

C. B. CORCORAN.
TYPE WRITING MACHINE.
APPLICATION FILED MAY 27, 1916.

1,247,084.

Patented Nov. 20, 1917.

2 SHEETS—SHEET 1.

FIG. 1.

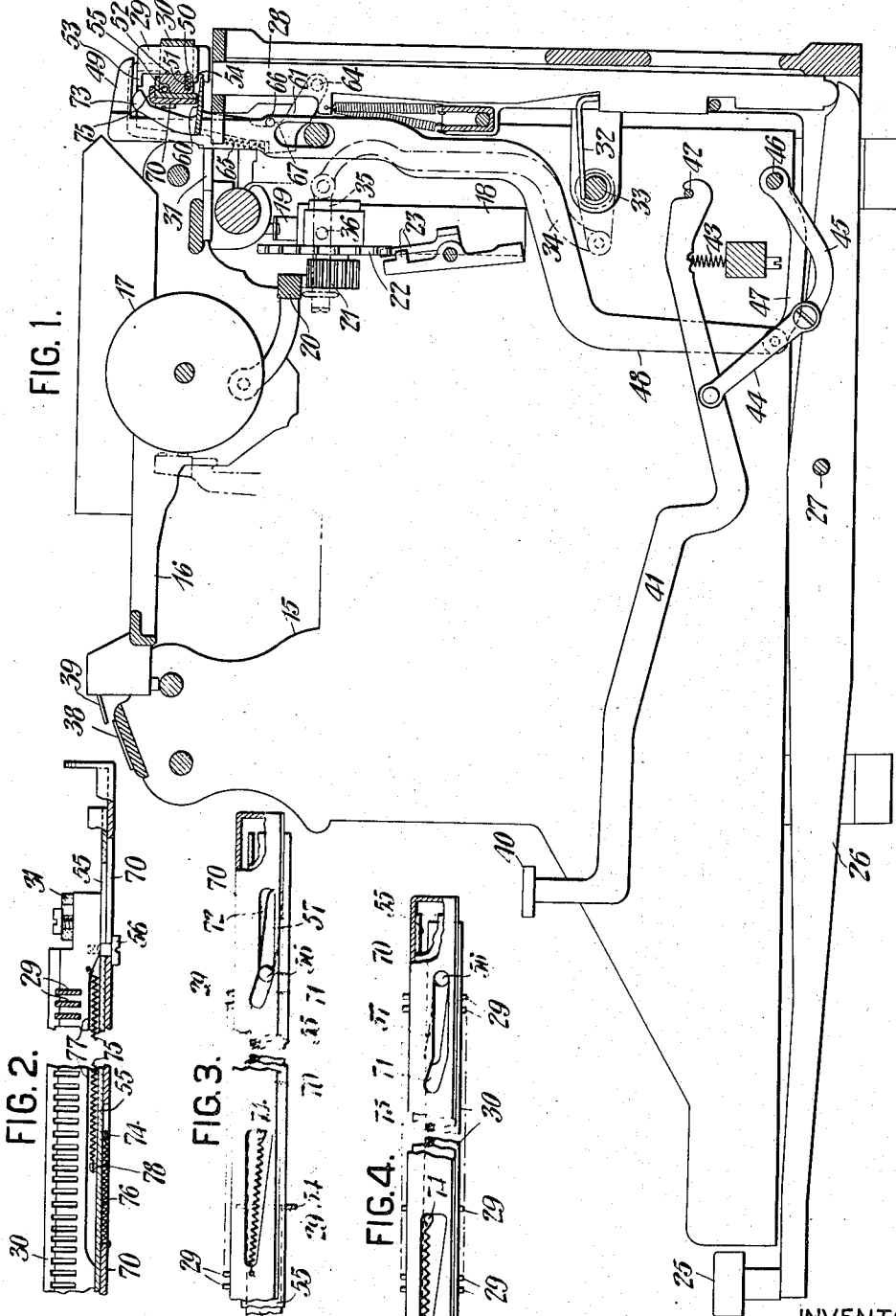


FIG. 2.

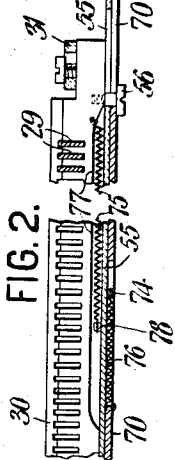


FIG. 3.

