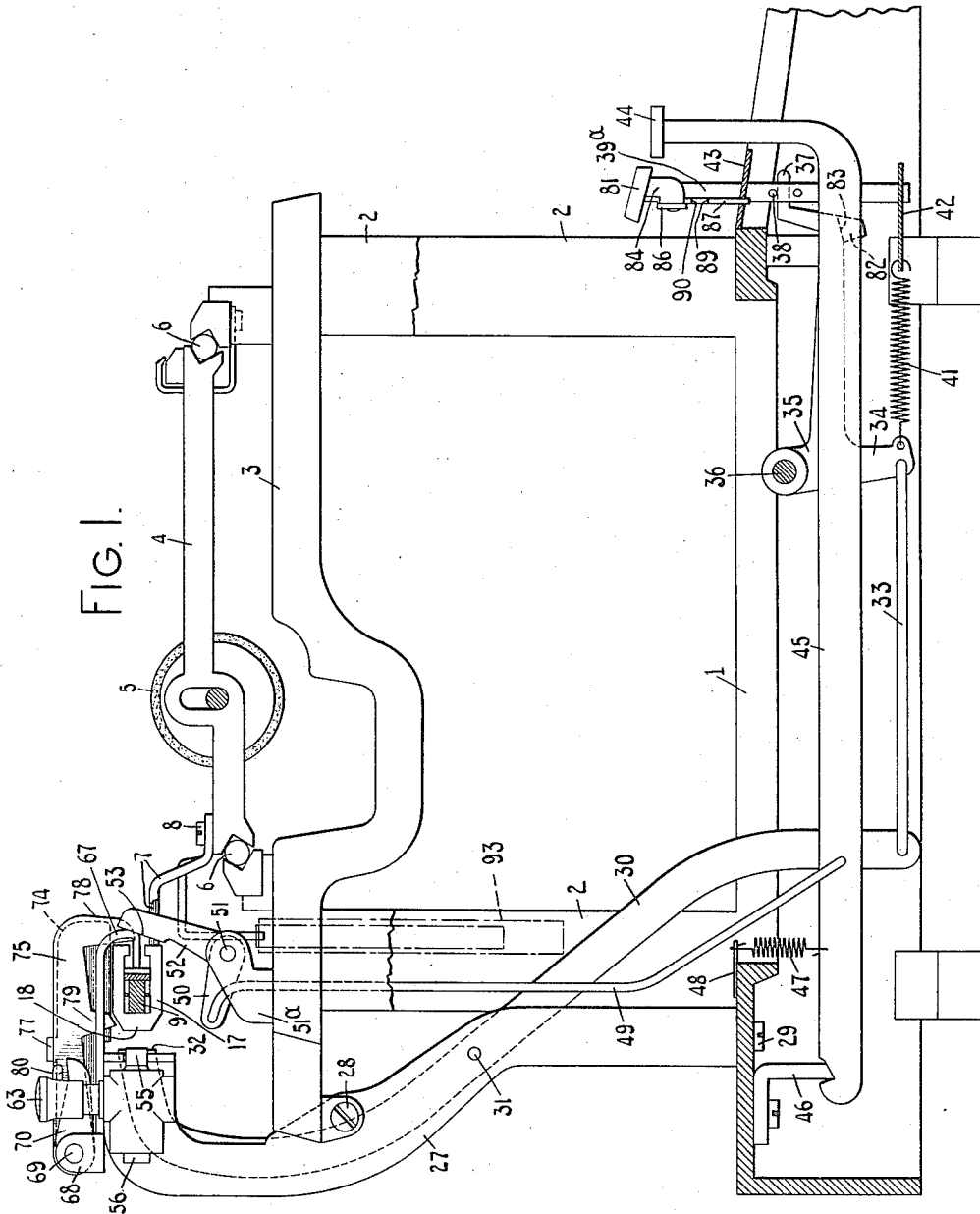


C. E. SMITH.
TYPE WRITING MACHINE.
APPLICATION FILED MAY 13, 1912.

1,043,262.

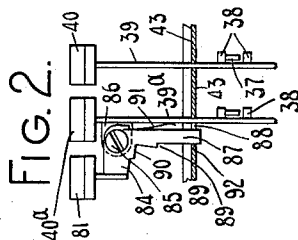
Patented Nov. 5, 1912.

2 SHEETS—SHEET 1.



WITNESSES:

W. M. Wells.
L. Nelson



INVENTOR:

Charles E. Smith
By Jacob Felbel

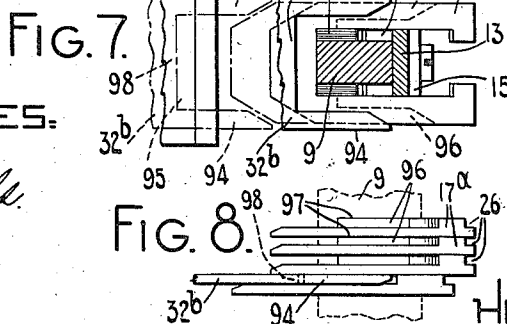
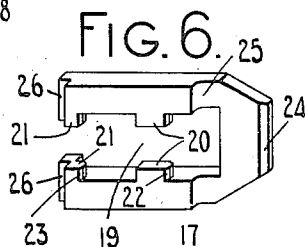
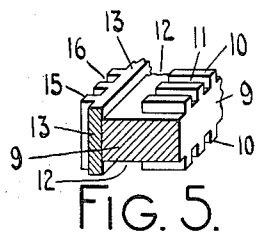
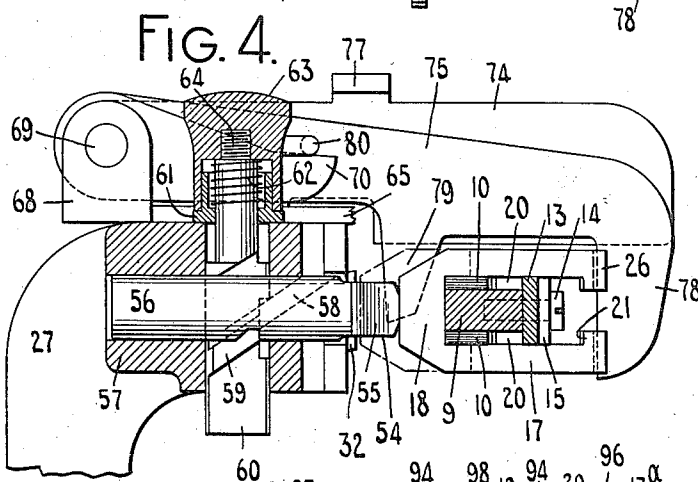
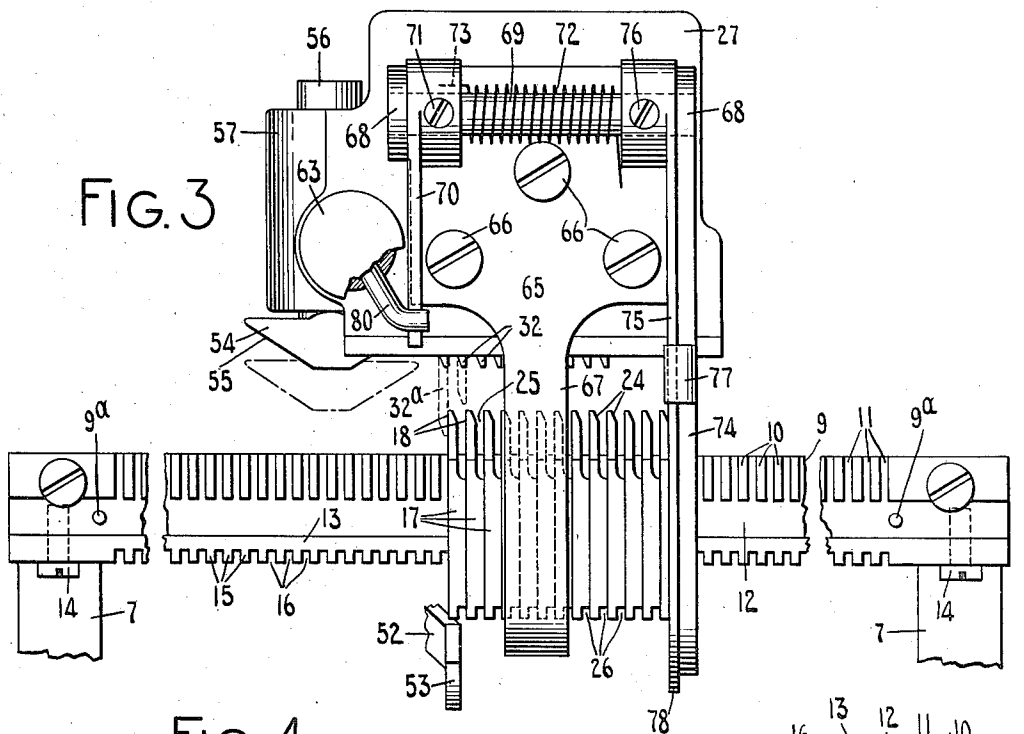
HIS ATTORNEY

