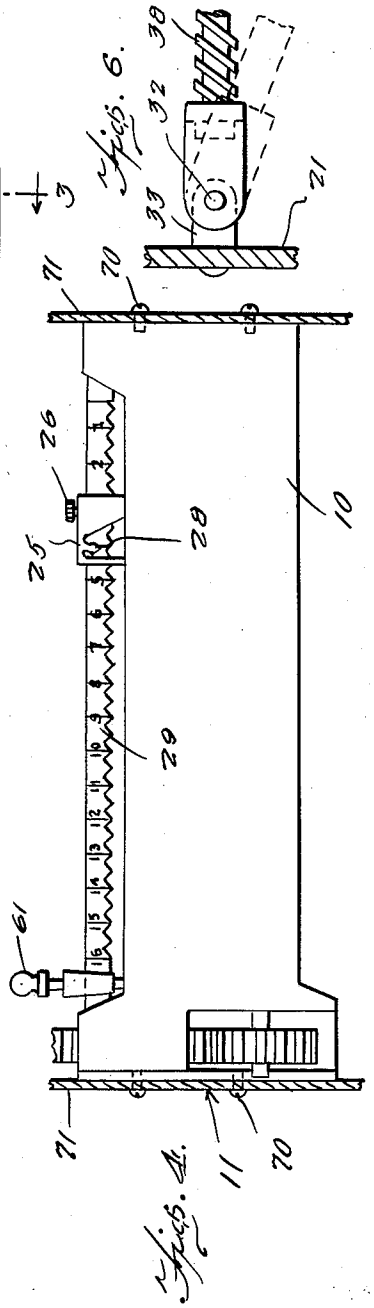


Fig. 6.

Fig. 4.

INVENTOR.
Columbus H. Castleberry
BY
McMorrow, Berman & Davidson
ATTORNEYS

Patented June 13, 1950 2,511,045

UNITED STATES PATENT OFFICE

2,511,045

LOWER MARGIN STOP MECHANISM FOR TYPEWRITERS

Columbus H. Castleberry, Jackson, Mich.

Application January 9, 1948, Serial No. 1,406

5 Claims. (Cl. 197—141)

1

This invention relates to lower margin stop mechanism for typewriters.

An object of the invention is the provision of a simple and efficient lower margin stop mechanism which is incorporated in a casing and applied as a unit directly to any kind of typewriter without necessitating changes in any of the mechanism thereof.

A further object of the invention is the provision of lower margin stop mechanism having a frame which is hinged on a side wall of a casing adapted to be secured to a housing of a typewriter at the rear thereof, said stop mechanism including a toothed wheel adapted to move into engagement with the ratchet wheel fixed to the platen, a lever pivoted intermediate the ends thereof on a fixed part in the casing being in a position convenient to the typist for causing, when rocked, the first gear to be disengaged from the platen gear to permit a mechanism on the frame to return the operating parts of the lower margin stop mechanism to their initial positions.

The invention consists in the novel construction, arrangement and combinations of parts hereinafter more particularly described and claimed.

In the drawings:

Figure 1 is a side view of a typewriter with part of the housing broken away showing my invention applied thereto,

Figure 2 is a transverse vertical section through the typewriter showing a rear view of my lower margin stop mechanism in an operative position,

Figure 3 is an enlarged fragmentary longitudinal vertical section of the typewriter taken along the line 3—3 of Figure 2,

Figure 4 is a front view in elevation of the lower margin stop mechanism with the housing of the typewriter in section,

Figure 5 is a vertical section through the return mechanism for the elements of the lower margin stop mechanism, and

Figure 6 is a fragmentary horizontal section showing the hinged portion of a screw shaft.

Referring more particularly to the drawings 10 designates a casing which houses the lower margin stop mechanism so that said mechanism may be applied directly to a typewriter 11 as a unit (Figure 1). Only certain elements of the type writer are illustrated, as, the toothed wheel 12 fixed to one end of a shaft 13 upon which the platen 14 is secured. A lever 15 operates a pawl 16 which engages the teeth of the wheel 12 for rotating the platen step-by-step to place the paper in a position to receive the next line of typing.

2

In other words, the lever 15 operates the line-spacer of the typewriter.

A bar 20 (Figure 2) has its ends secured in the opposite side walls 21 and 22 of the casing 10. Said bar has teeth 23 along the lower edge and a horizontal axle 24 depending from one end thereof adjacent the side wall 22.

A slide 25 has a rectangular passage receiving the bar 20. A set-screw 26 carried by the slide is adapted to fix the slide in an adjusted position on the bar 20. A finger 27 depends from the slide and acts as a stop in a manner which will be presently explained. A pointer 28 also depends from the slide and acts as an indicator when moving along a series of graduations 29 applied along the rear face of the bar 20. It will be noted that the vertical graduations pass through the apices of the teeth 23 and are numbered from 1 to 16 inclusive.

