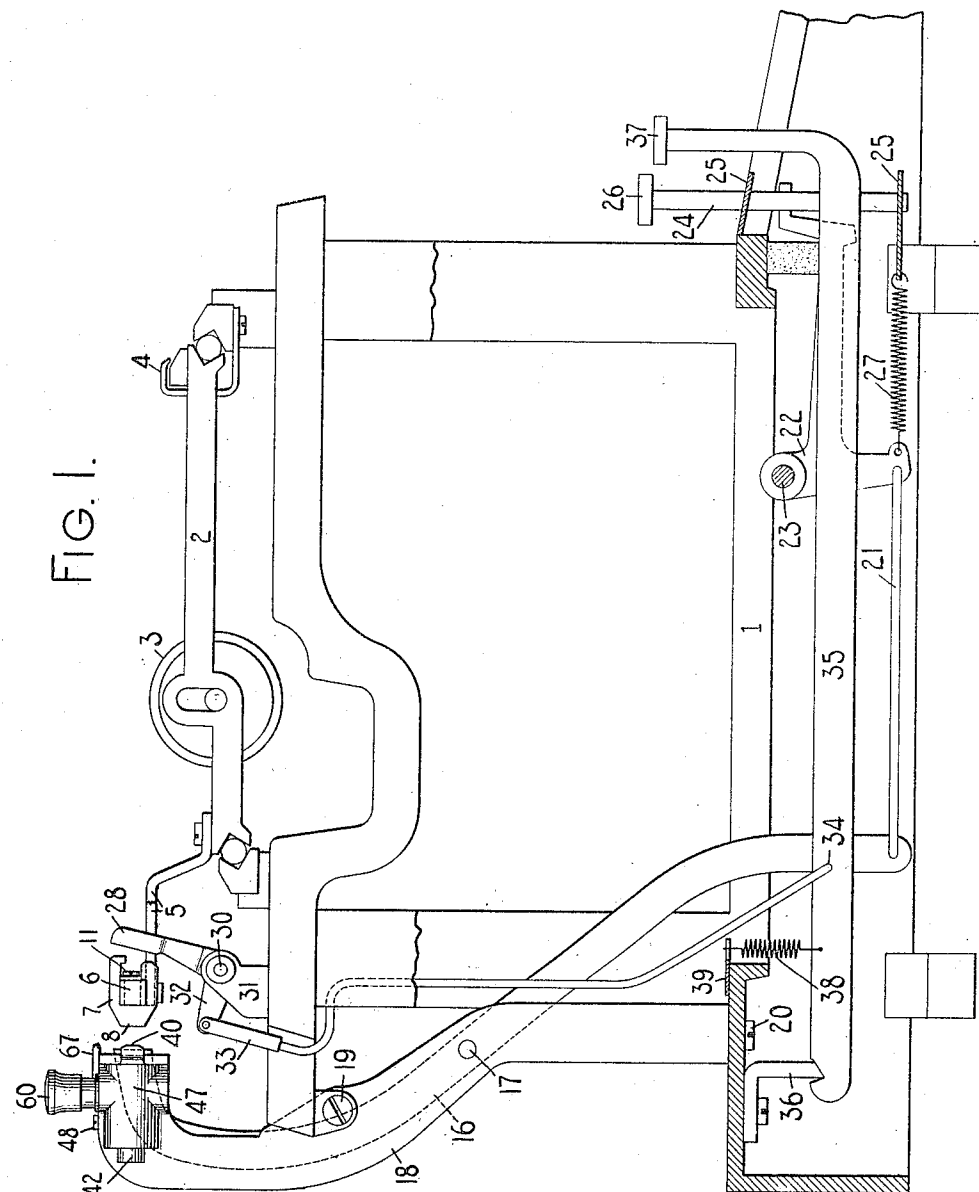


971,953.

Patented Oct. 4, 1910.
3 SHEETS—SHEET 1.



WITNESSES:

E. M. Wells
Charles E. Smith

INVENTOR:

Oscar Woodward
By Jacob F. Hill
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O. WOODWARD.
TYPE WRITING MACHINE.
APPLICATION FILED JUNE 8, 1910.

971,953.