C. E. SMITH.
TYPE WRITING MACHINE.
APPLICATION FILED MAY 13, 1912.

1,043,262.

Patented Nov. 5, 1912.

2 SHEETS—SHEET 2.



WITNESSES:

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UNITED STATES PATENT OFFICE.

CHARLES E. SMITH, OF NEW YORK, N. Y., ASSIGNOR TO UNION TYPEWRITER COMPANY,
OF JERSEY CITY, NEW JERSEY, A CORPORATION OF NEW JERSEY.

TYPE-WRITING MACHINE.

1,043,262.

Specification of Letters Patent.

Patented Nov. 5, 1912.

Application filed May 13, 1912. Serial No. 696,858.

To all whom it may concern:

Be it known that I, CHARLES E. SMITH, citizen of the United States, and resident of the borough of Brooklyn, city of New York, in the county of Kings 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.

One object of my invention, generally stated, is to provide means whereby column stops may be readily adjusted to or set in different columnar determining positions.

A further object of my invention, generally stated, is to provide simple and efficient means for "clearing" the column stops preparatory to resetting them in different arrangement.

Considered from a more specific point of view one object of my invention is to provide a construction in which the number of column stops employed need not be in excess of the number that are to be actually used at any one time and in which such stops may be readily set or cleared.

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 set forth in the following description and particularly pointed out in the appended claims.

In the accompanying drawings wherein like reference characters indicate like 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. Fig. 2 is a detail fragmentary front elevation with parts in section, showing a means for controlling the decimal key, the view also including one of the adjacent denominational keys. Fig. 3 is an enlarged detail fragmentary plan view of a portion of the tabulator stop setting and clearing mechanism and some of the associated parts. Fig. 4 is an enlarged detail fragmentary side elevation, with parts in section, of some of the parts represented in Fig. 3. Fig. 5 is an enlarged detail fragmentary perspective view of the column stop and retaining bars. Fig. 6 is an enlarged detail perspective view of one of the column stops. Fig. 7 is a detail fragmentary side

elevation partly in section of a modified form of construction. Fig. 8 is a fragmentary plan view of the same.

The present invention has some of the same general objects in view as the constructions disclosed in my Patent No. 979,216, dated December 20th, 1910, and in the patent to Walter E. Palmer No. 1,008,053, dated November 7th, 1911, and also some of the same objects as the construction disclosed in the application of Arthur W. Smith, Sr. No. 687,400, filed March 30th, 1912.

One form of the invention is shown in the present instance embodied in a No. 11 Remington machine, although some of the features of that machine are only conventionally represented and only so much of the machine is shown as may be necessary to arrive at an understanding of the invention. It should be understood, however, that the invention may be embodied in various styles of typewriting machines and that various changes in the construction may be made as are required to effect such embodiment.

The frame of the machine in the present instance comprises a base 1, corner posts 2 and a top plate 3. A carriage 4, as the parts are represented in the present embodiment of the invention, carries a cylindrical platen 5 and is mounted on anti-friction rollers 6 for movement over the top plate from side to side of the machine. The type bars are adapted to strike upwardly and rearwardly against the front face of the platen, the type bars being segmentally arranged and actuated by usual or any suitable type bar actuating devices. Rearwardly extending bracket arms 7 are fixed to the carriage by screws 8 and constitute means by which a column stop bar 9 is connected to the carriage. This column stop bar in the present instance is provided with teeth 10 projecting from the top and bottom thereof, said teeth forming interdental spaces 11 between them. The teeth 10 extend throughout only a portion of the width of the bar so as to provide untoothed portions or channels 12 on the top and bottom of the bar. A securing or retaining bar 13 is fixed to the column stop bar by screws 14. The height of the securing bar is sufficient to overlap the untoothed portions 12 of the column stop bar as shown in Fig. 5, for purposes which will hereinafter more clearly appear. The forward face of the securing bar 13 is pro-

5 vided with forwardly projecting teeth 15
 forming interdental spaces 16 between them.
 Each column stop is designated as a whole
 by the reference numeral 17 and there are
 10 preferably as many column stops provided
 as are to be used at any one time in the ma-
 chine. Each of these column stops is pref-
 15 erably of a width which corresponds to a
 full letter space movement of the carriage
 so that when the stops are arranged in con-
 tact with each other, as shown in Fig. 3, the
 engaging face 18 of adjacent stops will be
 situated a letter space distance apart. Each
 column stop is substantially U-shaped, being
 20 provided with an opening 19 which extends
 in the direction of the length of the stop in
 order that each stop may straddle the col-
 umn stop bar and be able to move fore and
 aft of the machine thereon. Inwardly pro-
 25 jecting oppositely disposed teeth 20 are
 formed on each stop, and the thickness of
 each of these teeth corresponds substantially
 to the width of an interdental space 11 in
 the column stop bar. The length of each
 30 tooth 20 is slightly less than the distance be-
 tween the inner ends of the teeth 10 and the
 rear face of the retaining bar 13, in order
 that the column stops may slide freely along
 the column stop bar when the teeth 20 are
 35 in register with the channels 12 in the stop
 bar. Each column stop is also provided
 near the forward end thereof with inwardly
 projecting oppositely disposed teeth 21
 which are arranged in alinement with the
 40 teeth 20 and are adapted to be received in
 the interdental spaces 16 in the retaining
 bar 13. It will be understood that when
 the retaining bar 13 is removed, any suitable
 number of stops may be slipped into posi-
 45 tion on the column stop bar and the retain-
 ing bar 13 may then be moved lengthwise
 through the central openings 19 in the col-
 umn stops when the latter are moved for-
 wardly on the column stop bar to the inop-
 50 erative position shown in Fig. 3. The re-
 taining bar may then be secured in place
 and the column stops cannot be removed
 from the column stop bar although the stops
 may be moved on the bar fore and aft of the
 machine and may be adjusted longitudinally
 55 of the bar. Thus, when a stop is moved for-
 wardly on the column stop bar to the full
 line position shown in Fig. 4, the teeth 21
 on the stop are disengaged from the inter-
 60 dental spaces 16 between the teeth on the
 retaining bar and the teeth 20 on the stop
 will be brought into register with the chan-
 nels 12 so that a relative sliding adjust-
 ment of the column stops along the column
 stop bar may be effected at this time. When,
 65 however, a column stop is moved rearwardly
 to the dotted line position shown in Fig. 4,
 and to the position shown in Fig. 3, the
 teeth 20 on the column stop will be seated
 in interdental spaces 11 and the teeth 21

