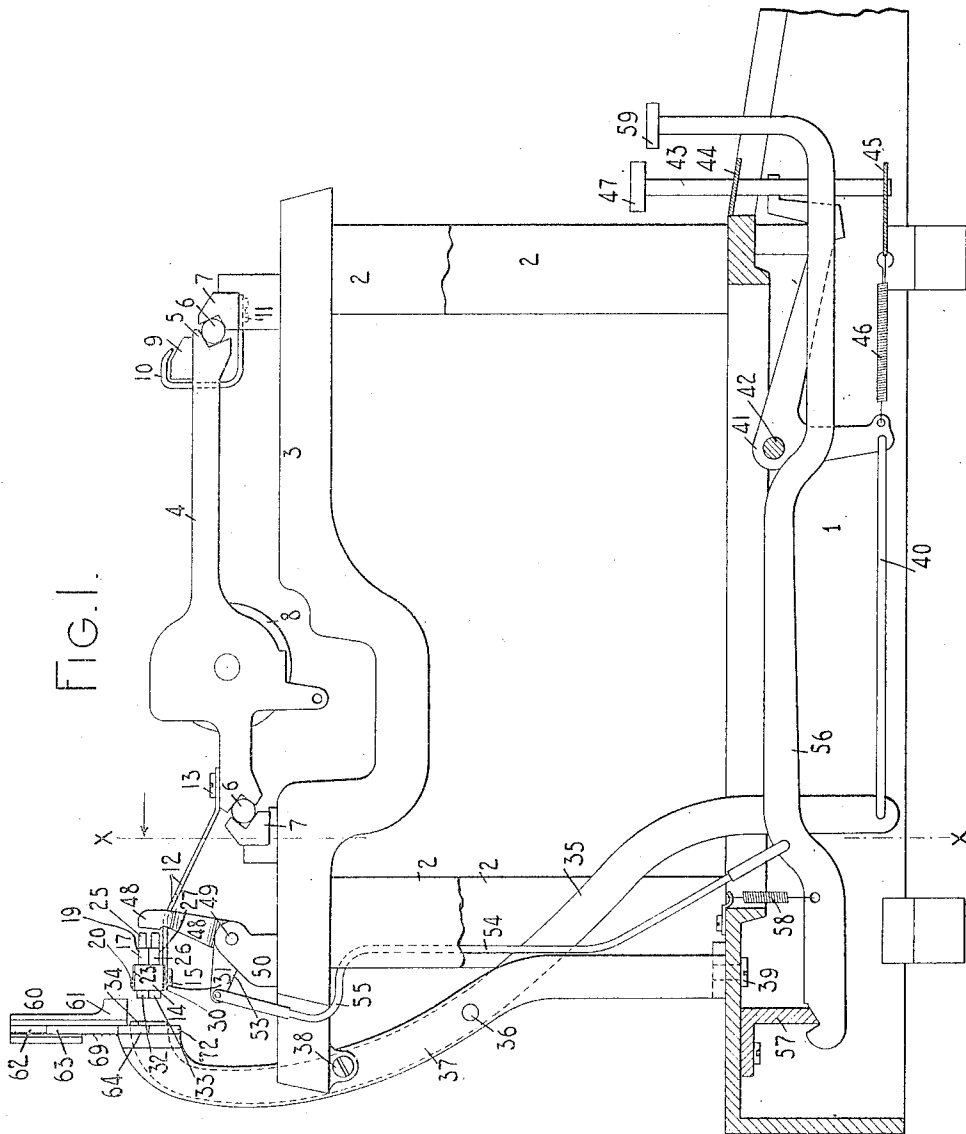


G. F. BALLOU.
TYPE WRITING MACHINE.
APPLICATION FILED FEB. 4, 1910.

971,959.

Patented Oct. 4, 1910.

4 SHEETS—SHEET 1.



WITNESSES:

E. M. Wells
Wm. E. Smith

INVENTOR:

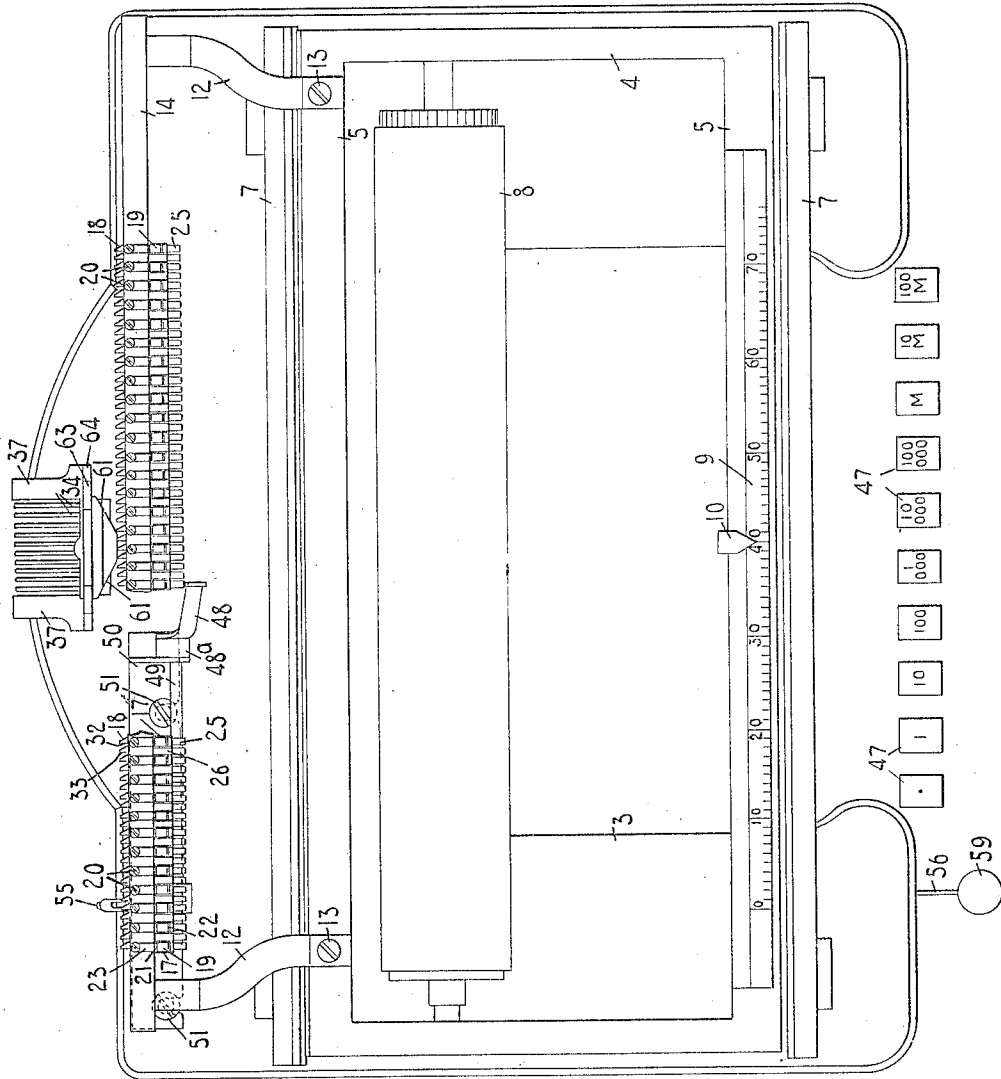
George F. Ballou
By Jacob F. Ballou

HIS ATTORNEY

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4 SHEETS—SHEET 2.



WITNESSES:

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FIG. 2.

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4 SHEETS—SHEET 3.