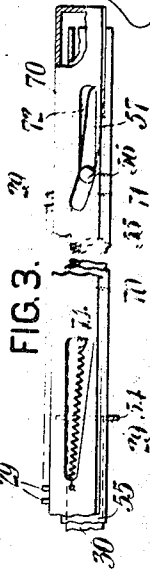
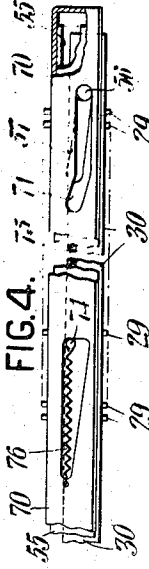


FIG. 4.



WITNESSES:

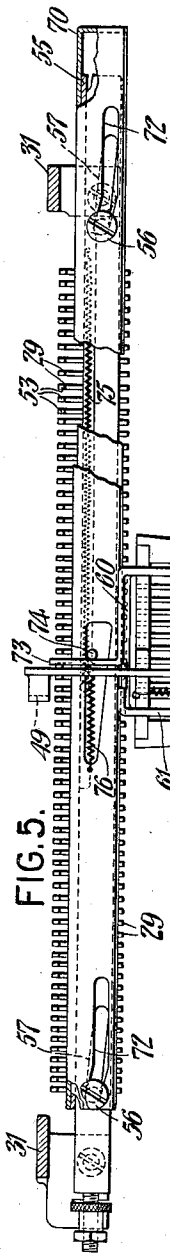
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1,247,084.

Patented Nov. 20, 1917.

2 SHEETS—SHEET 2.



WITNESSES.
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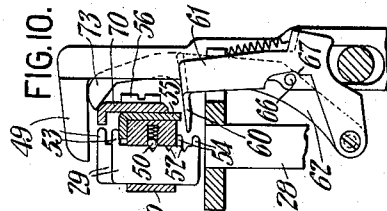
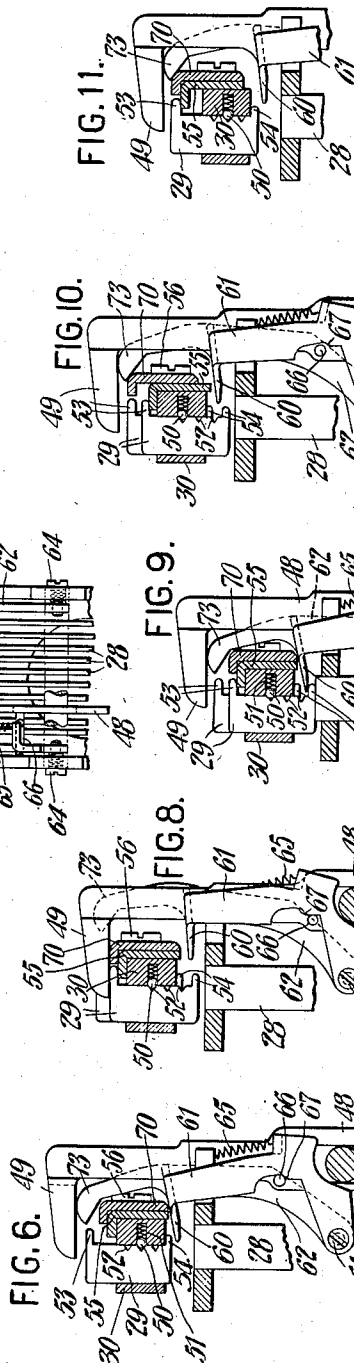


FIG. 11.

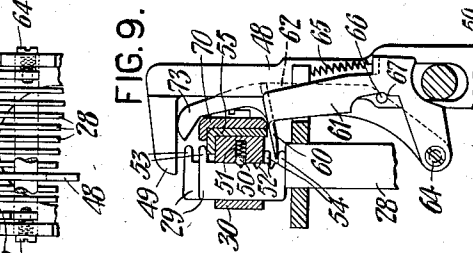
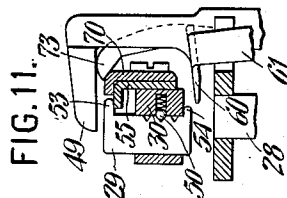


FIG. 9.