will be seated in a corresponding interdental
 space 16 in the retaining bar, thus locking
 the column stop against relative movement
 longitudinally of the stop bar. I prefer to
 bevel the forward edges of each of the teeth
 20 and 21, as indicated at 22 and 23 respec-
 70 tively, in order to aid the teeth in readily
 entering the interdental spaces between the
 teeth 10 and 15.

From the foregoing description it will be
 understood that each column stop is adapted
 to receive a rectilinear movement fore
 and aft of the machine on the column stop
 bar and in a plane which extends trans-
 80 versely of the bar and that each stop is also
 adapted to receive a relative sliding move-
 ment or adjustment along the column stop
 bar when the stop is released from its lock-
 ing means. The right-hand face of each
 column stop is preferably beveled at 24 to
 85 facilitate a proper engagement of one of
 the denominational stops therewith, as will
 hereinafter more clearly appear. Each stop
 is likewise preferably recessed on its right-
 hand face, as indicated at 25 and 26, for co-
 90 operation with a stop arresting device to be
 hereinafter described. The parts are so con-
 structed and arranged that when a column
 stop is moved forwardly on the column stop
 bar to the inoperative position and is dis-
 95 engaged from the teeth 10 and 15, there is
 sufficient frictional contact between the col-
 umn stop and the column stop bar to carry
 the stop along with the bar until such
 time as the stop is arrested. At this time,
 100 however, a further independent movement
 of the column stop bar independently of the
 stop may take place, the stop being carried
 along with the bar at this time wholly by
 frictional contact.

105 When the column stops are moved rear-
 wardly on the stop bar to the position shown
 in dotted lines in Fig. 4, they are in the op-
 erative position where they are adapted to
 co-act with key controlled tabulator stop
 110 mechanism of any suitable character. In
 the present instance I have shown denomi-
 national stop mechanism of a character simi-
 lar to that employed in the No. 11 Reming-
 ton machine. Thus, a tabulator frame 27 is
 115 fixed to the frame of the machine by screws
 28 and 29. This frame is therefore rigidly
 secured to the frame of the machine and for
 the purposes of the present invention may
 be regarded as a part of the frame. De-
 120 denominational stop levers 30 are pivoted at
 31 in the frame 27 and extend upwardly and
 forwardly to provide denominational stops
 32. The lower end of each stop lever is con-
 125 nected to a link 33 which in turn is connect-
 ed at its forward end to a depending arm 34
 of an angular lever 35. The angular levers
 35 are pivoted on a rod 36 which is fixed to
 the frame of the machine. A forwardly ex-
 130 tending arm 37 is suitably connected to its

actuating key as for example by being received between pins 38 on a key stem 39 provided at its upper end with a denominational key 40. A returning spring 41 is connected at one end to the angular lever 35 and at its opposite end to a plate 42 fixed to the frame of the machine. This plate 42 and the corresponding plate 43 are apertured to receive and guide the key stems 39. A depression of a denominational key is effective to move the corresponding denominational stop into the path of the column stops when the latter are moved rearwardly on the stop bar and locked in the operative position.

In the present instance I have provided the usual means employed in the No. 11 Remington machine for coöperating individually with the column stops to move them rearwardly to operative position. Thus, a stop setting key 44 is arranged at the keyboard of the machine and its key lever 45 is fulcrumed on the usual fulcrum bar 46. A returning spring 47 is connected at one end to the key lever 45 and at its opposite end to a plate 48. An upwardly directed link 49 extends through an opening in the top plate and is connected to a rearwardly projecting crank arm 50 on a rock shaft 51. This rock shaft is mounted to turn in a bracket 51^a secured to the top plate of the machine. Connected to this rock shaft is a stop setting device or finger 52 which at its engaging portion 53 is of a thickness to engage but one column stop at a time. When the column stop is in register with the engaging portion of the stop setting finger, as shown in Fig. 3, an actuation of the key 44 is effective to move the finger 52 rearwardly, thereby moving the registering column stop from a forward inoperative position on the column stop bar rearwardly to bring about an engagement between the teeth 20 and 21 with the teeth 10 and 15 on the stop bar and the retaining bar respectively. The column stop therefore is moved to operative position and into engagement with the means by which it is locked to move with the column stop bar.

In the present instance I have provided means for moving the column stops forwardly of the stop bar, which means are similar to those ordinarily employed in the No. 11 Remington machine. Thus, to the left of the series of denominational stops I have arranged a wiper, cam, stop releasing or clearing device 54 provided with an inclined face 55. This cam 54 is provided with a stem 56 mounted in a bearing 57 formed in the tabulator frame 27. The stem 56 is formed with an inclined cam groove 58 which is coöperative with a correspondingly inclined cam projection 59 on a stem 60 which extends at right angles to the stem 56 and receives a bearing in a bearing open-

ing formed in the tabulator frame. The upper end of the stem 60 extends through an opening in a cup 61 which bears on top of the tabulator frame and constitutes an abutment against which the lower end of a coiled spring 62 bears. The upper end of this spring bears against the bottom wall of a finger piece or key 63 which is tapped to receive a threaded projection 64 on the upper end of the stem 60. The power of the coiled spring is exerted to normally maintain the stem 60 in the uppermost position and to withdraw the cam 54 to the inoperative or full line position represented in Fig. 3. A depression of the finger piece 63, however, is effective to move the cam forward to the dotted line position where it is adapted to coöperate during the travel of the carriage, with such of the column stops as are in the operative position. If at this time a movement of the carriage is effected the cam will co-act with the operative stops to move them successively to the inoperative position as shown in Fig. 3, and out of engagement with the locking means by which they are locked to move with the column stop bar.