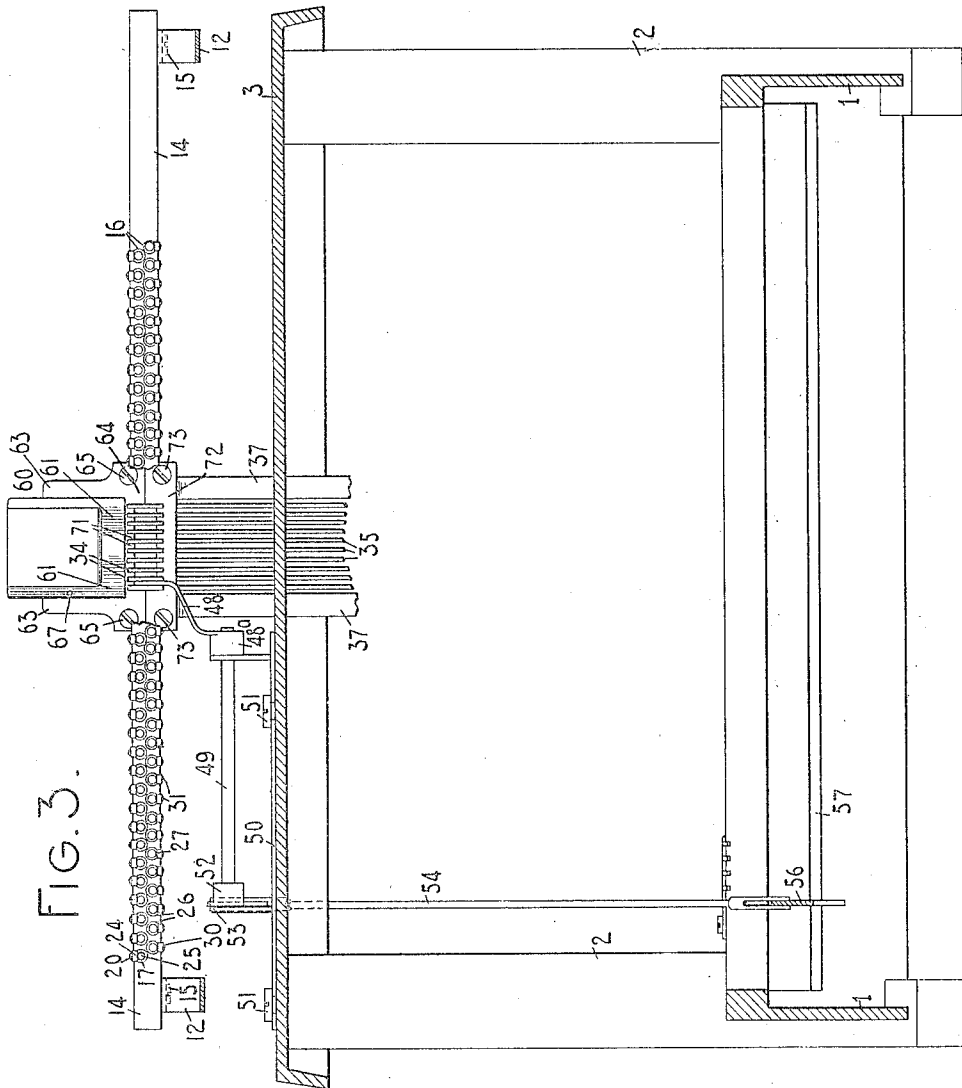


FIG. 3.

WITNESSES:

E. M. Wells

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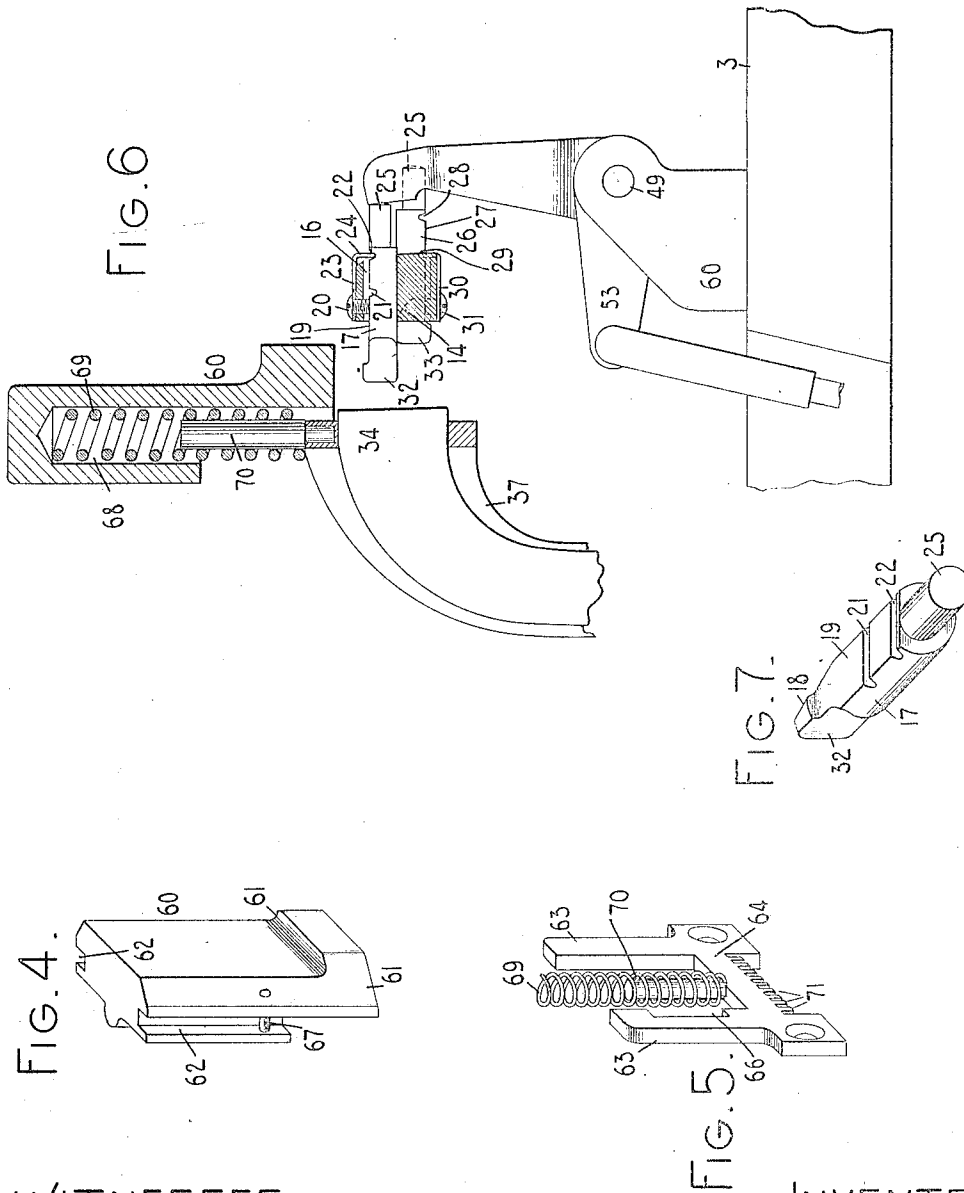
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4 SHEETS—SHEET 4.



WITNESSES:

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UNITED STATES PATENT OFFICE

GEORGE F. BALLOU, OF NEW YORK, N. Y., ASSIGNOR TO REMINGTON TYPEWRITER COMPANY, OF ILION, NEW YORK, A CORPORATION OF NEW YORK.