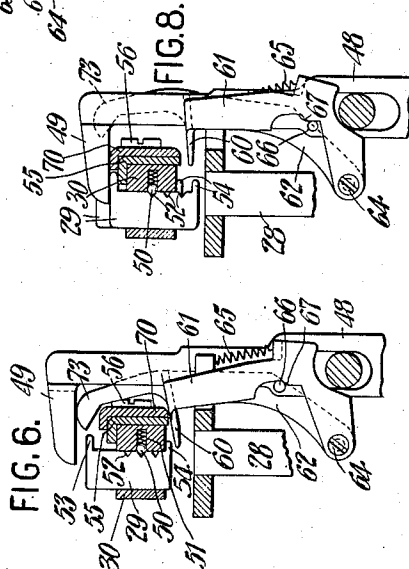


FIG. 8.

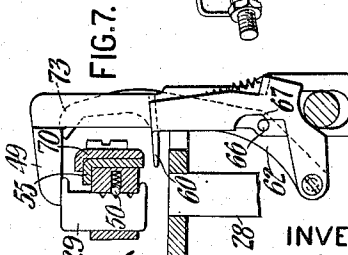


FIG. 7.

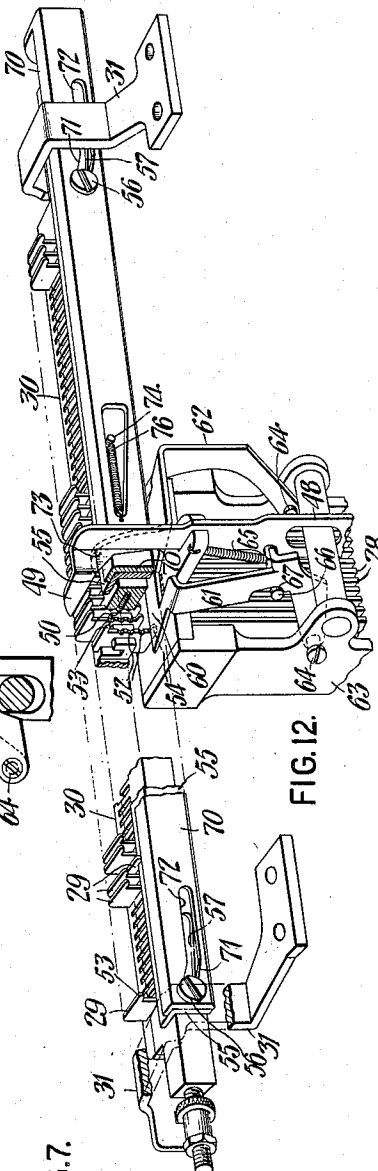


FIG. 12.

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UNITED STATES PATENT OFFICE.

CORNELIUS B. CORCORAN, OF NEW YORK, N. Y., ASSIGNOR TO UNDERWOOD TYPE-WRITER COMPANY, OF NEW YORK, N. Y., A CORPORATION OF DELAWARE.

TYPE-WRITING MACHINE.

1,247,084.

Specification of Letters Patent.

Patented Nov. 20, 1917.

Application filed May 27, 1916. Serial No. 100,249.

To all whom it may concern:

Be it known that I, CORNELIUS B. CORCORAN, a citizen of the United States, residing in borough of Bronx, in the county of Bronx, city and State of New York, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

This invention relates to tabulating mechanism for typewriting machines, and more particularly to means for preventing a tabulator stop from being accidentally displaced by a counter-stop being projected while directly opposite or in line with the stop.

This invention may be used with key-set tabulators for typewriting machines in which stops on the typewriter carriage are selectively set to effective position by a key at the keyboard, and in which the stops are restored to their ineffective position by a suitable restoring device.

The stop-setting device may be of the type disclosed in the patents to Kurowski, No. 1,106,950, dated August 11, 1914, and J. C. Doane, No. 1,157,683, dated October 26, 1915.

The construction of the stop bar and the stop-restoring means may be similar to that disclosed in the latter patent referred to.