A bracket plate 65 is secured by screws 66 to the top of the tabulator frame 27 and carries the usual forwardly projecting bracing arm 67 by which the usual stop bar is braced. This bracket plate is provided with upwardly projecting ears 68 which constitute bearings for a rock shaft 69. A stop positioning device which in the present instance is in the nature of a crank arm 70 is fixed to the rock shaft by a screw 71, and a coiled spring 72 surrounds the rock shaft and bears at one end against the bracket plate and is connected at its opposite end, as at 73, to the hub of a crank arm 70. This spring tends to turn the rock shaft and normally maintain the crank arm 70 in its elevated position. The right-hand ear 68 is prolonged to form a bearing plate or abutment 74 which extends forward over the column stop bar but clears the bar and the stops thereon, as indicated in Fig. 4. A second crank arm 75 is secured to the rock shaft by means of a screw 76 and extends forward over the column stop bar and is limited in its upward movement by an offset projection or lug 77 formed on the bearing plate 74. This lug not only limits the upward movement of the crank arm 75 but also the upward movement of the crank arm 70. The crank arm 75 is provided with two depending engaging projections or stops 78 and 79. The projection 78 is arranged forward of the column stop bar and the projection 79 is arranged in the rear thereof. In the normal positions of the parts the crank arm 75 is maintained by the spring 72 in the elevated position where the engaging or stop members 78 and 79 are out of the path of the column stops. When,

however, the crank arm 75 is moved down to the position shown in Fig. 4 the projections 78 and 79 extend into the path of or into coöperative relation with the column stops and arrest their movement with the carriage, as will hereinafter more clearly appear. The finger piece 63, by which the cam 54 is controlled, is provided with a forwardly projecting pin 80 which is bent at its forward end to the right, as indicated in Fig. 3, to overlie the crank arm 70. When the finger piece 63 is depressed to move the cam 54 to the dotted line position a downward movement of the crank arm 70 is effected and this movement is transmitted through the rock shaft 69 to the crank arm 75, moving the latter from the position shown in Fig. 1 to that represented in Fig. 4, where it is interposed in the path of the column stops.

In practice the finger piece 63 is not depressed until the carriage has been moved to the extreme left-hand position preparatory to clearing the column stops or moving them to inoperative position. After this movement of the carriage has been effected and the finger piece 63 has been depressed, the carriage is given a movement to the right and the column stops will be brought successively into engagement with the inclined face 55 on the cam 54, thus moving each stop forwardly on the column stop bar to disengage the stop from its locking means. After each stop is disengaged from its locking means it will be carried by frictional contact along with the column stop bar until it is arrested by the member 75 which is maintained interposed in the path thereof. Thus after the column stops are successively cammed forward during the movement of the carriage to the right the first of the column stops to the right is first engaged by the member 75 and the next column stop is arrested by engagement with the preceding column stop and so on the various column stops may be grouped against the member 75, one in contact with the other, so represented in Fig. 3, while the carriage and the column stop bar continue their movement to the right. It will be observed that the member 75 is situated to the right of the series of denominational stops 32 and that the distance between this member 75 and the left-hand denominational or decimal stop 32^a is such, in the present instance, as to provide for the grouping of thirteen column stops, which ordinarily is as many as will be used at one time in a machine. However, if an extremely long carriage is employed and a greater number of column stops are used, the space between the member 75 and the decimal stop 32^a may be increased accordingly.

When the column stops are grouped in the manner indicated in Fig. 3 by a movement of the carriage from left to right, this will

leave the group of column stops at or near the left-hand end of the column stop bar when the movement of the carriage to the right is completed and all of the column stops are grouped together in the manner shown. It is desirable to provide means for holding the group of column stops in the position shown while an independent movement of the carriage and column stop bar to the left is effected. From certain aspects of the present invention any suitable means may be employed for this purpose. In the present instance, however, I have provided special means for controlling the decimal stop 32^a so that this stop may be projected into the path of the column stops, as indicated in dotted lines in Fig. 3, to hold the group of stops in a position where the left-hand stop of the group will register or be in coöperative relation with the engaging portion 53 of the stop setting device. These controlling means consist in the present instance of the provision of two keys, 40^a and 81 (see Fig. 2), the key 40^a corresponding to the ordinary denominational key which controls the decimal stop. The connections between the key 40^a and the decimal stop are similar to those of the other denominational stops in the machine except that the arresting abutment 82, provided on the other angular levers 35, is cut away, as at 83, to afford a greater dip of the key 40^a under certain conditions, as will hereinafter appear. The auxiliary key 81 has its stem 84 connected by an offset pivot 85 to an ear 86 which projects laterally from the key stem 39^a for the decimal stop. The key stem 84 has a depending arm or portion 87 which is received in a guide slot 88 formed in the upper guide plate 43. The depending arm is also provided with two stop faces 89 and 90, one arranged above the other and to the left thereof. A leaf spring 91 is connected at one end to the angular key stem 84 and bears at its free end against the key stem 39^a so as to cause the depending arm 87 to normally bear against the left-hand end wall 92 of the guide slot 88. It will be understood that a depression of the decimal key 40^a will carry the key stem 84 down with it until the stop or abutment 89 engages the guide plate 43 and arrests the further downward movement of the parts. This movement of the decimal key 40^a is effective to carry the decimal stop forward to a position corresponding to that represented in dotted lines just to the right of the decimal stop 32^a in Fig. 3, to interpose the decimal stop in the path of any of the column stops which may be projected rearwardly on the column stop bar to the operative position. However, this movement is ineffective to bring the decimal stop into the path of the column stops when the latter are in the inoperative position shown in Fig. 3. It follows, there-

fore, that the actuation of the key 40^a is effective to actuate the decimal stop in the ordinary manner for the purposes for which it is ordinarily employed in tabulating operation. When, however, the decimal stop is to be employed to aid in effecting a setting of the column stops, the key 81 is depressed, thereby first turning the key stem 84 on its pivot 85 until the depending portion 87 engages the key stem 39^a. When the pivotal movement of the key stem 84 is thus arrested a continued downward pressure on the key is effective to move the key stem 39^a downwardly until the stop or abutment 90 engages the guide plate 43, it being understood that the pivotal movement of the key stem just described is effective to carry the abutment 89 out of coöperative relation with the guide plate and to bring the stop or abutment 90 to a position where it will coact with the guide plate 43 to arrest the downward movement of the parts. The additional downward movement of the key stem 39^a thus effected is effective to move the decimal stop 32^a forward beyond the position to which it is ordinarily moved by an actuation of the key 40^a. This movement of the decimal stop under control of the key 81 is represented in dotted lines in Fig. 3, from which it will be seen that the decimal stop is moved into the path of the column stops when the latter are in the inoperative position. It will be remembered that at the completion of the grouping of the column stops the carriage is at or near the limit of its movement to the right. The projection of the decimal key 32^a at this time is effective to hold the group of stops while the carriage moves to the left.

The actuation of the decimal key operates in the usual manner to effect a release of the carriage but the carriage is held by hand as it moves under the power of its spring drum 93 from right to left until the carriage reaches the position where the first column stop is to be located. This may be determined in any suitable manner either by direct reference to a sheet in the machine and an inspection thereof with reference to the printing point or with the aid of the ordinary carriage scale and pointer when the positions where the column stops are to be located have been previously determined. When the carriage arrives at the position where the first column stop is to be located to coöperate with, say, the decimal stop, then the decimal stop controlling key 81 is released, thereby again placing the carriage under control of its escapement mechanism. An actuation of the stop setting key 44 is then effected to the left-hand one of the group of column stops rearwardly to operative position and into engagement with its locking means, so that the stop is locked to the column stop bar.