Patented Oct. 4, 1910

3 SHEETS—SHEET 2.

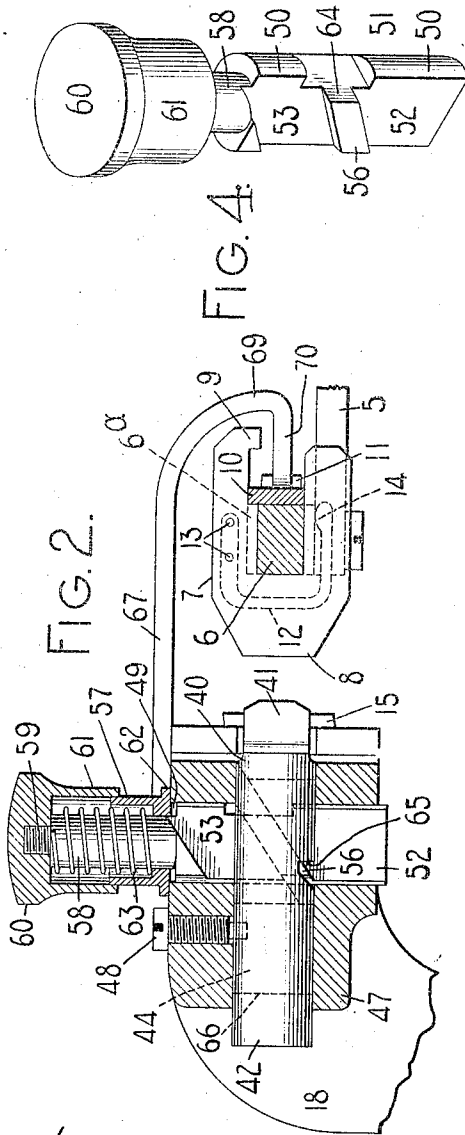


FIG. 4.

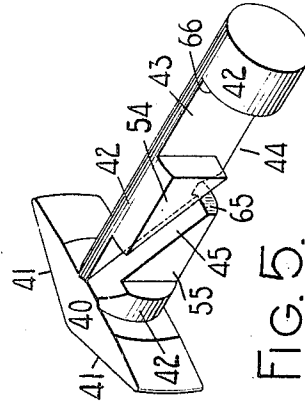


FIG. 5.

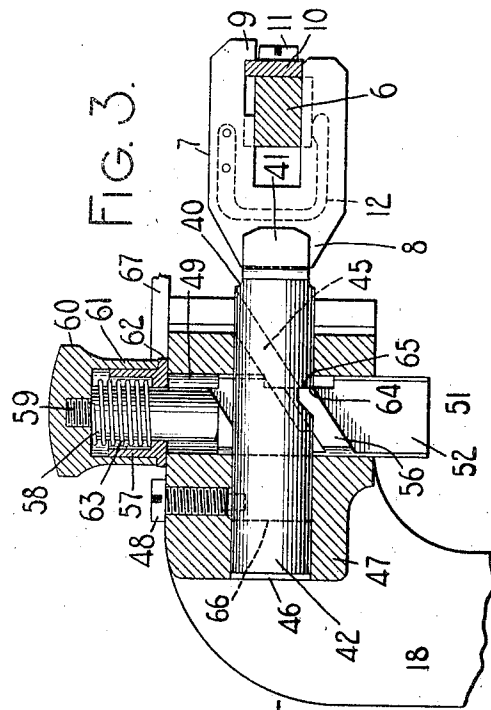


FIG. 3.