A U-shaped hinge 30 has its leg 31 pivoted on a pin 32 carried by bearings 33 secured to the side wall 21 of the casing 10. A guide rod 34 has one end mounted in the hinge 30 while the other end 35 is bent downwardly and provided with a bearing 36 received by one end 37 of a screw shaft 38.

A crosshead 40 has a passage 41 receiving the rod 34. A roller 42 mounted within the crosshead rides on said rod. A toe 43 on the upper end of the crosshead is adapted to engage the finger 27 on the slide 25 to stop movement of the crosshead for a purpose which will be explained presently. The lower end of the crosshead is provided with an internally threaded passage 44 to receive the threads on the shaft 38.

The shaft 38 has one end 45 mounted in a bearing in the hinge 30 below the rod 34 which is parallel to said shaft. The other end 46 of the shaft is mounted in an elongated open bearing 47 (Figures 1 and 2) in the side wall 22 of the casing 10 so that the last-mentioned end of the shaft may swing back and forth in the bearing 47.

A collar 50 is mounted slidably on the rod 34 and a coil spring 51 has one end received by a passage in said collar while the other end of the spring is received by a passage in a hanger 52 secured to and depending from the rod 34. The collar acts as a cushioned bumper for the upper end of the crosshead 40.

An axle 53 has one end secured in the lower end of the hanger 52 and projects horizontally toward the side wall 22 of the casing 10. A roller 54 mounted on the axle has one end of a coiled spring wire 55 secured thereto with the coils of the wire surrounding the roller. An intermediate portion 56 of the wire extends downwardly and a

coil 57 thereof is wound on the shaft 38. The free end of the coil 57 is secured to said shaft. When the shaft 38 is revolved in one direction the wire is wound on said shaft and withdrawn from the roller or spool 54. The spool or roller 54 (Figure 5) is hollow and houses a coil spring 58 received by the axle 53. One end of the spring is fixed to a collar 59 rigid with the axle 53. The other end of the spring is secured to the roller 54.

A lever 60 having a finger piece 61 is pivoted intermediate its ends on the axle 24. The lower portion 62 of the lever is located normally in a vertical line while the upper portion 63 is bent at an angle towards the front of the typewriter. The lower end of the lever has a collar 64 receiving the shaft 38 (Figure 2).

A toothed wheel 65 is secured to the shaft 38 adjacent the lower end of the lever 60. The teeth of said wheel are adapted to mesh with the teeth of a ratchet wheel 12 secured to the shaft 13 of the roller 14.

The casing 10 has its side walls 21 and 22 secured by bolts 70 (Figure 4) to the opposite side walls 71 of the housing for the typewriter 11. In applying the casing 10 to the typewriter, it is only necessary to bore and thread passages in the side walls of the typewriter housing adjacent the rear end thereof.

The operation of my device is as follows: In order to set the slide 25 on the bar 20, the length of the paper used must be known. If the length of the paper is eleven inches and a lower margin of one inch is desired, the indicator is positioned on the graduation 10 and the slide 25 is fixed in place on the bar 20 by the set screw 26.

The finger piece 61 of the lever 60 is pulled towards the operator whereby the rod 34 and shaft 38 will be swung on the hinge pin 32 (Figure 3) so that the wheel 65 will be moved away from the wheel 12. The typist may then insert the necessary sheet of paper in the typewriter. After the paper has been properly positioned, the lever 60 is returned so that the toothed wheel 65 will be in mesh with the wheel 12.

Each time the typist actuates the lever 15 of the line spacing mechanism of the typewriter, the ratchet wheel 12 is moved one tooth and the wheel 65 is similarly rotated. Rotation of the wheel 65 causes rotation of the shaft 38 so that the crosshead is moved progressively from right to left in Figure 2. When the shaft 38 is revolved the wire 56 (Figures 2 and 5) is wound on said shaft and unwound from roller 54. At the same time, coil spring 58 is being progressively wound on axle 53 by the revolving roller with increased tension. However, when the toe 43 strikes the finger 27, the shaft 38 can no longer be rotated and the typist is thus warned that the lower margin stop mechanism has completed its function and it is time to remove the paper.

The lever 60 is now operated to release the wheel 65 from its engagement with the wheel 12. Since the wheel 65 is free to rotate, the spring 58 will reversely revolve the roller 54 and cause the coil 57 to revolve the shaft 38 in the opposite direction. This action causes the crosshead 40 to be returned automatically to the bumper 50 on the rod 34.

The crosshead 40 is in the form of a nut which is held against rotation by the guide rod 34. The roller 42 in the crosshead tends to prevent binding of said crosshead on the rod. The movable collar 50 on the rod 34 not only cushions the returned crosshead but the spring 51 being under slight pressure by the crosshead tends to initiate

movement of the crosshead when the shaft 38 is initially rotated by the wheel 65.