TYPE-WRITING MACHINE.

971,959.

Specification of Letters Patent.

Patented Oct. 4, 1910.

Application filed February 4, 1910. Serial No. 541,995.

To all whom it may concern:

Be it known that I, GEORGE F. BALLOU, citizen of the United States, and resident of borough of Manhattan, city of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

My invention relates to typewriting machines and more particularly to tabulating mechanism.

In tabulating mechanism heretofore employed it has been customary to use column stops adjustable along a column stop bar to different positions corresponding to each index on the carriage scale or to each letter space position of the carriage in its line of travel. In the use of such column stops considerable time was required to set them or adjust them when a change from one character of work to another was made and the work involved in determining where to set the stops was somewhat troublesome.

One of the objects of my present invention is to overcome these difficulties and to provide comparatively simple and efficient mechanism for quickly determining the position of arrest of the carriage by the tabulator mechanism and for readily setting the tabulator mechanism accordingly.

A further and main object of my invention is to provide simple and efficient means for clearing, or restoring the set stops to inoperative position.

To the above and other ends which will hereinafter appear my invention consists in the features of construction, arrangements of parts and combinations of devices to be hereinafter described and particularly pointed out in the appended claims.

In the accompanying drawings wherein like reference characters designate corresponding parts in the various views, Figure 1 is a fragmentary side elevation partly in section showing a sufficient number of parts of one form of typewriting machine to illustrate my invention in its embodiment therein. Fig. 2 is a fragmentary plan view of the same. Fig. 3 is a fragmentary vertical transverse sectional view of the same with parts broken away and parts omitted, the section being taken on a line $x-x$ in Fig. 1 and looking in the direction of the arrow at said line. Fig. 4 is an enlarged detail

perspective view of the re-setting cam for re-setting the column stops to inoperative position. Fig. 5 is a detail perspective view of the guide on which said cam is mounted for movement. Fig. 6 is an enlarged detail side elevation partly in section showing parts of the tabulating mechanism and the associated parts by which the column stops are moved to and from operative position. Fig. 7 is a detail perspective view of one of the column stops.

I have shown my invention in the present instance embodied in a No. 11 Remington typewriting machine which contains a denominational tabulator. It should be understood, however, that the character of machine and of the tabulating mechanism employed is immaterial, so far as my invention is concerned.

My present invention is in the nature of an improvement upon the construction disclosed in the application of Victor Albert Emanuel Sivertsen and Jans Christian Nielsen, filed April 8, 1909, Serial No. 488,675.

The frame of the machine comprises a base 1, corner posts 2 and a top plate 3. A carriage 4 is provided with grooved rails 5 which receive anti-friction balls or rollers 6, the latter being likewise received in fixed grooved guide rails 7 to support the carriage in its movement from side to side of the machine. The carriage carries the usual cylindrical platen 8. The front bar of the carriage is provided with a carriage scale 9 with which a pointer 10 coöperates, the pointer being secured by a screw 11 to the forward fixed carriage rail. Projecting rearwardly from the carriage are arms 12 which are fixed to the carriage by screws 13 and have secured thereto at their rear ends a column stop bar 14, screws 15 connecting the column stop bar to said arms. The column stop bar is, as will be seen more particularly upon reference to Figs. 3 and 6, provided with two series of cylindrical openings 16, one series arranged above the other, the openings of the upper series being staggered with reference to those of the lower series. The upper series of openings receive substantially cylindrical column stops 17 which are adapted to slide fore and aft of the machine in said openings and into and out of operative position. Each stop 17 is beveled on its right-hand side as indicated at 18 in Fig. 7

and each of these stops is likewise flattened on its upper side at 19 for coöperation with the inner flat end of a screw 20 received in a tapped opening in the column stop bar 14.

5 Each screw 20 thus prevents the associated substantially cylindrical stop 17 from turning in its bearing opening. Each of the stops 17 is likewise provided with two notches 21 and 22 in the flattened face thereof. A leaf spring 23 is secured in

10 place by each of the headed screws 20 and is bent downwardly at its free end as at 24 for coöperation with the notches 21 and 22 in the associated column stop. The springs

15 thus constitute individual spring means for each of the stops 17 to maintain it against accidental displacement in either the projected or operative position shown in Fig. 6 or in the inoperative position where the stop

20 is moved forwardly until the end 24 of the spring is seated in the rear notch 21. Each of the stops 17 is reduced at its forward end portion as indicated at 25 for purposes which will hereinafter more clearly appear. The

25 lower series of cylindrical openings 16 in the column stop bar likewise receives a series of stops 26 which are formed like the stops 17 except that the flattened face 27 and the grooves or notches 28 and 29 therein are on the under sides of the stops, and the leaf

30 springs 30 for retaining the lower series of stops in either the operative or inoperative positions are connected to the lower side of the column stop bar by screws 31. By this

35 construction it will be understood from an inspection of Figs. 2 and 3 that the column stops of the two series are arranged in staggered relation and overlap one another in vertical planes although the contact faces 32

40 and 33 of each adjacent pair of stops 17 and 26 are arranged a letter space distance apart. By this construction I am enabled to provide comparatively thick or heavy column stops and nevertheless to situate the contact faces

45 thereof at a letter space distance apart.