In practice it has been found that in key-set tabulators of the type disclosed in the above-mentioned patents, the stops on the carriage when set in their effective position are liable to accidentally be displaced by the coöperative or denominational stops on the machine frame. This may occur, for example, when the operator wishes to move the carriage past a column position determined by one stop on the carriage to a position determined by another stop. By depressing a denomination - stop key, the carriage is permitted to run forward until the projected denomination stop is struck by a set column stop on the carriage, and the latter thereby arrested. By releasing and again depressing the key, the denomination stop is temporarily withdrawn, permitting the adjacent carriage stop to pass as the carriage again advances. If this second depression of the key takes place very quickly, the denomination stop operated thereby may

strike the passing carriage stop, and displace the latter from its operative position.

An object of the present invention is to provide means for positively preventing such accidental displacement of the stop on the carriage, and to this end there is provided a stop-locking or displacement-preventing device on the machine frame, which positively prevents the set stops from being moved from their operative position while they are passing the denomination stops.

In practising the invention, the means for preventing accidental displacement of the stops on the carriage may comprise a swinging locking bail on the machine frame, normally in position to overlie projections on the operative stops on the carriage, while the latter are passing the denomination stops, so that said stops on the carriage are at this time locked or positively prevented from being shifted to inoperative position.

The set stops may be restored to ineffective position by a stop-restoring slide bar, such as shown in the patent to Doane, above referred to, and in order to withdraw the locking device to permit such restoration, a second slide bar may be provided. This second slide bar is operable during its initial movement to cam the locking bail to inoperative position, and during its final movement to operate the stop-restoring slide bar. The locking bail, when in its normal or locking position, may underlie the lugs on those stops on the carriage which are in ineffective position, preventing such stops from being set.

In order to withdraw the locking bail to permit the stops to be set by the stop-setting device, the latter may have a pin operable during the initial movement of the stop-setting device to cam the locking bail to inoperative position.

Other features and advantages will hereinafter appear.

In the accompanying drawings,

Figure 1 is a sectional elevation from front to rear of a typewriting machine showing the application of my invention.

Fig. 2 is a fragmentary plan view of the stop bar, showing two slide bars mounted thereon, one of which moves the stop displacement-preventing means out of the path

of the stop before the latter is restored to its ineffective position, by the second slide bar.

Fig. 3 is a fragmentary rear view of the parts shown in Fig. 2 and shows the position of the first slide bar after it has moved the stop displacement-preventing means out of the path of the stops.

Fig. 4 is a view similar to Fig. 3, and shows the second or stop-restoring slide-bar moved to restore the stops to their ineffective position.

Fig. 5 is a rear view showing the stop bar and the denominational stop bracket, with the stop-displacement-preventing means mounted on said bracket.

Fig. 6 is a fragmentary side elevation showing a stop on the stop-bar, a denominational stop, the stop-setting slide, the stop-restoring slide and the means for preventing an accidental displacement of the stop on the stop bar. All of the parts are shown in their normal position.

Fig. 7 shows the stop-displacement-preventing means moved out of the path of the stop on the stop-bar by a partial movement of the stop-setting slide.

Fig. 8 shows the stop-setting slide moved to its final position, and the stop set to its effective position thereby.

Fig. 9 shows the position of the parts after the stop-setting slide has been restored to its normal position; also how the stop-displacement-preventing means is effective to prevent the denominational stop from displacing the stop on the stop bar.

Fig. 10 shows the position of parts at an intermediate point in the operation of restoring a stop, the stop-displacement-preventing means being moved out of the path of the stop by a slide on the stop-bar before restoring said stop to its ineffective or normal position.

Fig. 11 shows the position of the parts after the second slide, or stop-restoring means has moved the stop on the stop-bar to its ineffective position, but before the slides have been returned by their springs to normal position.

Fig. 12 is a perspective view, showing the stop-bar, some of the stops being omitted, and the denominational stop bracket with the displacement-preventing means mounted thereon.

The machine may be of the regular Underwood construction, in which a machine frame 15 supports a typewriter carriage 16, comprising a platen 17. The carriage is moved from right to left of the machine by a spring-drum 18 connected to the carriage by a strap 19. To permit step-by-step movements of the carriage, there is pivoted thereon a rack 20, which meshes with a pinion 21 to rotate an escapement wheel 22, the rotation of said wheel being controlled by recip-

rocating escapement dogs 23 during the course of writing.