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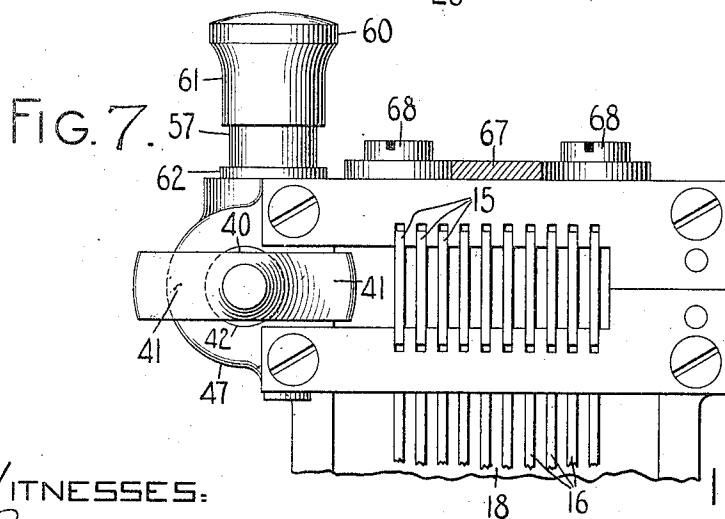
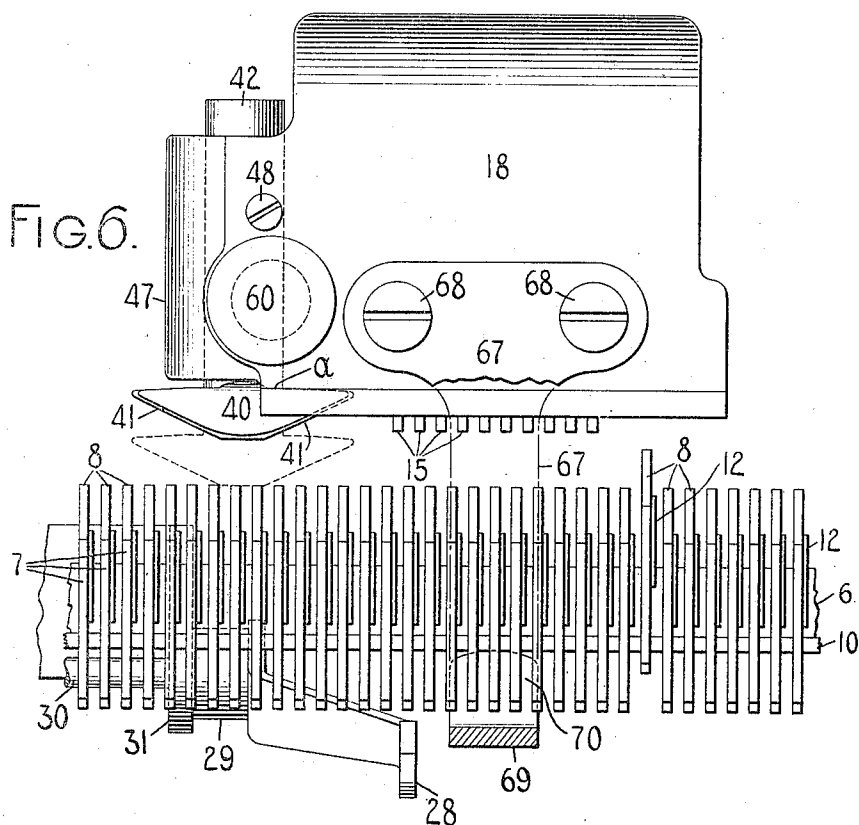
HIS ATTORNEY

O. WOODWARD.
TYPE WRITING MACHINE.
APPLICATION FILED JUNE 8, 1910.

971,953.

Patented Oct. 4, 1910.

3 SHEETS—SHEET 3.



WITNESSES:

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UNITED STATES PATENT OFFICE.

OSCAR WOODWARD, OF MONTCLAIR, NEW JERSEY, ASSIGNOR TO UNION TYPEWRITER COMPANY, OF ILION, NEW YORK, A CORPORATION OF NEW YORK.

TYPE-WRITING MACHINE.

971,953.

Specification of Letters Patent.

Patented Oct. 4, 1910.

Application filed June 8, 1910. Serial No. 565,846.

To all whom it may concern:

Be it known that I, OSCAR WOODWARD, a citizen of the United States, and resident of Montclair, in the county of Essex and State of New Jersey, 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 the 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, to provide comparatively simple and efficient mechanism for quickly determining the position of arrest of the carriage by the tabulating mechanism, and for readily setting the tabulating mechanism accordingly.

A further and main object of my invention is to provide simple and efficient means for restoring the set stops to inoperative position and to so construct the mechanism as to facilitate manufacturing and assembling the parts.