As hereinbefore explained when the column stops 17 and 26 are projected rearwardly as shown by the column stop 17 in Fig. 6, they are in the operative position

50 where they are adapted to coöperate with tabulator or denominational stops 34 when the latter are projected forwardly by their key-controlled mechanism. In the present instance I have shown a form of denominational tabulator employed in the No. 11

55 Remington machine, though it should be understood that for the purposes of my present invention any desired form of tabulating mechanism may be employed to coöperate

60 with the column stops. As shown in the present instance the denominational stops 34 constitute parts of upwardly extending denominational stop levers 35 pivoted at 36 in a tabulator frame 37 secured by screws 38

65 and 39 to the frame of the machine. The

lowers ends of these denominational stop levers are connected to push links 40 which in turn are connected to the depending arms of angular actuating levers 41 pivoted on a rod 42 secured to the base of the machine. The

70 forwardly extending arms of these angular levers are operatively connected to key stems 43 guided in openings in guide plates 44 and 45. Restoring springs 46 are each connected at one end to the guide plate 45 and at the

75 opposite end to the depending arm of one of the angular levers 41. A depression of one of the denominational tabulator keys 47 is effective to project the associated denominational stop 34 forwardly into the path of the

80 column stops 17 and 26 which have been moved to operative position.

In order to select and project any desired column stop to operative position, I have provided projecting means which is coöperative with the column stops independently to

85 move any desired one of them at a time to operative position, the particular stop which may be projected to operative position depending on the position of the carriage in

90 its line of travel. Thus I have provided an actuating arm, finger or projecting device 48 formed as an upwardly extending crank arm which projects from a hub 48^a secured to a rock shaft 49 mounted to turn in bear-

95 ings in a bracket 50 secured to the top plate of the machine by screws 51.

From an inspection of Figs. 2 and 3 it will be seen that the arm 48 is bent to the right so as to bring the free end portion

100 thereof just to the right of the left-hand or decimal stop of the series of denominational stops. This arm extends forwardly of the column stop bar 14 and forwardly of the

105 column stops carried thereby and at each letter space movement of the carriage a column stop is brought into register with the contact portion of the setting or actuating arm 48, the stops of the upper and lower series alternating in their coöperation with

110 the arm 48 as the carriage moves successive letter space distances along the line of its travel. The reduced forward ends 25 of the column stops enable the arm 48 to co-act

115 with each individual stop without contacting with the adjacent stops. As the arm 48 moves rearwardly one of the column stops is moved from its foremost position rearwardly to operative position as shown in

120 Fig. 6. The pressure of the arm 48 on the co-acting column stop overcomes the pressure of the associated spring 24 or 30; the inclined sides of the groove or notch in which the spring is seated camming the en-

125 gaging end of the spring out of the notch and affording a movement of the stop rearwardly until the engaging end of the spring is seated in the foremost notch in the stop, thus locking it against accidental displacement from the operative position. The rock

130

shaft 49 has a hub 52 secured thereto and from this hub extends a rearwardly projecting crank arm 53 to which is connected a downwardly extending link 54 bent as indicated at 55 to clear the top plate of the machine at the rear edge thereof. The lower end of the link 54 is connected to a key lever 56 fulcrumed on a plate 57 and provided with a restoring spring 58. This key lever preferably extends to the key board of the machine where it is provided with a special key 59 by which the rock shaft and the projecting device 48 may be moved to project the selected column stop to operative position.

In order to quickly restore all of the column stops to inoperative position or to move them forwardly on the column stop bar, I have provided a re-setting, clearing, restoring device, wiper or cam designated as a whole by the reference numeral 60 as shown in detail in Fig. 4. This cam is provided with inclined faces 61 on the right and left-hand sides thereof. The member 60 is grooved on opposite sides at 62 for the reception of upwardly extending guide arms 63 forming part of a bracket 64 which is shown in detail in Fig. 5. This bracket is secured by screws 65 (see Fig. 3) to the upper forward end of the tabulator frame 37 to guide the member 60 in its up and down movements. One of the arms 63 is cut out as indicated at 66 to receive a pin 67 secured to the member 60 and extending into the cut-out 66 to limit the up and down movements of the member 60. The member 60 is recessed vertically, as indicated at 68 in Fig. 6, for the reception of a coiled expansion spring 69, the lower end portion of which surrounds a pin 70 secured to the bracket 64. This spring normally maintains the restoring device 60 in the elevated position where it is out of the path of the rearwardly projected column stops. When, however, the member 60 is depressed by hand against the pressure of the spring 69, the inclined or cam faces 61 are brought into the paths of the two series of column stops 17 and 26 which are in the operative position. If at this time the carriage is given a complete movement in the direction of its travel, either from left to right or vice versa, all of the operative column stops will be moved successively into coöperation with the re-setting cam 60 and they will be successively moved by one cam face 61 or the other rearwardly against the pressure of the retaining springs 23 or 30 to the forward or inoperative position where they will no longer coöperate with any of the projected denominational stops. It will thus be seen that by a single movement of the carriage throughout its entire run from right to left or vice versa the entire set of projected column stops will be successively restored to

normal or inoperative position. When the column stops have been thus restored to inoperative position pressure on the restoring device 60 is released and it is moved upwardly to inoperative position by its spring 69.