To perform tabulating operations of the carriage, there is provided a set of tabulator denomination selecting keys 25. By depressing a key 25, a lever 26 is moved about a fulcrum 27, to move a plunger or denominational stop 28 upwardly into the path of a stop 29 on a stop-bar 30, secured to the carriage 16 by brackets 31. The carriage is released during the upward movement of any one of the counter-stops 28, by a universal bar 32, which is engaged by the operated stop 28 (there being one of said stops 28 for each key 25) to swing about a pivot 33 and cause a downward pull on a link 34 connected to a release lever 35 pivoted at 36, and move the rack 20 out of engagement with the pinion 21. Thus the carriage is set free to be moved by the spring-drum 18 until it is arrested at the proper position by a stop 29 on the carriage engaging with the projected denominational counter-stop 28.

The stop-bar 30 is provided with a plurality of stops 29, there being one for each letter-space position of the carriage, and normally in an ineffective position, as indicated in Fig. 6.

To set a stop to an effective position on the carriage, the latter is moved to a desired position indicated by a scale 38 and pointer 39. A stop-setting key 40 is now depressed, to move a lever 41 about a fulcrum 42 and against the tension of a spring 43, to move a link 44 connected to an arm 45 and rock a rock shaft 46. A second arm 47 on the rock shaft 46 is moved by the latter to cause a downward pull on a slide 48, the upper end of which is provided with a finger or engaging portion 49, which moves in a vertical plane a fraction of a letter space to the left of the set of decimal denomination stops 28 and engages with one of the stops 29 in the path of the finger 49 to set said stop to an effective position on the carriage, as indicated in Fig. 8.

To hold the stops in their effective or ineffective positions on the stop-bar, there is provided for each stop a spring-pressed ball 50 in a hole 51 in the stop-bar 30, which engages in notches 52 on the stop 29. Each stop 29 is provided with fingers 53 and 54, projecting from the upper and lower edges of said stop, which limit the movement of the stop to effective or ineffective position on the bar.

To restore the stops 29 to their ineffective position, there is provided a slide bar 55 supported on the stop-bar 30 by screws 56. When the bar 55 is moved lengthwise of the stop-bar 30, it is caused to rise by means of the cams 57 and engages with the fingers 53 of those stops which are set in their effective position on the bar to restore said stops to their ineffective position.

To prevent an accidental displacement of any of the stops 29 from their operative position, which might be caused by a denominational stop 28 being moved upwardly to its operative position while a stop 29 is directly over it, there is provided a bail 60, comprising arms 61 and 62, pivoted on the denominational stop bracket 63 by means of pivot screws 64. The bail 60 is held in its normal position by a spring 65 which holds the bail against a pin 66 on the stop-setting slide 48. When thus held, the horizontal portion of the bail 60 forms a locking bar which is in the path of the fingers 54 on the stops 29. The bail thus forms a locking device by which the stops 29 are locked or positively prevented from being shifted out of operative position while they are adjacent the counter-stops 28.

To withdraw the bail from the path of the stop 29, during a stop-setting operation, the pin 66 on the slide 48 engages with a cam 67 on the arm 61 to swing the bail to the position indicated in Fig. 7. It will be seen by an inspection of Figs. 6 and 7 that the stop-setting slide 48 has a movement before the finger 49 is brought into coöperation with the stop 29. This movement is utilized in effecting a withdrawal of the bail 60 from the path of the stop 29. After the withdrawal of the bail 60, the slide 48 continues its movement, which is effective to set the stop 29 in its effective position on the stop-bar, as indicated in Fig. 8. If the stop-setting slide 48 is now permitted to return to its normal position, the horizontal portion of the bail 60 will be moved into the path of the stop 29 by the spring 65; thus, the parts will occupy the position indicated in Fig. 9, in which the bail 60 overlies the finger 54 on the set stop, thereby preventing the stop from being moved upward accidentally to inoperative position.