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 indicate corresponding parts in the various views, Figure 1 is a fragmentary side elevation with parts in section of one form of typewriting machine embodying my invention, only a sufficient number of parts of the machine being shown to illustrate my invention in its embodiment therein. Fig. 2 is an enlarged detail transverse sectional view showing parts of the tabulator and resetting mechanism; the parts being shown in their normal positions.

Fig. 3 is a view corresponding to Fig. 2, but showing a column stop in its projected or operative position, and the resetting cam moved to operative position to reset the column stop. Fig. 4 is a detail perspective view of the actuating member for the resetting cam. Fig. 5 is a detail perspective view of the resetting cam. Fig. 6 is an enlarged, detail, fragmentary, plan view of the parts shown in Fig. 2, together with the selecting device. Fig. 7 is an enlarged, detail, fragmentary, front view of some of the parts represented in Fig. 6.

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 the machine and of the tabulating mechanism employed is immaterial so far as my present invention is concerned.

The general purposes to be attained by the present invention are the same as those attained by the mechanism disclosed in the application of Sivertsen and Nielsen, Serial No. 488,675, filed April 8th, 1909.

So far as the resetting mechanism of the present invention is concerned, this mechanism is in the nature of an improvement of the constructions disclosed in the applications of George F. Ballou, Serial No. 541,995, filed February 4th, 1910 and Clio B. Yaw, filed May 31st, 1910, Serial No. 564,227. The column stop construction and the means for retaining the stops against accidental displacement are in the nature of improvements upon the structure disclosed in the application of George H. Smith, Serial No. 533,717, filed December 17th, 1909.

The frame 1 of the machine supports a carriage 2 which is adapted to travel over the top plate from side to side of the machine. The carriage may support the usual cylindrical platen 3, and may be provided with a carriage scale with which a fixed pointer 4 cooperates. Projecting rearwardly from the carriage are arms 5 to which are fixed a toothed column stop bar 6, the teeth 6^a (Fig. 2) being arranged on the upper and lower sides of the bar and forming interdental spaces in which bifurcated flat sheet metal column stops 7 are adapted to slide fore and aft of the machine. These column stops, as best shown in Fig. 2, straddle the

column stop bar and the rear end portion 8, which unites the arms of the stop, constitutes the contact portion thereof for co-operation with suitable tabulator stops as will hereinafter more clearly appear. Each of the column stops 7 is provided with an inwardly extending or depending contact piece or projection 9 adapted to slide through one of the interdental spaces in the stop rod, when the stop is placed in position on the stop rod. A bar 10 is detachably secured by screws 11 to the front face of the column stop bar. This bar 10 is of sufficient width to close the forward ends of the interdental spaces between the teeth 6^a at the upper side of the column stop bar, so as to form an abutment or contact for the projections 9, to limit the rearward movement of the column stops on the bar 6, and thus prevent their removal from the stop bar except when the bar 10 is detached. Each of the column stops is provided with a substantially U-shaped spring 12, connected at one end by rivets 13 to a side of the associated stop. The free end of the spring is provided with an enlargement 14, adapted to bear with a spring pressure against the crown of one of the adjacent teeth 6^a on the column stop bar, whether the column stop be, in the retracted or inoperative position shown in Fig. 2, or in the projected or operative position shown in Fig. 3; and to exert sufficient pressure to maintain the associated stop against accidental displacement from either of these positions. It should be understood that the column stop bar preferably extends throughout the length of the carriage and is provided with as many pairs of interdental spaces between the teeth 6^a as there are letter space positions of the carriage in the travel thereof from side to side of the machine, or as there are indices on the carriage scale. Preferably a column stop 7 is provided for each set of oppositely disposed interdental spaces, so that there are preferably as many column stops as there are letter space positions of the carriage.