The ordinary space key may then be depressed to effect a letter space movement of the carriage, thereby bringing the next column stop to a position where the decimal stop may coöperate therewith when the decimal stop is projected to operative position by its key 81. This will hold all of the column stops to the right of the decimal stop against movement with the column stop bar when the movement of the carriage to the left continues. When the position where the next column stop is to be located has been attained in the manner hereinbefore described, pressure on the key 81 is released and the stop setting device 52 is actuated by its key 44 to move the next column stop rearwardly into engagement with its locking means and into operative position, and so on the various column stops may be set.

Any suitable means may be provided for keeping the column stops within a range of adjustment determined by the teeth 10 along the stop bar. In the present instance I have provided pins 9^a at opposite ends of the bar to prevent the stops from passing beyond the range of the teeth.

It will be understood that the construction is such that the column stops are adapted to remain indefinitely in either the operative or inoperative positions to which they are moved on the column stop bar; that a single movement of the carriage to the right, effected when the finger piece 63 is depressed, is operative to successively move the column stops from the operative to the inoperative position, or from the locked position on the column stop bar to a position where they are released from their locking means, and that this same movement is effective to group the column stops against the stop positioning member 75, as shown in Fig. 3, and to hold them in such position against movement with the carriage during the travel of the latter to the right. It will also be seen that the grouping of the stops in this manner locates them where they are received between the stop positioning device 75 and the decimal stop 32^a when the latter is projected to the dotted line position shown in Fig. 3; that the decimal stop when it is in this position holds the group of column stops against movement to the left with the column stop bar during the travel of the carriage to the left; that the group of stops when so held maintains the left-hand stop of the group in register with the stop setting device 52, so that an actuation of such stop setting device at any letter space position of the carriage is effective to move the column stop that is in register therewith to operative position and into locking engagement with its locking means; and that when a stop is thus moved and locked in operative position and the carriage is given a letter space movement, the

parts are so positioned that the next actuation of the decimal stop is effective to bring it into the path of the next column stop to the right of that which has been moved to operative position. Moreover, it will be understood that the plate 74 against which the right-hand face of the positioning device 75 bears is adapted to effectively resist any movement of the positioning device to the right while the column stops are being grouped against the positioning device. Furthermore, it will be observed from an inspection of Fig. 4 that the depending engaging projections 78 and 79 on the positioning member 75 are adapted to co-act with each column stop at opposite end portions thereof and on opposite sides of the column stop bar so as to provide an effective resistance at opposite ends of the column stop to the movement of the column stops with the carriage while the stops are being grouped in the position indicated in Fig. 3. There is little liability, therefore, of the stops jamming on the column stop bar while they are being grouped.

If fewer stops than those shown are intended to be employed, it is merely necessary to set up as many stops as are to be used and those which are left over remain on the column stop bar in the inoperative position to the right of the last stop set up so that they remain in a position where they are not available for tabulating work and no difficulty is presented from the fact that they remain on the bar. If desired, however, the stops in excess of those ever used at any one time may be removed from the column stop bar in the manner hereinbefore indicated.

My present invention is adapted to be readily embodied in the No. 11 Remington machine without materially modifying the construction now embodied in that machine. Thus the column stop bar and column stops of the present invention may be readily substituted for the stops and bar now employed in the machine. The plate 65 and the parts carried thereby may replace the ordinary plate which supports the usual arm 67 and the key stem 39^a and the parts carried thereby may replace the ordinary decimal key and stem usually employed in the machine. These and other slight changes may be made to embody the present invention in place of the column stop setting and clearing mechanism now employed in the machine, and in which a separate stop is provided for each letter space position in the travel of the carriage.

In order to obtain a more efficient engagement between the decimal stop and the column stops when the former is employed to hold the group of column stops, I prefer in practice to modify the form of the usual decimal stop as shown in Figs. 7 and 8, and

to slightly modify the form of the column stops. The parts which correspond exactly to those hereinbefore described will be designated by the same reference numerals employed to indicate such parts in the preceding figure. From an inspection of Figs. 7 and 8 it will be seen that the decimal stop 32^b is of greater width from the top to the bottom edges thereof than the denominational stops shown in the construction previously described, and has two forwardly projecting fingers 94 at the top and bottom. The space 95 between these fingers is greater than the vertical diameter of the stop bar 9 so that when the decimal stop is moved forward from the dotted line to the full line position shown in Fig. 7, the fingers 94 extend above and below the stop bar. The fingers are at this time adapted, if necessity requires it, to be received in longitudinally extending recesses 96 formed in the right-hand face of each column stop 17^a near to the top and bottom edges thereof. While these recesses enable the fingers 94 to be received between two adjacent column stops, nevertheless each column stop may have a bearing against its adjacent stop throughout a considerable portion of the length thereof as indicated at 97 in Fig. 8, so that one column stop may lie flat against another and there is no liability of the column stops teetering one on another and binding on the rod. Moreover, it will be understood that when the decimal stop is projected to the full line position in Fig. 7, and to the position shown in Fig. 8, such stop presents by its fingers 94 and by the engaging portion 98 of the stop a three point contact for the column stops to co-act with. Thus the upper finger 94 is adapted to be engaged by a column stop above the bar 9, whereas the lower finger is adapted to be engaged by a column stop at the opposite side or below the bar, and the engaging portion 98 is adapted to be engaged by the rear end portion of a column stop. This provides an effective arresting means which extends throughout a considerable portion of the length of each column stop as indicated in Fig. 8 and against which the column stops may be effectively held without any tendency to teeter or bind on the stop rod.

In the ordinary operation of stop 32^b for tabulating purposes it is moved forwardly by its denominational key, as 40^a, until the engaging portion 98 of the decimal stop is brought into the path of the operative column stops to arrest the carriage. When, however, the stop 32^b is to be employed as a means for holding the grouped column stops, so that the left-hand column stop of the group is in register with the stop setting device as indicated in Fig. 3, the stop 32^b will be moved farther forwardly to the full line position indicated in Fig. 7. This last

mentioned movement may be effected by an auxiliary key, as the key 81.

The recesses 96 in the column stops enable the decimal stop to be received between adjacent column stops under the same conditions that the decimal stop 32^a may be received in the recesses 25 in the column stops of the previously described construction, and which has been hereinbefore explained.

While I have described with considerable detail a construction in which the column stops are carried by the carriage and in which the stop positioning means, the stop setting device 52 and the clearing device 54 are carried by the frame of the machine, it should be understood that from certain aspects of my invention the parts in question may be otherwise arranged and that various modifications may be made without departing from my invention. Moreover, certain features of the invention may be employed without others or in combination with other features different from those disclosed herein.

While I refer herein to a "carriage" it should be understood that this term is employed in a generic sense and is intended to include typewriter carriages whatever the character of the carriage may be and whether or not the carriage carries a platen.

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

1. In a typewriting machine, the combination of a carriage, a column stop bar, a series of column stops each adapted to be locked relatively to said bar or to receive a relative sliding adjustment to different points along the bar, means for locking the stops against relative adjustment along said bar, releasing means for releasing the stops from said locking means, and automatically actuated positioning means controlled by said releasing means and thrown into coöperative relation with said column stops by an actuation of said releasing means.