To withdraw the bail 60 from the path of the stop during stop-restoring operations, there is provided a slide-bar 70, mounted on the stop-bar 30 by means of the screws 56 which extend through longitudinal slots in the slide-bar. By an inspection of Figs. 3, 4, 5 and 7, it will be noticed that each slot in the slide 70 provides a cam 71 and a dwell 72. Thus, when the slide-bar 70 is moved lengthwise the cams 71 raise the bar to the position indicated in Figs. 3 and 10, where it has been effective to move the horizontal portion of the bail 60 out of the path of the fingers 54, by means of an arm 73 on the bail 60, which coöperates with the slide-bar 70. As the slide moves to the left and the guide screws 56 enter the horizontal portions of the slots, so that the slide has been raised its maximum amount, it engages with a pin 74 on the stop-restoring slide 55 and moves

the latter, causing it to be raised by the cams 57, this movement being effective to restore the stops 29 to their ineffective position. Thus, it will be seen that the slide 70 is effective first to move the bail 60 out of the path of the stops 29, and then move the stop-restoring slide, by engaging with the pin 74, to restore the stops 29 to their normal position, and that while the first slide is effective to move the second, for the purpose of restoring the stops, said first slide moves on the dwell 72.

The slide bars 55 and 70 (see Fig. 2) are returned to their normal positions by springs 75 and 76. The spring 75 is retained within a cut-out 77 in the stop-bar 30, one end of said spring being connected to the stop bar 30, the other end being connected to a pin 78 on the slide bar 55. The spring 76 is connected at one end to the slide bar 70, the other end is connected to the pin 74 on the slide bar 55.

Variations may be resorted to within the scope of the invention, and portions of the improvements may be used without others. Having thus described my invention, I claim:

1. In a typewriting machine, the combination with a typewriter frame and a carriage, of a stop and a counter-stop for positioning said carriage, and means carried by the frame for preventing an accidental displacement of said stop by said counter-stop.

2. In a typewriting machine, the combination with a carriage, of a stop thereon, a machine frame, a counter-stop thereon, and means also carried by the machine frame for preventing accidental displacement of said stop by said counter-stop.

3. In a typewriting machine, the combination with a carriage, of a stop thereon, a machine frame, a counter-stop thereon, and means on the machine frame for preventing accidental displacement of said stop by a movement of the counter-stop toward operative position while the said stop is in its path.

4. In a typewriting machine, the combination with a carriage comprising a stop bar, a stop on said stop bar, a machine frame, a counter-stop on said machine frame, stop-setting means for moving said stop from an ineffective position to an effective position on the stop bar, and means for preventing accidental displacement of said stop, relative to said stop bar, by said counter-stop, said preventing means moving under control of said stop-setting means after said stop has been moved to its effective position.

5. In a typewriting machine, the combination with a carriage, of a stop thereon, means for setting said stop to effective position on said carriage, a counter-stop, means

for preventing accidental displacement of said stop by said counter-stop, and means controlled by said stop-setting means for moving said displacement-preventing means
5 out of the path of said first-mentioned stop when it is being moved to an effective position.

6. In a typewriting machine, the combination with a carriage, of a stop thereon,
10 stop-setting means for setting said stop to effective position, a counter-stop, and means for preventing displacement of said stop by said counter-stop, said preventing means normally lying in the path of the stop while
15 the latter is in ineffective position, said stop-setting means being effective to move said preventing means out of the path of said first-mentioned stop before it is moved to effective position.

20 7. In a typewriting machine, the combination with a carriage, of a stop thereon, means for setting said stop to effective position, a machine frame, a counter-stop on the machine frame, means on the machine frame
25 for preventing displacement of said stop by said counter-stop, after said stop has been moved to effective position, said preventing means normally lying in the path of the stop while the latter is in ineffective position,
30 and means on the machine frame for moving said preventing means out of the path of said first-mentioned stop before it is moved to an effective position.

8. In a typewriting machine, the combination with a carriage, of a stop thereon,
35 means for setting said stop to effective position, a counter-stop, means for preventing accidental displacement of said stop by said counter-stop, and means for restoring said
40 stop to ineffective position, said displacement-preventing means being movable out of the path of said first-mentioned stop by either the stop-setting means or the stop-restoring means.

45 9. In a typewriting machine, the combination with a carriage, of a stop thereon, means for setting said stop to effective position, a machine frame, a counter-stop on the machine frame, means for preventing
50 an accidental displacement of said stop by said counter-stop after said stop has been moved to an effective position, and means on the typewriter carriage for restoring said stop to an ineffective position, said displacement-preventing means being movable out
55 of the path of said stop by either the stop-setting means or the stop-restoring means.