In the present instance I have shown a series of denominational stops 15, coöperative with the column stops. The tabulator mechanism which coöperates with the column stops shown in the present instance is similar to that employed in the No. 11 Remington machine, but for the purpose of my present invention it will be understood that any suitable tabulating mechanism may be employed in connection with the column stops. The denominational stops 15 are formed as parts of upright denominational stop levers 16, pivoted at 17 in a tabulator frame 18, secured by screws 19 and 20 to the main frame of the machine. The lower ends of the stop levers 16 are pivotally connected to push links 21, which are connected at their forward ends to depending

arms of angular levers 22, pivoted on a rod 23. The forwardly extending arms of these angular levers are operatively connected with key stems 24, guided in openings in guide plates 25; the upper end of each key stem being provided with the usual tabulator key 26. A contractile spring 27 is connected at one end to the depending arm of the angular lever 22, and at its opposite end to the plate 24, so as to restore the tabulator key 26 and the parts controlled thereby to operative position. It will be understood that when any of the column stops is moved rearwardly on the column stop bar to operative position, it is in a position to coöperate with one of the denominational stops 15, when the latter is projected forwardly by the depression of the corresponding tabulator key 26.

In order to project the desired column stops to operative position, I have provided projecting means which is coöperative with the column stops independently, or individually, to 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 its line of travel. Thus I have provided an actuating arm, finger, or selecting device 28 formed as an upwardly extending crank arm, which projects from a hub 29 (see Fig. 6), secured to a rock shaft 30, mounted to turn in bearings in a bracket 31, secured to the top plate of the machine. From an inspection of Fig. 6 it will be seen that the arm 28 is bent to the right, so as to bring the free end portion thereof just to the right of the left-hand, or decimal, stop of the series of denominational stops 15. This arm 28 extends forwardly of the column stop bar 14 and forwardly of the 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 28. The rock shaft 30 likewise has a rearwardly extending crank arm 32 projecting therefrom. A link 33 is pivoted to this arm and extends downwardly, and is pivotally connected at its lower end, as at 34, to a key lever 35, fulcrumed on a plate 36 secured to the base of the machine. A selecting or projecting key 37 is carried by the key lever and is preferably located in the keyboard of the machine, and by which control of the selecting device 28 is afforded. A restoring spring 38 is connected at one end of the key lever 35, and at its opposite end to a fixed plate or finger 39. The restoring spring is effective to move the key lever 35 and the parts controlled thereby to normal position and to normally maintain the upper end of the device 28 out of contact with the column stops. By depressing the selecting key 37, the rock shaft 30

is turned, and the actuating device 28 is moved rearwardly to engage one of the column stops and move it 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 resetting device, wiper, or cam designated as a whole by the reference numeral 40, and shown in detail in Fig. 5. This cam or wiper is provided with inclined faces 41 on the right and left-hand sides thereof. The member 40 is also provided with a substantially cylindrical bearing portion 42, with a flat face 43 forming one side wall of a cut-out portion 44, and with an inclined cam groove 45. The cylindrical bearing portion of the member 40, is received in a cylindrical bearing opening 46 drilled through a casting 47, formed integral with the tabulator frame 18 at the left-hand side thereof. A screw 48 is received in a tapped opening in the casting, and extends at its free end into the cut-out or recess 44, and constitutes a stop to prevent a withdrawal of the member 40 from the bearing opening 46 therefor. A cylindrical opening 49 is drilled through the casting 47 at right angles to the opening 46. The opening 49 receives a substantially cylindrical bearing portion 50, of an actuating device, indicated as a whole by the reference numeral 51, and shown in detail in Fig. 4. This actuating device is provided with flat faces 52 and 53, which cooperate with flat faces 54 and 55 on the member 40, to prevent a turning movement of either of the members 40 or 51. The member 51 is likewise provided with an inclined cam projection 56, which matches and is adapted to be received in the cam groove 45 in the member 40. A cup-like receptacle 57 is supported on top of the casting 47; with the bottom of the cup arranged downwardly, and having a central perforation therein through which a cylindrical stem 58, formed on the member 51, extends. The upper end of the stem 58 is threaded at 59, for cooperation with a tapped opening in a finger piece or key 60, preferably formed with a cylindrical depending portion 61, which surrounds the cup 57, and the lower edge of which is adapted to contact with a circumferential flange 62 on the cup when the finger piece is depressed as shown in Fig. 3. A coiled expansion spring 63 surrounds the stem 58, and bears at its lower end against the bottom wall of the cup, and at its upper end against the top wall of the finger piece. It will be observed that the cup section 57, and the cylindrical portion 61 of the finger piece, constitute a housing which incloses the spring 63, and that this spring is effective to normally maintain the actuating device 51 in the elevated position, shown in Fig. 2, and to maintain the cam 40 in the with-