2. In a typewriting machine, the combination of a carriage, a column stop bar, a series of column stops each adapted to be locked relatively to said bar or to receive a relative sliding adjustment to different points along the bar, means for locking the stops against relative adjustment along said bar, releasing means for releasing the stops from said locking means, and automatically actuated positioning means controlled by said releasing means and thrown into coöperative relation with said column stops by an actuation of said releasing means, the column stops and positioning means being carried one by the carriage and the other by the frame of the machine.

3. In a typewriting machine and tabulating mechanism, the combination of a carriage, a column stop bar, a series of column stops each having a relative sliding adjust-

ment along said bar and also having a bodily sliding, rectilinear movement in a plane which extends transversely of said bar, each of said stops being adapted to remain indefinitely in either of two positions transversely of the bar to which the stops may be moved, locking means which are coöperative with said stops to lock them against relative adjustment longitudinally of the bar, and a single key-actuated means operable individually on said stops to effect such rectilinear movements of the stops to bring about an engagement of the column stops with their locking means.

4. In a typewriting machine and tabulating mechanism, the combination of a carriage, a column stop bar, a series of column stops each having a relative sliding adjustment along said bar and also having a rectilinear movement in a plane which extends transversely of said bar, each of said stops being adapted to remain indefinitely in either of two positions transversely of the bar to which the stops may be moved, locking means which are coöperative with said stops to lock them against relative adjustment longitudinally of the bar, and a single key-actuated means operable individually on said stops to effect such rectilinear movement of the stops to bring about an engagement of the column stops with their locking means, said series of column stops and key-actuated means being carried one by the carriage and the other by the frame of the machine.

5. In a typewriting machine and tabulating mechanism, the combination of a carriage, a column stop bar, a series of column stops each having a relative sliding adjustment along said bar and also having a bodily sliding, rectilinear movement in a plane which extends transversely of said bar, each of said stops being adapted to remain indefinitely in either of two positions transversely of the bar to which the stops may be moved, locking means which are coöperative with said stops to lock them against relative adjustment longitudinally of the bar, means coöperative with said column stops to effect a rectilinear movement of the stops transversely of the column stop bar in one direction to release the stops from their locking means, and a single key-actuated means operable individually on said stops to effect a rectilinear movement of the stops in the opposite direction to bring about an engagement of the column stops with their locking means.

6. In a typewriting machine and tabulating mechanism, the combination of a carriage, a column stop bar, a series of column stops each having a relative sliding adjustment along said bar and also having a bodily rectilinear sliding movement in a plane which extends transversely of said bar, each of

said stops being adapted to remain indefinitely in either of two positions transversely of the bar to which the stops may be moved, locking means which are cooperative with said stops to lock them against relative adjustment longitudinally of the bar, means cooperative with said column stops to effect a rectilinear movement of the stops transversely of the column stop bar in one direction to release the stops from their locking means, and a single key-actuated means operable individually on said stops to effect a rectilinear movement of the stops in the opposite direction to bring about an engagement of the column stops with their locking means, said series of column stops and key actuated means being carried one on the carriage and the other on the frame of the machine.

7. In a typewriting machine and tabulating mechanism, the combination of a carriage, a column stop bar, a series of column stops each having a relative sliding adjustment along said bar and also having a bodily sliding rectilinear movement in a plane which extends transversely of said bar, each of said stops being adapted to remain indefinitely in either of two positions transversely of the bar to which the stops may be moved, and a cam which is cooperative successively with said column stops to move them transversely of the column stop bar.

8. In a typewriting machine, the combination of a stop bar, a stop mounted on said stop bar for relative sliding adjustment along the same and for a bodily rectilinear sliding movement in a plane which extends transversely of said bar and to either one of two positions, said stop being adapted to remain indefinitely in either of the said two transverse positions, and a series of teeth on said bar and with which the stop engages when it is moved to one of said transverse positions and from which teeth the stop is disengaged when it is moved to the other of said transverse positions to lock the stop relatively to the bar in one instance and to free the stop for relative adjustment longitudinally of the bar in the other instance.

9. In a typewriting machine and tabulating mechanism, the combination of a carriage, a series of column stops which are adjustable in the direction of the travel of the carriage along the part that carries said stops and which are also movable into and out of operative position, and means for grouping the column stops one next to another when they are in the inoperative position, said means comprising a key controlled device which under control of its key may be interposed in the path of the column stops in order that the stops may be grouped against said device.

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

riage, a series of column stops which are adjustable in the direction of the travel of the carriage along the part that carries said stops and which are also movable into and out of operative position, key controlled tabulator stop mechanism which is cooperative with said column stops when the latter are in operative position, and means independent of said key controlled tabulator stop mechanism for grouping the column stops one next to another when they are in the inoperative position, said means comprising a key controlled device which under control of its key may be interposed in the path of the column stops in order that the stops may be grouped against said device.

11. In a typewriting machine and tabulating mechanism, the combination of a carriage, a column stop bar carried by the carriage, a series of column stops mounted for relative sliding adjustment along said bar, locking means for locking the column stops and bar against relative sliding adjustment, means operating successively to release the column stops from said locking means, and key controlled positioning means carried by the frame of the machine and movable under control of the key into the path of the column stops to hold the released stops against movement with the carriage while the column stop bar continues its movement with the carriage, and key controlled tabulator stop mechanism cooperative with said column stops.

12. In a typewriting machine and tabulating mechanism, the combination of a carriage, a column stop bar, a series of column stops mounted for relative sliding adjustment along said bar and adapted to be locked relatively to the bar in their adjusted positions, and a key controlled stop positioning device distinct from the tabulator mechanism but movable into the path of the series of column stops to bring about a grouping of the stops against said stop positioning device and against one another.

13. In a typewriting machine and tabulating mechanism, the combination of a carriage, a column stop bar carried thereby, a series of column stops carried by the carriage and mounted for relative sliding adjustment along said column stop bar and each stop being also mounted for individual movement in a plane which extends transversely of the bar, said stops being adapted to remain indefinitely in either one of two different transverse positions to which they may be moved, locking means with which the stops are cooperative to lock the stops against relative adjustment along the bar, means carried by the frame of the machine and operative individually on the stops to effect a transverse movement thereof in one direction to bring about an engagement of the stops with their locking means, releasing

means for moving the stops transversely of the bar in the opposite direction to disengage them from their locking means, and key controlled stop positioning means carried by the frame of the machine and movable into the path of the column stops to hold them while the carriage and column stop bar move independently thereof to effect a relative adjustment of the column stops along the stop bar.

14. In a typewriting machine and tabulating mechanism, the combination of a carriage, a column stop bar carried thereby, a series of column stops carried by the carriage and mounted for relative sliding adjustment along said column stop bar and each stop being also mounted for individual movement in a plane which extends transversely of the bar, said stops being adapted to remain indefinitely in either one of two different transverse positions to which they may be moved, locking means with which the stops are cooperative to lock the stops against relative adjustment along the bar, means carried by the frame of the machine and operative individually on the stops to move them transversely of the bar in one direction to effect an engagement of the stops with their locking means, releasing means for moving the stops transversely of the bar in the opposite direction to disengage them from their locking means, stop positioning means carried by the frame of the machine and movable into the path of the column stops to hold them while the carriage and column stop bar move independently thereof, and means whereby the releasing means are effective to control the movement of the stop positioning means into and out of cooperative relation with the column stops.