10. In a typewriting machine, the combination with a carriage comprising a stop
60 bar, of a stop on said stop bar, a counter-stop, means for moving said stop to an effective position, means for preventing an accidental displacement of said stop from its effective position, by said counter-stop,
65 a slide bar for moving said displacement-

preventing means out of the path of said stop, and a second slide bar for restoring said stop to ineffective position, said second slide bar being operated from said first-mentioned slide bar.

70 11. In a typewriting machine, the combination with a carriage comprising a stop bar, of a stop on said stop bar, a counter-stop, means for moving said stop to effective position, means for preventing accidental
75 displacement of said stop from its effective position, two slide-bars on said stop bar, means operated by one of said slide-bars for moving said displacement-preventing means out of the path of said stop, and means operated by the other slide-bar for restoring said
80 stop to an ineffective position.

12. In a typewriting machine, the combination with a carriage, of a stop thereon
85 shiftable into and out of an operative position, a counter-stop, a device in the path of the shifting movement of said stop when the stop is within the range of movement of said counter-stop, to prevent displacement of the
90 stop by the counter-stop, means for shifting said stop to operative position, and means controlled by said stop-shifting means to move said device out of the path of the stop before the latter is shifted to operative position.

95 13. In a typewriting machine, the combination with a carriage, of a stop thereon shiftable into and out of effective position, a counter-stop, a pivoted bail in the path of shifting movement of said stop when said
100 stop is within the range of said counter-stop, means for shifting said stop to an effective position, and means operated by said stop-shifting means to move said bail out of the path of said stop before it is
105 shifted to effective position.

14. In a typewriting machine, the combination with a carriage, of a stop thereon
110 shiftable into and out of effective position, a counter-stop, a machine frame, a pivoted bail on said machine frame in the path of shifting movement of said stop when the latter is within the range of said counter-stop, means for shifting said stop to an effective position, and a projection on said
115 stop-shifting means engaging with said pivoted bail to move the latter out of the path of said stop before the latter is shifted to effective position.

15. In a typewriting machine, the combination with a carriage, of a stop thereon, a machine frame, a set of denominational
120 stops on the machine frame, means for moving said stop to effective position, and means operative only in the zone of said denominational stops engaging with the carriage stop to prevent accidental displacement thereof by any one of said denominational stops.

16. In a typewriting machine, the combination with a carriage, of a stop thereon, a machine frame, a set of denominational stops on the machine frame, means for moving said stop to effective position, and means operative only in the zone of said denominational stops engaging with the carriage stop to prevent accidental displacement thereof by any one of said denominational stops.

5 bination with a carriage, of a stop thereon, a machine frame, a set of denominational stops on the machine frame, means for moving said carriage stop to effective position, and means for preventing accidental displacement of said carriage stop by any one of said denominational stops, said displacement-preventing means comprising a bar on the machine frame and extending only across the space occupied by said denominational stops in position to protect the carriage stop during its entire travel within the range of the denominational stops.

10 17. In a typewriting machine, the combination with a carriage, of a stop thereon, means for moving said stop to effective position, a counter-stop, means for preventing accidental displacement of said stop by said counter-stop, said displacement-preventing means being normally in the path of movement of said stop to and from its effective position, and means controlled by said stop-moving means for moving said displacement-preventing means out of said path before the stop is moved to an effective position, said stop-moving means also controlling the return of said displacement-preventing means into said path after the stop has been moved to effective position.

15 18. In a typewriting machine, the combination with a carriage, of a stop thereon, means for moving said stop to effective position, a set of denominational stops, means embracing the zone of said stops for preventing accidental displacement of said first-mentioned stop by any one of said denominational stops, said displacement-preventing means being in the path of movement of said stop to and from effective position, only when the stop is within the range of said denominational stops, means acting within the zone of said denominational stops for moving said displacement-preventing means out of said path before the stop is moved to effective position, means for restoring said stop to an ineffective position, and means for moving said displacement-preventing means out of the path of said stop before it is restored to an ineffective position.

20 19. In a typewriting machine, the combination with a carriage comprising a stop-bar, of a stop on said stop bar, means for moving said stop to an effective position, a counter-stop, means for preventing accidental displacement of said stop by said counter-stop, and two slide-bars on said bar, one of said slide-bars being effective to move the displacement-preventing means out of the path of said stop on the stop bar, the other slide-bar being effective to restore the stop to its ineffective position, one of said slide-bars being arranged to operate the other.