drawn or inoperative position. When, however, downward pressure is exerted on the finger piece 60, this is effective to depress the actuating member 51, thereby camming the member 40 forward in the general direction of movement of the column stops out of operative position. When the member 40 is moved forwardly to operative position, as shown in Fig. 3 and as indicated in dotted lines in Fig. 6, it is in cooperative relation with those of the column stops 7 which have been moved rearwardly on the column stop bar, to operative position. A movement of the carriage in either direction at this time will bring the operative column stops successively into contact with one of the inclined faces 41 on the resetting device 40 and such column stops will be forced forwardly successively to inoperative position, thus "clearing" the entire set of column stops which may have been moved to operative position.

From an inspection of Fig. 3 it will be seen that a flat face 64, on the end of the cam 56, is brought into the path of a corresponding flat face 65 on the member 40, when the finger piece 60 reaches the limit of its downward movement. These flat faces 64 and 65 are vertically disposed, and constitute a lock to prevent a rearward movement of the member 40 under the action of the column stops 7 thereon, as the column stops are being restored to normal or inoperative position. When pressure is released on the finger piece 60, the actuating member 51 moves upwardly carrying the flat face 64 out of engagement with the face 65, and moves the cam 56 into interlocking engagement with the cam groove 45 in the member 40. The continued upward movement of the actuating member 51, effects a rearward camming action on the member 40, thus positively withdrawing it to the position shown in Fig. 2, where it is in the inoperative position or is out of cooperative relation with the operative column stops.

The rearward movement of the member 40, (and the upward movement of the member 51 as well) is limited by the cooperation of the head of the cam on the member 40, with the forward face of the casting 47, as indicated at *a* in Fig. 6. The downward movement of the finger piece 60, and the forward movement of the resetting device 40 as well, is limited by the engagement of the lower end of the finger piece with the flange 62, as hereinbefore indicated.

In assembling the parts of the resetting mechanism, it may be assumed that all of the parts are disconnected from the supporting casting 47, and are disconnected one from another. The member 40 is first moved rearwardly in its bearing opening 46; until the enlarged transverse opening 44 is brought into register with the vertically dis-

posed bearing opening 49. The member 51 is then introduced upwardly through the bearing opening 49, and the cam 56 is seated in the cooperating cam groove 45 in the member 40; the two members being manipulated relatively to each other until this interlocking engagement between the cam and cam groove is effected. The thimble or cup-like section 57 is then placed in position with the spring 63 surrounding the spindle 58. The finger piece 60 is then screwed into position. The set screw 48 is next threaded into place and the parts are assembled. The purpose of the set screw 48 is to prevent a withdrawal of the member 40, even if the finger piece 60 should be removed from the actuating member 51. In short, the set screw 48, cooperating as it does with an end wall 66 of the cut-out 44, constitutes a stop which limits the forward movement of the member 40, to a position where the actuating member 51 cannot be withdrawn from its bearing opening 49, on account of the cooperative engagement between the members 40 and 51. When, however, the set screw 48 is removed, or the end thereof withdrawn from the opening 44, a further forward movement of the member 40 may be effected, in order to bring the member 51 fully within the enlarged cut-out or opening 44, so as to afford a removal of the member 51 through said opening.

In order to prevent an undue straining, or flexing, of the column stop bar 6, a supporting bracket 67 is provided. The rear end of this bracket is secured, by screws 68, to the tabulator frame 18, and the forward end portion of the bracket is bent downwardly at 69, and rearwardly at 70, to a position where the free end 70 will be received between the bifurcated arms of the column stops, and where it is adapted at its free end to just clear the bar 10, fixed to the column stop bar. During the forward camming movement of the column stops, by the device 40, any undue strain upon the column stop bar will tend to flex it forwardly and this will be resisted by the fixed bracket 67; it being observed that the bracket is located adjacent to the cam or resetting device 40. This bracket constitutes no part of my present invention but is the invention of George A. Seib.