15. In a typewriting machine and tabulating mechanism, the combination of a carriage, a column stop bar, a series of column stops mounted for relative sliding adjustment along and on said bar and for movement thereon into and out of operative position, means for controlling the movement of the column stops into and out of operative position, and means to aid in effecting such sliding adjustment of the column stops, said means comprising a key controlled stop positioning device independent of the tabulator mechanism and which is movable by its key into cooperative relation with the column stops, said stop positioning means also being distinct from the means for moving the column stop into and out of operative position.

16. In a typewriting machine and tabulating mechanism, the combination of a carriage, a column stop bar, a series of column stops mounted for relative sliding adjustment on and along said bar, means for locking the stops in and for freeing them from

their adjusted positions, and means to aid in effecting such sliding adjustment of the column stops, said means comprising a key controlled stop positioning device independent of the tabulator mechanism and separate and distinct from the means by which the column stops are locked in and freed from the adjusted positions.

17. In a typewriting machine and tabulating mechanism, the combination of a carriage, a column stop bar, a series of column stops each having a relative sliding adjustment along said bar and also having a bodily sliding rectilinear movement in a plane which extends transversely of said bar, said stops being adapted to remain indefinitely in either of two transverse positions to which they may be moved, locking means which are cooperative with said stops to lock them against relative adjustment longitudinally of the bar, a single key-actuated means operable individually on said stops to effect such rectilinear movements of the stops to bring about an engagement of the column stops with their locking means, and stop positioning means cooperative with the released stops to hold them relatively thereto while an independent longitudinal movement of the column stop bar is effected.

18. In a typewriting machine and tabulating mechanism, the combination of a carriage, a column stop bar, a series of column stops each having a relative sliding adjustment along said bar and also having a bodily rectilinear sliding movement in a plane which extends transversely of said bar, said stops being adapted to remain indefinitely in either of two positions transversely of the bar to which they may be moved, locking means which are cooperative with said stops to lock them against relative adjustment longitudinally of the bar, means cooperative with said column stops to effect a rectilinear movement of the stops in one direction to release the stops from their locking means, a single key actuated means operable individually on said stops to effect a rectilinear movement of the stops in the opposite direction to bring about an engagement of the column stops with their locking means, said series of column stops and key actuated means being carried one on the carriage and the other on the frame of the machine, and stop positioning means cooperative with the released stops to hold them relatively thereto while an independent longitudinal movement of the column stop bar is effected.

19. In a typewriting machine and tabulating mechanism, the combination of a carriage, a column stop bar carried thereby, a series of column stops each having a relative adjustment along said bar and also having a movement in a plane which extends transversely of the bar, locking means to lock the stops against relative movement

along the bar, releasing means carried by the frame of the machine for effecting such transverse movement of the column stops to release them from their locking means, and a stop positioning device carried by the

5 frame of the machine and movable thereon into the path of the column stops to hold the stops while the stop bar and carriage move independently thereof.

10 20. In a typewriting machine and tabulating mechanism, the combination of a carriage, a column stop bar carried thereby, a series of column stops each having a relative adjustment along said bar and also having a movement in a plane which extends

15 transversely of the bar, locking means to lock the stops against relative movement along the bar, releasing means carried by the frame of the machine for effecting such transverse movement of the column stops to

20 release them from their locking means, a stop positioning device carried by the frame of the machine and movable thereon into the path of the column stops to hold the stops

25 while the stop bar and carriage move independently thereof, the movement of said stop positioning means into and out of co-operative relation with the column stops being under control of said releasing means.

30 21. In a typewriting machine and tabulating mechanism, the combination of a carriage, a column stop bar carried thereby, a series of column stops each having a relative adjustment along said bar, co-operative

35 key controlled tabulator stop mechanism carried by the frame of the machine, and a stop positioning device carried by the frame of the machine to the right of said key controlled tabulator stop mechanism and movable

40 into and out of the path of the column stops so that the stops may be grouped against said positioning device and held relatively to the frame of the machine while the column stop bar and carriage move in-

45 dependently thereof.

22. In a typewriting machine and tabulating mechanism, the combination of a carriage, a column stop bar carried thereby, a series of column stops each having a relative adjustment along said bar, and also

50 having a movement in a plane which extends transversely of the bar, locking means to lock the stops against relative movement along the bar, releasing means carried by the frame of the machine for effecting a transverse movement of the column stops to

55 release them from their locking means, key controlled tabulator stop mechanism carried by the frame of the machine and co-operative with the column stops, and a stop positioning device carried by the frame of the machine to the right of said key controlled tabulator stop mechanism and movable into and out of the path of the released column

60 stops so that the stops may be grouped

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against said positioning device and held relatively to the frame of the machine while the column stop bar and carriage move independently thereof.

23. In a typewriting machine and tabulating mechanism, the combination of a carriage, a column stop bar carried thereby, a series of column stops each mounted for relative adjustment along said bar and for movement in a plane which extends transversely of the bar, a cam carried by the

70 frame of the machine and movable into and out of co-operative relation with said stops and operative to effect a transverse movement thereof, a stop positioning device

75 mounted on the frame of the machine for movement into and out of the path of the column stops, and means whereby a movement of the cam into co-operative relation with the stops is effective to move the stop

80 positioning device into the path of the column stops, so that the latter after they leave the cam may be brought into co-operation with the positioning device to be held thereby while the column stop bar and carriage

85 continue their movement independently of the stops.

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24. In a typewriting machine and tabulating mechanism, the combination of a carriage, a column stop bar carried thereby, a series of column stops each mounted for relative adjustment along said bar and for movement in a plane which extends transversely of the bar, a cam carried by the

95 frame of the machine and movable into and out of co-operative relation with said stops and operative to effect a transverse movement thereof, a stop positioning device

100 mounted on the frame of the machine for movement into and out of the path of the column stops, means whereby a movement of the cam into co-operative relation with the stops is effective to move the stop

105 positioning device into the path of the column stops so that the latter after they leave the cam may be brought into co-operation with the positioning device to be held thereby while the column stop and carriage continue their movement in one direction independently of the stops, and a second stop

110 positioning device movable at will into the path of the stops so as to hold the stops while the stop bar and carriage may continue their movement in the opposite direction independently of the stops.

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25. In a typewriting machine and tabulating mechanism, the combination of a carriage, a column stop bar, a series of column stops mounted for relative adjustment along said bar, two positioning devices which are

125 spaced apart and are operative on opposite sides of the series of column stops, one of said positioning devices operating to hold the series of stops relatively thereto in one direction and the other positioning device

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operating to hold the stops relatively thereto in the opposite direction, and means operable at will to bring the positioning devices into coöperative relation with said column stops.

26. In a typewriting machine and tabulating mechanism, the combination of a carriage, a column stop bar, a series of column stops mounted for relative adjustment along said bar, two independently movable positioning devices which are spaced apart and are operative on opposite sides of the series of column stops, one of said positioning devices operating to hold the series of stops relatively thereto in one direction and the other positioning device operating to hold the stops relatively thereto in the opposite direction, and means operable at will to bring either of the positioning devices into coöperative relation with said column stops, the column stops and positioning devices being carried one by the carriage and the other by the frame of the machine.