25 20. In a typewriting machine, the combination with a carriage comprising a stop

bar, of a stop on said stop-bar, means for moving said stop to an effective position, a counter-stop, means for preventing an accidental displacement of said stop by said counter-stop, and two slide-bars carried by studs on the stop-bar, one of said slide-bars being effective to move the displacement-preventing means out of the path of said stop, the other slide-bar being effective to restore said stop to an ineffective position, the first slide-bar being provided with a slot comprising a cam and a dwell, said cam and dwell engaging with the stud on the stop-bar, and the cam being effective during the initial movement of said first slide-bar to raise the slide-bar and move the displacement-preventing means out of the path of said stop on the stop bar, said first slide-bar being guided by the dwell during its continued movement and operative during said continued movement to operate the stop-restoring slide, the latter having a cam by means of which it is raised to restore the first-mentioned stop to an ineffective position.

21. In a typewriting machine, the combination with a carriage and a carriage stop shiftable thereon transversely of the direction of the carriage travel into and out of operative position, of a key-operated counter-stop projectable into the path of the carriage stop, and a locking device for the carriage stop automatically brought into operative relation to the carriage stop during the carriage travel to prevent accidental displacement of the carriage stop by the counter-stop.

22. In a typewriting machine, the combination with a carriage, of a carriage stop thereon shiftable into and out of operative position, a series of denominational stops on the machine frame selectively movable into the path of the carriage stop, and a locking device automatically brought, during the travel of the carriage, into operative relation to the carriage stop and retained in such relation while the carriage stop is traveling past the denominational stops, to prevent accidental shifting of the carriage stop to inoperative position by the projection of a denominational stop while the latter is opposite the carriage stop, the locking device being ineffective to control a carriage stop while the latter is beyond the zone of the denominational stops.

23. In a typewriting machine, the combination with a carriage, of a carriage stop thereon shiftable into and out of operative position, a series of denominational stops on the machine frame selectively movable into the path of the carriage stop, and a locking device automatically brought, during the travel of the carriage, into operative relation to the carriage stop and retained in such relation while the carriage stop is traveling

past the denominational stops, to prevent accidental shifting of the carriage stop to inoperative position by the projection of a denominational stop while the latter is opposite the carriage stop, the locking device being ineffective to control a carriage stop while the latter is beyond the zone of the denominational stops, said locking device comprising a locking bar on the machine frame in the path of shifting movement of the carriage stop to and from operative position.

24. In a typewriting machine, the combination with a carriage, of a stop rack thereon, column stops mounted on said rack and shiftable thereon to and from operative position, a key-operated counter-stop movable into the path of the operative column stops, a locking device in position to prevent movement of the operative column stops from operative to inoperative position only while they are passing the counter-stop, a stop-restoring device for moving the column stops to inoperative positions, and means operated by the said restoring device, during its initial movement, to withdraw said locking device to inoperative position.

25. In a typewriting machine, the combination with a carriage and a series of stops thereon settable to operative position, of a key-operated counter-stop projectable into the path of the set carriage stops to arrest the carriage at positions corresponding to the positions of the set stops, a displacement-preventing device operative to prevent a carriage stop from being accidentally moved

from its set position by the operation of the counter-stop only while opposite said carriage stop, a stop-setting device operative to selectively set the carriage stops, and means operated by said stop-setting device to render the displacement-preventing device ineffective during a stop-setting operation.

26. In a typewriting machine, the combination with a carriage and a machine frame, of a stop on the carriage, a stop on the machine frame, a key to operate one of said stops, the other stop being shiftable into and out of operative position in which it may cooperate with the key-operated stop to arrest the carriage, and a locking device to lock the shiftable stop in its operative position while within the range of movement of the key-operated stop, said locking device being effective only while the carriage is at or adjacent to the stop position determined by said stops.

27. In a typewriting machine, the combination with a carriage, of a stop and a counter-stop for positioning said carriage, means for preventing accidental movement of said stop by said counter-stop, means to set said stop, and means for moving said preventing means to effective position brought into action under control of said stop-setting means after it has set any stop.

CORNELIUS B. CORCORAN.

Witnesses:

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EDITH B. LIBBEY.