In use it may be assumed, for instance, that a letter or invoice is to be written in which vertical rows of names, or items and amounts are to be written, which items and amounts in the different lines are to be placed exactly under each other. It is only necessary, when the carriage is moved to the position where the first letter of the name or item is to be written, as at, say, "15" on the carriage scale, to press down the selecting key 37. This moves the column stop at "15", which is opposite the column select-

ing finger, into operative position. Thereafter, during the tabulating operation, the projected column stop will co-act with the decimal stop at the same point, "15", in the travel of the carriage, where the carriage was arrested to select the column stop, and in the desired position where the name or item is to be started. If the operator desires to set another column stop to write, for instance, an amount in the same line at, say, "55" on the carriage scale, it is only necessary, in a decimal tabulator, to press down the selecting key 37 when the carriage is found to be at the point where the decimal point is to be written at "55", as indicated on the carriage scale. This selects the column stop at "55", 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 the operative position by the actuation of the selecting key 37 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 the cam or wiper 40, in the manner hereinbefore described.

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

1. In a typewriting machine, the combination of a toothed column stop bar, bifurcated flat sheet metal column stops received in the interdental spaces between the teeth on said bar and mounted for movement in said spaces into and out of operative position, and a bar removably fixed to the column stop bar and closing the interdental spaces at one end and against which the stops are adapted to abut at the limit of these movements in one direction to prevent the detachment of the stops from the stop bar.

2. In a typewriting machine, the combination of a toothed column stop bar, bifurcated flat sheet metal column stops received in the interdental spaces between the teeth on said bar and mounted for movement in said spaces into and out of operative position on said bar and adapted to be maintained indefinitely in either of said positions, each of said stops having an inwardly extending projection, and a bar removably fixed to the column stop bar and standing in the path of said projections on the stops to afford a movement of each of said stops into and out of operative position but preventing the removal of the stops from the column stop bar.

3. In a typewriting machine, the combination of a toothed column stop bar, bifurcated flat sheet metal column stops received in the

interdental spaces between the teeth on said bar and mounted for movement in said spaces into and out of operative position, each of said stops having a spring that co-acts with the column stop bar to retain the associated stop in either of the positions to which it may be moved, and each stop also having an inwardly extending projection which limits the movement of the associated stop in one direction and prevents the withdrawal of the stop from the column stop bar.

4. In a typewriting machine and tabulating mechanism, the combination of a series of tabulator stops movable into and out of operative position, a cooperative tabulator stop, and resetting means for said first mentioned stops, said resetting means comprising a wiper movable into and out of cooperative relation with the first mentioned stops, an actuating member, and cam connections between the wiper and actuating member for camming the wiper into and out of said cooperative relation.

5. In a typewriting machine and tabulating mechanism, the combination of a series of tabulator stops movable into and out of operative position, a cooperative tabulator stop, and resetting means for said first mentioned stops, said resetting means comprising a wiper movable into and out of cooperative relation with the first mentioned stops, an actuating member, cam connections between the wiper and actuating member for camming the wiper into and out of said cooperative relation, a finger piece for moving said actuating device in one direction, and a spring for moving the actuating device in the opposite direction and for causing the wiper to be withdrawn to inoperative position.

6. In a typewriting machine and tabulating mechanism, the combination of a series of tabulator stops movable into and out of operative position; a cooperative tabulator stop; and resetting means for said first mentioned stops, said resetting means comprising a wiper movable into and out of operative position and cooperative with those of the first mentioned stops which are in the operative position when the wiper is projected or moved to operative position, a hand operated spring-restored actuating device for said wiper, and interlocking cams between said actuating device and wiper, whereby a movement of the actuating device in opposite directions will cause the wiper to be cammed into and out of operative position.

7. In a typewriting machine and tabulating mechanism, the combination of a series of tabulator stops movable into and out of operative position; a cooperative tabulator stop; and resetting means for said first mentioned stops, said resetting means

comprising a wiper movable into and out of cooperative relation with said first mentioned stops, said wiper having a substantially cylindrical bearing portion, an actuating device therefor, said actuating device having a substantially cylindrical bearing portion, and a support having cylindrical bearing openings to receive the substantially cylindrical bearing portions of the wiper and actuating device.