What I claim:

1. In a typewriter having a ratchet wheel for controlling the line spacing, a lower margin stop mechanism comprising a casing, a screw shaft mounted for rotation in the casing, a guide rod spaced from the shaft, a crosshead slidable on the rod and provided with an internally threaded passage to receive the screw shaft, a toothed wheel fixed to one end of the shaft and adapted to mesh with the usual ratchet wheel of the platen shaft of the typewriter, resilient means connecting the shaft with the rod so that when the shaft is revolved in one direction by the intermeshing wheels, the resilient means will be placed under tension to cause rotation of the shaft in the opposite direction, a graduated bar mounted in the casing parallel with the rod, a stop adjustable along the bar and adapted to be engaged by the crosshead to limit travel of the crosshead on the rod, a hinged mounting on one wall of the casing, one end of the rod and shaft being carried by the hinged mounting, the toothed wheel on the shaft being movable away from the ratchet wheel when the shaft is oscillated, and a lever pivoted in the casing for controlling swinging movement of the shaft.

2. In a typewriter having a platen, a ratchet wheel connected to the platen and a manually actuated pawl for rotating the wheel and platen to space the typing lines, a lower margin stop mechanism comprising a casing, a hinge mounted on one side wall of the casing, a screw shaft having one end mounted for rotation on the hinge, a nut threaded onto the shaft, an adjustable stop in the rectilinear path of the nut, means preventing rotation of the nut, means supporting the stop, a toothed wheel fixed to the other end of the shaft and swingable with the shaft towards or away from the ratchet wheel, a manual means for oscillating the shaft and moving the toothed wheel into mesh with the ratchet wheel for causing rotation of the screw shaft when the ratchet wheel is revolved and resilient means operatively connected with the screw shaft adapted to be placed under tension when the screw shaft is rotated by the toothed wheel until the nut engages the stop, removal of the toothed wheel from the ratchet wheel releasing the resilient means under tension and causing reverse rotation of the shaft and the return of the nut from the stop.

3. In a typewriter having a ratchet wheel for controlling the line spacing, a lower margin stop mechanism comprising a casing, a screw shaft, means hingedly mounting one end of the shaft on one side wall of the casing, an elongated open bearing on the opposite side wall of the casing, manual means for supporting and swinging the other end of the shaft back and forth in the open bearing, a toothed wheel on the second end of the shaft adapted to be moved into mesh with the ratchet wheel when the shaft is oscillated, a nut receiving the screw shaft, means retaining the nut against rotation when the shaft is rotated to provide a rectilinear movement of the nut along the shaft, an adjustable stop adapted to be engaged by the nut to limit the travel of said nut when the indicated lower margin has been reached, said screw shaft adapted to be rotated in one direction when the ratchet wheel is revolved, and a resilient means connected with the shaft and adapted to be placed under tension when the shaft is revolved by the toothed wheel, said resilient means reversely rotating the shaft when

the toothed wheel is released from the ratchet wheel.

4. In a typewriter having a ratchet wheel for controlling the line spacing, a lower margin stop mechanism comprising a casing, a shaft, means swingably mounting one end of the shaft in the casing, a toothed wheel on the other end of the shaft and adapted to be moved into mesh with the ratchet wheel by the swinging shaft, a crosshead on the shaft, cooperative means between the shaft and the crosshead for moving the crosshead rectilinearly when the shaft is rotated in one direction by the intermeshing wheels, a resilient means connected to the shaft and placed under tension when the shaft is rotated by the toothed wheel for revolving the shaft reversely after the toothed wheel has been released from the ratchet wheel, an adjustable stop disposed in the path of the moving crosshead, the position of the stop along the path of the crosshead determining the width of the lower margin, and manual means for moving the shaft on the swinging mounting.

5. In a typewriter having a ratchet wheel for controlling the line spacing, a lower margin stop mechanism comprising a casing, a shaft, means swingably mounting one end of the shaft in the casing, a toothed wheel on the other end of the shaft and adapted to be moved into mesh with the ratchet wheel by the swinging shaft, a crosshead on the shaft, cooperative means between

the shaft and the crosshead for moving the crosshead rectilinearly when the shaft is rotated in one direction by the intermeshing wheels, a resilient means connected to the shaft and placed under tension when the shaft is rotated by the toothed wheel for revolving the shaft reversely after the toothed wheel has been released from the ratchet wheel, an adjustable stop disposed in the path of the moving crosshead, the position of the stop along the path of the crosshead determining the width of the lower margin, and manual means for moving the shaft on the swinging mounting, said casing completely housing the lower margin stop mechanism to form a unit adapted to be secured to the rear end of the typewriter housing so that the toothed wheel may mesh with the ratchet wheel.

COLUMBUS H. CASTLEBERRY.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
2,402,936	Slocum	June 25, 1946

FOREIGN PATENTS

Number	Country	Date
43,025	Denmark	1930