27. In a typewriting machine and tabulating mechanism, the combination of a carriage, a column stop bar, a series of column stops mounted for relative adjustment along said bar, means for locking the column stops relatively to said column stop bar and against relative adjustment, means for releasing the stops from their locking means, two independently movable positioning devices which are spaced apart to receive the entire series of column stops between them and are operative on opposite sides of the series of column stops, one of said positioning devices operating to hold the released stops relatively thereto in one direction and the other positioning device operating to hold the released stops relatively thereto in the opposite direction, and means operable at will to bring either of the positioning devices into coöperative relation with said column stops, the column stops and positioning devices being carried one by the carriage and the other by the frame of the machine.

28. In a typewriting machine and tabulating mechanism, the combination of a carriage, a column stop bar carried thereby, a series of column stops mounted for relative adjustment along said column stop bar, two stop positioning devices carried by the frame of the machine, said positioning devices being spaced apart to receive the entire series of column stops between them, and means for moving said positioning devices into and out of coöperative relation with the column stops, each of said positioning devices being adapted to hold the column stops against movement in one direction while a relative movement between the column stop bar and column stops may be effected.

29. In a typewriting machine and tabu-

lating mechanism, the combination of a carriage, a column stop bar carried thereby, a series of column stops mounted for relative adjustment along said column stop bar, two stop positioning devices carried by the frame of the machine, said positioning devices being spaced apart to receive the entire series of column stops between them, and means for moving said positioning devices into and out of coöperative relation with the column stops, each of said positioning devices being adapted to hold the column stops against movement in one direction while the column stop bar and carriage move independently thereof and one of said positioning devices also acting as a tabulator stop.

30. In a typewriting machine and tabulating mechanism, the combination of a carriage, a column stop bar carried thereby, a series of column stops each mounted for relative adjustment along said column stop bar and for movement in a plane which extends transversely of the bar, locking means for locking the stops in their adjusted positions, releasing means for effecting a transverse movement of the stops to free them from their locking means, two stop positioning devices carried by the frame of the machine and movable thereon into and out of the path of the column stops, said positioning devices being spaced apart to receive the entire series of column stops between them, means controlled by said releasing means for moving one of said positioning devices into the path of the released stops, and separate means for moving the other of said positioning devices into the path of the column stops.

31. In a typewriting machine and tabulating mechanism, the combination of a carriage, a column stop bar carried thereby, a series of column stops each mounted for relative sliding adjustment along said column stop bar and for movement in a plane which extends transversely of the bar, locking means for locking the stops in their adjusted positions, releasing means for effecting a transverse movement of the stops transversely to free them from their locking means, two stop positioning devices carried by the frame of the machine and movable thereon into and out of the path of the column stops, said positioning devices being spaced apart to receive the entire series of column stops between them, one of said positioning devices being a tabulator stop which ordinarily acts as such, and means for moving said tabulator stop into the path of the column stops when the latter are in the released position so that the tabulator stop may act as a positioning device.

32. In a typewriting machine and tabulating mechanism, the combination of a carriage, a series of column stops movable into

and out of operative position and adapted to remain indefinitely in either of such positions, a cooperative key controlled tabulator stop, and means whereby the tabulator stop may be brought into cooperative relation with the column stops whether the latter are in the operative or inoperative position.

33. In a typewriting machine and tabulating mechanism, the combination of a carriage, a series of column stops movable into and out of operative position and adapted to remain indefinitely in either of such positions, means which lock the column stops on the parts which carry it and against relative adjustment when the column stops are in the operative position and which are freed from such locking means when the stops are in the inoperative position, a cooperative key controlled tabulator stop, and means whereby the tabulator stop may be brought into cooperative relation with the column stops whether the latter are in the operative or inoperative position.

34. In a typewriting machine and tabulating mechanism, the combination of a carriage, a series of column stops movable into and out of operative position and adapted to remain indefinitely in either of such positions, a cooperative key controlled tabulator stop, and means whereby the tabulator stop may be given varying extents of movement to operative position and may thus be brought into cooperative relation with the column stops whether the latter are in the operative or inoperative position.

35. In a typewriting machine and tabulating mechanism, the combination of a carriage, a series of column stops movable into and out of operative position and adapted to remain indefinitely in either of such positions, cooperative denominational stop mechanism including a key controlled decimal stop, and means whereby the decimal stop may be brought into cooperative relation with the column stops whether the latter are in the operative or inoperative position.

36. In a typewriting machine and tabulating mechanism, the combination of a carriage, a series of column stops movable into and out of operative position and adapted to remain indefinitely in either of such positions, means which lock the column stops on the part which carries them and against relative adjustment when the column stops are in the operative position and which stops are freed from such locking means when the stops are in the inoperative position, denomination stop mechanism cooperative with said column stops, said denomination stop mechanism including a key controlled decimal stop, and means whereby said decimal stop may be brought into cooperative

relation with the column stops whether the latter are in the operative or inoperative position.

37. In a typewriting machine and tabulating mechanism, the combination of a carriage, a series of column stops movable into and out of operative position and adapted to remain indefinitely in either of such positions, a cooperative key controlled tabulator stop, and means whereby the tabulator stop may be given varying extents of movement to operative position and may then be brought into cooperative relation with the column stops whether the latter are in the operative or inoperative position, said means for bringing the tabulator stop into cooperation with the column stops comprising two keys operatively connected with said tabulator stop, one extent of movement of the tabulator stop being effected under control of one key and a different extent of movement of the tabulator stop being effected under control of the other of said keys.

38. In a typewriting machine and tabulating mechanism, the combination of a carriage, a series of column stops movable into and out of operative position and adapted to remain indefinitely in either of such positions, means which lock the column stops on the part which carries them and against relative adjustment when the column stops are in the operative position and which stops are freed from such locking means when the stops are in the inoperative position, a cooperative key controlled tabulator stop, and means whereby the tabulator stop may be given varying extents of movement to operative position and may thus be brought into cooperative relation with the column stops whether the latter are in the operative or inoperative position, said means for bringing the tabulator stop into cooperation with the column stops comprising two keys operatively connected with said tabulator stop, one extent of movement of the tabulator stop being effected under control of one key and a different extent of movement of the tabulator stop being effected under control of the other of said keys.

39. In a typewriting machine and tabulating mechanism, the combination of a carriage, a series of column stops movable into and out of operative position and adapted to remain indefinitely in either of such positions, cooperative denominational stop mechanism including a key controlled decimal stop, and means whereby the decimal stop may be brought into cooperative relation with the column stops whether the latter are in the operative or inoperative position, said last mentioned means comprising two keys and means whereby the actuation of one of said keys will bring the decimal

stop into coöperative relation with the column stops when the latter are in the operative position and an actuation of the other of said keys will bring the decimal stop into coöperative relation with the column stops when the latter are in the inoperative position.

Signed at the borough of Manhattan, city

of New York, in the county of New York, and State of New York, this 11th day of 10 May, A. D. 1912.

CHARLES E. SMITH.

Witnesses:

E. M. WELLS,

M. F. HARNWEHER.