8. In a typewriting machine and tabulating mechanism, the combination of a series of tabulator stops movable into and out of operative position; a cooperative tabulator stop; and resetting means for said first mentioned stops, said resetting means comprising a wiper movable into and out of cooperative relation with the first mentioned stops, an actuating member, cam connections between the wiper and actuating member for camming the wiper into and out of said cooperative relation, and cooperative means on the actuating member and wiper to lock the wiper against return movement when the actuating member is operated to move the wiper to operative position.

9. In a typewriting machine and tabulating mechanism, the combination of a series of tabulator stops movable into and out of operative position; a cooperative tabulator stop; and resetting means for said first mentioned stops, said resetting means comprising a wiper movable into and out of cooperative relation with said first mentioned stops, said wiper having a substantially cylindrical bearing portion and a flat face, an actuating device therefor, said actuating device having a substantially cylindrical bearing portion and a flat face, and a support having cylindrical bearing openings to receive the substantially cylindrical bearing portions of the wiper and actuating device, and the said flat faces on the wiper and actuating device cooperating to resist a turning movement of both of said members.

10. In a typewriting machine and tabulating mechanism, the combination of a series of tabulator stops movable into and out of operative position; a cooperative tabulator stop; and resetting means for said first mentioned stops, said resetting means comprising a wiper movable into and out of cooperative relation with the first mentioned stops, an actuating member, interlocking cam connections between the wiper and actuating member for camming the wiper into and out of said cooperative relation, and means for affording a disconnection between said interlocking cam connections and for affording a removal of the wiper and actuating member from their support.

11. In a typewriting machine and tabulating mechanism, the combination of a series of tabulator stops movable into and out of operative position; a cooperative tabu-

lator stop; and resetting means for said first mentioned stops, said resetting means comprising a wiper movable into and out of co-operative relation with the first mentioned stops, an actuating member, interlocking cam connections between the wiper and actuating member for camming the wiper into and out of said co-operative relation, and a single spring co-operative with said actuating member for moving the actuating member and wiper to normal position.

12. In a typewriting machine and tabulating mechanism, the combination of a series of column stops movable into and out of operative position; a co-operative tabulator stop; a tabulator frame for said tabulator stop; and resetting means for said column stops, said resetting means being carried by said tabulator frame and parts of the resetting means being movable in bearing openings formed in said frame.

13. In a typewriting machine and tabulating mechanism, the combination of a series of column stops movable into and out of operative position; a co-operative tabulator stop; a tabulator frame for said tabulator stop; and resetting means for said column stops, said resetting means comprising a wiper having a substantially cylindrical bearing portion, an actuating device for said wiper, said actuating device having a substantially cylindrical bearing portion, and a support for the resetting means, said support being formed integral with the tabulator frame and having cylindrical bearing openings formed therein for the reception of said substantially cylindrical bearing portions of the wiper and actuating device.

14. In a typewriting machine and tabu-

lating mechanism, the combination of a series of tabulator stops movable into and out of operative position; a co-operative tabulator stop; and resetting means for said first mentioned stops, said resetting means comprising a wiper movable into and out of co-operative relation with the first mentioned stops, an actuating member, interlocking cam connections between the wiper and actuating member, for camming the wiper into and out of said co-operative relation, and a movable stop which prevents a disconnection between said interlocking cams.

15. In a typewriting machine and tabulating mechanism, the combination of a series of tabulator stops movable into and out of operative position; a co-operative tabulator stop; and resetting means for said first mentioned stops, said resetting means comprising a wiper movable into and out of co-operative relation with the first mentioned stops, an actuating member, interlocking cam connections between the wiper and actuating member for camming the wiper into and out of said co-operative relation, a movable stop which prevents a disconnection between said interlocking cams, and a detachable finger piece on said actuating device to prevent the removal or detachment of the actuating device.

Signed at the borough of Manhattan, city of New York, in the county of New York, and State of New York, this 7th day of June, A. D. 1910.

OSCAR WOODWARD.

Witnesses:

E. M. WELLS,

CHARLES E. SMITH.