In the present instance I have utilized the bracket 64 to constitute a part of the guiding means for the denominational stops. Thus from an inspection of Fig. 5 it will be seen that I have formed on the bracket a series of teeth 71 with interdental spaces in which the denominational stops 34 are received at their upper edges and adapted to move. The lower edges of the denominational stops are in the present instance received in interdental spaces between like teeth on a plate 72 secured by screws 73 to the upper forward face of the tabulator frame 37.

From the foregoing description it will be observed that the projecting or selecting device 48 is carried upon the frame of the machine, whereas the column stops are carried upon the carriage. It will also be observed that the restoring device 60 by which the column stops are restored to normal position is carried by the frame of the machine and when it is in the operative position it is effective, by the movement of the carriage, to restore the column stops to normal or inoperative position.

In the use of the devices it may be assumed, for instance, that a letter is to be written in which vertical rows of names or items and amounts are to appear, which items and amounts in different lines are to be placed exactly under each other. The carriage is moved to the position where the first letter of the first name or item is to be written. This may be assumed to be at "20," which is indicated by the pointer 10 on the carriage scale 9. The key 59 is then depressed and this effects a rearward movement of the finger, arm, projecting or selecting device 48 and effects a rearward movement of the particular column stop 17 or 26 which is opposite the contact portion of the column selecting finger or device. Said column stop is thereby moved to operative position where it is retained against accidental displacement by its coöperative spring until the stop is restored to inoperative position. Thereafter and during the tabulating operation the projected column stop will coact with the decimal stop, or the first of the denominational stops counting from left to right, at the same point, "20," in the travel of the carriage where the carriage was arrested to select the column stop, and in the desired position where the first name or item to be written is to be started. If the operator desires to set the next column stop to write, for instance, an amount in the same line so that the decimal point will be at say "50" on the carriage scale, it is only neces-

sary to press down the key 59 when the carriage is moved to a position where the decimal point may be written in a position which corresponds to "50" on the carriage scale. This projects the column stop at "50" to arrest the carriage at such position when the decimal key is depressed. If in the next and subsequent lines a name or item and an amount are to be written exactly under the first ones, no further setting of the stops is required and only those column stops are effective which have been moved to operative position by the actuation of the selecting key 59 in the manner described.

When the tabulator is to be set for a different character of work requiring the use of different column stops, those formerly in use may be cleared or moved to inoperative position by simply depressing the restoring device or cam 60 to the operative position in the manner hereinbefore described and moving the carriage in the direction of its travel while the cam is maintained in operative position. New column stops may then be individually and successively selected and set in the manner hereinbefore pointed out.

It will be understood that a material advantage of the invention is that the column stops are, by pressure exerted on the key 59, individually set up while writing the first line so as to avoid calculating before-hand the positions where the stops are to be set, the position of the carriage in the present structure aiding in determining the selection of the column stop to be used for that particular point of arrest.

In accordance with the present invention I prefer to employ a stop for each index on the carriage scale or for each letter space position of the carriage, or at any rate for each index on the carriage scale or each letter space position of the carriage where ordinarily such stops might be employed and to provide means whereby each of said stops can be thrown into and out of operative position.

Various changes may be made without departing from the spirit and scope of my invention.

What I claim as new and desire to secure by Letters Patent, is:—

1. In a typewriting machine and tabulating mechanism, the combination of a carriage; a series of column stops; means for projecting said stops individually to operative position, said means including means whereby the column stop which may be projected depends on the position of the carriage in its travel; a key controlled cooperative stop; and means carried by the frame of the machine for moving the projected column stops to inoperative position.

2. In a typewriting machine and tabulating mechanism, the combination of a carriage; a series of column stops carried by

the carriage; means carried by the frame of the machine for projecting said column stops separately to operative position; a cooperative stop carried by the frame of the machine; key controlled means for projecting said cooperative stop into the path of the projected column stop or stops; and means carried by the frame of the machine for moving the projected column stops back to inoperative position.

3. In a typewriting machine and tabulating mechanism, the combination of a carriage; a series of column stops situated a letter-space distance apart and mounted for individual movement into and out of operative position and for maintenance indefinitely in either of such positions; key actuated means for moving any desired individual column stop to operative position; a cooperative stop; key controlled means for moving said cooperative stop to a position where it will cooperate only with the column stop or stops which are in the operative position; and means carried by the frame of the machine for moving the projected column stops back to inoperative position.

4. In a typewriting machine and tabulating mechanism, the combination of a carriage; a series of stops; means for projecting said stops to operative position, said means including means whereby the stop which may be projected depends on the position of the carriage in its travel; a cooperative stop; and means independent of said projecting means for re-setting said first mentioned stops to in-operative position, said re-setting means including a part on the frame of the machine, and means for moving said part into and out of cooperative relation with said first mentioned stops.

5. In a typewriting machine and tabulating mechanism, the combination of a carriage; a series of stops; means for projecting said stops to operative position, said means including means whereby the stop which may be projected depends on the position of the carriage in its travel; a cooperative stop; and means independent of said projecting means for re-setting said first mentioned stops to inoperative position, said re-setting means comprising a wiper, and means for moving said wiper into and out of the path of said first mentioned stops so that when the wiper is in operative position it will co-act successively with said first mentioned stops to move them back to inoperative position.

6. In a typewriting machine and tabulating mechanism, the combination of a carriage; a series of stops; means for projecting said stops to operative position, said means including means whereby the stop which may be projected depends on the position of the carriage in its travel; a cooperative stop; and means independent of said

projecting means for re-setting said first mentioned stops to inoperative position, said re-setting means comprising a cam, and means for moving said cam into and out of cooperative relation with said first mentioned stops.

7. In a typewriting machine and tabulating mechanism, the combination of a carriage; a series of column stops carried by the carriage; means carried by the frame of the machine for projecting said column stops separately to operative position; a cooperative stop carried by the frame of the machine; key controlled means for projecting said cooperative stop into the path of the projected column stop or stops; and means independent of the column stop projecting means for re-setting all of the projected column stops to inoperative position, said re-setting means comprising a wiper carried by the frame of the machine, and means for rendering said wiper operative or inoperative on said column stops.

8. In a typewriting machine and tabulating mechanism, the combination of a carriage; a series of column stops carried by the carriage; means carried by the frame of the machine for projecting said column stops separately to operative position; a cooperative stop carried by the frame of the machine; key controlled means for projecting said cooperative stop into the path of the projected column stop or stops; and means independent of the column stop projecting means for re-setting all of the projected column stops to inoperative position, said re-setting means comprising a cam carried by the frame of the machine, and means for projecting said cam into the path of the projected column stops.

9. In a typewriting machine and tabulating mechanism, the combination of a carriage; a series of column stops situated a letter space distance apart and mounted for individual movement into and out of operative position and for maintenance indefinitely in either of such positions; key actuated means for moving any desired individual column stop to operative position; a cooperative stop; key controlled means for moving said cooperative stop to a position where it will cooperate only with column stops which are in the operative position; and means independent of said column stop moving means for re-setting all of the operative column stops to inoperative position, said re-setting means comprising a device operative successively on the said column stops during the travel of the carriage.

10. In a typewriting machine and tabulating mechanism, the combination of a carriage; a series of column stops situated a letter space distance apart and mounted for individual movement into and out of operative position and for maintenance indefinitely

in either of such positions; key actuated means for moving any desired individual column stop to operative position; a cooperative stop; key controlled means for moving said cooperative stop to a position where it will cooperate only with column stops which are in the operative position; and means independent of said column stop moving means for re-setting all of the operative column stops to inoperative position, said re-setting means comprising a cam operative successively on said column stops during the travel of the carriage, and means for moving said cam into and out of cooperative relation with said column stops.

11. In a typewriting machine and tabulating mechanism, the combination of a carriage; a series of column stops, one for each letter space movement of the carriage, said column stops being mounted for individual movement into and out of operative position; a selector cooperative with all of said column stops individually, the particular column stop with which the selector is adapted to co-act depending on the position of the carriage along its line of travel; a key actuated stop cooperative with said column stop; and a wiper operative successively on the column stops during the travel of the carriage to re-set the column stops to inoperative position.

12. In a typewriting machine and tabulating mechanism, the combination of a carriage; a series of column stops, one for each letter space movement of the carriage, said column stops being mounted for individual movement into and out of operative position; a selector cooperative with all of said column stops individually, the particular column stop with which the selector is adapted to co-act depending on the position of the carriage along its line of travel; a key actuated stop cooperative with said column stops; a cam cooperative with said column stops to re-set them to inoperative position during the travel of the carriage; and means for moving said cam into and out of cooperative relation with said column stops.

13. In a typewriting machine and tabulating mechanism, the combination of a carriage; a series of tabulator stops movable into and out of operative position and adapted to remain in either of said positions; key actuated selecting means for moving said stops to operative position; a cooperative tabulator stop; and re-setting means for moving said first mentioned stops to inoperative position, said re-setting means comprising a restoring device cooperative with said first mentioned stops, said first mentioned stops and restoring device being carried one by the frame of the machine and the other by the carriage.

14. In a typewriting machine and tabulating mechanism, the combination of a car-

- riage; a series of tabulator stops movable into and out of operative position and adapted to remain in either of said positions; key actuated selecting means for moving said stops to operative position; a cooperative tabulator stop; and re-setting means for moving said first mentioned stops to inoperative position, said re-setting means comprising a cam cooperative successively with said first mentioned stops to move them to inoperative position, the said first mentioned stops and re-setting means being carried one by the carriage and the other by the frame of the machine.
- 15 15. In a typewriting machine and tabulating mechanism, the combination of a carriage; a series of tabulator stops movable into and out of operative position and adapted to remain in either of said positions; key actuated selecting means for moving said stops to operative position; a cooperative tabulator stop; and re-setting means for moving said first mentioned stops to inoperative position, said re-setting means comprising a spring restored cam movable into and out of cooperative relation with said first mentioned stops, the cam when in cooperative relation effecting a successive re-setting of the stops during the travel of the carriage.
- 30 16. In a typewriting machine and tabulating mechanism, the combination of a carriage; a plurality of tabulator stops carried by the carriage and movable into and out of operative position and adapted to remain in either of said positions; a cooperative key actuated tabulating stop carried by the frame of the machine; and re-setting means carried by the frame of the machine for moving said first mentioned stops to inoperative position.
- 35 17. In a typewriting machine and tabulating mechanism, the combination of a carriage; a plurality of tabulator stops carried by the carriage and movable into and out of operative position and adapted to remain in either of said positions; a cooperative key actuated tabulating stop carried by the frame of the machine; and re-setting means carried by the frame of the machine for moving said first mentioned stops to inoperative position; said re-setting means comprising a wiper movable into and out of cooperative relation with said first mentioned stops.
- 50 18. In a typewriting machine and tabulating mechanism, the combination of a carriage; a plurality of tabulator stops carried by the carriage and movable into and out of operative position and adapted to remain in either of said positions; a cooperative key actuated tabulating stop carried by the frame of the machine; and re-setting means carried by the frame of the machine for moving said first mentioned stops to inoperative position, said re-setting means comprising a cam movable into and out of the path of said first mentioned stops which have been moved to operative position.
- 55 19. In a typewriting machine and tabulating mechanism, the combination of a carriage; a plurality of tabulator stops carried by the carriage and movable into and out of operative position and adapted to remain in either of said positions; a cooperative key actuated tabulating stop carried by the frame of the machine; and re-setting means carried by the frame of the machine for moving said first mentioned stops to inoperative position, said re-setting means comprising a cam movably mounted on the frame of the machine into and out of the path of said first mentioned stops which have been moved to operative position so that during the travel of the carriage said operative stops will be cammed back to inoperative position, and a spring for moving said cam out of the path of said operative stops.
- 60 20. In a typewriting machine and tabulating mechanism, the combination of a carriage; a tabulating stop; a tabulating stop bar; and two series of tabulating stops carried by said stop bar, the stops of one of said series being staggered relatively to the stops of the other series.
- 65 21. In a typewriting machine and tabulating mechanism, the combination of a carriage; a tabulating stop; a tabulating stop bar; and two series of tabulating stops carried by said stop bar, the stops of one of said series being staggered relatively to the stops of the other series, and the stops of the two series overlapping and having their contact faces arranged a letter space distance apart.
- 70 22. In a typewriting machine and tabulating mechanism, the combination of a carriage; a tabulating stop; a tabulating stop bar; two series of tabulating stops carried by said stop bar, the stops of one of said series being staggered relatively to the stops of the other series, and the two series of stops being mounted for movement on the stop bar into and out of operative position; and spring means for holding the stops of the two series in either the operative or inoperative positions to which they may be moved.
- 75 23. In a typewriting machine and tabulating mechanism, the combination of a carriage; a tabulating stop; a tabulating stop bar; two series of tabulating stops carried by said stop bar, the stops of one of said series being staggered relatively to the stops of the other series, and the two series of stops being mounted for movement on the stop bar into and out of operative position; and an individual spring for each of the
- 80 85 90 95 100 105 110 115 120 125

stops of the two series for retaining each of the stops in either the operative or inoperative position to which it may be moved.

24. In a typewriting machine and tabulating mechanism, the combination of a carriage; a tabulating stop, a tabulating stop bar bored with staggered openings; and tabulator stops slidable into and out of operative position in said openings.

25. In a typewriting machine and tabulating mechanism, the combination of a carriage; a tabulating stop, a tabulating stop bar bored with cylindrical openings therein; substantially cylindrical tabulator stops received and adapted to slide in said openings into and out of operative position, said last mentioned stops each having a flattened face, and means coöperative with the flattened faces on said stops to prevent them from turning in said openings.

26. In a typewriting machine and tabulating mechanism, the combination of a carriage; a tabulating stop; a tabulating stop

bar bored with cylindrical openings therein; substantially cylindrical tabulator stops received and adapted to slide in said openings into and out of operative position, said last mentioned stops each having a flattened face; means coöperative with the flattened faces on said stops to prevent them from turning in said openings, said sliding stops being also formed with notches; and an individual spring for each of said sliding stops, said springs coöperating with the notches in said stops to retain them in either the operative or inoperative positions to which they may be moved.

Signed at the borough of Manhattan, city of New York, in the county of New York, and State of New York this 3rd day of Feb. A. D. 1910.

GEORGE F. BALLOU.

Witnesses:

E. M. WELLS,
M. F. HANNWEBER.